



PERSONNEL AND
READINESS

UNDER SECRETARY OF DEFENSE
4000 DEFENSE PENTAGON
WASHINGTON, DC 20301-4000

JUL 22 2015

The Honorable William M. "Mac" Thornberry
Chairman
Committee on the Armed Services
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

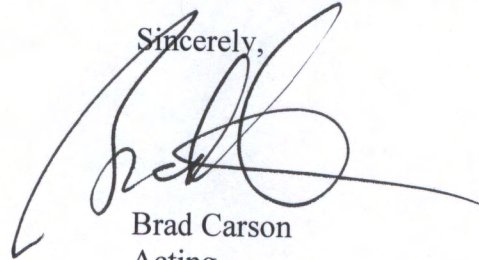
This enclosed report is in response to page 164 of House Report 113-446, "Deployment Health for Women," accompanying H.R. 4435, the Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015, which requests the Secretary of Defense to report the results of the assessment and implementation of policies or programs necessary to meet the specific gender health needs of women in various deployed environments. The Department appreciates your interest in the health and well-being of our Service members, particularly regarding the health care for Service women in austere medical environments.

The Department of Defense strives to meet the gender-specific health care needs of women at all times in both deployed and non-deployed settings. Health education and training are ongoing in a variety of settings for both men and women. This report finds that the gender-specific health care needs of women are being met in deployed and non-deployed settings.

In our effort to provide the highest quality of care, we are continuously evaluating and updating the educational programs, practice guidelines and policies in this area. The Department has identified areas of future opportunity that address research gaps noted by the Military Women's Health Research Interest Group.

Thank you for your interest in the health and well-being of our Service women when they are deployed. A similar letter has been sent to the Chairmen of the other defense committees.

Sincerely,



Brad Carson
Acting

Enclosure:
As stated

cc:
The Honorable Adam Smith
Ranking Member



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UNDER SECRETARY OF DEFENSE
4000 DEFENSE PENTAGON
WASHINGTON, DC 20301-4000

JUL 22 2015

The Honorable John McCain
Chairman
Committee on Armed Services
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

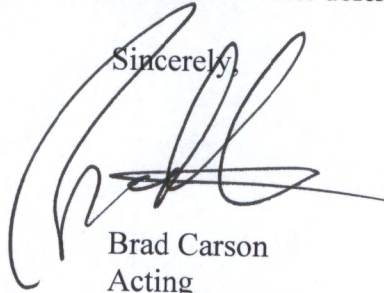
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cc:
The Honorable Jack Reed
Ranking Member



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4000 DEFENSE PENTAGON
WASHINGTON, DC 20301-4000

JUL 22 2015

The Honorable Thad Cochran
Chairman
Committee on Appropriations
United States Senate
Washington, DC 20510

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Brad Carson
Acting

Enclosure:
As stated

cc:
The Honorable Barbara A. Mikulski
Vice Chairwoman



PERSONNEL AND
READINESS

UNDER SECRETARY OF DEFENSE
4000 DEFENSE PENTAGON
WASHINGTON, DC 20301-4000

JUL 22 2015

The Honorable Harold Rogers
Chairman
Committee on Appropriations
U.S. House of Representatives
Washington, DC 20515

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Sincerely,

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Brad Carson
Acting

Enclosure:
As stated

cc:
The Honorable Nita M. Lowey
Ranking Member

House Report 113-446, Page 164: Deployment Health for Women



Office of the Assistant Secretary of Defense Health Affairs

July 2015

The estimated cost of this report or study for the Department of Defense is approximately \$101,600 for the 2015 Fiscal Year. This includes \$100 in expenses and \$101,500 in DoD labor.

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Executive Summary

Introduction

Page 164, of House Report 113-446, accompanying H.R. 4435, the Howard P. “Buck” McKeon National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2015, “recognizes the unique work of the Army Women’s Health Task Force (WHTF) in addressing the specific gender health needs of women in the military.” It also notes the findings of a Government Accountability Office (GAO) review of gender-specific health services for female members of the Armed Forces. The Committee on Armed Services, in their report, requests the Secretary of Defense conduct an assessment of the specific gender health needs of women in all types of deployed environments to ensure gender health needs of women are understood, addressed and standardized. The committee also requests an assessment of the research gaps related to women’s health in a deployed environment noted by the Military Women’s Health Research Interest Group (MWHRIG), and efforts undertaken by that group to develop a repository of peer-reviewed research articles related to women’s health, particularly in the deployed environment.

Assessment Plan

In response to this request, the Office of the Assistant Secretary of Defense for Health Affairs (OASD(HA)) tasked the Health Affairs Women’s Health Issues Working Group (HAWHIWG) to conduct an assessment, review research gaps, and report the results of the assessment and implementation of policies or programs related to women’s deployment health. The group chose to retrospectively review health status data prior to, during, and after deployment from 2008-2013, with a focus on leading medical encounters as a proxy for evidence of standardized education and training in women’s hygiene and gynecological management (men were included for comparison where appropriate). Contraceptive use was also assessed. Finally, the HAWHIWG evaluated the gaps in research identified by the MWHRIG’s systematic review of 317 research articles published between 2000 and 2010 and progress made toward creating an online repository of peer-reviewed research.

Findings Regarding Medical Encounters, 2008-2013

- Gender-specific health needs appear to have been met, indicating that training is adequate.
- The overall number of women affected by medical conditions across time was low.
- The top five medical encounters for Service women—injury, musculoskeletal diseases, signs and symptoms, mental disorders, and genitourinary diseases—remained constant pre-, during, and post-deployment.
- Similar patterns were noted in men, except for genitourinary encounters during deployment.
- Men and women had the same top five medical reasons for non-battle theater evacuations.
- The proportion of women evacuated for genitourinary conditions was close to three times that of men.
- The number of Service women with diagnoses for genitourinary disorders noted in theater was lower compared to pre- and post-deployed Service women.
- The greatest number of medical encounters for Service women across time was non-battle injuries.

Findings Regarding Education and Training in Women’s Hygiene and Gynecological Management to Enhance Readiness

Many of the WHTF recommendations have been accomplished and are examples of standardization of education and training:

- The Army has developed and is in the process of coordinating inclusion of a class for initial entry focused on female hygiene issues, field care and personal readiness.
- The WHTF and partners created the Women’s Health Portal, which provides on-line, updated, and evidence-based women’s health content for Service members and leaders. Members of all Services have access to the Portal.
- Army has adopted changes to the self-assessment portion of the Periodic Health Assessment (PHA) recommended by the WHTF related to female-specific health needs.
- A Tri-Service working group is developing gender-specific health questions for a standardized PHA that will be used by all Service members.
- Army has fielded the Female Urinary Diversion Device. It has been included in pre-deployment medical evaluation presentations and will be included in the class for initial entry focused on female hygiene issues.
- The WHTF established a set of women’s health care algorithms for the most common women’s health needs intended for geographically isolated medics and licensed providers.

Findings Regarding Research Needs and Implementation of the Database

The MWHRIG’s systematic review of the literature identified gaps in research related to 1) gynecologic illness and disease processes, prevention, and treatment in the deployed environment, 2) other injuries and mental disorders in theater. Filling these gaps would require implementation guidance to ensure evidence-based gender-specific health services for all active duty Service members. Although research findings are published in peer-reviewed journals, they have not been readily accessible to military health care providers and decision makers. A research database, housed on the Uniformed Services University of the Health Sciences (USUHS) website, will provide a comprehensive, searchable collection of citations for peer-reviewed research literature on U.S. military women’s health published between 2000 and 2010. The current estimated completion date for the web portal is mid-2015.

Summary

The gender-specific health care needs of women are being met in deployed and non-deployed settings. The top five medical encounters and complaints remain constant across pre-, during, and post-deployment settings. Currently no specific Department of Defense (DoD) policy or implementation guidance exists to address needs related to women’s health across the Services; however this report demonstrates evidence of ongoing activities and Service-level policies that standardize education and training on women’s health and hygiene. Additionally, this report identifies opportunities that would enhance current activities. The report concurs with many of the research gaps identified by systematic review of the literature conducted by the MWHRIG and finds that the data repository is currently in beta testing.

Future opportunities include: 1) expanding the Women's Health Portal; 2) enhancing genitourinary hygiene training for Service women; 3) further evaluating feasibility of fielding the Women in the Military Self-Diagnosis and Treatment Kit; 4) expanding activities of the PHA work group to include the Post-Deployment Health Reassessment (PDHRA); 5) examining the feasibility of developing an interactive mobile application to provide ready access to women's health treatment algorithms and educational content; 6) Evaluating whether the Army courses in women's health for leaders at the Noncommissioned Officer and Officer levels should be adapted for use by all Services; 7) Further evaluation of the pre-deployment training for all medical personnel providing direct patient care to women; and 8) identifying mechanisms to ensure continued support and updating of the research literature database and to evaluate mechanisms to support the military women's health research agenda.

