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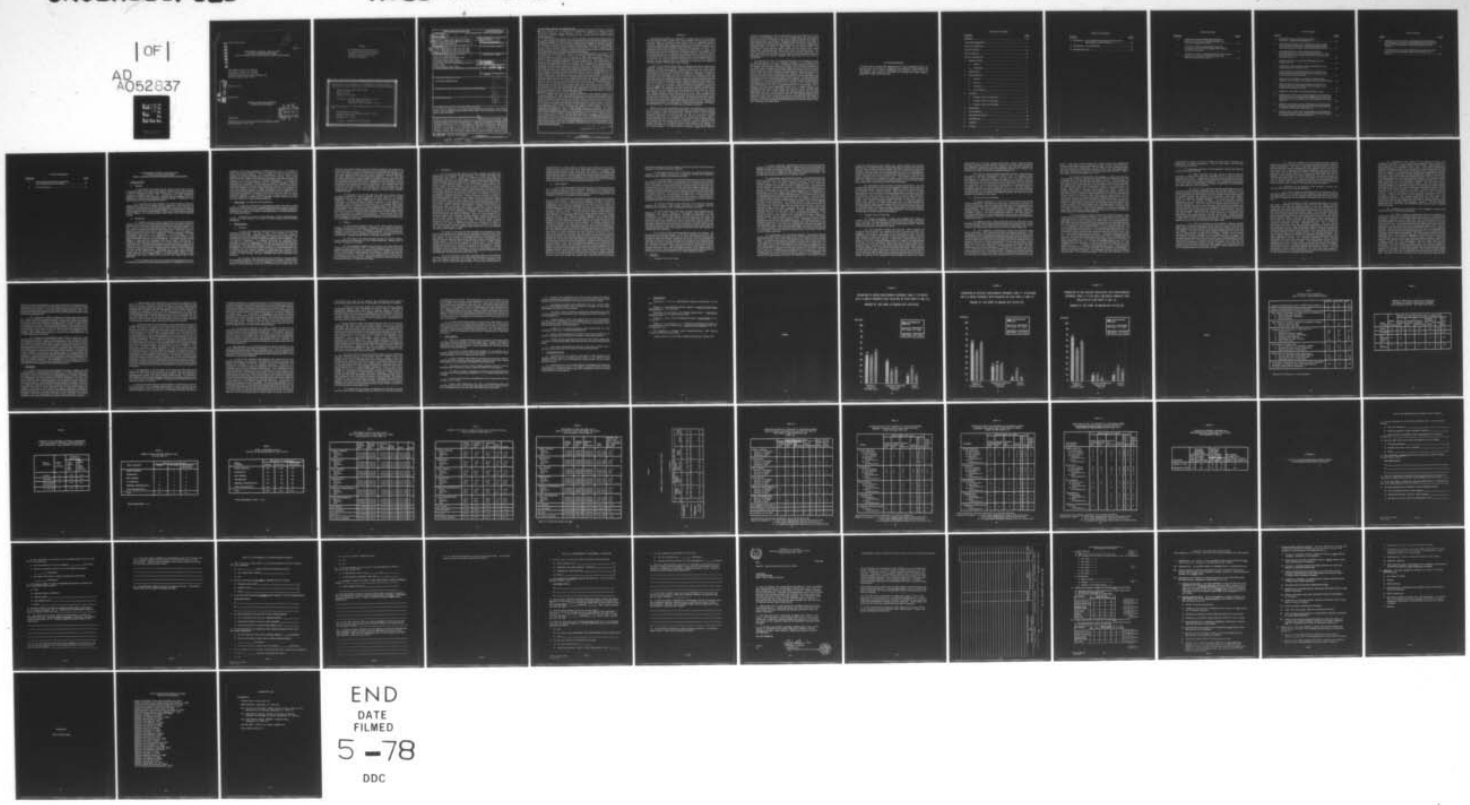

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Report HCSD-77-005

COMPARISON OF DENTAL CARE DELIVERY BY DENTAL MENTORS (TEACHERS), DENTAL RESIDENTS AND NON-TEACHING DENTAL SPECIALISTS

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Final Report

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number): Selected US Army Dental Corps officers receive dental specialty training in six military occupational specialty (MOS) producing programs which are conducted within Continental United States (CONUS) dental activities subordinate to HSC. These programs include dental residencies in endodontics, periodontics, oral surgery, fixed prosthodontics, removable prosthodontics, and general dentistry. The purposes of this three part study were: (1) to determine the relative amounts of dental care delivered by dental officers who are residents, dental officers serving as mentors, and other dental officers who are trained specialists serving in non-

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teaching positions; (2) to determine the productivity capabilities of dental officers involved in specialty training programs; and (3) to determine the treatment and educational resources available at selected US Army Health Services Command (HSC) dental activities.

A total of 318 Army Dental Corps officers completed questionnaires concerning the manpower, equipment and facility resources available for use in their dental treatment and educational programs; 57 Army dentists completed daily worksheets for six weeks in order to determine, on a pilot basis, the relative amounts of time expended in various categories of their duties and their dental procedure accomplishment rates; and 171 Army Dental Corps officers completed weekly worksheets for 48 weeks in order to determine the relative amounts of time expended in direct patient care, indirect patient care, teaching and educational duties, other (additional) duties; and absences.

FINDINGS AND CONCLUSIONS: Mentors in Army training programs were found to be responsible for the training of a mean of 2.6 residents within their own specialty, 6.9 general dentistry residents, and 3.7 residents in other dental specialties. Mentors, residents, and non-teaching dental specialists (NTS's) were found to have a mean of 1.5, 1.4, and 1.5 dental operatories respecively, for their exclusive use. The mean numbers of chairside dental assistants found to be available for the exclusive use of dental mentors, residents, and NTSs were 0.9, 0.9, and 1.0, respectively. In order to enhance/improve their programs all three groups reported a need for more/better qualified dental ancillary personnel and more/better quality dental equipment and supplies. In addition both mentors and residents perceived a need for more dental consultants in the training programs. The mean numbers of unweighted major dental treatment procedures accomplished per hour of direct patient care were found to be 2.18 for mentors, 1.69 for residents, and 2.47 for NTSs. During normal duty hours, mentors were found to spend 43.3 per cent of their time in direct patient care, 8.7 per cent in indirect patient care, 21.3 per cent in teaching and education duties, 10.5 per cent in other duties and 16.2 per cent absent. Residents spent 51.0 per cent of their time in direct patient care, 10.5 per cent in indirect patient care, 26.3 per cent in teaching/education duties, and 9.5 per cent absent. The percentage of normal duty time spent by NTSs in direct patient care, indirect patient care, teaching/-education duties, other duties, and absences were: 60.5 per cent, 6.3 per cent, 3.7 per cent, 3.7 per cent, 12.5 per cent, and 17.0 per cent, respectively. The mean numbers of after duty hours spent per week in performing patient treatment/educational duties by mentors, residents, and NTS were 6.0, 15.5 and 2.8 respectively.

It is concluded that there is an equitable distribution of the available resources for delivering patient care when comparing teaching and non-teaching dental specialty care delivery environments. The number of dental operatories available for the exclusive use of mentors, residents, and NTSs at the time of data collection was less than the current DOD authorization. In order to enhance their programs, all dental officers perceive a need for more/better qualified ancillary personnel and additional/better quality dental instruments and equipment. All personnel involved in dental residency programs perceive a need for additional consultants in order to enhance the quality of their programs. The dental procedure accomplishment rates of non-teaching specialists are greater than those generated by residents and mentors. Mentors procedure accomplishment rates are greater than those of residents. Mentors spend significantly more time in other/additional duties and absences than do residents, and they spend significantly more time in indirect patient care, teaching/education duties, and total "after duty" hours than do NTSs. Residents spent significantly more time in direct patient care than do mentors and they spend significantly more time in indirect patient care, teaching/education duties and total "after duty" hours than do the mentors or the NTSs. NTSs spend significantly more time in direct patient care and other/additional duties than do mentors or residents and they report significantly more absent time than residents.

* non-teaching specialists

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SUMMARY

This study was requested by Directorate of Dental Services, US Army Health Services Command (HSC) in August 1975. The Commander, US Army Health Services Command tasked the Academy of Health Sciences, US Army (AHSUSA) to perform the study. Selected Army Dental Corps officers receive specialty training in six military occupational specialty (MOS) producing programs which are conducted within Continental United States (CONUS) dental activities subordinate to HSC. These programs include dental residencies in endodontics, periodontics, oral surgery, fixed prosthodontics, removable prosthodontics, and general dentistry. The purposes of this three part study were: (1) to determine the relative amounts of dental care delivered by dental officers who are residents, dental officers serving as mentors, and other dental officers who are fully trained specialists serving in non-teaching positions; (2) to determine the dental productivity capabilities of dental officers involved in specialty training programs; and (3) to determine the treatment and educational resources available at selected HSC dental activities.

In Part I of the study 318 Army dentists completed questionnaires concerning the manpower, equipment, and facility resources available for use in their dental treatment and educational programs. Information was elicted from these officers concerning the number of dental operatories available for their use; the number of dental assistants available for their use; the number and categories of "additional" duties which had been assigned to them; the reliability (as to accuracy) of the daily worksheets or treatment logs which were in use at the time of data collection; and their requirements for additional manpower, equipment, supply and facility resources which were considered necessary in order to enhance the quality of their program. In Part II of the study, 57 Army dental officers completed daily worksheets, on a pilot basis, for a period of six weeks. These worksheets were designed to record the number of major dental treatment procedures, by specific category, accomplished by the participants. The worksheets were also used to determine the amount of time spent per day by the participants in various categories of their duties (i.e., patient care, didactic activities, other duties). In Part III of the study, 171 Army Dental Corps officers completed weekly worksheets for 48 weeks. These worksheets were used to record the number of hours per day (both during and after normal duty hours) expended by the participants in direct patient care, indirect patient care, teaching and educational duties, other (additional) duties, and absences. In all three parts of the study, the participants included dental officers serving as mentors, residents and non-teaching specialist in the specialties of endodontics, periodontics, oral surgery, fixed prosthodontics, removable prosthodontics, and general dentistry.

Mentors in Army training programs were found to be responsible for the training of a mean of 2.6 residents within their own specialty, 6.9 general dentistry residents, and 3.7 residents in other dental specialties. Mentors, residents, and non-teaching dental specialists (NTSs) were found to have a mean of 1.5, 1.4, and 1.5 dental operatories, respectively for their exclusive use. The mean numbers of chairside dental assistants found to be available for the exclusive use of dental mentors, residents, and NTSs were 0.9, 0.9, and 1.0, respectively. In order to enhance/improve their programs all three groups reported a need for more/better qualified dental ancillary personnel and more/better quality dental equipment and supplies. In addition, both mentors and residents perceived a need for more dental consultants in the training programs. The mean numbers of unweighted major dental treatment

procedures accomplished per hour of direct patient care were found to be 2.18 for mentors, 1.64 for residents, and 2.47 for NTSs. During normal duty hours, mentors were found to spend 43.3 percent of their time in direct patient care, 8.7 percent in indirect patient care, 21.3 percent in teaching and education duties, 10.5 percent in other duties and 16.2 percent absent. Residents spent 51.9 percent of their time in direct patient care, 10.5 percent in indirect patient care, 26.3 percent in teaching and education duties, 2.7 percent in other duties, and 9.5 percent absent. The percentages of normal duty time spent by NTSs in direct patient care, indirect patient care, teaching/education duties, other duties, and absences were: 60.5 percent, 6.3 percent, 3.7 percent, 12.5 percent, and 17.0 percent, respectively. The mean numbers of after duty hours spent per week in performing patient treatment/-educational duties by mentors, residents and NTSs were 6.0, 15.5, and 2.8, respectively.

It is concluded that there is an equitable distribution of the available resources for delivering patient care when comparing teaching and non-teaching dental specialty care delivery environments. The number of dental operatories available for the exclusive use of mentors, residents, and NTSs at the time of data collection was less than the current Department of Defense (DOD) authorization of 2.0 to 2.5 dental chairs per dentist. In order to enhance their programs, all dental officers perceive a need for more and/or better qualified ancillary personnel, additional and/or better quality dental instruments and equipment, and additional dental operatories. All personnel involved in dental residency programs perceive a need for additional dental consultants in order to enhance the quality of their programs. The dental procedure accomplishment rates of non-teaching specialists are greater than those generated by residents (1.5 to 1.7 fold) and by mentors (1.1 to 1.4 fold). Mentors dental procedure accomplishment rates are greater than those of residents (1.2 to 1.3 fold). Mentors spend significantly more time in other/additional duties and absences than do residents, and they spend significantly more time in indirect patient care, teaching/education duties, and total "after duty" hours than do NTSs. Residents spent significantly more time in direct patient care than do mentors and they spend significantly more time in indirect patient care, teaching/education duties and total "after duty" hours than do the mentors or the NTS. Non-teaching specialists spend significantly more time in direct patient care and other/additional duties than do mentors or residents and they report significantly more absent time than residents. Residents in the various specialties spend approximately the same percentage of their time in teaching/ educational duties.

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COMPARISON OF DENTAL CARE DELIVERY BY DENTAL MENTORS (TEACHERS), DENTAL RESIDENTS AND NON-TEACHING DENTAL SPECIALISTS

1. INTRODUCTION

a. Purposes.

(1) The purposes of this study were (a) to determine the relative amounts of dental care delivered by dental officers who are residents, dental officers serving as mentors (teachers), and other dental officers who are fully trained specialists serving in non-teaching positions; (b) to determine the dental productivity capabilities of dental officers involved in specialty training programs; and (c) to determine the treatment and educational resources available at selected US Army Health Services Command (HSC) dental activities.

(2) This information will be useful to the Assistant Surgeon General for Dental Services, Office of the Surgeon General, Department of the Army and the Directorate of Dental Services, US Army Health Services Command in evaluating the costs of in-service dental residency training programs, in making decisions concerning staffing guides for dental units subordinate to HSC, and in determining any possible need for changes in the methods whereby Dental Corps officers receive specialty training.

b. Background.

