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A Retrospective, Epidemiological Review of Type 2 Diabetes Mellitus in a Military Population

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Abstract

Objective: Examine incidence rates of Type 2 Diabetes Mellitus (T2DM) in a military population over a ten-year period and whether demographic characteristics differ within the same population.

Methods: Diagnostic data and demographic variables from 23,821 active duty service members between 2006 and 2015 were analyzed from the Defense Medical Epidemiological Database.

Results: The incidence rates of new onset cases ranged from .22 (per 1,000 service members) in 2015 to a high of 1.46 (per 1,000 service members) in 2006 for T2DM without complications and .00 (per 1,000 service members) in 2007 to a high of .29 (per 1,000 service members) in 2015 for T2DM with complications. The one-sample chi-square test showed the observed, and expected frequencies differed significantly for all demographic variables tested.

Conclusions: Although there was a significant increase in the diagnosis of T2DM with complications in 2015, the overall downtrend is similar to that of the general US population. Older age and higher rank were more likely to be associated with the diagnosis of T2DM with and without complications, again suggestive of similar trends with the general US population. Continued efforts towards early diagnosis and treatment of these service members are needed to address this problem regarding military readiness.

Keywords: type 2 diabetes mellitus; active duty military; incidence rates

Introduction

Prevalence of Type 2 Diabetes Mellitus (T2DM) has increased worldwide, affecting more than 451 million people.[1] The prevalence rate within the US general population was 9.4%.[2] In contrast, from 2006-2010, the estimated prevalence of diabetes within the military was 3%.[3] The National Diabetes Statistics Report also estimated 1.5 million (6.7 cases per 1,000 persons) new cases of adult diabetes in 2015. Previous research has reported lower comparable incidence rates of T2DM in the military. A report from the Army Medical Surveillance Activity using the Defense Medical Surveillance System found incidence rates were 1.99 (Navy), 1.82 (Air Force), 1.67 (Army), and 0.56 (Marines) per 1,000 person-years.[4] Another report using the Defense Medical Surveillance System reviewed the incidence of diabetes in the military from 2008-2015 to be less than 1% overall with an incidence rate of 0.96 (Army), 0.87 (Navy), 0.58 (Air Force), and 0.20 (Marines) per 1,000 person-years for T2DM.[5]

The diagnosis of T2DM presents a unique readiness challenge to the US military as they are involved in global operations to austere environments with limited access to medical facilities. Readiness means the ability of military forces to fight and meet the demands of assigned missions.[6] Those in the US military need to maintain optimal physical readiness and be ready to deploy anywhere in the world at any time.[7]

Previous literature has shown that military forces have deployed with T2DM. As demonstrated in a recent analysis, 366 service members with T2DM were safely

deployed from 2004 to 2014.[8] From baseline to after deployment, overall glycated hemoglobin (A1C) improved slightly (6.7% to 6.5%), and body mass index demonstrated a statistically significant decline from 28.3 kg/m2 to 27.7 kg/m2 ($p < 0.0001$). Service members deploying with T2DM may create potential logistical challenges to the US Armed Forces, along with an increased financial strain on an already limited budget. Per a Congressional Budget Office report from 2014, the Department of Defense (DoD) spent $52 billion on health care or 10% of the overall DoD budget. Over a 12-year period (2000-2012), DoD spending on healthcare and healthcare-related costs had increased by 130%.[9]

Table 1. Demographics for active duty service members with type 2 diabetes with and without complications.

Table 1
Demographics for Active Duty Service Members with Type 2 Diabetes With and Without Complications

