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Health care utilization among children with chronic conditions in military families

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ABSTRACT

Background: Studies have examined utilization of health care services by civilian children with chronic conditions but not utilization among child dependents of military personnel.
Objective: To identify children with chronic conditions among military members and retirees and examine their health care utilization and its association with type of condition.
Methods: We derived our sample from child dependents ages birth to 18 years of military personnel with health care enrollment in FY2011. We defined chronic conditions based on diagnoses and repeated specialty care visits. We accrued one year of health care utilization for each child starting with the date of first diagnosis that qualified (i.e., 2 + visits). Health care utilization measures were any inpatient stay; number of outpatient visits (excluding emergency department [ED] visits), ED visits, and number of psychotropic and non-psychotropic prescriptions.
Results: Conditions with the highest prevalence were ADHD/conduct disorders (41.2%), other behavioral health (BH) disorders (30.4%), asthma (25.3%) and arthritis (23.8%). Boys and children ages 6–18 were more likely to have BH conditions. Twelve percent had inpatient stays, 63% used the ED, and mean ED visits was 4.6. The mean outpatient visits was 27.9. Utilization was consistently higher for children with both BH and physical health (PH) conditions, children under age 5 (except for number of psychotropic prescriptions), and those enrolled in the military's Extended Health Care Options (ECHO) program.
Conclusions: Prevalence and utilization findings provide data for future service planning and highlight subgroups of children with chronic conditions who may need better access to supportive military programs.

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Introduction

Although large scale studies have examined the utilization of health care services by civilian children with disabilities, chronic conditions, and special health care needs,[1,2] few studies have examined these patterns among child dependents of military personnel. Almost 2 million children and youth are military-connected. Williams and colleagues[3] estimated that 23% of children in the military's health care program for active duty members (TRICARE Prime) were children with special health care needs. These children had significantly more outpatient visits, hospital admissions and days in the hospital than children without special health care needs.

The health of children and family members of military personnel is important to the Armed Services and the medical services and health policy communities. The Armed Forces recognize the family's influence on the well-being and readiness of service members. The Military Health System (MHS) offers several programs to assist families who have children with chronic

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conditions and special needs. The Exceptional Family Member Program (EFMP) permits the 'station assignment' process to consider the availability of healthcare services needed by children with special needs at the projected duty station.[4] It also helps families identify and access programs and services.[5] The Exceptional Care Health Option (ECHO) is available for children with grave disability (diagnosed with moderate or severe intellectual disability, a serious physical disability, or an extraordinary physical or psychological condition), when the military member is active duty or activated for duty. ECHO provides partial financial coverage for required services beyond the basic TRICARE program including certain home-based services, rehabilitation, respite and even transportation.

There are also both similarities and important differences between civilian and military children and their families.[6–9] In comparison to civilian families, service members marry at younger ages and begin families sooner. The military population includes a higher percentage of African Americans and a smaller percentage of Asian Americans. Military families move more frequently and many moves, if accompanied by family, are to remote regions of the U.S. or foreign countries. Service members can be separated from their families for long periods of time during deployments. These stressors unique to military families may be particularly salient to families of children with chronic conditions and special needs who may rely on social support, education services, and health services to a greater degree than other families.

Thus, a separate examination of the characteristics and health care utilization patterns of children with chronic conditions and special needs of military personnel and retirees is informative. Access to a comprehensive health care and military personnel data base provides a rare opportunity to assess the health services of children with chronic conditions within the context of a health care system with relatively low access barriers.

This study identifies a group of children of military service members and retirees with chronic conditions and addresses two broad questions: (1) What are the child, service member, and family characteristics of these children with chronic conditions? and (2) Which conditions are most common and to what extent does health care utilization vary by physical, behavioral, or combined conditions and by military family characteristics? This analysis is part of a larger project analyzing the influence of the deployment of the military parent on health care utilization among this population.

