A Comparison Of The Content Of Army Family Practice With Nonfederal Family Practice

B. Wayne Blount, MD, MPH, L. Gary Hart, PhD, and Jenifer L. Ebreth, PhD

Background: **To assist with planning for education and practice, family physicians should know the practice content of their practices. The present study compared the content of nonfederal family practice with Army family practice to explore their differences.**

Methods: **This was a secondary analysis that compared the similar variables within two national data sets: The National Ambulatory Medical Care Survey and the Army's Ambulatory Care Data Base.**

Results: **Army patients were younger and more likely to be female than were nonfederal patients. Army family physicians spent more time with patients in all groups than did nonfederal family physicians. While 12 of the top 20 diagnosis clusters of each sector were the same, there were differences found in the percentages of total visits contained within the top 20 clusters.**

Conclusions: **Both nonfederal and Army family practice have a wide variation in patients and diagnoses. The two sectors are different in patient age and the frequency of different diagnoses. Knowledge of these differences can assist with planning. (J Am Board Fam Pract 1994; 7:395-402.)**

To be successful, family physicians must provide needs-specific care based on the knowledge and skills patients demand of family physicians.[1] Ideally family physicians are aware of national and regional practice content as a result of studies describing national and regional practices and outcome studies describing current effective treatments. For an Army-based practice family physicians should establish military and Army family practice content from studies describing those practices. Having established the content, individual practices, both civilian and military, could develop specific practices and practice styles based on a consensus of local needs and realities. Lastly, family physicians could also ascertain their continuing educational needs based on how their experiences and competence compared with the above specification of local practice content.

Studies describing the content of nonfederal family practice show that content varies regionally and adapts to geographic location, population characteristics, availability of other specialists, and local disease incidence.[2-9] Results of these studies also have indicated that findings from national studies cannot be used alone to develop local practices, nor can findings from regional studies be used to develop practices in other regions. Finally, the study results have shown that the practice content of residency-trained physicians differs from that of non–residency-trained physicians. None of the studies cited above, however, included federal physicians.

In a separate article,[10] we described the content of Army family practice in terms of patient and physician demographics, diagnostic and procedural content, and the similarities and differences among different geographic sites. The purpose of this report is to compare that description of Army family practice with a description of civilian family practice.

Methods

Data Collection

Data on the content of nonfederal family practice were obtained from the 1985 National Ambulatory Medical Care Survey (NAMCS). This well-known data set was collected on an annual basis by the National Center for Health Statistics during the years 1975 through 1981 and again in 1985. The 1985 NAMCS data were chosen because they included many of the same variables as the Army data and the 1985 data set was temporally closest to the Army's data. The comparison variables used in this analysis had the same defini-

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From the Department of Family Practice, Eisenhower Army Medical Center, Ft. Gordon, GA. (BWB), the Department of Family Medicine, University of Washington School of Medicine (LGH), and the Department of Health Services, School of Public Health, University of Washington (JLE), Seattle. Address reprint requests to B. Wayne Blount, MD, MPH, 2713 Boar's Head Road, Martinez, GA 30907.

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tions and had quality checks of their coding protocols. Although such similarities do not assure that all data were coded correctly, they reduce the opportunity for inaccurate data.

The methods used in the probability sampling of the NAMCS studies have been described previously.[9,11] There were 17,241 family practice and general practice visits in the 1985 data set. To capture this information NAMCS used the coding system of the *International Classification of Diseases, 9th edition, Clinical Modification* (ICD-9-CM).[12] Diagnoses might or might not have been confirmed diagnoses, and procedures were further classified as diagnostic or therapeutic. Although some ICD-9-CM codes are known to be less accurate than others (e.g., mental health problems), and some problems presented to family physicians are not included (e.g., child abuse), the classification system is commonly recognized and understood by practitioners and educators.