Deployment Health for Women

I. Introduction

Page 164, of House Report 113-446, accompanying H.R. 4435, the Howard P. “Buck” McKeon NDAA for FY 2015, the House Armed Services Committee recognizes the unique work of the Army WHTF in addressing the specific gender health needs of women in the military. It also acknowledged the findings of a GAO review of women-specific health services and treatment for female members of the Armed Forces. It requests the Secretary of Defense to use these reports as the basis to ensure that the specific gender health needs of women in all types of deployed environments are being met.

“The committee directs the Secretary of Defense to conduct an assessment on the specific gender health needs of women in a deployed environment to ensure standardization of education and training in women’s hygiene and gynecological management to enhance readiness for female members; ensure that women’s health issues are included in leadership training and educational programs; provide Clinical Practice Guidelines to establish a standardized level of care in a deployed environment; and ensure that all services have the ability to provide a minimum level of education and training to address the specific gender health needs of women in a deployed environment.

The committee directs the Secretary of Defense to report the results of the assessment and implementation of policies or programs necessary to meet the specific gender health needs of women in various deployed environments. The assessment should also address the research gaps identified by the Women’s Health Research Interest Group, and what efforts have been undertaken to develop a repository of peer-reviewed research articles related to health issues for female service members, particularly those in a deployed environment.”¹

II. Background

A. Women Serving in the Military and Eligible for Deployment

The role of women in America’s military has evolved from supportive in nature during the Revolutionary War to those with direct assignment in the war zone since World War II.² In 1994, Secretary of Defense Les Aspin established DoD policy allowing women to be assigned to all positions they were qualified for except direct ground combat or other Service-specific limitations identified in the 1994 memo. In 2013, then-Secretary of Defense Leon Panetta

¹ H.R.4435 - Howard P. “Buck” McKeon National Defense Authorization Act for Fiscal Year 2015. House Report 113-446, page 164. <http://www.gpo.gov/fdsys/pkg/CRPT-113hrpt446/pdf/CRPT-113hrpt446.pdf>

² Naclerio A, Stola J, Trego L, et al. The Concerns of Women Currently Serving in the Afghanistan Theater of Operations White Paper; 2011. <http://www.globalsecurity.org/military/library/report/2011/womens-concerns-afghanistan.pdf>.

rescinded the 1994 policy and directed that all positions be open to women assignments by January 2016 unless an exception to policy was approved.³

The number of women in the military is growing, and more are rising into leadership positions. Among active duty members, 203,895 (14.9 percent) are women. Female officers represent 16.4 percent of the 199,578 active duty officers. The proportions are higher among the 842,510 Selected Reserve personnel, where 155,589 (18.5 percent) are women. When these two groups are combined, the 359,484 women represent 16.2 percent of the entire active duty and Selected Reserve force. Compared to 2000, the percentage of active duty officers who are women has increased from 14.4 percent in 2000 to 16.4 percent in 2013, while the percentage of active duty enlisted members who are women has decreased from 14.7 percent in 2000 to 14.5 percent in 2013. Overall, the number and ratio of female officers (39,286) to female enlisted members (164,609) is one female officer for every 4.2 female enlisted members, while the number and ratio of male officers (199,587) to male enlisted members (966,856) is one male officer for every 4.8 male enlisted Service members.⁴

Active Duty Service members, both male and female, may be deployed⁵ to a variety of shipboard and land-based platforms settings around the world. This includes highly developed settings with infrastructure comparable to their home base, such as Okinawa, Japan or Seoul, Korea and settings with more austere conditions such as in Afghanistan or, most recently, West Africa. Throughout the literature on health care during deployment, the environment is repeatedly referred to as one that is austere or primitive. Lowe and Ryan-Wenger characterize austere environments as those with “primitive sanitary conditions, and limited hygiene and laundry facilities, which are likely to increase military women’s risk for development of genitourinary conditions such as vaginitis and urinary tract infection (UTI).”⁶ An austere setting is a field setting that lacks some or all of the modern conveniences associated with hygiene practices (i.e., toilets, sinks, and showers with running water). In these conditions, feminine and personal hygiene may be compromised by a lack of hand washing, shower, flush toilets, and laundry facilities in the field.

Availability of health care services, pharmacy services, and basic needs, including access to running water and plumbing, vary widely. It is DoD policy that: “...The DoD Components implement a comprehensive deployment health program, which effectively anticipates,

³ Harrell MC, Werber L, Schirmer P, Hallmark BW, Kavanagh JE, Gershwin, D, et al. Assessing the assignment policy for Army women. Santa Monica, CA: RAND Corporation, 2007. <http://www.rand.org/pubs/monographs/MG590-1>.

⁴ Office of the Deputy Under Secretary of Defense (Military Community and Family Policy), (November, 2014) 2013 Demographics: Profile of the Military Community. <http://www.militaryonesource.mil/12038/MOS/Reports/2013-Demographics-Report.pdf>.

⁵ DoD defines deployment in DoD Instruction 6490.03 as: “The relocation of forces and materiel to desired operational areas. Deployment encompasses all activities from origin or home station through destination, specifically including intra-continental United States, intertheater, and intratheater movement legs, staging, and holding areas.” <http://www.dtic.mil/whs/directives/corres/pdf/649003p.pdf>

⁶ Lowe NK, Ryan-Wenger NA. Military women’s risk factors for and symptoms of genitourinary infections during deployment. *Mil Med.* 2003 Jul;168(7):569-74.

recognizes, evaluates, controls, and mitigates health threats encountered during deployments...”⁷ When women are deployed into these settings it is essential that they have access to health care that meets their gender-specific needs, whether in garrison or in the field. Between calendar years 2008 and 2013, 108,897 women have deployed for greater than 30 days in a segment.

The focus of this report to Congress provides an assessment of how DoD is meeting gender-specific health needs of deployed Service women. The report discusses several activities underway across DoD and the Military Departments to improve DoD’s understanding of the gender-specific health care needs of deployed Service women; assure standardization of education and training at all levels for their gender-specific health needs; improve the adequacy of existing guidelines for health care; facilitate progress toward establishing and maintaining a repository of peer-reviewed research articles related to health issues for Service women, particularly those in a deployed environment; and includes areas for future consideration in both policy guidance and research.

B. Background

The report language from page 164 in House Report 113-446 identifies three background activities for this request:

(1) The unique work of the Army WHTF, the October 10, 2011, White Paper, “The Concerns of Women Currently Serving in the Afghanistan Theater of Operations”⁸ (the White Paper), incorporated the WHTF’s findings, supporting literature, provided evidence-based recommendations, and identified 26 goals, or task items, for women’s health.

(2) GAO Report 13-182⁹ stated that DoD components have put into place policies and guidance that include female-specific aspects to help address the health care needs of Service women during deployment. GAO also concluded that there is no centralized place for research on women in the military.

(3) The Tri-Service Nursing Research Program’s (TSNRP’s) MWHRIG is a collaborative, Tri-Service multidisciplinary community of research scientists and clinicians who aim to expand the foundation of knowledge about military women’s health, including representatives from DoD, Department of Veterans Affairs (VA), and academia. The MWHRIG’s Core Leaders (CLs) are military nurse scientists and nurse practitioners. Its goals are to develop a military women’s health research agenda, foster the formation of multidisciplinary study teams on topics of common interest and expertise, create a web-based repository for MWHRIG community’s

⁷ Ibid.

⁸ Naclerio A, Stola J, Trego L, et al. The Concerns of Women Currently Serving in the Afghanistan Theater of Operations White Paper; 2011. <http://www.globalsecurity.org/military/library/report/2011/womens-concerns-afghanistan.pdf>.

⁹ Government Accountability Office. *Military Personnel: DOD Has Taken Steps to Meet the Health Needs of Deployed Service women, but Actions Are Needed to Enhance Care for Sexual Assault Victims*. GAO Report 13-182. January 29, 2013. <http://www.gao.gov/products/GAO-13-182>.

resources (e.g., biographies, reference lists, abstracts, studies, publications), and focus MWHRIG community members' efforts on the established military women's health research agenda.

In addition to these background activities identified by the congressional request, there is ongoing work to standardize health assessments:

III. Department of Defense Response

A. Assessment Plan

In order to respond to the congressional request, the OASD(HA) tasked the HAWHIWG to assemble a group of experts to conduct the assessment, identify gaps, and comment on implementation plans.

The HAWHIWG formed a subgroup, the Women's Deployment Health (WDH) Report To Congress Subgroup that included representation from Army, Navy, Air Force, Marine Corps, U.S. Public Health Service, Defense Centers of Excellence For Psychological Health And Traumatic Brain Injury (DCoE), USUHS, the MWHRIG, and the Armed Forces Health Surveillance Center (AFHSC). The WDH met weekly to plan the assessment, gather data, review findings, and prepare the report. The group followed the request set forth in House Report 113-446.