Demographic	Without Complications	Observed vs. Expected	With Complications	Observed vs. Expected
Total (*N*=23,821)	**19,064**		**4,757**	
Gender*	***n(%)***		***n(%)***	
Male[a]	16,586 (87.0%)	2.0% (1.02)	4,207 (88.4%)	4.0% (1.04)
Female[b]	2,479 (13.0%)	-13.0% (0.87)	550 (11.6%)	-13.0% (0.77)
Age at Diagnosis (Categories)*				
< 20[b]	218 (1.1%)	-81.0% (0.19)	78 (1.6%)	-73.0% (0.27)
20-24[b]	1,574 (8.3%)	-74.0% (0.26)	430 (9.0%)	-72.0% (0.28)
25-29[b]	2,087 (10.9%)	-54.0% (0.46)	510 (10.7%)	-55.0% (0.45)
30-34[b]	2,345 (12.3%)	-23.0% (0.77)	546 (11.5%)	-28.0% (0.72)
35-39[a]	4,027 (21.1%)	92.0% (1.92)	1,000 (21.0%)	91.0% (1.91)
≥40[a]	8,813 (46.2%)	320.0% (4.20)	2,193 (46.1%)	391.0% (4.91)
Marital Status*				
Married[a]	14,546 (76.3%)	27.0% (1.27)	3,550 (74.6%)	24.0% (1.24)
Other[b]	4,519 (23.7%)	-41.0% (0.59)	1,207 (25.4%)	-37.0% (0.63)
Race/Ethnicity*				
White[b]	9,250 (48.3%)	-19.0% (0.81)	2,119 (44.5%)	-26.0% (0.74)
Black[a]	6,138 (32.2%)	90% (1.90)	1,868 (39.2%)	131.0% (2.31)
Other[b]	3,677(19.3%)	-16.0% (0.84)	770 (16.2%)	-30.0% (0.70)
Service Component*				
Army[a]	8,790 (46.1%)	24.0% (1.24)	2,387 (50%)	35.0% (1.35)
Air Force[b]	3,709 (19.5%)	-21.0% (0.79)	1,017 (21%)	-14.0% (0.86)
Navy[a]	5,525 (28.9%)	22.0% (1.22)	1,144 (24%)	2.0% (1.02)
Marine Corps[b]	1,041 (5.5%)	-62.0% (0.38)	209 (4%)	-70.0% (0.30)
Military Pay Grade*				
E-1 to E-4[b]	3,279 (17.2%)	-60.0% (0.40)	933 (19.6%)	-54.0% (0.46)
E-5 to E-9[a]	12,727 (66.8%)	71.0% (1.71)	3,188 (67.0%)	72.0% (1.72)
O-1/WO1 to O-3/CW3[b]	1,026 (5.4%)	-51.0% (0.49)	200 (4.2%)	-62.0% (0.38)
O-4/CW4 to O-6/CW5[a]	2,031 (10.7%)	52.0% (1.52)	435 (9.1%)	31.0% (1.31)

Note: Military composition percentages provided by the DMED. * indicates significance at $p < .001$. [a] denotes more cases than expected. [b] denotes fewer cases than expected. E-1 to E-4 and E-5 to E-9: represents enlisted. O-1(WO1) to O-3 (CW3) and O-4 (CW4) to O-6 (CW5): represents officers. PTSD = posttraumatic stress disorder. Observed vs. Expected counts represent the percentage of representation of cases ([O/E*100]-100) in relation to the expected percentage of cases, by demographic.

Many health risks and comorbid complications exist with T2DM, including ketoacidosis, hypo/hyperglycemia, cardiovascular disease, kidney disease, foot ulcers, amputations, visual impairment, depression, and anxiety.[10,11] From 2012 to 2017, the direct and indirect cost of diabetes-related care in the US increased by 26% to a staggering $327 billion.[12] Indirect costs were responsible for $89.9 billion and had a negative impact through 1) absenteeism; 2) reduced work productivity; 3) reduced productivity for those not in the workforce; 4) inability to work because of disease-related disability; and 5) premature deaths related to diabetes. Within the military health system, a study estimated the cost of diabetes care to be $1,684 per year, with a total cost of over $124 million.[13]

While previous studies have compared diabetes in the military to the general population, there are few studies examining trends of newly diagnosed service members.[3] The available studies are outdated and do not compare rates of T2DM within the military population across different age groups, enlisted or officer, sex, and race amongst active duty military members. The purpose of this study was to examine incidence rates of T2DM in a military population over a ten-year period and whether demographic characteristics differ within the same population. We hypothesize there will be a continued increase in incidence rates of T2DM and differences within demographic variables over the ten-year period.

Methods

The Institutional Review Board at the 59th Medical Wing, Wilford Hall Medical Center, reviewed this study and deemed it exempt research because the data provided by Defense Medical Epidemiological Database (DMED) is de-identified and does not allow for linking back to individuals. This epidemiological study is a retrospective comparison trend analysis looking at rates of T2DM with and without complications based on initial diagnosis amongst the US military service components from 2006-2015, comparing rates amongst various age groups, military status (enlisted or officers), marital status, sex, and race. Data were derived from the Defense Medical Surveillance System stored within the DMED from 2006-2015. The DoD validates all the data within DMED and reports sex, age, race, military pay grade, marital status, and service component. The DMED tracks medical events and disease data pertinent to US military service members and categorizes data by hospitalization, ambulatory status, reportable events data, and demographics, as well as provides International Classification of Disorders (ICD) codes 9 for different medical diagnoses. Type 2 diabetes mellitus diagnoses within the first occurrence and ambulatory visits category (i.e., the first T2DM diagnosis documented within the electronic medical health record) were examined to ensure incidence rates were not overestimated. The data extracted from DMED only allow comparisons at the population level due to data being group-level counts.