Army family practice content has been reported previously from 28,849 family practice encounters from the Army's Ambulatory Care Data Base Study (ACDBS) done in 1986 and 1987.[10] The method used in the ACDBS has been previously described.[13] Diagnoses were coded according to ICD-9-CM, and procedures were coded according to the *Physicians' Current Procedural Terminology*, 4th edition (CPT-4).[14]

To facilitate comparison of the data sets, both sets of diagnoses were recoded into the schema of diagnosis clusters, a well-known system that facilitates analysis by reducing the number of codes, variations, and idiosyncratic coding patterns.[6]

Family Practice Patients

Nonfederal and Army family practice patients were compared by age and sex. Because NAMCS statistics were based on multistage probability sampling that resulted in weighted estimates, standard errors of the variables are approximate, and statistical tests based on such approximate standard errors would be approximate, e.g., t-tests. Thus, confidence intervals were used to compare Army data with nonfederal data. Because the standard errors of Army data were not approximate, confidence intervals were calculated for mean patient age and the proportion of patients in each sex category. Then, NAMCS data were compared for fit within the Army data confidence intervals.

Comparison of Army with Nonfederal Practice Content

Because of NAMCS weighted estimates, confidence intervals were again used to compare visit durations and the frequency with which individual diagnosis clusters were seen. We were interested in the comparison of relative importance rather than of absolute importance, and thus we compared the relative rankings of the diagnosis clusters between Army and nonfederal data sets using the Kendall coefficient of concordance, measuring the level of agreement in which each case is one ranked cluster in a data set.

Results

Family Practice Patients

Table 1 presents patient data in both sectors for age and sex. The average patient in an Army family practice is a 26-year-old woman, whereas the average nonfederal family practice patient is a 40-year-old woman. Although both groups saw more female than male patients, Army family physicians saw a greater percentage of female patients. Neither nonfederal sector mean age nor percentages for both sex and age categories fall within the 95 percent confidence interval of Army mean age and percentages.

Family Practice Content

In Table 2 are the comparisons of NAMCS with Army visit duration. All comparisons were made by constructing 95 percent confidence intervals around the means of Army data and then determining the consistency of nonfederal sector (NAMCS) means to those intervals. There were no fits: Army family physicians spent on average 14 percent more time in direct interaction with their patients than did nonfederal physicians. Most of the time difference is in two intervals: 6 to 10 minutes and 11 to 15 minutes. The Army visit duration is largely grouped in the 11- to 15-minute interval, whereas the nonfederal visits are spread more evenly among the middle three intervals. Although 44.6 percent of the visits to nonfederal physicians lasted 10 minutes or less, only 15.3 percent of the visits to Army physicians were less than 10 minutes.

The final comparison is of the top 20 diagnosis clusters from each data set. To make this comparison, 28 clusters were found to capture the top 20 diagnoses for both groups, encompassing 74.6

Table 1. Demographic Characteristics (Percentages) of Army and Nonfederal Patients by Sex and Age.

Variable	Army (N=28,849)	Army 95 Percent Confidence Interval	NAMCS* (N=17,241)	Consistent
Sex				
Female	65.8	65.25 to 66.35	60.65	No
Male	34.2	33.65 to 34.75	39.35	No
Age (years)				
<17	33.5	32.95 to 34.05	18.0	No
17–44	47.4	46.8 to 48.0	40.0	No
45–64	15.1	14.7 to 15.5	22.6	No
65+	3.9	3.7 to 4.1	19.4	No
Mean	25.91	25.69 to 26.13	40.15	No

*Weighted estimate. NAMCS=National Ambulatory Medical Care Survey.

percent of all Army encounters and 65.1 percent of all NAMCS encounters. Table 3 displays the NAMCS percentage of each cluster beside the 95 percent confidence interval constructed around the Army percentage for that cluster. There are no consistencies found for any of the 28 diagnosis clusters. In only one case was there a fit between the data sets using the wider 99 percent confidence interval.

With sample sizes so large, confidence intervals are accordingly narrow. To compensate, Table 4 displays the same 28 clusters by their respective rankings within each data set. For example, the cluster acute upper respiratory tract infections is the most frequently seen diagnosis cluster in the NAMCS data set, but this cluster is ranked third in the Army data. Looking at each cluster individually, there are some relatively large differences. The Kendall coefficient of concordance measures the level of agreement between the two data sets on the relative rankings of the diagnosis clusters. The value of the Kendall coefficient for these rankings was 0.6280, which implies a moderate agreement in the rank ordering between the Army and NAMCS data.