(1) Currently, US Army Dental Corps officers receive dental specialty training in six military occupational specialty (MOS) producing programs which are conducted within Continental United States (CONUS) dental activities subordinate to HSC. At the time this study was conducted, these dental residencies included a one year program in endodontics (MOS 63E) conducted at three installations; a one year program in periodontics (MOS 63D) at three installations; a two year program in general dentistry (MOS 63B) at five installations; a two year program in removable prosthodontics (MOS 63G) at five installations; a two year program in fixed prosthodontics (MOS 63F) at five installations; and a three year program in oral surgery (MOS 63N) conducted at five installations. The installation level training programs in endodontics and periodontics were each preceded by another year of residency in those specialties conducted at the United States Army Institute of Dental Research. Unlike post-doctoral student and faculty members in civilian dental schools, the mentors (teachers) and students in US Army dental training programs are considered to have patient care as a principal mission in addition to their educational and other military responsibilities. Historically, the US Army dental personnel resources have been allocated to installations based upon assigned military strength, without regard for dental training programs. In assigning dental officers to these installations, both student officers and mentors are fully counted against these allocations.[1]

(2) A knowledge of the costs of Army dental residency programs in terms of manhours expended and possible decreased patient care capabilities, as well as a

knowledge of the resources available for conducting these programs, was necessary to enable senior dental managers to determine if changes are needed in the methods of training Army dental specialists. This information also will be useful to these managers in formulating staffing guides for local dental activities. While various dental internships, residencies and post-doctoral programs have been described in the literature as to content, scope and teaching methodology[2, 3, 4], information concerning the costs of these programs in terms of manpower and patient treatment capabilities was unavailable. In 1975, Burger and Bennett[5] described a method of quantifying the number of faculty members needed by a dental school. These authors listed nine variables to be used in making these determinations. Unfortunately the methods and variables described by Burger and Bennett had little applicability to Army dental residency programs. The lack of background literature relavent to Army dental residency programs is probably related to the fact that these are unique educational programs in that, additional to their teaching mission, the dental activities conducting the programs have concomitant military missions and patient treatment missions for a highly transient population.

2. OBJECTIVES. The objectives of this study were:

a. To determine an estimate of the relative amount of time spent in direct patient care, indirect patient care, teaching/educational duties, absences, and other duties by Army officer mentors (teachers), residents, and non-teaching specialists in endodontics, periodontics, oral surgery, fixed prosthodontics, removable prosthodontics, and general dentistry.

b. To determine an estimate of the productivity in terms of dental procedure programs and dental specialty care delivery at dental teaching and non-teaching installations.

3. METHODOLOGY.

a. Overview.

(1) This study consisted of three parts with the first two parts being conducted simultaneously. The data in Part I were collected by means of questionnaires which were completed on a one-time basis, by mentors (teachers), residents, and non-teaching specialists (NTSs) in six selected dental specialties. The questionnaires rendered to mentors, residents and NTSs are shown in Appendices A-1, A-2, and A-3, respectively. The specific instructions for completing these questionnaires are shown in Appendices A-4 and A-5. For the six selected specialties, all mentors, residents, and NTSs assigned to 37 CONUS installations were involved in providing data. The questionnaires sought to elicit from the study population their perceptions of their local dental practice environments, to include various professional activities and the resources available for performing duty functions. The completed questionnaires were submitted to the Health Care Studies Division (HCSD), Academy of Health Sciences, US Army (AHSUSA) where data compilations were performed.

(2) The data in Part II of the study were collected by means of special daily worksheets (Appendix A-6) completed by all mentors, residents, and NTSs within six selected specialties (2.a.) and who were assigned to the dental activities at four selected CONUS installations. Since one of the HCSD project officers visited each

study site and verbally instructed all Part II study participants in the proper use of the daily worksheets, no written instructions were issued concerning this part of the study. The study sites included two Medical Centers (MEDCEN) with multiple multi-year dental residency programs and two Medical Department Activities (MEDDAC) with large compliments of non-teaching dental specialists. The four sites were selected in order that the maximum number of mentors, residents, and NTSs within all six selected dental specialties would be included as study participants. The data collection phase of this part of the study extended over a six week period. During this period the completed worksheets were submitted to HCSD, AHSUSA where data complications were performed. Determinations were made concerning the mean amount of time spent in various types of duties and the mean dental procedure accomplishment rates for the three major groups of dental officers (mentors, residents, and NTSs).

(3) The data in Part III of the study were collected by means of weekly worksheets completed by mentors, residents, and NTSs within the six selected specialities (2.a.) and who were assigned to the dental activities at 20 CONUS installations. The data collection instruments for this part of the study and the instructions for recording the data are shown in Appendix A-7 and Appendix A-8, respectively. Included among the 20 study sites were 11 installations where dental residency programs are conducted and 9 posts where graduates of the various dental training programs are assigned, but no formal residency programs are conducted for dental officers. The data collection phase extended over a 48 week period. During this time, the completed weekly worksheets were submitted to HCSD, AHSUSA where data compilations and analyses were performed. Determinations were made concerning the mean amount of time expended during, and after, normal duty hours in various categories of their duty functions by the mentors, residents, and NTSs in the six dental specialties under study.

b. Sample.

(1) The population sampled in Part I of the study included all mentors, residents, and NTSs in the specialties of endodontics, oral surgery, periodontics, removable prosthodontics, fixed prosthodontics, and general dentistry who were assigned to the dental activities at 37 CONUS installations. Thus, all CONUS-based individuals who were mentors, residents, or NTSs in one of these specialties received a questionnaire. Included were 59 mentors, 85 residents, and 252 NTSs.

(2) The sample in the second study part included all mentors, residents, and non-teaching dental specialists at four CONUS installations. Included were 10 mentors, 21 residents, and 28 NTSs.

(3) The population sampled in the third part of the study included all mentors and residents assigned to the 11 CONUS installations where the six dental specialty training programs (2.a.) are conducted and all NTSs assigned to the 9 posts where no formal dental residency programs are conducted. Excluded from this study part were all installations conducting only dental residency programs other than the six specialties previously mentioned. Thus posts conducting only one-year general practice residencies in dentistry were excluded. The population sampled in study Part III included 49 mentors, 74 residents, and 48 NTSs.

c. Procedures.

(1) In the first study part, the mentors, residents, and NTSs were unsupervised when completing the questionnaires. The following information was elicited from each mentor: number of residents for which the mentor had responsibility; estimate of the percentages of time devoted to training programs, patient dental care, and other duties; listing of specific additionally assigned duties; number of dental operatories utilized in the training program and for patient care; number of dental assistants assigned for use in the training program and/or by the mentor; listing of the specific agency, board, or society establishing the minimum standards for the training program; listing of additional resources deemed necessary to materially improve the training program; opinion concerning the accuracy of the dentist's daily worksheet/treatment log in reflecting patient treatments rendered and any additional comments the mentor desired to make. The residents were queried concerning the following information: number of dentists involved as teachers in their training program; estimate of the percentage of their time devoted to didactic activities, patient care, and other duties; listing of specific additionally assigned duties; number of dental operatories utilized in the training program and for patient care; number of chairside dental assistants utilized in their training program and for patient care; specific information concerning the residents' patient dental care requirements after normal duty hours; listing of additional resources deemed necessary for materially improving the residency program; their opinion concerning the accuracy of the daily worksheet in reflecting patient treatments, and any additional comments the residents desired to provide. The NTSs were requested to provide information concerning the following: estimate of the percentage of time expended in patient care, consulting with other dentists, training of other dentists, and other duties; listing of specific additionaly assigned duties; opportunities for officer rotation through various dental specialty departments; number of dental operatories available for individual use; number of chairside dental assistants available for use; listing of additional resources deemed necessary to conduct an informal dental rotation program; opinion concerning the accuracy of the presently used daily treatment log in reflecting patient treatments; and any additional comments the NTSs desired to impart.

(2) In Part II of the study, the pilot worksheets were completed on a daily basis by the individual dental officers (or their assistants), collected weekly in each clinic, and sent directly to one of the HCSD project officers in envelopes provided for that purpose. On each worksheet the following information was recorded: date; clinic and location identifiers; dental officer identifier; number of dental operatories utilized; number of chairside dental assistants utilized; number of dental therapy assistants (DTA) utilized; patient identifier or duty functions in which engaged; starting and finishing time for treatment of the patient or performance of the duty function; and specific dental treatments performed for the patient or a detailed description of the duty function performed. Much of the data recorded on the pilot worksheets was essentially the same information which is presently recorded on each dental provider's Dental Treatment Log (HSC Form 144).

(3) In the third part of the study, the dental officers or their chairside assistants entered the appropriate data on the weekly worksheets at the end of each day. The following information was elicited: name of Army installation; week identifier; military occupational specialty (MOS) of dental officer; duty position of

dental officer (i.e., mentor, resident, or NTS); and an estimate of the amount of normal duty hour time spent each day in direct patient care, indirect patient care, teaching and/or education duties, other duties, and absences. In addition, each officer was also required to record an estimate of the amount of time expended after normal duty hours each day in direct patient care, indirect patient care, and teaching and/or education duties. Each participant was provided specific guidelines as to which duty functions constituted direct patient care, indirect patient care, teaching and/or education duties, other duties and absences (Appendix A-8).

d. Data Handling.

(1) As the questionnaires, pilot daily worksheets, and weekly worksheets were returned to HCSD they were reviewed for completeness and erroneous entries prior to being computerized and/or analyzed. The disposition of incomplete and erroneously completed forms was made by the project officers. Incomplete forms and erroneous entries did not constitute a sizeable problem.

(2) In the first part of the study the following statistics were developed for the mentors (teachers): mean number of residents in training for the mentor's specialty; mean number of general dentistry residents for which a mentor had responsibility; mean number of residents with other MOSs for which a mentor had responsibility; mean estimated percentages of duty time which were devoted to training programs, patient care, and other duties; the three additional duties which were most frequently reported by mentors; the mean number of dental operatories available for use by a mentor; the mean number of dental assistants available for utilization by the mentor; the frequency that various agencies, boards or societies were responsible for establishing the minimum standards for the various training programs; the three most commonly requested additional resources which might enhance the training program; and the percentage of mentors who believed that the presently used daily worksheet accurately reflected the patient treatments they rendered or duty functions which were performed. The following statistics were developed for residents: the mean number of dental officer mentors (teachers) who were actively involved with a resident's training; the mean estimated percentages of duty time which were devoted to didactic activities, patient care, and other duties; the three additional duties which were most frequently reported by residents; the mean number of dental operatories and dental assistants available for use by a resident; the percentage of residents who were required to be "on call" for patient care during non-duty hours; the three most frequently requested additional resources necessary to improve the residency programs, and the percentage of residents who believed that the presently used daily worksheet accurately reflected the patient treatments and/or duty functions they performed. In addition the following statistics were developed for NTSs: the mean estimated percentages of duty time which were devoted to direct patient care, consultation for other dentists, training for other dentists, and other duties; the three most commonly reported additional duties for NTSs; the percentage of NTSs reporting that within their dental service a system was available whereby dental officers could rotate through the various specialty departments; the mean number of dental operatories and dental assistants available for use by a non-teaching specialist; the three most commonly requested additional resources which would enhance the conduct and/or implementation of an informal

clinic rotation program; and the percentage of NTSs who believed in the accuracy and adequacy of the presently used daily worksheet.

(3) The data collected in Part I of this study were manually tabulated and computed. Data analysis was limited to descriptive statistics and comparisons between mentors, residents and NTSs were not made.

(4) In the second part of the study determinations were made concerning the amount of normal duty hour time expended by each participant in direct patient care, indirect patient care, didactic/training activities, excused absences, and other duties. For mentors, residents, and NTSs, the mean percentages of normal duty hour time expended in each of these duty functions were then computed using eight hours per day as the normal duty hour time. The mean total number of after duty hours expended by the three categories of officers also was determined from data recorded on the pilot worksheets. The number of unweighted dental treatment procedures accomplished per day by each participant was determined. For the mentors, the residents, the NTSs, and the total sample the mean number of dental treatment procedures accomplished per duty hour and the mean number of treatment procedures accomplished per hour of direct patient care were determined.

(5) The data collected in the second part of the study were manually tabulated and computed. Data analysis was limited to descriptive statistics. Statistical tests comparing mentors, residents and NTSs were not made.

(6) In the third part of the study, the data were subdivided into the following six major groups according to the participants MOS: general dentists, endodontists, oral surgeons, periodontists, removable prosthodontists, and fixed prosthodontists. For the mentors, residents, and NTSs within each major group, for all mentors, residents, and NTSs, and for all study participants the means and standard deviations were calculated for each of the following: numbers of hours per week spent during normal duty hours in direct patient care; indirect patient care, teaching and education duties, other duties, and absences; numbers of duty hours per week spent after normal duty hours in direct patient care, indirect patient care, and teaching and education duties; and numbers of total after duty hours expended in military/dental duty functions.

(7) The Part III data were keypunched and analyzed by computer. The pre-programmed Statistical Package for the Social Sciences was used for data analysis. For the total sample and for each of the six dental specialties under study, the Scheffé Method for Multiple Comparisons was used to test for the possibility of differences existing between the cell means for the numbers of normal duty hours per week spent by mentors, residents and NTSs in direct patient care, indirect patient care, teaching and education duties, other duties, absences, total normal duty hours, and total after duty hours. This statistical test was also performed in order to compare individually the six different specialty mentors, the six different types of residents, and the six different specialty NTSs concerning possible differences in the mean number of hours per week spent in these various categories of duties.

4. FINDINGS

a. Findings in Part I of the study.

(1) Sample Composition. Questionnaires were sent to 396 dental officers assigned to the various CONUS installations. Included were 59 mentors (teachers), 85 residents, and 252 non-teaching specialists. Properly completed questionnaires were returned to HCSD by 318 officers and these individuals served as the sample in the first part of the study. Included were 49 mentors, 57 residents and 212 NTSs. This and other data collected in study Part I are related in Table 1.