Figure 1. Average incidence rates of type 2 diabetes without and with complications from 2006 - 2015.

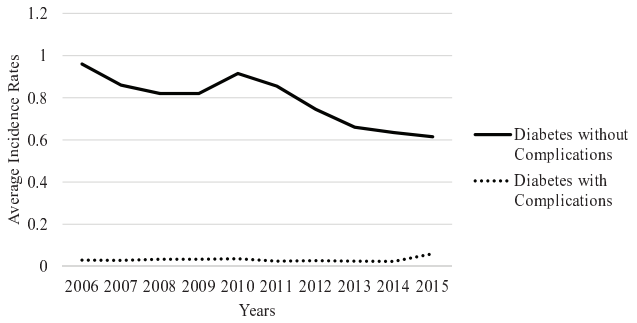
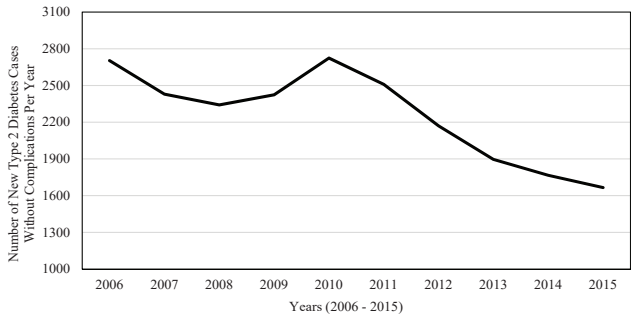


Figure 2. Counts of initial diagnoses of type 2 diabetes without complications counts by year, 2006 - 2015 (N=19,064).



Data were accessed on January 28, 2019, and were only screened for the following initial ICD-9 diagnoses: Diabetes Mellitus without mention of complication Type 2 (250.00 & 250.02), diabetes with ketoacidosis Type 2 (250.10), Diabetes with hyperosmolarity type 2 (250.20), Diabetes with other coma Type 2 (250.30), Diabetes with renal manifestations Type 2 (250.40), diabetes with ophthalmic manifestations Type 2 (250.50), Diabetes with neurologic manifestations Type 2 (250.60), Diabetes with peripheral circulatory disorders Type 2 (250.70), and Diabetes with other specified manifestations Type 2 (250.80). All Type 2 with complications were combined to assess for total presence. Due to the limitations in DMED, it is unclear where a diagnosis of Type 2 Diabetes was made (e.g., hospital admittance, routine annual physical or hospital appointment).

Statistical Analysis: T2DM incidence within each available demographic (e.g., sex, age, marital status, military pay grade, the branch of service, and race) were examined. Initially, the nonparametric one-sample chi-square goodness of fit test was used to determine over or under-representation of demographic subgroups of diabetes diagnoses relative to the hypothesized distribution within the entire military. The hypothesized distributions for each military composition variable used to derive expected values for each test were provided with the DMED data at the time of extraction. The diagnosed counts of diabetes within each composition variable was compared to military population distributions drawn from DMED to derive the observed-expected ratios. Follow-on chi-square analyses were conducted to assess for between-group differences amongst T2DM with and without complications. The mean population of service members each year in the DMED data was 1,375,484, with a range from 1,302,810 service members in the active force in 2015 to 1,418,896 service members in the active force in 2010.

Results

Between 2006 and 2015, 23,821 active duty service members received an initial diagnosis of T2DM (Table 1). The incidence rates in the U.S. military ranged from 0.22 (per 1,000) in 2015 to a high of 1.46 (per 1,000) in 2006 for T2DM without complications and 0.00 (per 1,000) in 2007 to a high of 0.29 (per 1,000) in 2015 for T2DM with complications (Figure 1).