To assess standardization of education and training in women's hygiene and gynecological management, the WDH agreed that a proxy for evidence of such standardized education and training would be health status during deployment. To get a full picture of health status during deployment, the WDH believed it was important to include an analysis of Service women's health care usage and incidence of illnesses and injury 365 days before, during, and 365 days after deployment. A retrospective analysis of medical encounter/health care usage data from 2008 to 2013 focused on health areas identified in the WHTF White Paper,¹⁰ including genitourinary health, mental health, and gynecological health. The purpose of the analysis was to evaluate the health care burden and health care needs pre-deployment, during deployment and post-deployment, including variances across the time periods. In some cases, data were compared to patterns in Service men. The goal was to assess potential health care gaps that would guide the need for additional standardization in education and training, clinical practice guidelines, or policy guidance.

¹⁰ Naclerio A, Stola J, Trego L, et al. The Concerns of Women Currently Serving in the Afghanistan Theater of Operations White Paper; 2011.

<http://www.globalsecurity.org/military/library/report/2011/womens-concerns-afghanistan.pdf>

Additionally, because both the WHTF White Paper and the GAO report noted concerns related to availability of contraception in deployed settings, an analysis of contraceptive use was included using the same methods.

To address the request for assessments of: inclusion of women's health issues in leadership training and educational programs; clinical practice guidelines to establish standardization; and availability of education and training to address specific gender health needs of women in deployed environments, the WDH reviewed:

- Office of the Secretary of Defense and Service training and educational programs for Service women and leadership,
- Clinical practice guidelines that addressed the specific gender health needs of women, and,
- Current pre-deployment preparation and post-deployment reintegration for women.

To assess research gaps identified by the MWHIRG and the status of a repository, the group discussed the findings of the MWHIRG's systematic literature. (The methodology for this review can be found in Appendix A.) It included review of 317 research articles published between 2000 and 2010. The review group identified gaps in current research and is developing a repository of the literature. Information related to deployment health is included in this review.

This assessment also capitalized on information gained at the Women in Combat Symposium held in spring 2014. This symposium was co-hosted by Defense Health Activity and USUHS. DCoE was a symposium partner. The event was open to federal employees, federal contractors, and active duty military. The objective of this symposium was to discuss and frame the key issues that must be addressed as women continue to be integrated into combat roles. Symposium participants presented findings in the current literature and developed a peer-reviewed published supplement, currently in press. The Symposium findings served to inform the MWHIRG's review and development of a research portal. The assessment of the review and status of the portal are included in this report.

B. Retrospective Analysis of Health Care Utilization

1. Population

Data from the AFHSC were used for this retrospective analysis following previously published methods.¹¹ The population for this analysis included all Armed Forces Service members from any of the five Services (Army, Navy, Air Force, Marine Corps, Coast Guard) who deployed between January 1, 2008, and December 31, 2013, for 30 or more days to any location at least once. Some findings compared outcomes to Service men who were also deployed; for those analyses, the study population was stratified by gender.

¹¹ Armed Forces Health Surveillance Center. Absolute and relative morbidity burdens attributable to various illnesses and injuries, U.S. Armed Forces, 2013. *Medical Surveillance Monthly Report*. 2014 Apr; 21(4): 2-7.

2. Deployment Locations

Between January 1, 2008, and December 31, 2013, there were a total of 108,987 Service women deployed for 30 days or longer (Table 1). Deployments often consist of deployment segments, indicating that Service members were located in more than one country during their deployment period. Therefore, data expressed in deployment segments may count an individual more than once. During the analysis period, there were 364,458 deployment segments of which 13.1 percent were not associated with a country or Combatant Command (COCOM), suggesting ship-based deployment segments; without the ability to verify location, deployments without country and COCOM information were removed from further analyses. During the analysis period, 84.4 percent of deployment segments were completed in the United States Central Command, which includes Kuwait, Afghanistan and Iraq. Of the cohort of women included in the analysis 90 percent were under the age of 30 and 21.5 percent were under the age of 21 (data not shown).

Table 1. Deployments \geq 30 days (N=364,458) by COCOM and Country, number of deployment segments for female Service members, U.S. Armed Forces, 2008-2013**

COCOM	# of deploy segments	%	Average length of deploy segment (days)
AFRICOM	3,909	0.9	84
CENTCOM	353,196	84.4	73
EUCOM	3,514	0.8	57
NORTHCOM	2,235	0.5	15
PACOM	595	0.1	156
SOUTHCOM	387	0.1	80
Not Assigned**	54,681	13.1	75

*Deployment segments may count an individual more than once

**May indicate ship-based deployment segments

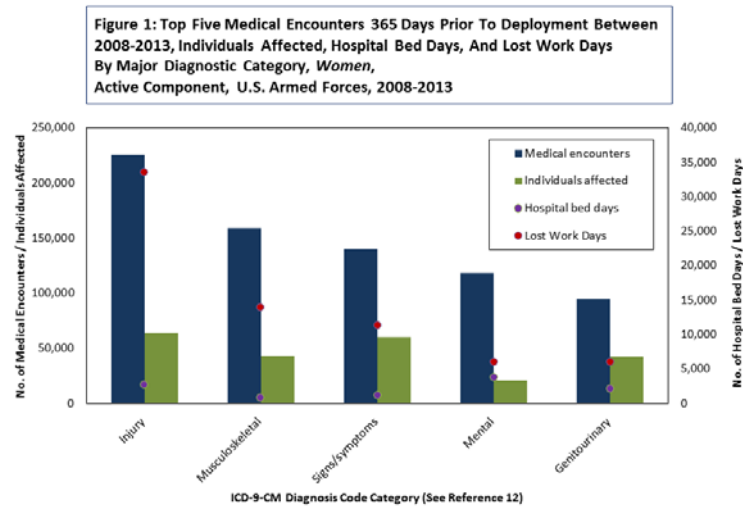
3. Health Care Burden

a. 365 Days Prior to Deployment – Outpatient Medical Encounters

Figure 1¹² displays the number of outpatient medical encounters, individuals affected, and lost days of work for Service women within one year prior to deployment. The most common outpatient encounter and the one accounting for the highest number of individuals affected was

¹² NOTE: All ICD-9-CM diagnosis codes are from: Centers for Medicare and Medicaid, International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM). 2015. *Signs/symptoms* refers to ICD-9-CM codes 780-799 and is used for cases that had ill-defined conditions that could not be classified elsewhere. It includes cases where no more specific diagnosis could be made, transient conditions where no cause could be determined, the patient did not return for follow-up, or a precise diagnosis was not available for any other reason. *Other* includes “Supplementary Classification of Factors Influencing Health Status and Contact with Health Services, this could be related to exposure to a variety of factors from exposure to communicable diseases to unspecified sensory conditions, the need for special medical observation or specialized medical tests

injury, which also accounted for the highest number of lost days of work. Of note, mental disorders were ranked fourth for number of medical encounters but were ranked low for number of individuals affected or lost days of work; this may suggest encounters and care received were effective in treating the condition, minimizing days lost from work or hospital bed days. Rates for encounters have stayed relatively consistent over the time period 2008-2013 (data not shown).

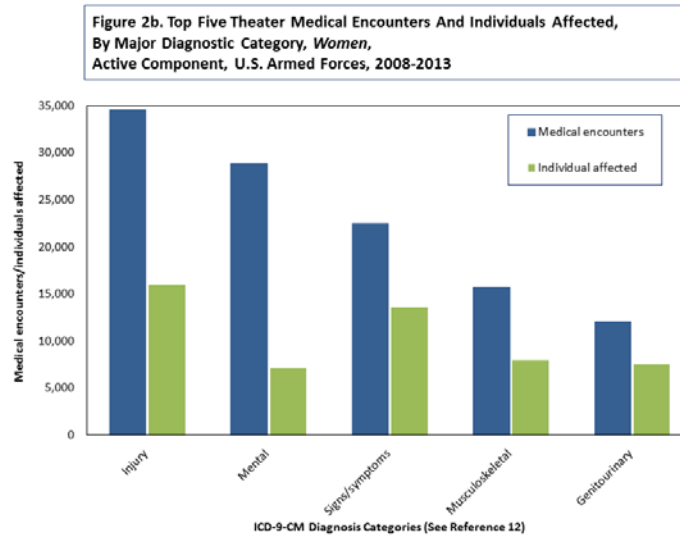
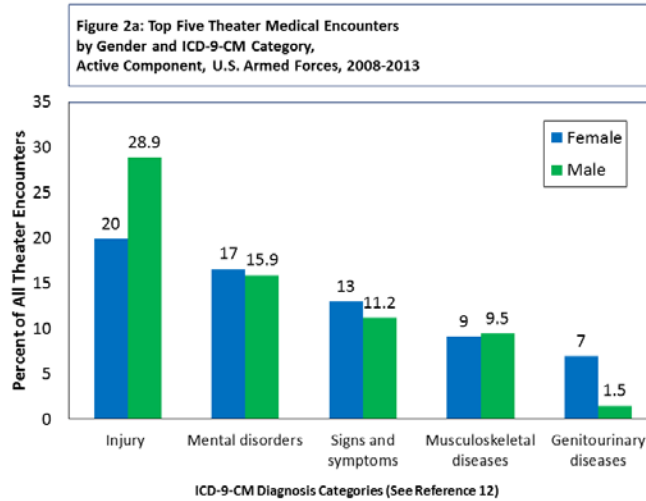


4. Deployment-Theater Medical Encounters

Theater medical encounters were stratified by sex. Consistent with pre-deployment patterns in women, non-battle injury continues to be the leading reason for medical encounters in the deployed setting, followed by mental disorders and signs and symptoms. The same pattern was noted in men; however, in men about half of the injuries were non-battle injuries.