(2) Questionnaire Data Provided by Mentors. The mentors reported that they were responsible for the training of a mean of 2.6 residents within their own dental specialty. They were further involved in teaching a mean of 6.9 general dentistry residents and 3.7 residents in other dental specialties. The mentors and teachers estimated that they spent 49 percent of their daily time in providing dental care for patients, 37 percent of their time in residency program activities, and 11 percent of their time in other duties. The mean number of dental operatories reported to be available for use by the residency programs were 2.7 operatories for the exclusive use of the training program and 1.3 operatories to be shared by the training program and other dental clinic departments. It was reported that a mean of 1.5 of these operatories were for the exclusive use of the mentor. The mean number of chairside dental assistants available for use in the residencies were 2.2 for the exclusive use of the residency and 0.9 individuals to be shared by the training program and other clinic departments. The mentors reported a mean of 0.9 chairside assistants for their exclusive use. Only 12 percent of the mentors believed that the daily worksheets/ treatment logs that were being used at the time of the survey accurately reflected the patient treatments that were rendered and/or daily activities and duties which were accomplished. The three most frequently reported additional duties for mentors were: Chief of Dental Clinic/Service, AMEDD Committee Member, and Assistant Chief of Department/Clinic/Service. The agencies, boards or societies responsible for establishing the minimum standards for specific specialty training programs were reported to be (in order of decreasing frequency): American Dental Association, Army Regulations, National Dental Specialty Boards, and other miscellaneous agencies. The additional resources most frequently requested by the mentors for the enhancement of the effectiveness of the training programs were: more and better qualified dental assistants and hygienists, more and better quality dental equipment and supplies, more dental consultants, and more dental operatories. The mentors reported a mean of 39 hours per year expended in the training of other dental specialists, giving lectures, and serving as consultants to other CONUS installations.

(3) Questionnaire Data Provided by Residents. The residents reported that the mean number of officers serving as their mentors (teachers) was 2.5 officers having the specialty MOS to which they aspired and 5.7 officers with other dental MOSs. The residents estimated that 66 percent of their time was spent in patient care, 23 percent in didactic (residency) activities, and 4 percent in other duties. The mean number of dental operatories reported by the residents to be available for use in their training program was 3.5 for exclusive use of the residency program and 1.6 to be shared between the program and other clinic departments. The residents reported that a mean of 1.4 operatories were availale for their exclusive use. The mean numbers of chairside dental assistants available for use in the training programs were 3.5 individuals for exclusive use in the residency program and 1.6 assistants to be shared by the training program and other clinic departments. The residents reported

a mean of 1.4 assistants for their exclusive use. Only 44 percent of the residents believed that the worksheets/daily treatment logs that were being used at the time that they were querried accurately reflected their daily activities and treatments rendered. Over 56 percent of the residents reported that they were assigned no significant additional duties other than educational and patient care responsibilities. A large majority (80 percent) of the residents were required to be "on call" to provide patient emergency care during non-duty hours. The additional resources most frequently requested by the residents in order to improve their training programs were: more and/or better qualified ancillary personnel, more and/or better quality dental instruments and equipment, and more dental consultants.

(4) Questionnaire Data Provided by Non-Teaching Specialists. The NTSs estimated that 69 percent of their time was expended in patient care, 9 percent in training other dentists, 7 percent serving as consultants for other dentists' patients, and 9 percent in other military activities. They reported a mean of 1.5 dental operatories for their exclusive use and 0.8 assistants which they shared with other clinic dentists. Only 30 percent of the NTSs believed that the daily worksheets/ treatment logs accurately reflected their activities and patient treatment performance. The most frequently reported additional duties for NTSs were: Chief of Dental Clinic, AMEDD Committee Member, and Chief of Department/Specialty Section. When querried as to whether their clinics had a policy allowing dentists to rotate through the various specialty departments within the facility, 55 percent of the NTSs responded affirmatively. The most common additional resources necessary to effectively conduct an informal rotating training program within their clinics as reported by the NTSs were: additional ancillary personnel, more dental operatories, and additional instruments and/or dental equipment.

b. Findings in Part II of the Study.

(1) Sample Composition. A total of 59 individuals (10 mentors, 21 residents, and 28 NTSs) were selected to provide daily worksheet data in the second part of the study. The data provided by two NTSs contained erroneous/incomplete entries and these data were eliminated by the HCSD project officers. Thus the sample in this study part consisted of 57 officers.

(2) Time Expended in Various Duty Functions. Table 2 presents the percent of total normal duty time expended by mentors, residents, and NTSs in five categories of their duties. Also shown is the mean number of after duty hours expended by the officers in performance of their military/dental duties. The pilot daily worksheets revealed that mentors expended 39 percent of their normal duty hours in direct patient care; 4 percent of these hours in indirect patient care; 19 percent of their time in didactic/training activities; 12 percent in excused absences (TDY, leave, sick), and 25 percent of their time in the performance of other duties. Residents spent 43 percent of their normal duty hours in direct patient care; 6 percent in indirect patient care; 28 percent in didactic/training activities; 7 percent in excused absences, and 16 percent in performing other duties. The worksheets revealed that NTSs expended 49 percent of their normal duty time in direct patient care; 4 percent in indirect patient care; 9 percent in didactic/training activities; 17 percent in excused absences; and 21 percent in performing other duties. For the total sample, the percent of time expended in various categories of duty was as follows:

direct patient care, 45 percent; indirect patient care, 5 percent; didactic/training activities, 18 percent; excused absences, 13 percent; and other duties, 20 percent. The worksheets indicated that the mean numbers of after duty hours expended by dental officers in performing various military/dental functions were: mentors, 3.34; residents, 9.91; NTSs, 3.21; and total sample (all officers), 5.70.

(3) Dental Treatment Procedure Accomplishment Rates. Table 3 presents the treatment procedure accomplishment rates in terms of unweighted dental procedures for the study participants. The data reveals the major procedures accomplished, and intermediate treatment procedures are not included. The pilot daily worksheets revealed the mean number of unweighted procedures accomplished per direct patient care hour by mentors, residents, and NTSs to be 2.18, 1.64, and 2.47; respectively. For the total sample, the mean number of unweighted procedures accomplished per hour of direct patient care was 2.13. The mean number of unweighted treatment procedures accomplished per duty hour were also calculated. As when calculated in terms of procedures per hour of direct patient care, the NTSs accomplished the greatest number of unweighted procedures per duty hour and the residents accomplished the least number.

c. Finding in Part III of the Study.

(1) Sample Composition. A total of 171 US Army Dental Corps officers served as participants in the third part of the study. Included were 49 mentors, 74 residents, and 48 NTSs. Within the mentor group there were 10 fixed prosthodontists, 10 removable prosthodontists, 8 periodontists, 9 oral surgeons, 7 endodontists, and 5 general dentists. The resident group included 37 general dentistry residents, 7 endodontic residents, 11 oral surgery residents, 3 periodontic students, 8 removable prosthodontic students, and 8 fixed prosthodontic residents. The NTSs included 11 removable prosthodontists, 8 fixed prosthodontists, 9 oral surgeons, 8 periodontists, 7 endodontists, and 5 general dentists. Information concerning the sample composition is presented in Table 4.

(2) Quantity of Data. Table 5 shows the number of work-weeks of data provided by the Part III participants by dental specialty and by duty position. A total of 7,740 work-weeks of data was collected from the 171 participants. The mentors, residents, and NTSs provided 2,208, 3,366; and 2,166 work-weeks; respectively.

(3) Time expended by Participants in Various Duty Functions During Normal Duty Hours. Table 6 presents the means and standard deviations ($\pm$ S.D.) concerning the number of normal duty hours per week spent in direct patient care, indirect patient care, teaching and/or education duties, other duties, and absences for the total sample and individually for the mentors, residents and NTSs within the six dental specialties under study. For the total sample, the mean estimated numbers of hours per week spent in various duty functions ($\pm$ S.D.) were as follows: direct patient care, 20.6 $\pm$ 10.14; indirect patient care, 3.6 $\pm$ 4.07; teaching and education duties, 7.4 $\pm$ 8.22; other duties 3.0 $\pm$ 5.04; and absences 5.4 $\pm$ 10.32. The mean estimated normal duty hour expenditures ($\pm$ S.D.) for the total mentor group were: 17.3 $\pm$ 10.28 hours per week in direct patient care; 3.5 $\pm$ 3.30 hours per week in indirect patient care, 8.5 $\pm$ 7.74 hours per week in teaching and education activities, 4.2 $\pm$ 6.56 hours per week in other duties, and 6.5 $\pm$ 11.29 hours per week absent. For the total sample of residents, the mean estimated numbers of normal duty hours per

week (± S.D.) spent in direct patient care, indirect patient care, teaching and education duties, other duties, and absences were 20.4 ± 9.24, 4.2 ± 5.04, 10.5 ± 8.47, 1.1 ± 2.19, and 3.8 ± 9, respectively. For all NTSs, the mean estimated numbers ofhours per week spent in various duty functions (± S.D.) were: direct patient care, 24.2 ± 10.11; indirect patient care, 2.5 ± 2.58; teaching and education duties, 1.5 ± 4.19, other duties, 5.0 ± 5.33; and absences, 6.8 ± 11.57.

(4) Percent of Normal Duty Time Expended in Various Duty Functions. The percentages of normal duty hours estimated to have been expended by the study participants in various duty activities are related in Table 7. The percentages are based upon 40 normal duty hours per week and any hours expended above that figure were considered to be after duty hours. For the entire sample, it was estimated that the officers normal duty time was expended as follows: direct patient care, 51.5 percent; indirect patient care, 9.0 percent; teaching and education duties, 18.5 percent; other duties, 7.5 percent; and absences, 13.5 percent. Mentors (all specialties combined) were estimated to have expended 43.3 percent of their time in direct patient care, 8.7 percent in indirect patient care, 21.3 percent in teaching and education duties, 10.5 percent in other duties, and 16.2 percent absent. For the entire resident group, the following estimates concerning expenditures of time were determined: direct patient care, 51.0 percent; indirect patient care, 10.5 percent; teaching and education duties, 26.3 percent; other duties 2.7 percent; and absent, 9.5 percent. The percentages of normal duty time estimated to have been spent by NTSs in direct patient care, indirect patient care, teaching/education activities, other duties, and absences were 60.5 percent, 6.3 percent, 3.7 percent, 12.5 percent, and 17.0 percent, respectively. Table 7 further presents the estimated percentages of normal duty time expended in various duty activities by the mentors, residents, and NTSs in each of the individual dental specialties.

(5) Time Expended in Various Activities After Normal Duty Hours. Table 8 shows the means and standard deviations (± S.D.) concerning the number of after normal duty hours per week spent in various duty activities for the total sample and individually for the mentors, residents, and NTSs within the six dental specialties. After duty hours were considered to be any working time more than eight hours per day. For the total sample, the mean estimated numbers of after duty hours per week (± S.D.) expended in various activities were: 1.1 ± 3.11 in direct patient care; 1.3 ± 3.47 in indirect patient care; and 6.9 ± 7.38 in teaching and education activities. The mean estimated total after duty hours (± S.D.) for the entire sample was 9.3 ± 9.81. For the entire mentor group the mean estimated total after duty hours (± S.D.) was 6.0 ± 6.12. Included among this time were 0.4 ± 1.34 hours in direct patient care, 0.8 ± 1.79 hours in indirect patient care and 4.8 ± 5.05 hours in teaching/ education activities. The mean estimated total after duty hours (± S.D.) for residents was 15.5 ± 10.56. This included 1.9 ± 4.31 hours in direct patient care, 2.2 ± 4.79 hours in indirect patient care, and 11.4 ± 7.73 hours in teaching/education duties. The mean estimated total after duty hours (± S.D.) for the entire NTS group was 2.8 ± 4.45. Included were 0.4 ± 1.40 hours in direct patient care, 0.4 ± 1.39 hours in indirect patient care, and 2.0 ± 3.99 hours in teaching/education duties. Also presented in Table 8 are the percentages of their "non-duty" time expended by the participants in various military/dental activities. The percentages are based upon 128 "non-duty" hours per week. The estimated percentages of "non-duty" hours expended in various

military/dental activities by mentors, residents and NTSs were 4.7 percent, 12.1 percent and 2.2 percent respectively. For the entire sample, the estimated percentage was 7.3 percent.

(6) Comparisons of Amount of Time Expended in Various Duty Activities by Mentors, Residents and NTSs.

(a) Table 9 presents a Summary Analysis of Variance (ANOVA) concerning the "normal duty hour" data, and Tables 10, 11, 12, and 13 relate the significant main effects. A significance matrix for comparing differences between dental officers with various MOSs and duty positions on mean number of hours spent in their duty activities is presented in Table 10. All comparisons between groups were made using the Scheffé Method for Multiple Comparisons and all significant differences cited were at the $p \leq .05$ level.

(b) Mentors in all six specialties expended significantly more normal duty time performing other or additional duties than did their residents. With two exceptions, mentors had significantly more absent time than did the residents. There were no significant differences between the mean numbers of hours absent reported by endodontic mentors and residents and by periodontic mentors and residents. Mentors in endodontics expended significantly more normal duty hours in indirect patient care than did endodontic residents. All mentor specialists expended significantly more normal duty hours in teaching/education duties than did their non-teaching counterparts. With the exception of general dentistry specialists, the mentors expended significantly more "non-duty" hours performing military/dental activities than did the NTSs. There was no significant difference between the mean total after duty hours expended by general dentistry mentors and NTSs. The entire mentor group expended significantly more normal duty time in indirect patient care than did the NTSs. However, for the specific specialties of endodontics, fixed prosthodontics and general dentistry, this was not the case. General dentistry mentors expended significantly more normal duty hours in performing other/additional duties than did their non-teaching counterparts. Oral surgery mentors spent significantly more time absent than did the oral surgery NTSs.

(c) With the exception of two specialties, residents expended significantly more normal duty hours in direct patient care than did their mentors. There were no significant differences between the mean numbers of normal duty hours expended in direct patient care by fixed and removable prosthodontic mentors and residents. The entire resident group expended significantly more normal duty time in indirect patient care than did the mentors. However, for the specific specialties of periodontics, endodontics, and oral surgery, this was not the case. With the exception of general dentistry and removable prosthodontic specialties, the residents expended significantly more normal duty hours in teaching/education duties than did their mentors. The residents reported significantly more "non-duty" hours performing military/dental activities than did the mentors or the NTSs. With the exception of the endodontic specialty, residents expended more normal duty hours in indirect patient care than did the NTSs. All residents expended significantly more time in teaching/education activities than did NTSs.

(d) With one exception, the non-teaching specialists expended significantly more normal duty hours in direct patient care than did their mentor and resident counterparts. There was no significant difference between the general dentistry NTSs and residents concerning the mean numbers of normal duty hours in direct patient care. Endodontic NTSs expended significantly more hours in indirect patient care than did the endodontic residents. Non-teaching specialists expended significantly more normal duty hours in performing other duties than did the residents. With the exception of general dentistry and oral surgery specialists, the NTSs expended significantly more time in other duties than did the corresponding mentors. With the exception of oral surgeons, the NTSs reported significantly more hours of absences than did the residents and there were no significant differences between the mean number of absent hours reported by NTSs and mentors.