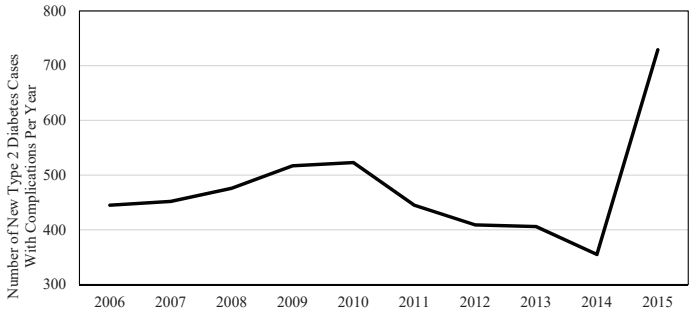
Type 2 Diabetes without Complications: Between 2006 and 2015, 19,064 active duty service members were diagnosed with T2DM without complications (Figure 2). In the present sample, T2DM without complications was found to significantly differ in terms of observed distributions and expected distributions for sex X2 (1, 19,065)=59.64, p<0.001, age, X2 (5, 19,065) =28,909.02, p<0.001; marital status, X2 (1, 19,065) =2,109.77, p<0.001, race, X2 (2, 19,065)=3,122.58, p<0.001, service branch, X2 (3, 19,065)=1,917.46, p<0.001, and pay grade, X2 (3, 19,065)=7,643.25, p<0.001 (Table 2). In the present sample, those most often diagnosed with

Table 2. Summary of demographics counts by age from 2001 to 2017 for type 2 diabetes without complications.

	Age (Years)					
	< 20	20 – 24	25 – 29	30 – 34	35 – 39	≥ 40
Gender						
Male	55	282	313	344	668	1501
Female	11	64	74	68	64	160
Marital Status						
Married	12	138	236	316	593	1380
Not Married	54	208	151	96	139	281
Race						
White	45	241	240	194	313	633
Black	13	83	107	160	303	704
Other	8	22	40	58	116	324
Service Branch						
Army	22	163	196	206	343	904
Air Force	15	80	80	81	158	345
Navy	9	56	85	105	211	372
Marine Corps	20	47	26	20	20	40
Military Pay Grade						
E-1 to E-4	66	304	175	81	43	52
E-5 to E-9	0	36	183	293	612	1249
O-1 to O-3 (W1 – W3)	0	6	29	30	44	54
O-4 to O-6 (W4 – W5)	0	0	0	8	32	306

T2DM without complications were married (76.3%), in the enlisted pay grade of E-5 to E-9 (66.8%), white (48.3%), males (87.0%), in the Army (46.1%), and were 40 years of age or older (46.2%). The average incidence rate over the study period was 0.79 (per 1,000).

Figure 3. Counts of initial diagnoses of type 2 diabetes with complications by year, 2006 - 2015 (N=4,757).



Type 2 Diabetes with Complications: Between 2006 and 2015, 4,757 active duty service members were diagnosed with T2DM with complications (Figure 3). In the present sample, T2DM with complications was collected using the collapsed variable to indicate any complications associated with T2DM. T2DM with complications was found to significantly differ in terms of observed distributions and expected distributions for sex, X2 (1, 4,757)=44.10, p<0.001, age, X2 (5, 4,757)=7,107.10, p<0.001; marital status, X2 (1, 4,757)=424.06, p<0.001, race, X2 (2, 4,757)=1,672.99, p<0.001, service branch, X2 (3, 4,757)=572.97, p<0.001, and pay grade, X2 (3, 4,756)=1,793.85, p<0.001 (Table 3). In the present sample, those most often diagnosed with T2DM with complications were married (74.6%), in the enlisted pay grade of E-5 to E-9 (67.0%), white (44.5%), males (88.4%), in the Army (50.0%), and were 40 years of age or older (46.1%). The average incidence rate over the study period was 0.03 (per 1,000).

Discussion

The incidence rates of T2DM has increased in the US, estimating a prevalence of 8-12% of the population in recent years and an incidence rate of approximately 7 per 1,000 persons.[12,17,18] Factors contributing to this include obesity and metabolic syndrome, which continue to be more prevalent in the US. The results of this study found rates of T2DM with and without complications that are lower than civilian studies and were consistent with previous military studies.[4,5] The low incidence rates may provide insight into a benefit of the military culture. Previous research has reported that low incidence of T2DM in the military may be a byproduct of the promotion and emphasis of weight control, exercise, and physical activities.[19]