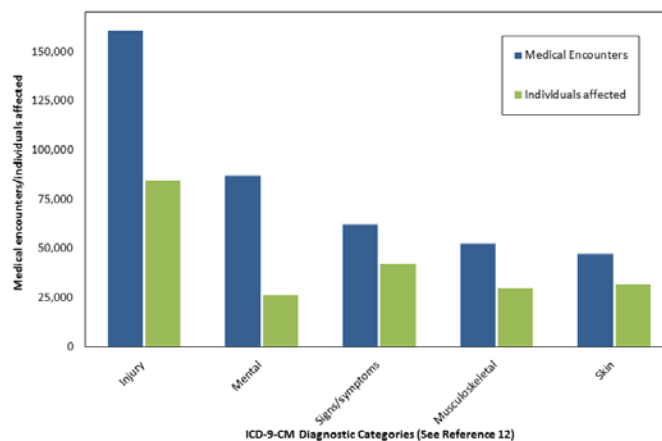
Mental disorders rank second for medical encounters in both men and women at similar proportions, (15.9 percent and 16.6 percent respectively), and the same pattern of high numbers of encounters, and low numbers of individuals affected was seen in the same manner as pre-deployment, in this case for both men and women. Proportionally, genitourinary diseases are close to five times more common in women compared to men in the deployed environment, (7 percent versus 1.5 percent) (Figure 2a). Except for the differences in genitourinary encounters, the major diagnostic categories followed a similar pattern (Figures 2a, 2b, and 2c). Skin diseases (which was fifth for men) were seventh on the list for women (data not shown).

Furthermore, the AFHSC reported that 6.5 percent of women ever deployed during 2008-2013 were diagnosed with a UTI during deployment, with 13.6 percent of those having recurrent UTIs. This was 26-55 percent lower compare to rates in non-deployed women.¹³



¹³ Armed Forces Health Surveillance Center. Urinary Tract Infections During Deployment, Active Component, U.S. Armed Forces, 2008–2013. *MSMR*. 2014 Mar; 21(3):2-5.

Figure 2c. Theater Medical Encounters And Individuals Affected, By Major Diagnostic Category, Men, Active Component, U.S. Armed Forces, 2008-2013



5. Contraception Pre-Deployment and in Theater

Another area of standardized gender-specific health care is availability of contraception. Evaluation of contraception availability in theater included assessment of pre-deployment preparation in the six months prior to deployment. Among all women who were deployed, 73.6 percent received contraceptive counseling and/or services, either six months prior to or during deployment. Seventy-two percent used either a short- or long-acting contraceptive method, either six months prior to and/or during deployment. The high percentage of use in this cohort may indicate that active duty women used contraceptive services at a higher rate than the 62 percent reported in the general population,¹⁴ even when deployed. A variety of types of contraception were used, including both long- and short-acting methods. Short-acting contraceptives prescribed in theater included low-, medium-, and high-dose combined oral contraceptive pills (OCPs) in traditional monthly packs and extended cycle packs, the contraceptive patch, the vaginal ring, and the contraceptive injection. Long-acting contraceptives used in theater included the hormonal intrauterine device (IUD) and the implantable rod.

Sixty-one percent of the deployed women used a short-acting contraceptive six months prior to deployment and/or were prescribed it in theater. Half of the deployed contraception users chose OCPs. Contraceptive counseling only (no prescribed contraception at the visit) was provided to more than 4,000 women in theater, and 9.4 percent of the women who were deployed received their short-acting contraceptive prescription in theater, indicating availability of services and medications in theater. Additionally, the list of contraceptives that were prescribed to this group of active duty women was comparable to those available on the U.S. civilian market.

¹⁴ Jones J, Mosher W, Daniels, K. National Health Statistics Report Number 60, October 18, 2012. *Current Contraceptive use in the United States, 2006-2010, and Changes in Patterns of Use since 1995*. U.S Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics.

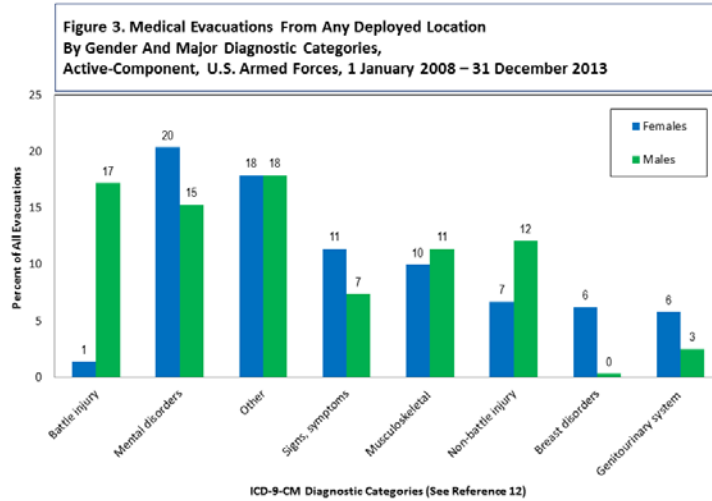
Appropriate contraceptive care includes not only the prevention of pregnancy, but therapeutic treatment for menstrual disorders and cycle control. In the years 2008-2013, there were 22,453 women who had a documented gynecologic condition within 30 days of starting a new contraceptive or switching contraceptives. The top three conditions associated with new starts and switching in this cohort were dysmenorrhea (41.2 percent), excessive or frequent menstruation (33.3 percent), and metrorrhagia (12.2 percent). Additionally, in the cohort of all women who were eligible for contraceptive care during the years 2008-2013, five percent of women received either emergency contraception counseling or a prescription for emergency contraception.

Nearly 10 percent of all deployed contraceptive users used a long-acting contraceptive either six months prior to and/or during deployment. Among the deployed women who used contraception, more than 11 percent used long-acting contraception including IUDs and contraceptive implants. The fact that a majority of long-term contraception was provided in the six months prior to deployment can be viewed as an indicator that active duty Military Health System (MHS) beneficiaries are likely receiving appropriate counseling and placement of IUD or implant prior to deployment, optimizing the therapeutic benefits of the method for the women. An additional one percent of women received their long-acting contraceptive in theater, suggesting access is available.

The women who utilized contraceptive services in theater may have done so for the treatment of menstrual symptoms or for the purpose of menstrual suppression, and it is standard practice to start or change the type of contraceptive to best manage the symptoms and achieve desired results. Less than one percent of the deployed cohort switched contraceptive methods during deployment. Of these, the diagnoses for the encounter included dysmenorrhea and excessive or frequent menstruation within 30 days of the switch.

6. Medical Evacuations from Any Deployed Theater

This assessment compared reasons for medical evacuation from any deployed location. Overall, the top five reasons were consistent with medical encounters. Mental disorders were the leading reason for medical evacuations of women from theater (20.4 percent versus 15.3 percent for men); compared to men, this is a ratio of 1.3:1. Genitourinary disorders accounted for 5.8 percent of medical evacuations among women compared to 2.5 percent in men (a ratio of 2.3 to 1) (Figure 3). Although the numbers of women being evacuated because of mental disorders has decreased over time, mental disorders as a fraction of overall evacuations has increased from 2008 to 2013 (data not shown). Additionally, medical evacuation for pregnancy accounted for less than one per 1000 deployed person-years (data not shown). These analyses are based upon diagnostic categories using International Classification of Disease coding and describe evacuations that were medically indicated. It should be noted that disposition of women diagnosed to be pregnant can vary by deployment setting, and may be moved out of a theater or any austere medical setting in administratively as well as medically. Additionally, Active Duty women may be in deployment status and be diagnosed as pregnant prior to leaving their United States duty station, or during approved leave during a deployment period, making full estimates of pregnancy during theater deployment challenging.