(7) Comparisons of the Amount of Time Expended in Various Duty Activities by Mentors in the Different Specialties.

(a) Table 11 presents a significance matrix for comparing mentors with various MOSs on mean number of hours expended in their duties. As with all other data analysis in Part III, the comparisons were made using the Scheffé Method for Multiple Comparisons and all significant differences cited were at the $p \leq .05$ level.

(b) General dentistry mentors expended significantly more normal duty hours in teaching and education duties than did oral surgery, removable prosthodontic, and fixed prosthodontic mentors. They spent significantly more normal duty time performing other/additional duties than did any other mentors. Endodontic mentors spent significantly more normal duty time in direct patient care than did general dentistry and oral surgery mentors. They also spent significantly more time in indirect patient care than did general dentistry mentors. Oral surgery mentors expended significantly more normal duty hours in direct patient care than did general dentistry mentors. They spent significantly more time in indirect patient care than did any of the other mentors. The oral surgery mentors spent significantly more normal duty hours performing other/additional duties than did endodontic, removable prosthodontic and fixed prosthdontic mentors. They also expended significantly more "after duty" hours performing military/dental activities than did any of the other mentors. These mentors spent significantly more time performing other/additional duties than fixed prosthodontic mentors. Removable prosthodontic mentors expended significantly more normal duty time in direct patient care than did the general dentistry and oral surgery mentors. They reported significantly more time in indirect patient care than general dentistry and periodontic mentors. They further expended significantly more time performing other/additional duties than fixed prosthodontic mentors. The removable prosthodontic mentors expended significantly more "after duty" hours performing military/dental activities than did endodontic and general dentistry mentors. Fixed prosthodontic mentors expended significantly more time in direct patient care than general dentistry, oral surgery, and periodontic mentors. They spent significantly more normal duty time in indirect patient care than general dentistry, endodontic and periodontic mentors. The fixed prosthodontic mentors reported significantly more "after duty" hours expended in military/dental activities than general dentistry, endodontic and periodontic mentors. All other comparisons were not significantly different.

(8) Comparisons of the Amount of Time Expended in Various Duty Activities by Residents in the Different Training Programs. Table 12 presents a significance matrix for comparing residents in the various training programs as to mean numbers of hours expended in their duties. There were no statistically significant differences among the various groups of residents concerning the mean number of "normal duty" hours spent in direct patient care, teaching and education duties, and absences. The general dentistry residents spent significantly more normal duty time in indirect patient care than did the endodontic residents. They also spent significantly more time performing other/additional duties than the oral surgery, removable prosthodontic, and fixed prosthodontic residents. The endodontic residents spent significantly more time performing other/additional duties than the oral surgery, removable and fixed prosthodontic residents. The oral surgery residents spent significantly more normal duty hours in indirect patient care than the general dentistry, endodontic, and periodontic residents. The oral surgery residents expended significantly more "after duty" time in performing military/dental activities than did any other dental officers evaluated in the survey. Periodontic residents expended significantly more "normal duty" time in indirect patient care than did endodontic residents. Removable prosthodontic residents expended significantly more normal duty time in indirect patient care than any other group of residents except fixed prosthodontic students. They expended significantly more "after duty" hours performing military/dental activities than did the general dentistry residents. Fixed prosthodontic residents spent significantly more time in indirect patient care than general dentistry, endodontic, and periodontic residents. They also expended significantly more "after duty" time performing duty activities than the general dentistry residents.

(9) Comparisons of the Amount of Time Expended in Various Duty Activities by NTSs in the Different Specialties.

(a) Table 13 presents a significance matrix for comparing non-teaching dental specialists with various MOSs on mean number of hours expended in their duties. There were no statistically significant differences among the various NTS groups concerning amount of absent time. With one exception there were no significant differences among the various NTSs concerning the amount of time spent in direct patient care. The periodontic NTSs reported significantly more normal duty hours spent in direct patient care than did the general dentistry NTSs. With the exception of oral surgeons and removable prosthodontists, there were no significant differences among the various NTS groups as to time spent in teaching/education activities. The oral surgery NTSs reported significantly more time performing these duties than did removable prosthodontists. The NTSs in general dentistry reported significantly more normal duty hours expended in indirect patient care than did the periodontic NTSs. They reported significantly more time spent in performing other/additional duties than did any other non-teaching specialists except oral surgeons. The endodontic NTSs reported significantly more "normal duty" time spent in indirect patient care than periodontists. The oral surgery NTSs reported significantly more time expended in indirect patient care than was reported by periodontists. The NTSs in oral surgery reported that they expended significantly more "normal duty" time in performing other/additional duties than did non-teaching specialists in removable and fixed prosthodontics. They further expended significantly more "after duty" hours in performing military/dental duties than any other NTSs. Periodontic NTSs spent significantly more time performing other/additional

duties than did fixed prosthodontists. Removable prosthodontic NTS expended significantly more normal duty hours in indirect patient care than their general dentistry and periodontic counterparts. They also expended significantly more "after duty" hours in performing various duty activities than the general dentistry NTSs. Fixed prosthodontic NTSs spent significantly more time in indirect patient care than did any other non-teaching specialists.

(10) Comparison of Mentors, Residents, and NTSs Using Various Indicators. Table 14 presents comparisons between mentors versus NTSs, and residents versus NTSs using the following five indicators: treatment procedures accomplished per duty hour, treatment procedures accomplished per hour spent in direct patient care, percent of time spent in direct plus indirect patient care (as reported in Part II and as reported in Part III of the study), and mean number of normal duty hours spent in direct patient care (as reported in Part III). When mentors were compared to NTSs, the index values ranged from a low of .71 to a high of .88 depending upon the indicator. When residents were compared to NTSs the index values ranged from .58 to .93 depending upon the indicator.

(11) Comparison of Questionnaire Data Collected in Study Part I With Worksheet Data Collected in Parts II and III. Figures 1, 2, and 3 compare the percent of time which the mentors, residents, and NTSs estimated that they spent in patient care, didactic/teaching/education duties, and other duties using the Part I questionnaires with the percent of time they recorded as having been expended in these activities using the worksheets in Parts II and III. The percentage of time expended in other/additional duties by all three groups was consistantly lower when recorded on the Part III worksheets than when recorded on the Part II worksheets. The percentage of time expended in patient care was slightly higher for all three groups when recorded on the Part III worksheets than when recorded on the worksheets used in the second part. The percentage of time spent by mentors in didactic/teaching/education activities was higher when estimated on the questionnaires than when recorded on the daily and weekly worksheets. The percentage of time expended by NTSs in other/additional duties was lower when estimated on the Part I questionnaires than when recorded on the worksheets in the second and third parts.

5. DISCUSSION.

a. In Part I of the study, the sample included all mentors, residents, and NTSs in the specialties of general dentistry, endodontics, oral surgery, periodontics, and removable and fixed prosthodontics who were assigned to all CONUS installations. The sample in the third part of the study included all mentors, residents, and NTSs in the six specialties who were assigned to 20 CONUS installations. The reason that fewer installations were utilized as study sites in the third part of the study than in the first part was that at some installations a one-year general practice residency in dentistry is conducted. Since the general practice residency in dentistry is conducted on a different educational level than the general dentistry residency and other residencies under study, it was not desirable in Part III to include the teachers and residents in this program in the mentor and resident groups under investigation. However, experience in the first study part indicated that including these teachers as non-teaching specialists could also complicate the data compilation and analysis. Therefore, it was deemed appropriate to exclude from participation in Part III all installations where the general practice residency in dentistry only was conducted.

b. A major purpose of the second part of the study was to serve as a pilot project for Part III. While useful and usable dental procedure accomplishment rates and time data were collected in Part II, this part of the study mainly provided information which allowed the development of a better data collection instrument for recording time expenditure data, the development of more refined techniques of collecting and analyzing this data, and the elimination/control of many study variables such as variations among study sites in the methods of recording after duty time and holiday hours. Since the second study part was a pilot project, only four study sites were selected. The four particular sites utilized in this study part were selected in order to insure that the maximum number of mentors, residents and NTSs in each of the six specialties under study would be included in the sample.

c. Certain variations were noted between the time expenditure data collected by daily work sheets in Part II and the time data collected by weekly worksheets in Part III. For example, the percent of time spent in patient care was consistently higher for the mentors, residents and NTSs in Part III, and the percent of time spent in other duties was consistently lower for all three groups in the third study part than in Part II (Figures 1, 2, and 3). These variations could be due to the fact that the second study part was a pilot project extending over a six week period while Part III extended over a 48 week period. In addition there were other differences in the data collection methodology. The data collection instruments were designed differently (See Appendices A-6 and A-7). In Part II, the participants listed on the worksheets the various treatments, activities, and duties performed and the starting and finishing time for each activity/treatment. The worksheets were then forwarded to HCSD where one of the project officers categorized each activity as to whether it was patient care, education, or another duty activity. In Part III, each study participant was provided lists of specific tasks (Appendix A-8) which were categorized into the five types of activities. Using these lists, the participants recorded the amount of time expended in each category of duty activity. There were a few differences in the categorizing of duties between the two study parts. For example, serving as library officer and serving as dental consultant to another post were considered other/additional duties in Part II, but were considered educational duties in Part III. Among the NTS group, continuing education officer duties were considered additional duties in Part II and education duties in Part III. Also the inclusion as NTSs, of a few teachers in the one year general practice residency in dentistry may have distorted slightly the Part II data.

d. The participants in all three parts of this study were field grade dental officers with several years of active military service and (in the case of mentors and NTSs) two or more years of post-doctoral dental education. None of the specialists, including general dentists, were junior (company grade) officers. The exclusion of junior officers from participation probably explains the fairly high percentage of their time which mentors and NTSs expended in performing other/additional duties (10 percent to 13 percent in Part III).

e. In Part I, the numbers of assistants and operatories available for the exclusive use of each dentist were remarkably similar between mentors, residents, and non-teaching specialists. Each stated that they had about 1.5 operatories and nearly 1.0 full-time assistants for their exclusive use. It would appear, therefore, that there is

an equitable distribution of the available resources for delivering patient care when comparing teaching with non-teaching environments of dental specialty care delivery. However, the number of operatories available for the exclusive use of dental officers is less than the number authorized by the Department of Defense (DOD). The DOD authorizes the construction of dental clinics which contain 2.0 to 2.5 dental chairs per dentist and the Army currently is constructing clinics which contain 2.0 operatories per general dentist [6, 7]. Furthermore, in responding to the question concerning additionally desired resources, both the mentors and NTSs responded that more dental operatories were needed to enhance their programs. Also, all three groups requested additional and/or better qualified ancillary personnel (including dental assistants). The participants further expressed a need for more and/or better quality dental equipment and supplies. Both the mentor and resident groups requested additional dental consultants in order to improve their training programs.

f. In the questionnaire responses the mentors, residents, and NTSs were all dissatisfied with the system/worksheets that they were using to record their daily activities (especially patient treatments accomplished). The respondents expressed a perceived need for more completeness in recording activities and for appropriate credit to be given to intermediate steps in the various dental treatment procedures. Since the collection of the Part I data, a new system/worksheet for recording daily activities/treatment procedures has been adopted (HSC Form 144). Therefore, it is possible that the participants, comments concerning the recording of daily activities are no longer appropriate.

g. There appeared to be no differences between mentors and NTSs as to the types of additional duties which they were assigned. In the first study part the most frequently reported additional duties by both groups were: Chief of Clinic/Service and AMEDD committee member. Additionally, the mentors spent only slightly less of their normal duty time performing additional/other duties than did the NTSs, but this difference was statistically significant.

h. In Part II, the procedure accomplishment rates reported by all three groups of participants was lower than was expected and than is presently being reported by the average dental officer. However, these accomplishment rates were recorded and calculated in terms of unweighted procedures. Furthermore, the treatments were rendered not by general practioners, but by dental specialists such as endodontists and fixed and removable prosthodontists. These specialists normally render complicated treatments such as the construction of full dentures, fixed prostheses, and root canal therapies which require several successive appointments during a given period of time. Since in Part II only the major treatment procedures were recorded and intermediate treatment procedures were omitted, the specialists may have treated individual patients for several days and/or weeks before being able to take credit for an unweighted dental treatment procedure. In any event, the relative productivity of the mentors, residents and NTSs is more important than the procedure accomplishment rates themselves. The non-teaching specialists accomplished approximately 1.4 times as many treatment procedures per duty hour and over 1.1 times as many procedures per hour of direct patient care as did the mentors. The NTSs accomplished 1.7 times as many dental treatment procedures per duty hour and 1.5 times as many procedures per hour of direct patient care as did the residents. While the Part II data revealed that the residents spent 4.0 percent more time in

direct patient care than did the mentors, they accomplished less treatment procedures per duty hour and per hour of direct patient care than did their teachers.

i. In Part III of the survey, absent time included not only time expended during various types of leaves and passes, but also time spent in medical/dental appointments (including travel time), sick in quarters, holidays, and while on temporary duty (TDY) which was not associated with dental education. During this part of the study many of the mentors and NTSs spent up to two weeks on TDY while attending military courses and performing other duties which were classified as absences. Therefore, the absent time for these two groups may be somewhat greater than what would normally be expected.

j. The data collected in Parts II and III concerning the amount of time that oral surgery residents spent in direct and indirect patient care may be somewhat misleading in that these officers spend extensive amounts of time treating patients with purely medical problems rather than dental patients. Depending upon the location of their training program, during their three-year residency, the oral surgery students spend three or four months in the hospital general anesthesia service; two or three months in general medicine; and one to three months in general surgery. They will also spend one to two months each in several of the following hospital departments: plastic surgery, neurosurgery, general trauma, emergency room, cardiology, and/or other departments. Thus, a large percentage of the direct and indirect patient care provided by these dental officers is rendered to patients with medical problems which cannot be counted toward the productivity of the installation dental service/activity. Indeed the fact that oral surgery mentors, NTSs, and especially residents spent significantly more time in patient care after "normal duty" hours than do their counterparts in other dental specialties is related to their treatment of both dental and "non dental" trauma.

k. Due to the nature of their primary duties/missions it was not unexpected that NTSs expended more time in direct patient care than residents, who in turn reported more direct patient care time than mentors. Likewise it had been anticipated that residents would spend more time in teaching/education duties than mentors and that the least amount of time spent in this activity would be by NTSs. The fact that residents spent more time in indirect patient care than either mentors or NTSs was probably due to their assisting the teachers in performing certain patient care procedures while in a teacher-student relationship. Also, as a part of their training, the fixed and removable prosthodontic, as well as the general dentistry residents were responsible for performing many laboratory procedures which would normally be accomplished by dental laboratory technicians. General dentistry mentors and NTSs spend significantly more time in other/additional duties than do their counterparts in the other specialties because of their versatility. The advanced training in all of the dental specialties, as well as in management and administration, received by a general dentistry resident produces a "decathlon" dentist who can be assigned a wider range of duties than any of the other specialists. As expected, increasing the general dentistry specialists additional duties reduces the amount of time they can spend in direct patient care.

l. For all dental officers surveyed, the percentage of time spent in patient care (direct plus indirect) was approximately 61 percent and for NTS this percentage

was approximately 67 percent. These percentages were adversely affected to some extent because failed or broken patient appointment time, when no other patients were available, was classified as other duty time. Information which would allow comparison of these percentages with the amount of time spent by civilian dentists in patient care is not available. However, conversations with civilian dentists reveal that a large percentage of their time is spent in activities other than patient care such as attending professional meetings, vacations, holidays, attending to the business aspects of private practice, broken patient appointments, and out of the office due to illnesses. Also many civilian dental offices are open for patient care only four and one-half days per week as compared to the 40 hour per week "normal" duty time for Army dental clinics.

m. The data revealed that serving as an Army Dental Corps officer is more than a 40 hour-a-week job. Although each Army dentist is entitled to 30 days annual leave per year, the Part III data revealed that mentors expend a mean of 6.0 hours per week "after duty" time in the performance of their duties. This "after duty" time is equivalent to approximately 39 eight-hour working days per year. For NTSs the mean total "after duty" hours reported per weeks was 2.8 or approximately 18 eight-hour days per year.