It is unclear why there was a slight increase in the incidence rate of T2DM patients from 2009 to 2010 and a decreasing trend from 2010 to 2015. A potential confounder for the slight increase could be due to the growth of the general military population, which peaked in 2010. In contrast, the large-scale reduction in forces that started in 2012 may partially explain the decrease in incidence of T2DM from 2010 to 2015.[20]

T2DM was more commonly diagnosed in individuals 40 years and older, similar to patterns in the general US population, which currently estimates incidence rates in adults 45-64 years old to be 10.9 per 1,000 adults and those 65 years and older to be 9.4 per 1,000 adults.[21] Similarly, the observed incidence rates of T2DM were more common in higher non-commissioned ranks E5 to E9, as a promotion to higher ranks is typically commensurate with time, merit, and age. Finally, when comparing rates between enlisted members and commissioned officers irrespective of age, there were similar numbers for junior enlisted (E-1 – E-4) and junior officers (O-1 – O-3). The same trend was similar for senior enlisted (E-5 – E-9) and senior officers. The higher rate of T2DM in members in the rank of E1-E-4 as compared to officers in the rank of O-4/CW4 to O-6/CW5 may be confounded by differences of socioeconomic classes and the level of education between these two groups. There is also a disproportionate amount of enlisted to commissioned officers in the overall Armed Forces as the observed-to-expected ratios are comparable. As of July

Table 3. Summary of demographics counts by age from 2001 to 2017 for type 2 diabetes with complications.

	Age (years)					
	< 20	20 – 24	25 – 29	30 – 34	35 – 39	≥ 40
Gender						
Male	149	1,227	1,852	2,241	4,340	9,200
Female	64	405	459	439	481	866
Marital Status						
Married	28	727	1,547	2,056	3,928	8,525
Not Married	185	905	764	624	893	1,541
Race						
White	136	1,078	1,301	1,282	2,177	4,497
Black	51	349	631	877	1,790	3,416
Other	26	205	379	521	854	2,153
Service Branch						
Army	84	729	1,065	1,188	2,079	4,890
Air Force	27	332	443	537	990	2,037
Navy	62	364	601	813	1,558	2,875
Marine Corps	40	207	202	142	194	264
Military Pay Grade						
E-1 to E-4	213	1,368	944	478	336	270
E-5 to E-9	0	224	1,215	1,952	4,015	7,365
O-1 to O-3 (W1 – W3)	0	40	152	193	256	462
O-4 to O-6 (W4 – W5)	0	0	0	57	212	1,969

2019, there were 1,085,107 enlisted personnel as compared to only 234,216 officers across the four branches (Air Force, Army, Marines, and Navy).[22]

The differences between sex and ethnicity differences seen in the military population were similar to those trends seen in the general US population. Although men typically had a higher incidence of T2DM, there was a lower observed than expected incidence of T2DM in the military women. These trends could be due to more athletic women joining and remaining in the US military. The differences in races may be accounted for by the more predominant overall number of white service members than black service members as the observed-to-expected ratio of black service members was much greater than the observed-to-expected ratio of white service members. Finally, of note, the incidence of married military members with T2DM was larger than expected and more extensive compared to those unmarried. Potential factors to explain these results may be an older age population or having less free time to spend on self-care in the married group.

Spending on healthcare related to diabetes mellitus and its complications has increased substantially and poses a significant challenge to the US. The average health care expenditure attributed to patients with diabetes in 2017 was estimated to be $6,675 and $13,239 per patient aged under and over 65, respectively.[13] Even though a new diagnosis of T2DM does not disqualify an active duty member from retaining their job, these members are required to undergo additional medical visits to ensure their diabetes is well controlled and does not interfere with their primary job or deployability. This likely adds to the average healthcare expenditure for the overall treatment of these patients.

Between 2006 and 2015, a small number of the US military were diagnosed with T2DM. Contrary to our hypothesis, however, the incidence rates of T2DM appears to be gradually decreasing during this time, although there was an increase in those with a history of complications in 2015. Knowing that T2DM typically presents in more experienced and high ranking members, it will be a continued burden upon the US military that needs to be addressed. Further studies analyzing more recent trends and the incidence rates of both T2DM and Type 1 diabetes mellitus would be required to determine the full extent of diabetes on military readiness.