Discussion

Patients

This study revealed that Army patients were younger than nonfederal patients even though the elderly were still represented in Army practice. Army family physicians, however, saw a higher proportion of female patients than did their civilian counterparts, perhaps explained by the Army's past staffing of soldier (male) clinics with nonfamily physicians and family clinics with family physicians. Nevertheless, neither Army nor nonfederal family physicians were limited in the age or sex of the patients they saw.

Practice Content

The analysis showed differences between the two groups in the list of the most frequent diagnosis clusters. The most frequent diagnoses included a higher percentage of the total encounters in the Army than in the nonfederal sector, 74 versus 63 percent. Army family physicians took care of more of their patients with fewer diagnoses. Although overall rankings showed some similarity between the two samples in the type of patient visits, only 12 of the top 20 clusters were the same in the two sectors.

Both data sets used primary diagnoses, precluding inflating the frequency of some diagnoses because of their more frequent inclusion as secondary diagnoses.[6] Recording only primary diagnoses, however, might decrease the representation of those diagnoses usually listed as secondary diagnoses, e.g., depression, heart failure, and chronic obstructive pulmonary disease.[15]

The most striking difference between the two samples was in the frequency of general medical examinations. This cluster was the most frequently seen cluster by Army family physicians, with 22.8 percent of encounters, but it ranked third in nonfederal practice, only 6.6 percent of encounters. The reasons for this threefold difference might include the requirement of regular physical examinations for active duty soldiers, the Army's temporally coincidental health promotion campaign, and the probability that Army physicians place greater emphasis on health promotion.

Table 2. Nonfederal and Army Family Physician Mean Time (Minutes) of Patient Visit Duration.

Variable	Army Mean (N=28,849)	95 Percent Confidence Interval (Army)	NAMCS Mean (N=17,241)	Consistent
Visit duration	16.38	16.28 to 16.48	14.41	No
Visit duration, by sex				
Female	16.51	16.38 to 16.65	14.59	No
Male	16.12	15.99 to 16.24	14.13	No
Visit duration, by age (years)				
<17	15.2	15.1 to 15.3	12.4	No
17–44	16.78	16.61 to 16.96	14.46	No
45–64	17.35	17.13 to 17.57	15.21	No
65+	17.62	17.4 to 17.84	15.25	No
Visit duration by percentage of total encounters within given time frame (minutes)				
1–5	4.1		9.3	
6-10	11.2		35.3	
11–15	61.6		32.6	
16–30	21.6		20.4	
31–60	1.4		2.4	
61+	0.2		0.1	

NAMCS=National Ambulatory Medical Survey.

One other possibility might be that the general medical examination has a high price elasticity of demand. If so, in the nonfederal sector, patients paying for this type of visit might consider a general medical examination or health promotion visit to be a luxury item. Such a consideration would decrease the frequency of such visits in the nonfederal sector.

Pregnancy care was the second of two obviously different cluster percentages (Army, 10.1 percent and nonfederal, 3.1 percent). Again, there are several possible explanations.

Perhaps there was a decline in the amount of pregnancy care delivered by nonfederal family physicians. Some 66 percent of nonfederal family physicians do not do obstetrics.[16] Conversely, Army family physicians are often required by their assignments to provide obstetric services and do not have the disincentive of malpractice premiums.

Another explanation might be the age difference in the patients of the two family practice sectors. With more patients and women in the reproductive years of 17 to 44 years, one would expect Army family physicians to have more pregnancy-related visits.

With more pregnancy care, Army physicians would be expected to, and do, provide more contraceptive care. Much contraceptive care is done during postpartum visits and usually by the physician who delivered the pregnancy care.

Nonfederal family physicians saw fewer pediatric patients than Army family physicians, which explains why Army physicians saw more of a typically pediatric diagnosis, such as otitis media.