6. CONCLUSIONS.

a. There is an equitable distribution of the resources for delivering patient care when comparing teaching and non-teaching dental specialty care delivery environments as demonstrated by the fact that mentors, residents and NTSs all reported that they had approximately 1.5 dental operatories and 1.0 full-time dental assistants for their exclusive use.

b. The number of dental operatories available for the exclusive use of mentors, residents, and NTSs at the time of data collection was less than the current DOD authorization of 2.0 to 2.5 dental chairs per dentist.

c. In order to enhance their programs, all dental officers perceive a need for more and/or better qualified ancillary personnel, additional and/or better quality dental instruments and equipment, and additional dental operatories.

d. All personnel involved in dental residency programs perceive a need for additional dental consultants in order to enhance the quality of their programs.

e. The dental procedure accomplishment rates of non-teaching specialists are greater than those generated by residents (1.5 to 1.7 fold) and by mentors (1.1 to 1.4 fold).

f. Mentors' dental procedure accomplishment rates are greater than those of residents (1.2 to 1.3 fold).

g. Mentors spend significantly more time in other/additional duties and absences than do residents, and they spend significantly more time in indirect patient care, teaching/education duties, and total "after duty" hours than do NTSs.

h. Residents spent significantly more time in direct patient care than do mentors and they spend significantly more time in indirect patient care, teaching/education duties and total "after duty" hours than do the mentors or the NTSs.

i. Non-teaching specialists spend significantly more time in direct patient care and other/additional duties than do mentors or residents and they report significantly more absent time than residents.

j. Oral surgery mentors, residents, and NTSs spend significantly more "after duty" hours performing military/dental duty functions than do their counterparts in the other specialties.

k. General dentistry mentors spend significantly less time in direct patient care than do their counterparts in other specialties, and both mentors and NTSs in general dentistry spend significantly more time performing other/additional duties than do their counterparts in other specialties.

l. Residents in the various specialties spend approximately the same percentage of their time in teaching/educational duties.

m. Mentors spend approximately 52 percent of their time in patient care, 21 percent in teaching/education duties and 11 percent in other/additional duties.

n. Residents expend approximately 62 percent of their time in patient care, 26 percent in teaching/educational duties, and very little time performing additional duties.

o. NTSs spend approximately 67 percent of their time in patient care, 4 percent in educational duties, and 13 percent in other/additional duties.

7. RECOMMENDATIONS.

a. Recommend that the results of this study be made available to the Assistant Surgeon General for Dental Services, Office of the Surgeon General, Department of the Army and to Directorate of Dental Services, US Army Health Services Command.

b. Recommend that the Army dental planners and managers mentioned above (7a.) utilize the findings presented in this report in making decisions concerning staffing guides for subordinate dental units and in evaluating the costs of in-service dental residency training programs.

8. REFERENCES.

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[7]Genova, James J., Col, DC, OTSG, Personal Communication, January 1977.

FIGURES

FIGURE 1

COMPARISON OF MENTOR QUESTIONNAIRE RESPONSES (PART I) TO MENTOR DAILY & WEEKLY WORKSHEET DATA COLLECTED IN STUDY PARTS II AND III:

PERCENT OF TIME SPENT IN VARIOUS DUTY ACTIVITIES

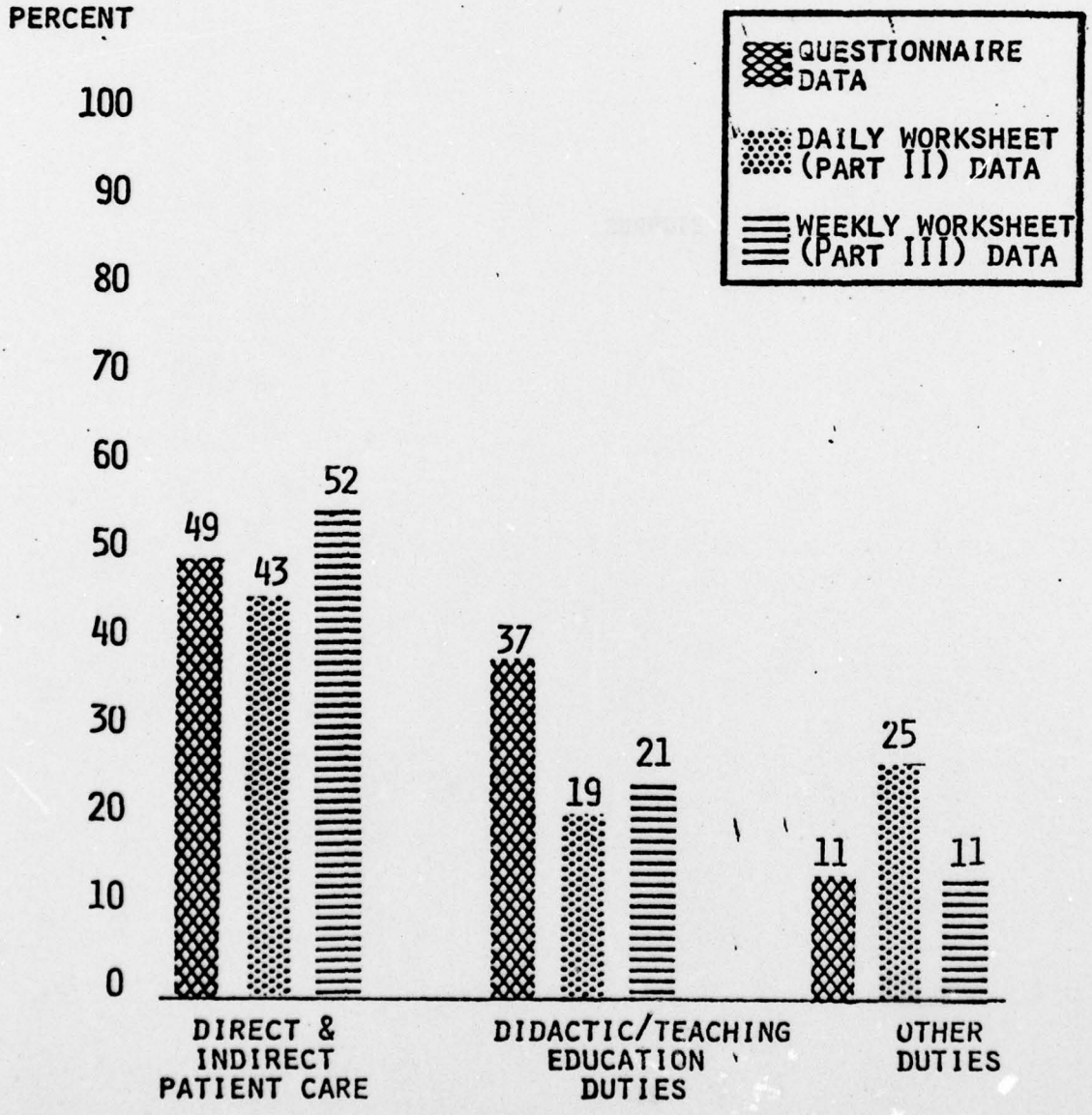


FIGURE 2

COMPARISON OF RESIDENT QUESTIONNAIRE RESPONSES (PART I) TO RESIDENT DAILY & WEEKLY WORKSHEET DATA COLLECTED IN STUDY PARTS II AND III:

PERCENT OF TIME SPENT IN VARIOUS DUTY ACTIVITIES

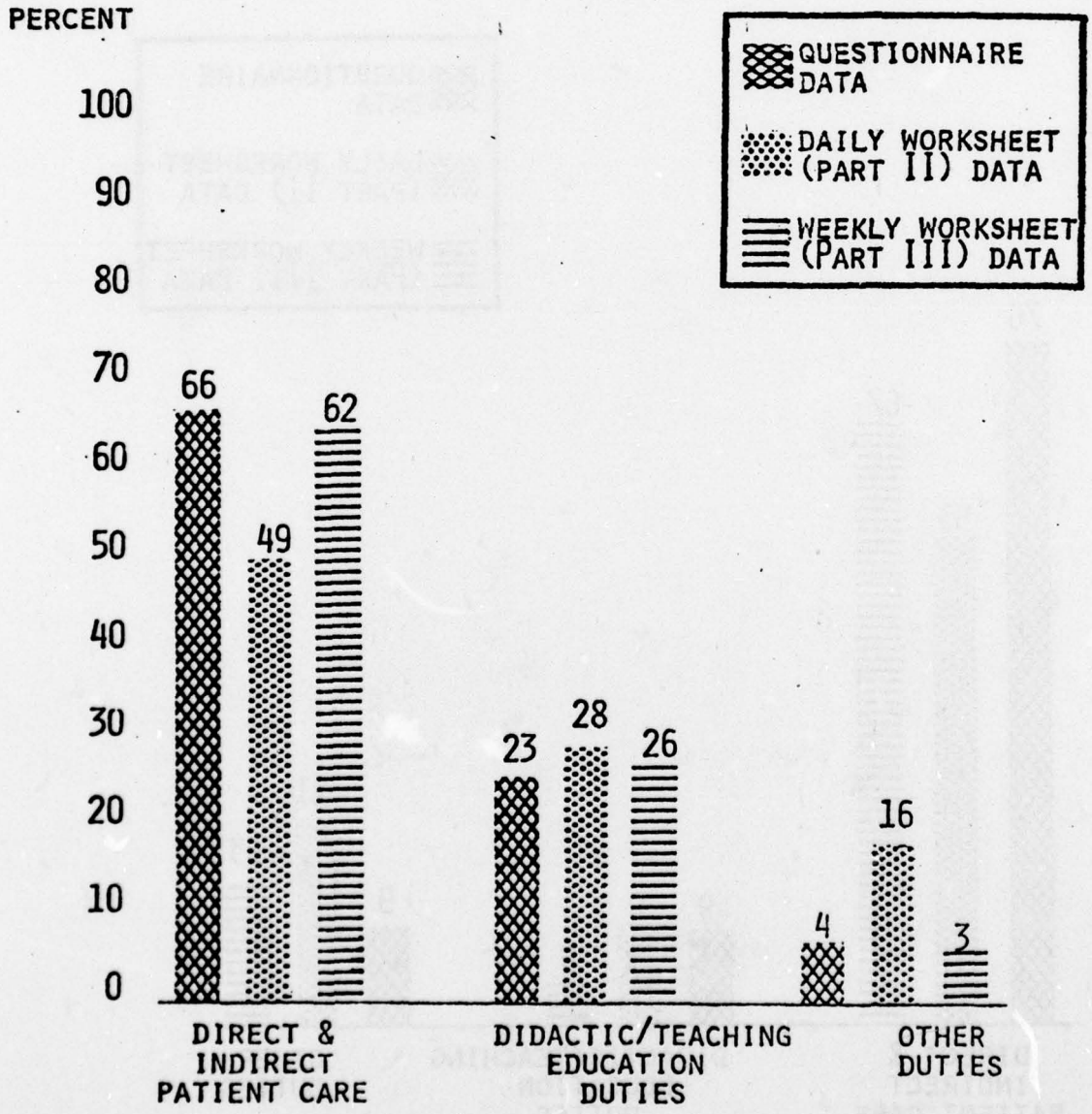
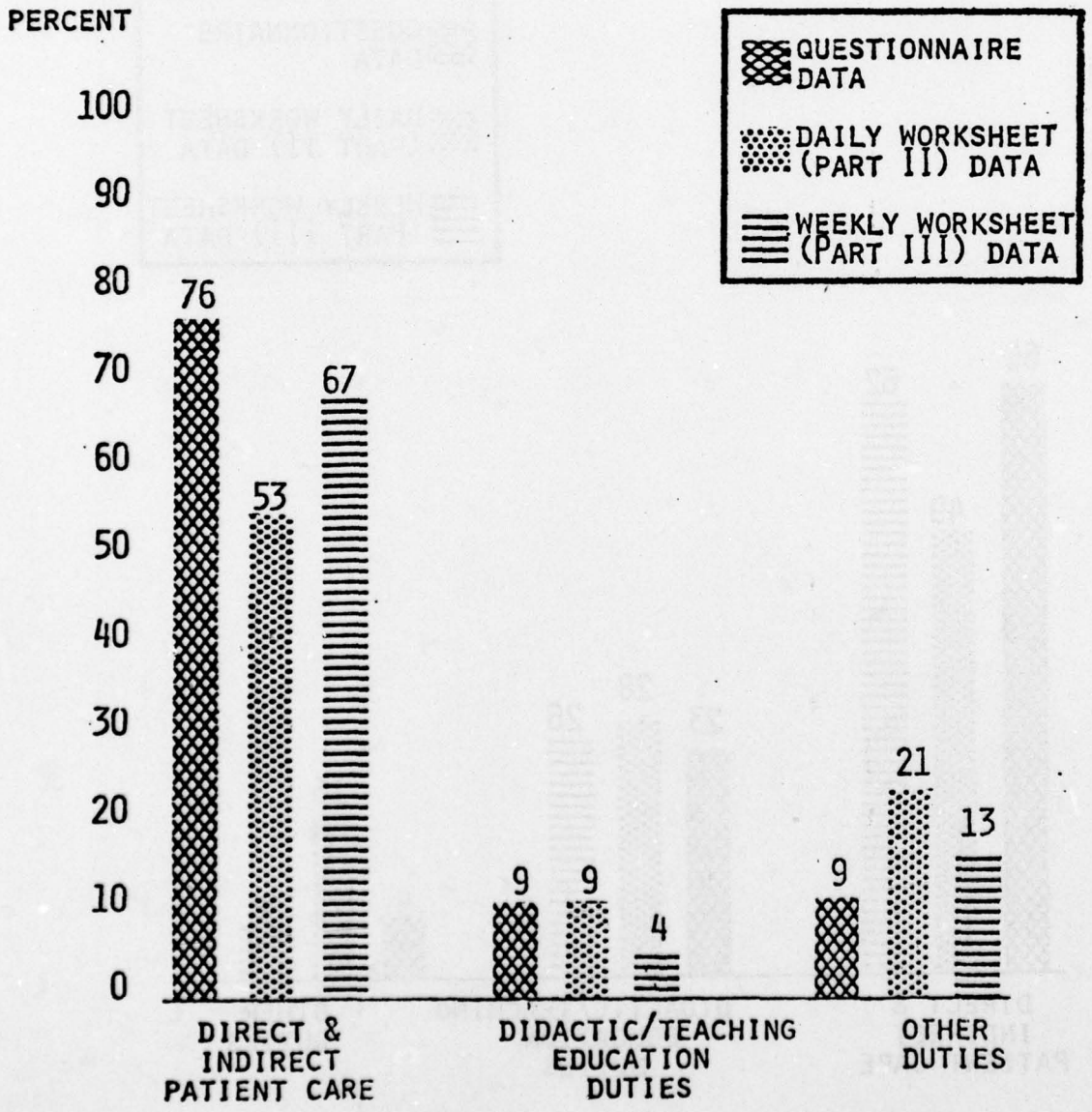