Methods

Setting and Data: The Military Health System (MHS), or TRICARE, is the healthcare delivery system for US military service members and retirees and their eligible spouse and child dependents. The data used for this study are from the MHS Data Repository which contains eligibility, enrollment, and healthcare services provided by military providers (i.e., direct care) and "purchased care" from civilian providers that accept TRICARE insurance. All outpatient health care encounters, inpatient care, and dispensed prescription records from direct and purchased care systems were analyzed. Demographic and enrollment information on child dependents, their military parents and associated family members was obtained from the Defense Enrollment Eligibility Reporting System (DEERS).

Study Sample: Our sample was derived from child dependents ages birth up to 18 years in FY2011. The study team had access to selected MHS Repository Data for a related study on the influence of the deployment of the military parent on health care utilization among children with chronic conditions. FY2011 data were chosen since this was part of an elevated period of deployment for U.S. troops.

We defined chronic conditions based on two criteria, 1) conditions linked to diagnoses and 2) repeated visits for specialty care. The first criterion was based on conditions included in the Maternal and Child Health Bureau (MCHB) definition[10] and used in the National Survey of Children with Special Health Care Needs (NS-CSHCN) which included: anxiety, autism spectrum disorder (ASD), arthritis, asthma, attention deficit hyperactivity disorder (ADHD)/conduct disorders, blood problems, cystic fibrosis, depression/bipolar disorder, developmental delay and intellectual disability, diabetes, Down syndrome, epilepsy or seizures, head injury, heart problems, migraine or headaches, muscular dystrophy, and psychotic disorders.[11] We analyzed the ICD9-CM diagnosis codes on all outpatient claims in FY2011 and classified the codes using the Agency for Healthcare Research and Quality Clinical Classifications Software (CCS).[12] To qualify as a chronic condition, the child had to have the diagnosis on two outpatient claims on different dates. The set of diagnostic codes is available from the authors upon request.

The chronicity criterion was defined as at least two visits to specialty physicians within FY 2011. Specialty physicians were defined as: allergist/immunologist, cardiologist, endocrinologist, neurologist, ophthalmologist, orthopedist, otolaryngologist/ENT, physiatrist, podiatrist, psychiatrist, psychologist, psychopharmacologist, pulmonologist, and rheumatologist.[13]

Health Care Utilization: We accrued one year of health care utilization for each child starting with the date of first diagnosis qualifying as a chronic condition and measured: number of outpatient visits (non-emergency department [ED]) visits, ED visits, inpatient stays, length of inpatient stays, number of psychotropic prescriptions and non-psychotropic prescriptions.[14] Outpatient visits were unique days of service including telephone consultation, lab, radiation, durable medical equipment and excluding encounters for ED service and for administrative purposes.

Covariates: Demographic characteristics consisted of sex and age group of the child, military parent sex, age group, and marital status. Race/ethnicity of the military parent has been used as a proxy for the race/ethnicity of the child with a chronic condition because of incomplete data on dependents.[15] To characterize family environment, we identified family members in FY2011 who shared a family identification number assigned to the child.

Family environment characteristics included military branch of Service and rank, region, residence within 20 miles of an outpatient Military Treatment Facility (or PRISM service area), number of other child dependents, number of other child dependents with chronic conditions, and participation in ECHO.

Data Analyses: We provide frequencies for all characteristics and each chronic condition. For most analyses we classify children based on type of condition: *Behavioral Health (BH)* (ASD, behavior or conduct disorders, developmental delay, intellectual disability or Down syndrome, and other behavioral health conditions); *Physical Health (PH)* (arthritis; asthma; blood problems; cystic fibrosis or muscular dystrophy; diabetes; epilepsy/seizures; head injury; heart problems; and migraine/headaches), either alone or combined.

We present bivariate associations of health care measures with each characteristic and type of condition and results of multivariable logistic and linear regression models that were used to test for associations of demographic, military and family characteristics and health care utilization outcomes. We report adjusted odds ratios (Model 1) and estimates (Models 2–5) and 95% confidence intervals (CIs). The p-values were two-sided at the $p<.001$ level to account for the large sample size.

All calculations were performed using SAS/Base and SAS/STAT software (version 9.3; SAS Institute, Inc., Cary, NC). Brandeis University's Committee for Protection of Human Subjects and the

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