There were several clusters that nonfederal family physicians saw noticeably more often. Three clusters — lacerations, contusions, and abrasions; sprains and strains; and fractures and dislocations — are easily explained by the method of care for these diagnoses in the Army. Such acute injuries are usually seen at decentralized soldier clinics or hospital emergency departments. These two areas of health care were not predominantly staffed by family physicians; thus, the Army family physicians did not encounter these injuries as frequently as their nonfederal counterparts.

Next were four diagnoses seen with greater frequency in the nonfederal sector, which occur more often as a population ages: hypertension, diabetes, degenerative joint disease, and ischemic heart disease. Nonfederal family physicians saw an older group of patients and saw geriatric patients at a sixfold higher frequency than Army family physicians. Because of the age of their patients, it is not surprising that nonfederal physicians treated more chronic illnesses. Add to this younger-aged

Table 3. Statistical Comparison of Top 20 Diagnosis Clusters for Both Army and Nonfederal Family Physicians (Percentage of Diagnoses).

Diagnosis Cluster	Army	Army 95% Confidence Interval	NAMCS	Consistent
General medical examination	22.8	22.3 to 23.1	6.6	No
Pregnancy care and abortion	10.1	9.8 to 10.5	3.1	No
Acute upper respiratory tract infection	7.8	7.5 to 8.1	8.8	No
Otitis media	5.5	5.3 to 5.8	2.7	No
Hypertension	3.7	3.5 to 3.9	7.1	No
Acute lower respiratory tract infection	1.9	1.8 to 1.98	3.5	No
Nonfungal infection of skin, subcutaneous tissue	1.6	1.53 to 1.67	1.3	No
Low back pain and syndromes	1.6	1.53 to 1.67	1.1	No
Vaginitis, vulvitis, and cervicitis	1.6	1.53 to 1.67	1.0	No
Fibrositis, myalgia, and arthralgia	1.4	1.34 to 1.46	1.15	No*
Abdominal pain	1.3	1.24 to 1.36	0.4	No
Headaches	1.2	1.1 to 1.3	1.0	No
Lacerations, contusions, and abrasions	1.2	1.1 to 1.3	3.3	No
Dermatitis, eczema	1.2	1.1 to 1.3	1.4	No
Diabetes mellitus	1.1	0.99 to 1.2	2.8	No
Asthma	1.1	0.99 to 1.2	0.94	No
Viral warts	1.1	0.99 to 1.2	0.8	No
Depression, anxiety, and neuroses	1.1	0.99 to 1.2	1.8	No
Contraception	1.1	0.99 to 1.2	0.6	No
Urinary tract infections	1.1	0.99 to 1.2	1.8	No
Sprains, strains	0.9	0.79 to 1.0	3.4	No
Degenerative joint disease	0.6	0.56 to 0.65	2.1	No
Sinusitis	1.0	0.89 to 1.11	1.9	No
Ischemic heart disease	0.6	0.56 to 0.65	1.5	No
Peptic diseases	0.3	0.24 to 0.36	1.3	No
Fractures and dislocations	0.4	0.37 to 0.43	1.3	No
Diarrhea, gastroenteritis	1.0	0.89 to 1.11	1.2	No
Obesity	0.3	0.24 to 0.36	1.2	No

*NAMCS percentage for this diagnosis was within the 99% confidence interval around the Army percentage. NAMCS=National Ambulatory Medical Care Survey.

patient population the Army policy of discharging any soldier with insulin-dependent diabetes, and it is understandable why Army physicians saw fewer patients with chronic illness.

Obesity was also seen more frequently by nonfederal physicians. This difference might reflect the Army's emphasis on fitness. Soldiers are required to meet semiannual physical fitness and weight requirements. If they do not meet these requirements, they can be discharged, thus lowering the number of obese people in the Army. The lifestyle required to maintain those standards could carry over both to soldier families and into retirement years, decreasing the likelihood of obesity. Also possible is that Army physicians did not, or were reluctant to, look for obesity as often because of its potentially adverse effect on the patient's career.