7. Health Care Burden Within 365 Days Post Deployment – All Medical Encounter (inpatient and outpatient)

Consistent with pre-deployment and deployment, mental disorders, injury, and musculoskeletal disorders were the top three reasons for women’s inpatient or outpatient medical encounters one year post deployment (Figure 4a). However, the number of individuals affected was low, suggesting multiple treatment encounters for the same individual. Patterns were similar in men (Figure 4b).

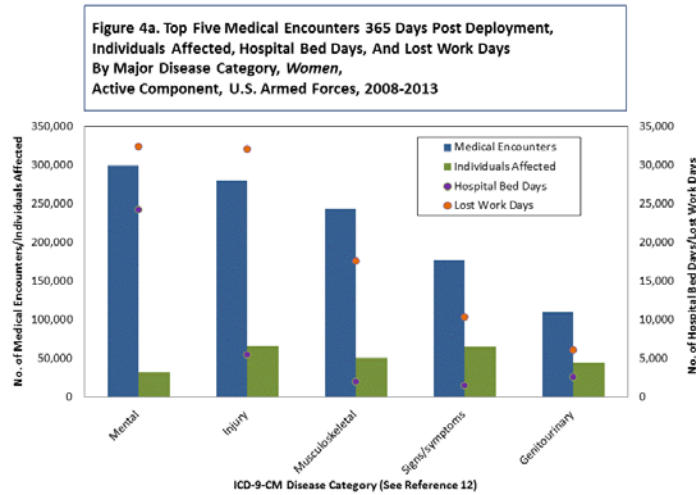
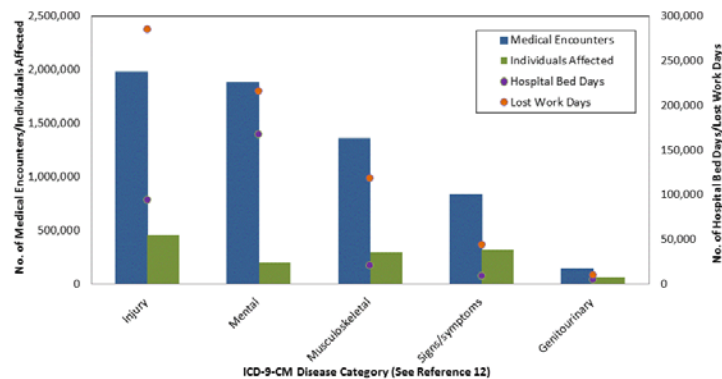


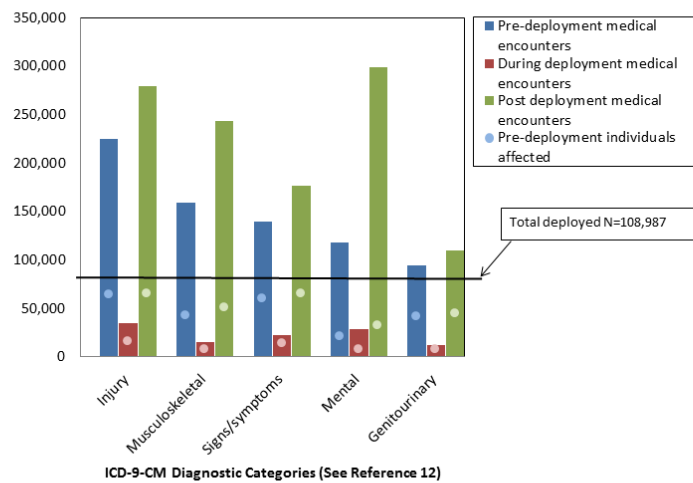
Figure 4b. Top Five Medical Encounters 365 Days Post Deployment, Individuals Affected, Hospital Bed Days, And Lost Work Days By Major Disease Category, Men, Active Component, U.S. Armed Forces, 2008-2013



8. Summary of Health Utilization and Outcomes

In summary, the pattern of medical encounters, and health outcomes is the same pre-deployment, during deployment and post-deployment (Figure 5). The top five medical conditions remain the same; however, their rank order changes, with more mental health encounters post-deployment. Similar patterns are noted in men, except for genitourinary encounters during deployment. Men and women had the same top five non-battle theater evacuations; however, the proportion of women evacuated for genitourinary conditions was close to three times higher than men. This requires further assessment to determine the specific conditions affecting women, and is an area of future consideration for additional evaluation in both outcomes and standardization of education and training. It should be noted that the actual number of individuals affected is lower than other conditions such as non-battle injury, mental health, and musculoskeletal conditions. Discussed below are examples of actions taken to prevent genitourinary conditions including the potential opportunity to distribute of female urinary diversion devices and the need of further evaluation into the utility of self-test kits for genitourinary conditions in women.

Figure 5. Overall Summary Comparing Major Disease Categories Pre/Post And During Deployment, Women, U.S. Armed Forces, 2008-2013

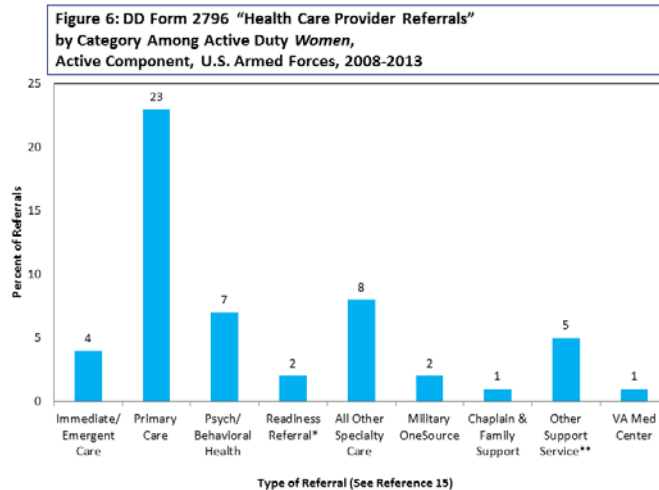


9. Post-Deployment Health Assessment/Post-Deployment Health Re-Assessment (DD 2796 Forms)

When Service members return from deployment, they receive a Post-Deployment Health Evaluation Assessment using form DD 2796. This assessment collects information on health needs and notes health provider referrals. Figure 6¹⁵ shows the variety of health assessments received by Service women post-deployment. This begins with an electronic online self-assessment completed by the Soldier and then discussed with a medical provider at a follow-up visit. Consistent with findings of mental health encounters in theater, almost one quarter of referrals were for mental health.

¹⁵ *Readiness referral defined as a referral to audiology, optometry, ophthalmology or dental.

**Other support services defined as Health Promotion, Substance Abuse Program or Case Management



C. Current Activities Related to Standardization of Education and Training in Women’s Hygiene and Gynecological Management to Enhance Readiness

An assessment of education and training activities in women’s hygiene and gynecological management to assess readiness identified a number of ongoing activities related to the unique health challenges faced by women during deployment. The assessment noted examples in current education and training approaches that supported standardization of gender-specific health care needs for women.

- The top five medical encounters remain constant pre-, during, and post-deployment.
- The overall number of women affected by medical conditions is low.
- The number one concern across time is non-battle injuries. Gender-specific health needs appear to be met.
- There are several examples of education and training that support standardized care:
 - All Service members complete an annual PHA. Army has adopted changes to the self-assessment portion recommended by the WHTF related to female-specific health needs. A positive response to female health-specific questions would generate a referral to gynecology services.
 - A Tri-Service workgroup was chartered in 2013 to develop a standardized PHA for all Service members, including Guard and Reserve. Questions specifically designed to assess the health and health needs of women are included in the draft health assessment.

- An example of changes to improve education and training in women’s hygiene and gynecological management is Army-developed resources that can be adapted by the other Services. The WHTF partnered with the Army Medical Department Center and School at Joint Base San Antonio to develop a class that focuses on initial entry of Soldiers completing basic training and will focus on female hygiene issues, field care, and personal readiness. Air Force and Navy have similar classes for basic training.
- The WHTF has marketed the Female Urinary Diversion Device. This device allows females to urinate without disrobing or when unsuitable locations make sitting to urinate difficult. Information posters have been placed at stateside pre-deployment centers. As well, it has been included in pre-deployment medical education presentations and the first aid class given to Soldiers going through basic combat training. The device is now mandatory packing for Army Ranger School.

D. Assessment of Leadership Training

Non-commissioned officers (NCOs) and officers receive training and access to tools related to gender-specific health needs during deployment that are necessary to prepare women for deployment. These trainings and tools are similar to what is available to all women. Examples of these tools include:

- Subject matter experts from the WHTF and the U.S. Army Public Health Command created the Women’s Health Portal, a web-based health education cache providing easily accessible, updated, and evidence-based women’s health content for Service members and leaders in both deployed and garrison environments. The Portal includes recommendations for women’s health preventive screening and readiness, and provides links to women’s health support resources.
- The WHTF established a set of women’s health care algorithms for the most common women’s health needs. These will help provide geographically isolated medics (who may be the only medical staff member for dozens of miles) and licensed providers with limited women’s health experience the ability to determine what conditions can be treated locally and who may need to be evacuated. This helps support adequate point-of-care treatment while avoiding potentially life-threatening evacuation in an active combat environment for what may be a simple treatable condition.