References

1. Cho N, Shaw J, Karuranga S, Huang Y, da Rocha Fernandes J, Ohlrogge A, Malanda B. IDF diabetes atlas: global estimates of diabetes prevalence for 2017 and projections for 2045. *Diabetes Res and Clin Pract*. 2018;138:271-281.
2. National Center for Chronic Disease Prevention and Health Promotion. National diabetes statistics report, 2017: estimates of diabetes and its burden in the United States. 2017. https://www.cdc.gov/diabetes/pdfs/data/statistics/national-diabetes-statistics-report.pdf.
3. Chao SY, Zarzabal LA, Walker SM, et al. Estimating diabetes prevalence in the Military Health System population from 2006 to 2010. *Mil Med*. 2013;178(9):986-93.
4. Army Medical Surveillance Activity. Incidence of diabetes mellitus among active duty service members, US Armed Services 1998. *MSMR*.1998;5(8):7-9.
5. Williams V, Stahlman S, Hu Z. Diabetes mellitus, active component, US Armed Forces, 2008-2015. *MSMR*. 2017;24(1):8-11.
6. D'Angelo MR, Seibert D., Wanzer L, et al. Operational readiness: redesigning advanced practice registered nurse (APRN) curriculum for an evolving battlefield. *Mil Med*. 2019;184(3-4):e156-e162.
7. Friedl KE, Knapik JJ, Hakkinen K, et al. Perspectives on aerobic and strength influences on military physical readiness. *J Strength Cond Res*. 2015;29:S10-23.
8. Folaron I, True MW, Wardian JL, et al. Effect of military deployment on diabetes mellitus in Air Force personnel. *Mil Med*. 2018;183(11-12):e603-e609.
9. *Approaches to Reducing Federal Spending on Military Health Care: Actual and Projected Costs for Military Health Care as a Share of DoD's Base Budget, 2000 to 2028*. Washington, DC: Congress of the United States; 2014.
10. Ducat L, Philipson LH, Anderson BJ. The mental health comorbidities of diabetes. *JAMA*. 2014;312(7):691-2.
11. Li R, Bilik D, Brown MB, Zhang P, Ettner SL, et al. Medical costs associated with type 2 diabetes complications and comorbidities. *Am J Manag Care*. 2013;19(5):421-30.

12. American Diabetes Association. Economic costs of diabetes in the US in 2017. *Diabetes Care*. 2013;41(5):917-28.

13. Dall TM, Zhang Y, Chen YJ, et al. Cost associated with being overweight and with obesity, high alcohol consumption, and tobacco use within the military health system's TRICARE prime-enrolled population. *Am J of Health Promot*. 2007;22(2):120-39.

14. Judkins J, Moore B, Collette T, Hale W, Peterson A, Morissette S. Incidence rates of posttraumatic stress disorder over a 17-year period in active duty military service members. *J Traumatic Stress*. 2020;00:1-13.

15. Moore B, Hale W, Nabity P, Koehn T, McGeary D, Peterson A. A retrospective, epidemiological review of hemiplegic migraines in a military population. *Mil Med*.2019;184:781-787.

16. Moore B, Moring J, Hale W, Peterson A. Incidence rates of tinnitus in active duty military service members between 2001 and 2015. *Am J of Aud*. 2019;28:866-876.

17. Caspard H, Jabbour S, Hammar N, Fenici P, Sheehan J, Kosiborod M. Recent trends in the prevalence of type 2 diabetes and the association with abdominal obesity lead to growing health disparities in the USA: an analysis of the NHANES surveys from 1999 to 2014. *Diabetes Obes Metab*. 2018;20(3):667-71.

18. Geiss LS, Wang J, Cheng YJ, et al. Prevalence and incidence trends for diagnosed diabetes among adults aged 20 to 79 years, United States, 1980-2012. *JAMA*. 2014;312(12):1218-26.

19. Gorham ED, Barrett-Connor E., Highfill-McRoy RM et al. Incidence of insulin-requiring diabetes in the US military. *Diabetologia*. 2009;52:2087-2091.

20. Lytell MC, Kuhn K, Haddard A et al. *Force drawdowns and demographic diversity: investigating the impact of force reductions on the demographic diversity of the US military*. Santa Monica, CA: RAND Corporation; 2015.

21. Bullard KM, Cowie CC, Lessem SE, et al. Prevalence of diagnosed diabetes in adults by diabetes type—United States, 2016. *Morb and Mort Weekly Rep*. 2018;67:359-61.

22. Active Duty Military Personnel by Rank/Grade. DoD personnel, Workforce Reports and publications website. https://www.dmdc.osd.mil/appj/dwp/dwp_reports.jsp. Updated March 1, 2019. Accessed September 26, 2019.

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