In this study depression was recorded less frequently by Army physicians. This discrepancy is not readily explained unless depression carries with it a stigma that Army physicians do not wish to attach to their patients. Depression is not an illness that requires discharge from the Army, but there are sensitive jobs to which a depressed person cannot be assigned. Of course, depression might occur less often in military personnel and their dependents because they have available support or less concern about job loss.

The other 13 clusters in Table 4 have statistically significant differences, ranging from 0.1 percentage point to 1.0. These differences are

Table 4. Comparison of Top 20 Diagnosis Clusters for Both Army and Nonfederal Family Physicians by Rank and Percentage.

Diagnosis Cluster	Rank		Percent	
	NAMCS	Army	NAMCS	Army
Acute upper respiratory tract infection	1	3	8.8	7.8
Hypertension	2	5	7.1	3.7
General medical examination	3	1	6.6	22.8
Acute lower respiratory tract infection	4	6	3.5	1.9
Acute sprains and strains	5	24	3.4	0.9
Lacerations, contusions, and abrasions	6	13	3.3	1.2
Pregnancy care and abortion	7	2	3.1	10.1
Diabetes mellitus	8	15	2.8	1.1
Otitis media	9	4	2.7	5.5
Degenerative joint disease	10	29	2.1	0.6
Sinusitis	11	23	1.9	1.0
Urinary tract infections	12	20	1.8	1.1
Depression, anxiety, and neuroses	13	18	1.8	1.1
Ischemic heart disease	14	31	1.5	0.6
Dermatitis and eczema	15	14	1.4	1.2
Peptic diseases	16	39	1.3	0.3
Nonfungal infection of skin, subcutaneous tissue	17	7	1.3	1.6
All fractures and dislocations	18	37	1.3	0.4
Diarrhea and gastroenteritis	19	21	1.2	1.0
Obesity	20	42	1.2	0.3
Low back pain and syndromes	22	8	1.1	1.6
Vaginitis, vulvitis, and cervicitis	26	9	1.0	1.6
Fibrositis, myalgia, and arthralgia	21	10	1.2	1.4
Abdominal pain	47	11	0.4	1.3
Headaches	25	12	1.0	1.2
Asthma	27	13	0.9	1.1
Viral warts	28	14	0.8	1.1
Contraception	36	15	0.6	1.1

NAMCS=National Ambulatory Medical Care Survey.

not important for clinical, policy, or planning purposes.

This analysis of the top 20 diagnosis clusters revealed the breadth in family practice for both Army and nonfederal physicians. As in the nonfederal sector, Army family practice is not a homogeneous discipline.[6] Nonfederal and Army family physicians encounter many of the same problems in their top 20 diagnoses but do so in different proportions, and the patients and diagnoses they encounter vary regionally.[6,10]

Family physicians are competent to the extent that they can manage the problems patients bring to them. Studies such as this one do not define the entire range of problems a family physician will encounter; rather they emphasize the common illnesses seen in the clinic. The relatively rare but life-threatening conditions that arise episodically do not appear in descriptions of most frequent diagnoses. Nevertheless, family physicians must still be able to handle such conditions, and family physicians cannot neglect training in them.

Neither can family physicians ignore inpatient care. As shown by Rosenblatt, et al.,[6] more than one-fourth of a nonfederal family physician's workday is spent in an inpatient setting. There are no good extant data on Army family practice inpatient content. From nonfederal data, one could surmise that the overlap of content between inpatient and outpatient settings would not be great.[6]

A strength in this study was that in using the same coding system in both data sets, it allowed for comparable conversion of the diagnoses into the diagnosis clusters and markedly enhanced the ability to make comparisons between the two data sets.

Limitations include problems with the two sampling methods. NAMCS used a probability sampling method, but achieved only a 70 percent response rate. ACDBS used a nonprobability sampling method, which is not as representative as a probability method.

NAMCS also lumped together family and general practice physicians. Army data included only family physicians because Army general physicians are almost always physicians who have completed their internship and are waiting to be selected for a residency. They generally have between 1 and 3 years experience. Nonfederal general physicians are usually older and have practiced for many years without the intention to complete a residency. It remains unknown whether the differences between the two data sets would endure if NAMCS had used only family physicians.