E. Assessment of the Recommendations of the MWHIRIG

1. Congressional Request

Included in the congressional language is a request to conduct an assessment of research gaps identified by the MWHIRIG and what efforts have been taken to develop a repository of peer-reviewed research articles related to health issues for Service women, particularly those in a deployed environment. The methods and findings of the systematic review can be found in Appendix A.

2. MWHRIG Gap Analysis

The MWHRIG found that the preponderance of the literature on military women's health research is related to readiness and health promotion, followed by psychological health, and gynecologic health. These topics are aligned with the medical conditions and demographics of Service women, who tend to be young and of childbearing age.

The literature gathered represents a decade of research on military women's health issues. During this time, the Nation went from a peacetime to a wartime military. As a result, research efforts on the health of the warfighter gathered momentum. Simultaneously, the MWHRIG noted that there was an expansion of women's roles in the military, including roles on the battlefield. However, the majority of investigations into medical issues and treatments of the warfighter failed to consider gender differences that may be inherent in women's reactions to the physiological and psychological insults of war. Long-term consequences of having served in a conflict are evident in the literature on Veteran Women, yet there is a lack of investigation on the impact of having been in a conflict on women's health while they were still serving. The MWHRIG recommended that if filled, this gap in research could discover unknown variables specific to women that might be key to the physical and psychological health of Service women.

The MWHRIG also graded the quality of available evidence (strength of the research findings to allow conclusions to be drawn) and found that most studies focused on single populations and were descriptive in nature, not intended to draw comparisons across multiple populations. This limited the ability to generalize the findings. In addition, the review was limited to the years 2000-2010, so the gaps in research may have been addressed in the ensuing years.

The MWHRIG's systematic review of the literature identified research gaps in areas related to deployment health for women:

- **Overall Gap:** There was a large gap in knowledge about military women's health because the level of evidence is from "Level VI research," that is, single descriptive studies rather than stronger research designs such as controlled clinical trials or comparative studies of populations. This limits the ability to generalize the findings to all military women, as well as the ability to apply findings to practice and policy.
- **Readiness/ Health Protection/ Illness Prevention:** There is little research that evaluates musculoskeletal concerns by gender.
- **Deployment Health:**
 - Gynecologic care in theater has been discussed in at least 10 publications, with documentation of women's complaints including those associated with the menstrual cycle, contraceptive care, and pregnancy. These complaints and diagnoses indicate that there is a need to further investigate the impact of the deployed environment on the menstrual cycle, and methods to manage menstrual cycle symptoms.
 - Findings on the behaviors unique to the military population that increase women's risk for developing UTIs, as well as preventive measures, deserve further investigation.

- The literature indicated that servicewomen require knowledge on vaginal health and the prevention of common vaginal infections, particularly in relation to the field environment. Additionally, the literature indicated a lack of knowledge related to contraception options and their feasibility, and availability during deployment. Subsequently, the literature review concluded that there is a lack of knowledge on menstrual cycle management to manage/ameliorate symptoms of the menstrual cycle that commonly occur in theater.

3. MWHRIG-Identified Future Research Needs

- Future research should include cohort studies to describe incidence and analyze predictors of the common illnesses that women encounter, in addition to meta-analyses of existing evidence.
- Research shows that Service women use complementary and alternative medicine more often than Service men. Continued research is needed to explore evidence of benefit.
- The literature investigating mental health needs of women in theater is scarce. The DoD and VA's Integrated Mental Health Strategy (IMHS) collaboration published its Strategic Action Summary January 3, 2011¹⁶, and recommended that research be conducted to review gender differences in delivery and effectiveness of mental health services. Future research could investigate women's psychological reactions to deployment, combat stress, and family separation. Furthermore, investigation into battlefield/deployment interventions and resiliency programs that women can use downrange to mitigate these stressors is warranted. The MWHRIG concurs with the conclusions of the IMHS report and recommendations for future research for mental health issues related to women's wartime experiences, particularly posttraumatic stress disorder.
- While the literature identified menstrual disorders in deployed Service women, it also identified a gap in knowledge on the use of contraceptives for menstrual cycle control, suppression of menses, and management of menstrual symptoms. Although treatment for menstrual cycle-related symptoms with contraceptive methods is an industry standard, the MWHRIG concluded that more research is needed on their use in managing the common menstrual disorders that affect women's health, particularly during training and deployment. The MWHRIG noted that research should focus on optimizing the use of contraceptives for both menstrual management and family planning in military women.
- Promising findings on self-testing and self-treatment for common vaginal infections should be further investigated to both promote vaginal health as well as to overcome barriers to care in the deployed environment.

¹⁶ Systematic Review of Women Veterans Health Research 2004-2008. Department of Veterans Affairs Health Services Research & Development Service. October 2010. Prepared by: Evidence-based Synthesis Program (ESP) Center, West Los Angeles VA Medical Center, Los Angeles, CA.

4. MWHRIG Database Development¹⁷

A goal of the MWHRIG was to develop a web-based literature repository that is a comprehensive, searchable collection of citations for peer-reviewed research literature on U.S. military women's health published between 2000 and 2010. This web-based literature repository is envisioned to consist of a complete list of references included in this review, as well as a summary of each study's questions, methods, gender-specific findings, and a grade of the strength of evidence in the literature. The articles have been selected and vetted through the MWHRIG for applicability to servicewomen's health and subject matter experts (SMEs) in military women's health research graded the strength of the evidence. A structured abstract has been produced for every article following concurrence between MWHRIG Core Leader and subject matter expert evaluations.

The database will be housed on the USUHS website. A collaborative effort between the TSNRP Informatics Staff Officer and the Information Technology department at USUHS has resulted in a database test site.

Currently, the selection page (where users will check which articles they want to read) is complete. The formatting of the query results page is ongoing. The test site has been uploaded with almost 100 of 317 articles and is searchable. Pending action is to pull the data to write and complete the cover page and text for the remaining articles. The current estimated completion date is mid-2015. While the MWHRIG database is in the testing phase, it is not public or shared outside of the MWHRIG testing group. (See Appendix B for screen shots of the Beta Test site.)

IV. DoD Assessment Findings

A. Health Status of Service Women Before, During, and Post Deployment

1. One Year Prior to Deployment:

- The top five diagnostic categories for medical encounters among deployable women were injury, musculoskeletal diseases, signs and symptoms, mental disorders and genitourinary diseases.
- The most common pre-deployment outpatient encounter (20.2 percent) and the one accounting for the highest number of women affected was injury, which also accounted for the highest number of lost days of work.
- Although mental disorders were ranked fourth for number of medical encounters, they were ranked low for number of individuals affected and lost days of work.
- Active Duty Service women's use of contraceptives was 76.2 percent. When considering the high percentage of women who have already sought and received the services in the six months prior to deployment, the data indicate that active duty Service women have

¹⁷ Wilson C, Trego L, Rychnovsky J, Steele N, Foradori M. Creating and sustaining a Military Women's Health Researh Interest Group. AMEDD Journal Apr-Jun 2015;86-90.

access to the full range of contraceptives and that contraceptive use is above that of the general population.¹⁸

- The fact that the majority of long-term contraception was provided in the six months prior to deployment can be viewed as an indicator that active duty Service women are likely receiving appropriate counseling and placement of IUD or implant prior to deployment, optimizing the therapeutic benefits of the method for the women.
- The list of contraceptives that were prescribed to this group of deployable active duty Service women is comparable to those available on the U.S. market to civilian women.

2. During Deployment:

- The top five diagnostic categories for medical encounters during deployment shows a similar pattern to pre-deployment with be non-battle injury, musculoskeletal diseases, signs and symptoms, and mental disorders. Among the five leading diagnoses is “other”, and genitourinary diseases moves to sixth.
- Non-battle injury continues to be the leading reason for medical encounters in the deployed setting for both men and women followed by mental disorders and signs and symptoms.
- Genitourinary diseases are more common in women compared to men in the deployed environment, at seven percent versus 1.5 percent respectively.
- Mental disorders rank second for both men and women, at 15.9 percent and 16.6 percent respectively.
- Mental disorders were the leading reason for medical evacuations of women from theater (20.4 percent versus 15.3 percent for men). Genitourinary disorders accounted for 5.8 percent of medical evacuations among women compared to 2.5 percent in men.
- The prescriptions and contraceptive counseling encounters in theater indicate that women have access to providers and methods as needed once they are deployed. Furthermore, the findings suggest that there are providers in theater who are able to diagnose and manage menstrual disorders, and there are medications in theater to do so.