FIGURE 5

COMPARISON OF NON-TEACHING SPECIALISTS (NTS) QUESTIONNAIRE RESPONSES (PART I) TO NTS DAILY AND WEEKLY WORKSHEET DATA COLLECTED IN STUDY PARTS II AND III:

PERCENT OF TIME SPENT IN VARIOUS DUTY ACTIVITIES



TABLES

TABLE 1

SUMMARY OF DATA COLLECTED IN
PART I OF STUDY: QUESTIONNAIRE RESULTS

	MENTORS	RESIDENTS	NTSs
Number of Questionnaires Sent to CONUS Dental Officers	59	85	252
Number of Questionnaires Properly Completed	49	57	212
Mean Number of Residents for Which Mentor is Responsible:			
a. Within Their Own Specialty	2.6	*	*
b. General Dentistry Residents	6.9	*	*
c. Other Residents	3.7	*	*
Mean Number of Teachers Involved in Residents Training:			
a. Officers with same MOS	*	2.5	*
b. Officer with other MOSs	*	5.7	*
Estimated Mean Percentage of Time Spent in:			
a. Patient Care	49%	66%	69%
b. Residency Training Program	37%	*	*
c. Didactic Activities (Residency)	*	23%	*
d. Training Other Dentists	*	*	9%
e. Consulting to Other Dentists	*	*	7%
f. Other Activities	11%	4%	9%
Mean Number of Operatories:			
a. For exclusive use by Residency Program	2.7	3.5	*
b. Shared with Other Clinic Departments	1.3	1.6	0.8
c. Used Exclusively by Individual	1.5	1.4	1.5
Mean Number of Chairside Dental Assistants:			
a. For Exclusive Use in Residency Program	2.2	2.3	*
b. Shared with Other Clinic Personnel	0.9	1.4	0.8
c. Used Exclusively by Individual	0.9	0.9	1.0
Percentage of Personnel Who Believe the Daily Worksheet/ Treatment Log Presently Used Accurately Reflects Treatments Rendered/Time Expended	12%	44%	30%

*Response Not Requested or Not Applicable

TABLE 2

PERCENT OF TIME SPENT IN VARIOUS DUTY FUNCTIONS AND NUMBER OF NON-DUTY HOURS SPENT PERFORMING MILITARY/DENTAL DUTIES: DATA FROM STUDY PART II

DENTAL OFFICERS	NUMBER OF OFFICERS	PERCENT OF TIME DURING DUTY HOURS (8 HOURS/DAY)					NUMBER OF AFTER DUTY HOURS
		DIRECT PATIENT CARE	INDIRECT PATIENT CARE	DIDACTIC/ TRAINING ACTIVITIES	EXCUSED ABSENCES (ILL, TDY LEAVE)	OTHER	
MENTORS	10	39%	4%	10%	12%	25%	3.34
RESIDENTS	21	43	6	28	7	16	9.91
NON-TEACHING SPECIAL-ISTS	26	49	4	9	17	21	3.21
ALL OFFICERS	57	45	5	18	13	20	5.70

TABLE 3

UNWEIGHTED DENTAL TREATMENT PROCEDURE ACCOMPLISHMENT RATES FOR MENTORS, RESIDENTS, AND NON-TEACHING DENTAL SPECIALISTS: DATA COLLECTED IN STUDY PART II

DENTAL OFFICERS	NUMBER OF OFFICERS	PROCEDURES ACCOMPLISHED	
		MEAN NUMBER PER DUTY HOUR	MEAN NUMBER PER DIRECT PATIENT CARE HOUR
MENTORS	10	0.85	2.18
RESIDENTS	21	0.70	1.64
NON-TEACHING SPECIALISTS	26	1.20	2.47
ALL DENTISTS	57	0.96	2.13

TABLE 4

NUMBER OF DENTAL OFFICERS PROVIDING DATA
IN STUDY PART III

DENTAL SPECIALTY	DUTY STATUS OF SPECIALISTS		
	MENTORS	RESIDENTS	NON-TEACHING SPECIALISTS
GENERAL DENTISTS	5	37	5
ENDODONTISTS	7	7	7
ORAL SURGEONS	9	11	9
PERIODONTISTS	8	3	8
REMOVABLE PROSTHODONTISTS	10	8	11
FIXED PROSTHODONTISTS	10	8	8
TOTAL	49	74	48

TOTAL PARTICIPANTS = 171

TABLE 5

NUMBER OF WORK-WEEKS OF DATA
PROVIDED BY THE PARTICIPANTS IN STUDY PART III

DENTAL SPECIALTY	DUTY STATUS OF SPECIALISTS		
	MENTORS	RESIDENTS	NON-TEACHING SPECIALISTS
GENERAL DENTISTS	229	1,696	230
ENDODONTISTS	310	321	328
ORAL SURGEONS	414	486	388
PERIODONTISTS	344	129	366
REMOVABLE PROSTHODONTISTS	460	368	481
FIXED PROSTHODONTISTS	451	366	373
TOTAL	2,208	3,366	2,166

TOTAL WORK-WEEKS OF DATA = 7,740

TABLE 6

MEAN NUMBER OF HOURS PER WEEK (±S.D.)
SPENT IN VARIOUS DUTIES DURING NORMAL DUTY HOURS
DATA COLLECTED IN STUDY PART III

	DIRECT PATIENT CARE	INDIRECT PATIENT CARE	TEACHING AND EDUCATION	OTHER DUTIES	ABSENT	TOTAL
GENERAL DENTISTS						
Mentors	11.2±10.98	1.8±1.82	10.5±9.01	9.6±12.57	6.9±11.95	40
Residents	21.0± 8.56	3.3±4.15	10.7±7.35	1.4± 2.32	3.6± 8.25	40
NTSs	22.1±10.73	2.2±3.09	1.5±4.47	6.9± 7.05	7.3±11.91	40
ENDODONTISTS						
Mentors	18.2±10.56	2.8±3.29	9.3±8.32	3.2± 5.28	6.5±11.40	40
Residents	21.0± 9.16	1.2±2.33	11.3±7.96	1.7± 2.91	4.8± 9.92	40
NTSs	23.9±10.37	2.3±2.14	1.6±3.46	4.8± 5.34	7.4±12.13	40
ORAL SURGEONS						
Mentors	14.8± 8.81	5.3±4.05	7.6±6.33	5.4± 5.46	6.9±11.42	40
Residents	19.9±12.01	5.8±5.89	10.0±12.26	0.4± 1.49	3.9± 9.27	40
NTSs	24.2± 8.70	2.8±2.71	2.1±4.88	5.8± 4.19	5.1±10.10	40
PERIODONTISTS						
Mentors	17.6± 8.73	2.6±2.54	9.2±7.51	4.0± 6.14	6.6±10.87	40
Residents	20.2± 8.69	3.0±3.24	11.5±7.70	1.3± 2.63	4.0± 7.15	40
NTSs	25.1±10.40	1.2±1.50	1.2±3.24	5.3± 5.53	7.2±11.70	40
REMOVABLE PROSTHODONTISTS						
Mentors	18.7±10.16	3.6±2.58	8.2±8.01	3.5± 4.46	6.0±11.09	40
Residents	19.8± 9.16	7.3±6.50	9.3±7.75	0.5± 1.35	3.1± 7.20	40
NTSs	24.7± 9.98	2.9±2.61	1.0±3.98	4.5± 4.73	6.9±11.53	40
FIXED PROSTHODONTISTS						
Mentors	20.3±10.54	3.9±3.53	7.6±7.47	1.7± 3.41	6.5±11.29	40
Residents	18.8± 8.17	6.4±5.29	10.6±8.46	0.5± 1.59	3.7± 7.79	40
NTSs	24.4±10.61	3.6±2.65	1.6±4.83	3.4± 5.15	7.0±12.08	40
ALL MENTORS	17.3±10.28	3.5±3.30	8.5±7.74	4.2± 6.56	6.5±11.29	40
ALL RESIDENTS	20.4± 9.24	4.2±5.04	10.5±8.47	1.1± 2.19	3.8± 8.39	40
ALL NTSs	24.2±10.11	2.5±2.58	1.5±4.19	5.0± 5.33	6.8±11.57	40
ALL DENTAL OFFICERS	20.6±10.14	3.6±4.07	7.4±8.22	3.0± 5.04	5.4±10.32	40

TABLE 7

PERCENT OF TIME SPENT IN VARIOUS DUTIES DURING NORMAL DUTY HOURS:
DATA COLLECTED IN STUDY PART III

	DIRECT PATIENT CARE	INDIRECT PATIENT CARE	TEACHING AND EDUCATION	OTHER DUTIES	ABSENT
GENERAL DENTISTS					
Mentors	28.0%	4.5%	26.3%	24.0%	17.2%
Residents	52.5	8.2	26.8	3.5	9.0
NTSs	55.3	5.5	3.7	17.3	18.2
ENDODONTISTS					
Mentors	45.5%	7.0%	23.3%	8.0%	16.2%
Residents	52.5	3.0	28.3	4.2	12.0
NTSs	59.8	5.7	4.0	12.0	18.5
ORAL SURGEONS					
Mentors	37.0%	13.3%	19.0%	13.5%	17.2%
Residents	49.8	14.5	25.0	1.0	9.7
NTSs	60.5	7.0	5.3	14.5	12.7
PERIODONTISTS					
Mentors	44.0%	6.5%	23.0%	10.0%	16.5%
Residents	50.5	7.5	28.8	3.2	10.0
NTSs	62.8	3.0	3.0	13.2	18.0
REMOVABLE PROSTHODONTISTS					
Mentors	46.8%	9.0%	20.5%	8.7%	15.0%
Residents	49.5	18.3	23.2	1.3	7.7
NTSs	61.8	7.2	2.5	11.3	17.2
FIXED PROSTHODONTISTS					
Mentors	50.8%	9.7%	19.0%	4.3%	16.2%
Residents	47.0	16.0	26.5	1.3	9.2
NTSs	61.0	9.0	4.0	8.5	17.5
ALL MENTORS	43.3%	8.7%	21.3%	10.5%	16.2%
ALL RESIDENTS	51.0%	10.5%	26.3%	2.7%	9.5%
ALL NTSs	60.5%	6.3%	3.7%	12.5%	17.0%
ALL DENTAL OFFICERS	51.5%	9.0%	18.5%	7.5%	13.5%

TABLE 8

MEAN NUMBER OF HOURS PER WEEK (±S.D.)
SPENT IN VARIOUS DUTIES AFTER NORMAL DUTY HOURS:
DATA COLLECTED IN STUDY PART III

	DIRECT PATIENT CARE	INDIRECT PATIENT CARE	TEACHING AND EDUCATION	TOTAL HOURS	PERCENT "NON-DUTY" TIME SPENT IN TEACHING, EDUCATION AND OTHER DUTIES *
GENERAL DENTISTS					
Mentors	0.1±0.63	0.0±0.22	3.2±3.04	3.3± 3.11	2.6%
Residents	1.5±3.92	0.4±1.4.	11.0±7.43	12.9± 9.06	10.1
NTSs	0.0±0.27	0.3±0.97	1.2±2.30	1.5± 2.39	1.2
ENDODONTISTS					
Mentors	0.0±0.12	0.0±0.09	4.2±4.94	4.2± 4.96	3.3%
Residents	0.3±1.09	0.1±0.56	13.9±9.74	14.3± 9.80	11.2
NTSs	0.1±0.34	0.4±1.39	1.6±2.48	2.1± 2.75	1.6
ORAL SURGEONS					
Mentors	1.9±2.42	1.1±1.84	6.5±6.99	9.5± 8.52	7.4%
Residents	7.3±6.09	6.0±6.32	10.9±8.78	24.2±13.63	18.9
NTSs	1.5±2.56	0.3±0.85	3.2±5.68	5.0± 6.57	3.9
PERIODONTISTS					
Mentors	0.1±0.47	0.0±0.38	4.7±4.64	4.8± 4.64	3.8%
Residents	0.2±0.83	0.5±2.82	13.2±7.01	13.9± 7.14	10.9
NTSs	0.1±0.26	0.2±0.66	2.4±3.85	2.7± 3.82	2.1
REMOVABLE PROSTHODONTISTS					
Mentors	0.1±0.35	1.1±1.80	4.5±4.41	5.7± 5.27	4.5%
Residents	0.4±1.01	4.6±6.59	11.2±6.89	16.2± 8.67	12.7
NTSs	0.1±0.57	0.8±2.15	1.9±3.73	2.8± 4.07	2.2
FIXED PROSTHODONTISTS					
Mentors	0.2±0.71	1.5±2.71	5.0±4.27	6.7± 5.66	5.2%
Residents	0.3±0.73	5.6±6.76	11.3±6.01	17.2± 9.13	13.4
NTSs	0.4±1.49	0.4±1.25	1.3±3.88	2.1± 4.17	1.6
ALL MENTORS	0.4±1.34	0.8±1.79	4.8±5.05	6.0± 6.12	4.7%
ALL RESIDENTS	1.9±4.31	2.2±4.79	11.4±7.73	15.5±10.56	12.1
ALL NTSs	0.4±1.40	0.4±1.39	2.0±3.99	2.8± 4.45	2.2
ALL DENTAL OFFICERS	1.1±3.11	1.3±3.47	6.9±7.38	9.3± 9.81	7.3%