This study does not address more subtle and less measurable aspects of physician behavior, such as counseling and education.

Sample sizes in both data sets are so large that statistical tests were likely to show even very small differences to be significant. Such statistical significance might not have clinical or policy-making importance. Interpretation of results necessitates consideration of meaningful differences, not just statistical differences.

With these caveats, this study has implications for Army family physicians, who can review this profile of ambulatory family practice in the Army and use it to assess their experiences compared with the observed frequency of diagnoses in this study. For example, with the second most common presenting diagnosis being pregnancy, these physicians should be prepared to provide antenatal and obstetric care.

This study implies that Army family physicians must be able to provide skilled obstetric care and general medical examinations, and they must be able to treat acute upper respiratory tract infections, otitis media, and hypertension. Knowing these areas well might enable Army family physicians to serve 50 percent of their clinic encounters. Knowing how to treat the other diagnoses in the most frequent clusters will enable family physicians to take care of 75 percent of future encounters.

Because such a major proportion of encounters falls within the general medical examination cluster, Army family physicians must be firmly grounded in the basic skills of history taking and physical examination, for this cluster extends across all patient age groups and both sexes. There might be evidence to suggest that Army family physicians are not as confident in those areas as they should be, however. A previous analysis of the difficult-to-diagnose problems indicated that some diagnoses reasonably made as the result of a physical examination were not being made.[10] This finding does not necessarily imply that Army family physicians are not competent in physical examinations, but perhaps they lack some confidence in those abilities.

A previous analysis of difficult-to-diagnose problems found that family physicians were not doing simple, in-office procedures, such as microscopic urinalyses and tonometry.[10] Perhaps these simple diagnoses were awaiting results from technicians within the practice. Practice planners, administrators, and physicians might want to assess the effect this finding has on cost, patient satisfaction, and outcomes.

Certainly, the 20 most frequent diagnoses, as well as those most difficult to diagnose, require that Army family physicians are competent in their management. Several diagnoses that appear with the highest frequency in the Army are either preventable or have preventable complications, e.g., hypertension, low back pain, diabetes, and asthma. These are diagnoses for which lifestyle changes and patient compliance are important aspects of management success. A related issue is the probability that many of the general medical examinations were performed as part of a health promotion visit. Therefore, Army family physicians must be knowledgeable in advising, educating, and counseling patients about risk factors, disease prevention, and lifestyle changes.

Geriatrics is not a large part of Army family practice. Even in the nonfederal sector, which encounters more geriatric patients, it has been suggested that the time placed on training in geriatrics be reassessed.[6] Because Army family physicians see fewer geriatric patients, it might also be prudent for Army family physicians to review their training in geriatrics.

Army family physicians usually move every 3 to 4 years. The results previously published manifested the variation in practice content among different Army sites.[10] Ideally, Army family physicians would be flexible enough to be assigned to

any site and have the skills and knowledge needed by the patients in those locales. With the knowledge of where one's assignment will be and the results of such studies as this, family physicians could compare their present experiences, skills, and knowledge areas with the needs of the practice and patients at that next assignment. This comparison might indicate to the family physician those weak areas where additional training would be helpful. For example, family physicians who have been assigned to an outpatient clinic for the last 2 years and then go to a full-service hospital might take time to refresh their skills in obstetrics and inpatient medicine. Such experiences are already offered in some Army facilities.

Summary

This study performed a secondary analysis by bringing together two national data sets and comparing similar variables to determine any differences for which there would be implications for planning for practices and practice styles. We found that neither nonfederal nor Army family practice was a homogeneous discipline. Both sectors encounter remarkable breadth in their outpatient care, determined by the physician, patient demographics, disease incidence, practice characteristics, and other available specialists.

Differences were noted in the specific frequency of diagnoses and patient age. There was, however, an identifiable pattern of morbidity that Army family physicians encountered in outpatient practice. This pattern could help provide guidelines for planning for practices and practice styles.

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