3. One Year Post Deployment:

- The pattern of medical encounters remains consistent. The top five diagnostic categories for medical encounters post-deployment remains the same: injury, musculoskeletal diseases, signs and symptoms, mental disorders and genitourinary diseases.
- During post-deployment, the rank order changes with mental disorders, injury, and musculoskeletal disorders as the top three reasons for female inpatient or outpatient medical encounters one year post deployment.

¹⁸ Jones J, Mosher W, Daniels, K. National Health Statistics Report Number 60, October 18, 2012. Current Contraceptive use in the United States, 2006-2010, and Changes in Patterns of Use since 1995. U.S Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics.

B. Standardization of Education and Training for Troops and Leadership

Education related to the unique health challenges faced by women during deployment and ensuring that the proper tools and knowledge are available to address these challenges is needed across the Services to ensure a ready and deployable force to meet the Nation's needs. The assessment noted a number of examples in current education and training approaches that supported standardization of gender-specific health care needs for women. Examples include a Women's Health Portal that is accessible to all Service women, incorporation of gender-specific health training into basic and annual training refreshers, thus normalizing the trainings for all women and standardization of the PHA.

C. Assessment of MWHRIG Gap Analysis

This report concurs with the MWHRIG research gaps in the literature regarding deployed women's health, particularly gynecological and mental health outside contraceptive access. It is possible that this means that clinical practice could sometimes be based on less-than-sufficient evidence. However, it is important to note that this report also found that women are using contraceptives at a higher rate than their civilian counterparts, and that contraception is available both in non-deployed and deployed settings. It is not known the extent to which contraceptive medications are being used to treat menstrual disorders, or are for menstrual suppression. This report supports the MWHRIG's assessment that as noted in the GAO report, there is no centralized place in DoD to conduct women's health research, particularly research on the deployed environment, despite the growing number of women in the military. A centralized approach to a research agenda will assure that the health care needs of Service women are met and will assure readiness.

V. DoD Summary and Conclusions

The gender-specific health care needs of women are being met in deployed and non-deployed settings. The top five medical encounters and complaints remain constant across pre-, during, and post-deployment settings. Currently no DoD policy or implementation guidance exists to address needs related to women's health across the Services; however this report demonstrates evidence of ongoing activities and Service-level policies that standardize education and training on women's health and hygiene. Additionally, this report identifies opportunities that would enhance current activities. The report concurs with many of the research gaps identified by MWHRIG and finds that the data repository is currently in beta testing.

Future opportunities include: 1) expanding the Women's Health Portal; 2) enhancing genitourinary hygiene training for Service women; 3) further evaluating feasibility of fielding the Women in the Military Self-Diagnosis and Treatment Kit; 4) expanding activities of the PHA work group to include the PDHRA; 5) examining the feasibility of developing an interactive mobile application to provide ready access to women's health treatment algorithms and educational content; 6) Fielding the Army courses in women's health for leaders at the NCO and Officer levels be adapted for use by all Services; 7) Further evaluating pre-deployment training for all medical personnel providing direct patient care to women; and 8) identifying mechanisms to ensure continued support and updating of the research literature database and to evaluate mechanisms to support the military women's health research agenda.

Appendix A: MWHRIG Assessment of Research Needs

A. Overview

The MWHRIG's work focuses on research conducted on women serving in the Armed Forces, therefore the literature selected was limited to peer reviewed research publications on women serving in the military forces at the time of the research study. The literature was selected and evaluated by a four-level process of screening and consensus among the MWHRIG CLs and the SMEs from the DoD, VA, and academic institutions. A structured Hierarchy of Evidence was used to grade the strength of the literature, and a defined system for evaluating the quality of the research was employed. MHS utilization data were gathered from publications by the AFHSC and compared to the body of literature. A gap analysis was derived from the findings in the literature, recommendations for future research, and the need as evidenced by the utilization data. (See Figure C.1.)

B. Methods

1. Topic Development

The MWHRIG proposed utilizing the 4-step agenda-setting model established by VA's Greater Los Angeles Health Services Research and Development (HSR&D) Center of Excellence Research Agenda Planning Group, and under guidance of the HSR&D experts, the MWHRIG closely followed the model that they used to determine the VA Women's Health Research Agenda in 2006. However, the MWHRIG's work focused on women serving in the Armed Forces, rather than female Veterans. Therefore, we chose to exclude studies on female Veterans. Refer to the Systematic Review of Women Veterans Health Research 2004-2008, published in October 2010, for findings and research recommendations.¹⁹ Similarly, we did not include any articles from 2000-2010 on mental health or sexual assault that have been previously included in a systematic review of literature. The IMHS "Female Mental Health Needs and Military Sexual Trauma, Assault, and Harassment among Military Service Members and Veterans of Both Genders" (2013) was prepared by the VA/DoD Integrated Mental Health Strategies Strategic Action 28 Task Group.²⁰ This review identifies research from 2005-2012 on the unique needs of Service women and female Veterans associated with mental health, sexual assault, and harassment, as well as the gaps in DoD and VA research on treatment and prevention in women.

¹⁹ Bean-Mayberry B, Batuman F, Huang C, Goldzweig CL, Washington DL, Yano EM, Miake-Lye I, Shekelle PG. Systematic Review of Women Veterans Health Research 2004-2008. VA-ESP Project #05-226; 2010) Prepared by: Evidence-based Synthesis Program (ESP) Center, West Los Angeles VA Medical Center, Los Angeles, CA. Paul G. Shekelle, MD, PhD, Director.

²⁰ Summary Report of a Systematic Literature Review: Female Mental Health Needs and Military Sexual Trauma, Assault, and Harassment among Military Service Members and Veterans of Both Genders. (26 JUNE 2013). VA/DoD Integrated Mental Health Strategies Strategic Action 28 Task Group (TG).

2. Search Strategy

The MWHRIG searched MEDLINE/PubMed for potentially relevant peer-reviewed research articles on Service women and military health published between January 2000 and December 2010. Four different searches were conducted. In the first search, the medical subject heading (MeSH) terms “military personnel” and “medicine” were utilized. This returned 523 articles. Other MeSH term searches included “delivery of health care” and “military personnel” (N=302) and “military personnel” and “medicine” (N=47). A final query was performed on the journal *Military Medicine* to search for relevant literature, using MeSH terms “women” or “female” or “gender” (N=837). We supplemented this search by reviewing the extensive list of publications by SMEs in research on military health or the health of Service women from DoD or the academic institutions with members of the MWHRIG. The articles were selected for inclusion in the systematic review following a tiered screening process.

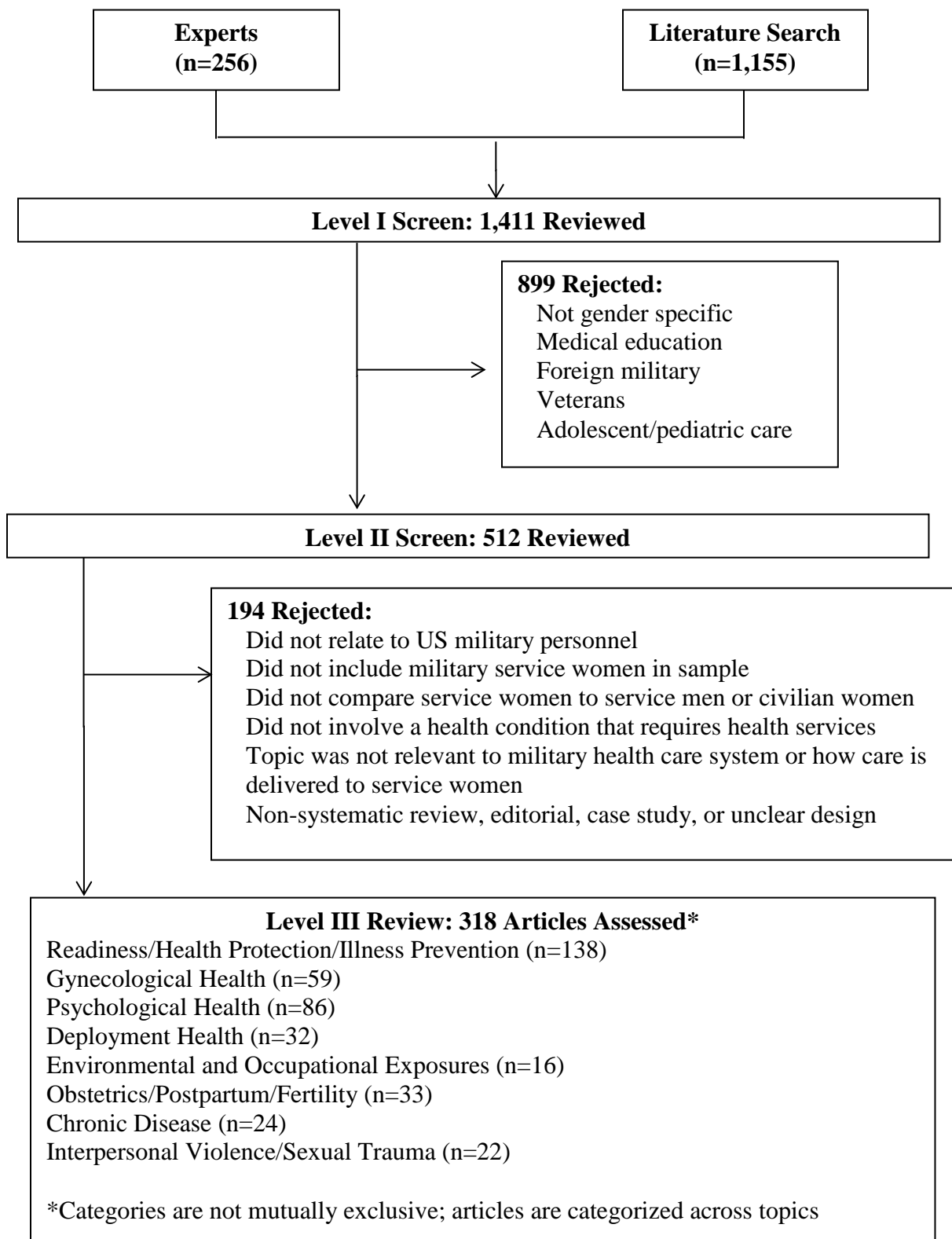
After the initial screening process (Levels 1-2), articles meeting inclusion criteria advanced to Level 3 and were evaluated and abstracted using a structured abstract form. The following data were abstracted: study question, study design, sample size (both female and male), data collection, main findings, and limitations as stated by the author(s). Included in the Level 3 review was an assessment of both the level and quality of evidence presented in each article. Each article was assigned one of seven levels that represent the strength of evidence. Level I, i.e., systematic reviews or meta-analysis of randomized controlled trials, represents the strongest evidence and Level VII the weakest. The stronger the evidence, the more reliable the findings when used to determine courses of actions.