*Based on 128 Non-Duty Hours per Week

TABLE 9

SUMMARY ANALYSIS OF VARIANCE (ANOVA) TABLE

F (P VALUES)

		TIME EXPENDED DURING NORMAL DUTY HOURS					
	df	DIRECT PATIENT CARE	INDIRECT PATIENT CARE	TEACHING AND EDUCATION	OTHER DUTIES	ABSENT	TOTAL HOURS
MAIN EFFECTS							
MOS	5	6.783(.001)	138.724(.001)	5.467(.001)	65.387(.001)	1.233(N.S.)	N.S.
Duty Position	2	283.288(.001)	187.842(.001)	904.600(.001)	663.061(.001)	60.044(.001)	N.S.
INTERACTION							
Duty MOS X Position	10	17.504(.001)	32.987(.001)	3.546(.001)	33.665(.001)	1.565(N.S.)	N.S.

TABLE 10

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN DENTAL OFFICERS WITH VARIOUS MOSs AND DUTY POSITIONS ON MEAN NUMBER OF HOURS WORKED PER WEEK
(PART III)

	DURING NORMAL DUTY HOURS					TOTAL NORMAL DUTY HOURS	TOTAL AFTER DUTY HOURS
	DIRECT PATIENT CARE	INDIRECT PATIENT CARE	TEACHING AND EDUCATION	OTHER DUTIES	ABSENT		
GENERAL DENTISTS							
Mentors vs Residents	-	-	0	+	+	0	-
Residents vs NTS_s	0	+	+	-	-	0	+
Mentors vs NTS_s	-	0	+	+	0	0	0
ENDODONTISTS							
Mentors vs Residents	-	+	-	+	0	0	-
Residents vs NTSs	-	-	+	-	-	0	+
Mentors vs NTSs	-	0	+	-	0	0	+
ORAL SURGEONS							
Mentors vs Residents	-	0	-	+	+	0	-
Residents vs NTSs	-	+	+	-	0	0	+
Mentors vs NTSs	-	+	+	0	+	0	+
PERIODONTISTS							
Mentors vs Residents	-	0	-	+	0	0	-
Residents vs NTSs	-	+	+	-	-	0	+
Mentors vs NTSs	-	+	+	-	0	0	+
REMOVABLE PROSTHODONTISTS							
Mentors vs Residents	0	-	0	+	+	0	-
Residents vs NTSs	-	+	+	-	0	0	+
Mentors vs NTSs	-	+	+	-	0	0	+
FIXED PROSTHODONTISTS							
Mentors vs Residents	0	-	-	+	+	0	-
Residents vs NTSs	-	+	+	-	-	0	+
Mentors vs NTSs	-	0	+	-	0	0	+
ALL MENTORS vs All Res.-	-	-	-	+	+	0	-
ALL RESIDENTS vs All NTSs	-	+	+	-	-	0	+
ALL Mentors vs All NTSs	-	+	+	-	0	0	+

Scheffe Method for Multiple Comparisons ($p \leq .05$) was performed.
Significance Symbols: + = First Group Significantly Greater Than Second Group
- = First Group Significantly Less Than Second Group
0 = No Significant Difference Between First and Second Groups

TABLE 11

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN MENTORS WITH VARIOUS MOSs ON MEAN NUMBER OF HOURS WORKED PER WEEK (PART III)

MENTORS	DURING NORMAL DUTY HOURS						TOTAL AFTER NORMAL DUTY HOURS
	DIRECT PATIENT CARE	INDIRECT PATIENT CARE	TEACHING AND EDUCATION	OTHER DUTIES	ABSENT	TOTAL HOURS	
GENERAL DENTISTS							
VS Endodontists	-	-	0	+	0	0	0
VS Oral Surgeons	-	-	+	+	0	0	-
VS Periodontists	-	0	0	+	0	0	0
VS Removable Prosthodontists	-	-	+	+	0	0	-
VS Fixed Prosthodontists	-	-	+	+	0	0	-
ENDODONTISTS							
VS Oral Surgeons	+	-	0	-	0	0	-
VS Periodontists	0	0	0	0	0	0	0
VS Removable Prosthodontists	0	0	0	0	0	0	0
VS Fixed Prosthdodontists	0	-	0	0	0	0	-
ORAL SURGEONS							
VS Periodontists	-	+	0	0	0	0	+
VS Removable Prosthodontists	-	+	0	+	0	0	+
VS Fixed Prosthodontists	-	+	0	+	0	0	+
PERIODONTISTS							
VS Removable Prosthodontists	0	-	0	0	0	0	0
VS Fixed Prosthodontists	-	-	0	+	0	0	-
REMOVABLE PROSTHODONTISTS							
VS Fixed Prosthodontists	0	0	0	+	0	0	0

Scheffé Method for Multiple Comparison ($p \leq .05$) was performed.
Significance Symbols: + = First Group Significantly Greater Than Second Group
- = First Group Significantly Less Than Second Group
0 = No Significant Difference Between First and Second Group

TABLE 12

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN RESIDENTS WITH VARIOUS MOSs ON MEAN NUMBER OF HOURS WORKED PER WEEK (PART III)

RESIDENTS	DURING NORMAL DUTY HOURS						TOTAL AFTER NORMAL DUTY HOURS
	DIRECT PATIENT CARE	INDIRECT PATIENT CARE	TEACHING AND EDUCATION	OTHER DUTIES	ABSENT	TOTAL HOURS	
GENERAL DENTISTS							
VS Endodontists	0	+	0	0	0	0	0
VS Oral Surgeons	0	-	0	+	0	0	-
VS Periodontists	0	0	0	0	0	0	0
VS Removable Prosthodontists	0	-	0	+	0	0	-
VS Fixed Prosthodontists	0	-	0	+	0	0	-
ENDODONTISTS							
VS Oral Surgeons	0	-	0	+	0	0	-
VS Periodontists	0	-	0	0	0	0	0
VS Removable Prosthodontists	0	-	0	+	0	0	0
VS Fixed Prosthdodontists	0	-	0	+	0	0	0
ORAL SURGEONS							
VS Periodontists	0	+	0	-	0	0	+
VS Removable Prosthodontists	0	-	0	0	0	0	+
VS Fixed Prosthodontists	0	0	0	0	0	0	+
PERIODONTISTS							
VS Removable Prosthodontists	0	-	0	+	0	0	0
VS Fixed Prosthodontists	0	-	0	+	0	0	0
REMOVABLE PROSTHODONTISTS							
VS Fixed Prosthodontists	0	0	0	0	0	0	0

Scheffe Method for Multiple Comparison ($p \leq .05$) was performed.
Significance Symbols: + = First Group Significantly Greater Than Second Group
- = First Group Significantly Less Than Second Group
0 = No Significant Difference Between First and Second Group

TABLE 13

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN NON-TEACHING SPECIALISTS (NTS) WITH VARIOUS MOSs ON MEAN NUMBER OF HOURS WORKED PER WEEK (PART III)

NON-TEACHING SPECIALISTS	DURING NORMAL DUTY HOURS						
	DIRECT PATIENT CARE	INDIRECT PATIENT CARE	TEACHING AND EDUCATION	OTHER DUTIES	ABSENT	TOTAL HOURS	TOTAL AFTER NORMAL DUTY HOURS
GENERAL DENTISTS							
VS Endodontists	0	0	0	+	0	0	0
VS Oral Surgeons	0	0	0	0	0	0	-
VS Periodontists	-	+	0	+	0	0	0
VS Removable Prosthodontists	0	-	0	+	0	0	-
VS Fixed Prosthodontists	0	-	0	+	0	0	0
ENDODONTISTS							
VS Oral Surgeons	0	0	0	0	0	0	0
VS Periodontists	0	+	0	0	0	0	0
VS Removable Prosthodontists	0	0	0	0	0	0	0
VS Fixed Prosthdodontists	0	-	0	0	0	0	0
ORAL SURGEONS							
VS Periodontists	0	+	0	0	0	0	+
VS Removable Prosthodontists	0	0	+	+	0	0	+
VS Fixed Prosthodontists	0	-	0	+	0	0	+
PERIODONTISTS							
VS Removable Prosthodontists	0	-	0	0	0	0	0
VS Fixed Prosthodontists	0	-	0	+	0	0	0
REMOVABLE PROSTHODONTISTS							
VS Fixed Prosthodontists	0	-	0	0	0	0	0

Scheffé Method for Multiple Comparison ($p \leq .05$) was performed.
Significance Symbols: + = First Group Significantly Greater Than Second Group
- = First Group Significantly Less Than Second Group
0 = No Significant Difference Between First and Second Group

TABLE 14

COMPARISON OF MENTORS, RESIDENTS AND NON-TEACHING DENTAL SPECIALISTS (NTSs) USING FIVE COMPARATIVE INDICES

COMPARISON	TREATMENT PROCEDURES ACCOMPLISHED		PERCENT OF TIME SPENT IN DIRECT PLUS INDIRECT PATIENT CARE		MEAN NUMBER OF NORMAL DUTY HOURS SPENT IN DIRECT PATIENT CARE (PART III)
	PER DUTY HOUR	PER HOUR OF DIRECT PATIENT CARE	STUDY PART II	STUDY PART III	
MENTORS to NTSs	.71	.88	.81	.78	.72
RESIDENTS to NTSs	.58	.66	.93	.92	.84

APPENDIX A

DATA COLLECTION INSTRUMENTS, INSTRUCTIONS, AND QUESTIONNAIRES USED IN THE STUDY

M&R VS NTS QUESTIONNAIRE TO TRAINING PROGRAM MENTORS

1. How many trainees are you directly involved with in your training program?

a) Your own residents: _____

b) General Dentistry (2-year rotation) residents: _____

c) Other dentists (including 1-year rotating general dentistry residents): _____

2. What per cent of your duty time is devoted to the following?

a) Training program(s): _____%

b) Patient Care (your "own" patients): _____%

c) Other: _____%

3. What additional assigned duties do you have (e.g. Chief of Clinic, Project Officer, etc.)?

ADDITIONAL DUTIES

a) _____

b) _____

c) _____

4. Without a significant increase in the time you presently devote to training, how many additional full time residents could you train? _____

5. If you were able to devote all your time exclusively to training, how many full time residents could you train? _____

6. How many operatories are devoted to your training program?

a) For the exclusive use of your program: _____

b) Shared with general clinic or other program: _____

c) How many (a plus b) are used exclusively by you: _____

7. How many assistants are devoted to your training program (do not count part-time volunteers)?

a) For the exclusive use of your program: _____ assistants.

b) Shared with general clinic use or other training programs:

_____ assistants.

c) How many of the above (a plus b) assist you exclusively:

_____ assistants.

8. What agency, board or society establishes the minimum standards for your specialty/training program?

a) None

b) American Dental Association

c) National Board _____

d) Army Regulation(s) _____

e) Other _____

9. How much time do you spend in training of other dental specialties (e.g. lecture, consultant, etc.)? Please state in approximate number of hours per month or hours per year. _____

10. What additional resources would you like to have to increase the effectiveness of your training program (personnel, equipment, consultants, reference materials, etc.)? Please be specific, giving examples when appropriate.

_____

_____

_____

_____

_____

11. Do you feel confident that your daily worksheet (if you use one) can portray how your time is spent and accurately reflects the patients seen and treatment rendered? _____

12. If you use a daily worksheet for maintaining a record of patients seen and treatments rendered, please include a copy with the return of this questionnaire. Describe any improvements that in your opinion would make the worksheet a more accurate record.

13. Any additional comments you wish to make are invited. If possible, please limit to this page (including the back).

M&R VS NTS QUESTIONNAIRE TO TRAINING PROGRAM RESIDENTS

1. Other than your primary mentor, are any other dentists actively involved with your training?

a) yes, _____ Dental Officer(s) with the same MOS.

b) yes, other dental MOS(s) _____.

c) No.

2. What per cent of your duty time is devoted to the following?

a) Didactic activities? _____%

b) Patient care? _____%

c) Other: _____%

3. Do you have any additional assigned duties (exclude "on call" requirements)?

ADDITIONAL DUTIES

a) _____

b) _____

c) _____

4. How many operatories are devoted to the training program?

a) For the exclusive use of your training program: _____

b) Shared with general clinic or other programs: _____

c) How many (a plus b) are used exclusively by you: _____

5. How many assistants are devoted to the training program (Do not count part-time volunteers)?

a) For the exclusive use of your training program: _____assistants

b) Shared with general clinic use or other training programs:

_____ assistants

c) How many (a plus b) assist your exclusively? _____assistants

6. Are you required to be "on call" during non-duty hours during your residency?

a) Yes, _____ (days per week/weeks per month)

b) No.

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1 Oct 1975

7. Do you have a "beeper" (paging device)?

a) Yes.

b) No.

8. If you are required to be "on call", are you required to serve at any particular location(s)?

a) In the dental clinic, from_____to_____.

b) In the hospital emergency room, from _____to_____.

c) Allowed to "serve" at home or other close location within telephone contact? _____

d) Other (please describe) _____

_____

9. What additional resources would you like to have available to improve the training you are presently receiving (personnel, equipment, consultants, reference materials, etc.)? Please be specific, giving examples when appropriate:

_____

_____

_____

_____

_____

10. Do you feel confident that your daily worksheet (if you use one) can portray how your time is spent and accurately reflects the patients seen and treatment rendered? _____

11. If you use a daily worksheet for maintaining a record of patients seen and treatments rendered, please include a copy with the return of this questionnaire. Describe any improvements that in your opinion would make the worksheet a more accurate record.

_____

_____

_____

_____

_____

12. Any additional comments you wish to make are invited. If possible please limit to this page (including the back).

M&R VS NTS QUESTIONNAIRE TO NON-TEACHING SPECIALISTS

1. What per cent of your duty time is devoted to the following?

   a) Direct patient care: _____%

   b) Consultant for other dentists' patients: _____%

   c) Training for other dentists: _____%

   d) Other: _____%

2. What additional assigned duties do you have (e.g. Chief of Clinic, Project Officer, etc.)?

   ADDITIONAL DUTIES

   a) _____

   b) _____

   c) _____

3. Do you have a rotation schedule within your clinic to give the general dentists an opportunity to work with or receive additional training from you? _____ If so, for how many people and for what block of time for each per year? _____dentists _____ (days, weeks, months) per year for each.

4. How many other dental clinics are on your post? _____
Do you have a rotation program for any of the dentists from the other clinics? _____ If so, for how many people and for what block of time for each per year? _____dentists _____(days, weeks, months) per year for each.

5. Would you have some sort of training program (do more, if you already have one) for general dentists if you had fewer extra duties as listed in question two above?

   a) Yes.

   b) No, would devote additional time toward needed direct patient care.

   c) Other _____

6. How many operatories are devoted to your use?

   a) For your exclusive use: _____

   b) Shared with general clinic or other specialist(s) use: _____

7. How many assistants are devoted for your use?

a) For your exclusive use: _____ assistants

b) Shared with general clinic or other specialist(s): _____assistants

8. Would you need additional resources of some kind to effectively run an informal rotating training program at your post for other dental officers (personnel, equipment, consultants, reference materials, etc.)? Please be specific, giving examples when appropriate:

_____

_____

_____

_____

_____

9. Do you feel confident that your daily worksheet (if you use one) can portray how your time is spent and accurately reflects the patients seen and treatment rendered? _____

10. If you use a daily worksheet for maintaining a record of patients seen and treatments rendered, please include a copy with the return of this questionnaire. Describe any improvements that in your opinion would make the worksheet a more accurate record.

_____

_____

_____

_____

_____

11. Any additional comments you wish to make are invited. If possible, please limit to this page (including the back).

DEPARTMENT OF THE ARMY
HEADQUARTERS, UNITED STATES ARMY HEALTH SERVICES COMMAND
FORT SAM HOUSTON, TEXAS 78234

HSDS

7 NOV 1975

SUBJECT: Dental Health Care Delivery Study

Commanders
HSC MEDCEN/MEDDAC
ATTN: Dir of Dental Services

1. Due to concerns over rising health care delivery costs, the Health Care Studies Division of the Academy of Health Sciences, US Army at Fort Sam Houston, Texas has been tasked to conduct studies concerning health care delivery. Attached are questionnaires which are a part of one such study regarding dental care delivery by various dental specialties and their related training programs. This particular study will investigate the amount of care delivered and the resources (operatories and dental assistants) made available for care delivery by various clinical dental specialties.

2. Comparisons will be made between the training programs and other trained specialists. Conclusions drawn from this study could help form future up-to-date staffing and resource allocation bases for dental activities.

3. Your full and active cooperation is sought with regard to this study. Please expedite a rapid distribution of the inclosed questionnaires. Addressed return envelopes are included to facilitate the return of the completed forms by the individual personnel being surveyed.

4. If you have any specific questions, please contact the project officer at the Health Care Studies Division, Academy of Health Sciences, US Army: Major Robert C. Ahlers, DC, Autovon telephone 471-4541/3331.

FOR THE COMMANDER:

Richard E. Swisher

RICHARD E. SWISHER
Colonel, DC
Deputy Director of Dental Services

5 Incl
as

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

Questionnaire survey of dental residents, mentors and other trained specialists.

Due to concerns over rising health care delivery costs, the Health Care Studies Division of the US Army Academy of Health Sciences at Fort Sam Houston, TX has been tasked to conduct studies concerning health care delivery. Attached is a questionnaire which is part of one such study regarding dental care delivery by various dental specialities and their related training programs. This particular study will investigate the amount of care delivered and the resources (operatories and dental assistants) made available for care delivery by various clinical dental specialities.

Comparisons of study results will be made between training programs and other trained specialists. The conclusions drawn from this study could help form future, up-to-date staffing and resource allocation bases for dental activites.

Your full and active cooperation is sought with regard to this study, especially for the completion of the attached questionnaire. For your convenience, an addressed return envelope is included to facilitate your timely and confidential response to these questions. Please answer all questions and return the questionnaire as soon as possible.

If you have any specific questions, please contact the project officer at the Health Care Studies Division, AHS: Major Robert C. Ahlers, DC, Autovon telephone 471-4541/3331.

M&R VS NTS DAILY WORKSHEET FOR DR. _____

CLINIC and LOCATION _____ DATE _____

NUMBER OF OPERATORIES USED ____ NUMBER OF ASSISTANTS _____ NUMBER OF DTAs ___

TIME		PATIENT/ACTIVITY		DIAGNOSIS AND TREATMENT OR DESCRIPTION OF ACTIVITIES
TART	FINISH	NAME	CATEGORY	

A-6

HS Form 121 (OT)

TIME EXPENDED BY ARMY DENTAL CORPS OFFICERS IN
THE PERFORMANCE OF THEIR DUTIES

I. GENERAL INFORMATION:

A. Post_____. ☐☐ 1,2

B. Week of_____. ☐☐ 3,4

C. MOS: Residents check MOS related to residency programs. Others check as appropriate

1. 63E (3168)..... —

2. 63B (3170)..... —

3. 63N (3171)..... —

4. 63D (3174)..... — ☐ 5

5. 63G (3175)..... —

6. 63F (3176)..... —

D. Duty Position:

1. Mentor or Teacher..... —

2. Resident..... — ☐ 6

3. Specialist in Non-Teaching Position..... —

II. NUMBER OF HOURS EXPENDED IN VARIOUS DUTY CATEGORIES DURING NORMAL DUTY HOURS.

A. Use only one-quarter, one-half, three-quarters, or whole number of hours.
B. Each daily total must equal 8 hours.
C. Leave the boxes at the right of the page blank.

DUTY CATEGORY	NUMBER OF HOURS MON	TUES	WED	THURS	FRI	
DIRECT PATIENT CARE						☐☐.☐☐ 7-10
INDIRECT PATIENT CARE						☐☐.☐☐ 11-14
TEACHING AND/OR EDUCATION DUTIES						☐☐.☐☐ 15-18
OTHER DUTIES						☐☐.☐☐ 19-22
ABSENCES						☐☐.☐☐ 23-26
DAILY TOTAL						☐☐ 27,28

III. NUMBER OF HOURS EXPENDED IN VARIOUS DUTY CATEGORIES AFTER NORMAL DUTY HOURS.

A. Use only one-quarter, one-half, three-quarters, or whole number of hours.
B. Leave the boxes at the right of the page blank.

DUTY CATEGORY	NUMBER OF HOURS MON	TUES	WED	THURS	FRI	SAT/SUN	
DIRECT PATIENT CARE							☐☐.☐☐ 29-32
INDIRECT PATIENT CARE							☐☐.☐☐ 33-36
TEACHING AND/OR EDUCATION DUTIES							☐☐.☐☐ 37-40
DAILY TOTAL							☐☐.☐☐ 41-44

☐☐ 45,46

DIRECTIONS FOR COMPLETION OF FORM TITLED
"TIME EXPENDED BY ARMY DENTAL CORPS OFFICERS IN THE PERFORMANCE OF THEIR DUTIES"

I. Question II. The number of hours expended during normal duty hours must total 8 per day. Do not fill in the boxes under "Column".

II. Question III. No specific number of expended hours is required per day.

III. Dental Officers providing information in this study will forward completed forms through their Director of Dental Services to the HCSD project officer on a WEEKLY basis.

IV. Explanation And Examples Of Specific Functions To Be Classified Under The Various Duty Categories In Questions II and III.

A. Direct Patient Care: The time expended in direct patient care will include all of the dental officer's time expended in patient treatment and the accomplishment of dental patient treatment procedures which are recorded on HSC Form 144 EXCEPT where there is a conflict associated with the functions listed under duty categories B, C, D or E below.

B. Indirect Patient Care: The time expended in indirect patient care will include all of the dental officer's time expended performing the following functions:

1. Dental Laboratory Procedures.

2. Treatment Planning for a patient when the patient is NOT present in the dental operatory.

3. Reviewing a patient's record when the patient is not present.

4. Writing up a patient's record when the patient is not present.

5. Consultation with a laboratory technician concerning a patient when the patient is not present.

6. Consultation with another doctor concerning your patient when the patient is not present.

7. Consultation with another doctor concerning HIS/HER patient. The patient may be present or absent.

8. Assisting another doctor in direct patient care.

*9. Special Note: When two dental officers are simultaneously treating a patient in the operatory, one dentist will take credit for direct patient care and the other dentist MUST take credit for indirect patient care. The senior dental officer will make this decision.

C. Teaching and/or Education Duties: The time expended in teaching and/or education duties will include all of the dental officers time expended in performing the following functions:

1. Giving or attending lectures, literature reviews, group patient treatment conferences, and symposia.

2. Preparing for lectures, literature reviews, group patient treatment conferences, and symposia.

3. Giving or attending educational demonstrations not involving direct or indirect patient care.

4. Reading dental/medical literature, notes and other written material associated with self improvement as a dentist and/or a formal dental residency program.

5. Preparing, reviewing, or reading dental papers associated with a formal Army dental residency.

6. Attending dental education committee meetings.

7. Rendering or receiving student counseling associated with an Army dental residency.

8. Library and other study time associated with self improvement as a dentist.

9. Preparing or reviewing student critiques associated with an Army dental residency program.

10. Attending dental professional meetings.

11. Other self-improvement (dental) continuing education.

12. Time expended while serving as a professional (dental) consultant to other MEDDACs/MEDCENs.

13. Other duties directly associated with the education phases of a formal Army dental residency which are not listed elsewhere AND not associated with direct or indirect patient care.

D. Other Duties: The time expended in other duties will include all of the dental officer's time expended in performing the following functions:

1. Military duties NOT associated with direct patient care, indirect patient care, teaching/education duties and/or absences.

2. Dental duties NOT associated with direct patient care, indirect patient care, teaching/education duties and/or absences.

3. Attendance at clinic directors (chiefs) meetings.

4. Attendance at meetings not listed above which might be called by the Director of Dental Services, clinic directors, unit commanders, and/or post commanders.

5. Performance of clinic and/or unit administrative duties.

6. Physical training.

7. Down time and other miscellaneous time including failed patient appointments when no other duties are performed.

E. Absences: The time expended in absences from duty will include the following:

1. All types of leave.

2. Passes.

3. VOCO absences.

4. Dental/medical appointments (to include time in transient to and from clinics).

5. Sick in quarters.

6. TDY which is NOT associated with self-improvement as a dentist. (i.e., Included in this duty category will be TDY to attend management conferences, military courses and TDY for similar purposes).

7. Holidays.

APPENDIX B

LIST OF STUDY SITES

LIST OF MEDCEN AND MEDDAC UTILIZED FOR DATA COLLECTION

Brooke Army Medical Center, Fort Sam Houston, TX 78234
Dwight D. Eisenhower Army Medical Center, Fort Gordon, GA 30905
Fitzsimmons Army Medical Center, San Francisco, CA 94129
Letterman Army Medical Center, San Francisco, CA 94129
Madigan Army Medical Center, Tacoma, WA 98431
William Beaumont Army Medical Center, Fort Bliss, TX 79920
Walter Reed Army Medical Center, Washington, DC 20012
MEDDAC, Aberdeen Proving Ground, MD 21005
MEDDAC, Fort Belvoir, VA 22060
MEDDAC, Fort Benjamin Harrison, IN 46216
MEDDAC, Fort Benning, GA 31905
MEDDAC, Fort Bragg, NC 28307
MEDDAC, Fort Campbell, KY 42223
MEDDAC, Fort Carson, CO 80913
MEDDAC, Fort Devens, MA 01433
MEDDAC, Fort Dix, NJ 08640
MEDDAC, Fort Eustis, VA 23604
MEDDAC, Fort Hood, TX 76545
MEDDAC, Fort Huachuca, AZ 85613
MEDDAC, Fort Jackson, SC 29207
MEDDAC, Fort Knox, KY 40121
MEDDAC, Fort Leavenworth, KS 66027
MEDDAC, Fort Lee, VA 23801
MEDDAC, Fort Leonard Wood, MO 65475
MEDDAC, Fort McClellan, AL 36205
MEDDAC, Fort McPherson, GA 30330
MEDDAC, Fort George G. Meade, MD 20755
MEDDAC, Fort Monmouth, NY 07703
MEDDAC, Fort Ord, CA 93941
MEDDAC, Fort Polk, LA 71459
MEDDAC, Redstone Arsenal, AL 35809
MEDDAC, Fort Riley, KS 66442
MEDDAC, Fort Rucker, AL 36360
MEDDAC, Fort Sill, OK 73503
MEDDAC, Fort Stewart, GA 31313
MEDDAC, USMA, West Point, NY 10996
US Army Health Clinic,Fort Sheridan, IL 66037

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Dir, The Army Library (ATTN: ANRAL), US Army Service Center for the Armed Forces, the Pentagon, Washington, DC 20310 (1)

Dir, Joint Medical Library, Offices of the Surgeons General, USA/USAF, the Pentagon, Rm 1B-473, Washington, DC 20310 (1)

Dir, Joint Medical Library (AAFJML), Forrestal Bldg., Washington, DC 20315 (1)

USA HSC (ATTN: HSDS-P) (3); (ATTN: HSCM-R) (5)

AHS, Stimson Library (1)