3. Approach

The literature search identified 1,155 titles and the SMEs provided 256 titles of articles that were screened for inclusion in this systematic review. At this point, Level 1 screening was performed, and 899 articles were rejected either as not meeting the title screening criteria, or 1) not gender specific, 2) related to medical education 3) related to Foreign Military personnel, 4) related to U.S. female Veterans, or 5) were about adolescent or pediatric females. The remaining 512 articles were subjected to Level 2 screening. Upon closer review, 194 articles were rejected because the article 1) was not related to U.S. military personnel, 2) did not include military Service women in the sample, 3) did not compare Service women to Service men or to civilian women, 4) did not involve a health condition that requires health services, 5) was not relevant to the U.S. military healthcare system or how care is delivered to Service women, or was a 6) non-systematic review of literature, an editorial or opinion article, a case study or series, or had unclear methods. Thus, following initial screening by the MWHRIG CLs, 318 peer reviewed publications remained for inclusion in the systematic review (Figure 9.)

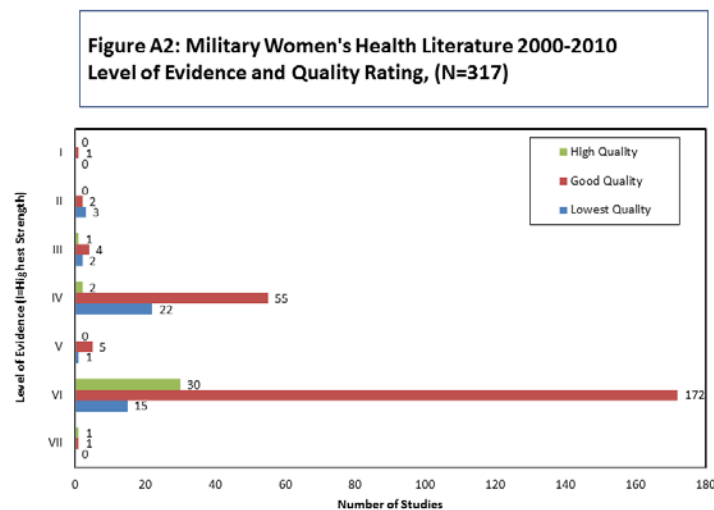
Thematic analysis was conducted by the CLs on the remaining 317 articles, and all articles were categorized into the following eight topics (not mutually exclusive): 1) readiness/health protection/illness prevention (n=120); 2) gynecological health (n=59); 3) psychological health (n=86); 4) deployment health (n=32); 5) environmental and occupational exposures (n=16); 6) obstetrics/postpartum/fertility (n=33); 7) chronic disease (n=23); and 8) interpersonal violence/sexual trauma (n=22).

Figure A1. Literature Flow



C. Description of Evidence

The vast majority of the literature, nearly 70 percent in this review, is derived from single descriptive studies, which is Level VI in the evidence hierarchy. The next largest body of literature (25 percent) is Level IV, which are mainly cohort studies. There were only 12 controlled trials (four percent), and of those only five were randomized (Level III). There were six systematic reviews (Level V), making up only two percent of the literature. Two Level VII (expert opinion) articles were chosen due to the relevance of the topic or the paucity of research in a topic that is considered essential by the SMEs. Nearly three quarters of the literature was graded as good quality, with 14 percent of high quality. Four percent of the evidence was graded as low quality by consensus of the CLs and the SMEs (see Figure C.2).



D. Search Results

1. Deployment Health

The articles were categorized and summarized in the following areas of research: disease non-battle injury (DNBI), healthcare utilization, gynecologic care in the deployed environment, aeromedical evacuation, and impact of body armor. A total of 32 articles addressed the healthcare of women in the deployed, austere environment. Gynecological care in a deployment environment was examined in a third of these articles. DNBI that occurred in deployed settings, healthcare utilization other than gynecologic care while deployed and aeromedical evacuation from theater each contributed more than 20 percent of the deployment health articles. Also relevant to health during deployment were two articles on the impact of body armor on women.

Sites where women sought gynecologic care ranged from field expedient (tented) medical sites, various sick call facilities, gynecological clinics in combat support hospitals, to fixed facilities on land and shipboard. Irregular bleeding, amenorrhea, menstrual symptoms, pelvic pain, pain with

urination, vaginal symptoms, contraceptive care, suspected pregnancy, and routine wellness care were cited as common reasons for seeking gynecologic care while deployed. Gynecologic care seeking behaviors, including access and barriers to gynecologic care, were examined. Two studies reported the benefits of having advanced gynecologic clinical capabilities in theater such as ultrasound, colposcopy, endometrial sampling, ablation of condylomas, loop electrosurgical excision, and urodynamic evaluation.

There are unique characteristics to women's healthcare needs in the deployed, austere environment. The literature on deployment health for women includes examinations of DNBI, gynecologic healthcare, and other health needs of women during deployment. Research on healthcare issues range from musculoskeletal issues, to oral-facial injuries, to mental health care needs of women. While the incidence of disease and non-battle illness and injury for women is included in reports of large cohorts by gender, the predominance of DNBI that is reported among women appears to be related to gynecologic illness and disease processes, a unique factor for women. This is evident in the literature that focuses on specific issues or experiences of gynecologic care that have been rendered in theater. Women do utilize a full range of gynecologic services in theater, but it appears that access to gynecologic care and resources could be improved.

2. Gynecological Health

Fifty-nine articles addressed gynecological health in the following areas of research: contraception, sexually transmitted infections (STI), sexual health, vaginal health, urological health, hygiene, menstruation, cervical cancer, and breast cancer. Not all of the articles in this category related to deployment health; therefore the discussion here is limited to those that did. A number of studies focused on specific types of gynecological health that are applicable to deployment health: vaginal health, urological health, hygiene, menstruation, and contraception.

Research articles described the provision and utilization of contraception in military women, with varied investigations into knowledge, attitudes, and decision making on contraception, type and frequency of methods used, and side effects. Symptoms, attitudes, and menstrual suppression were addressed in ten articles. Amenorrhea and irregular bleeding were common complaints in theater. Education, knowledge, and use of OCPs for menstrual cycle control or menstrual suppression were included in six articles; although desire for use among women was high, knowledge and use of OCPs for this purpose was low.

One article described a low incidence of STI in theater. Common infections other than STIs were identified as bacterial vaginosis, candidiasis, and urinary tract infections. The practices of feminine hygiene were described in seven articles and the main risk factor that was identified was the field environment.

Appendix B: Screenshots of Women's Health Literature Database Beta Test Site

Women's Health Literature Search

Service Branch

- Army
- Navy
- Air Force
- Marines
- Coast Guard

Selecting Service Branch criteria will limit the search results to the selected branches. If none are selected, results are shown for all Service Branches.

Study Design

- Descriptive
- Correlational
- Condition
- Quasi-Experimental
- Qualitative Research
- Triangulation
- Systematic Review or Meta-analysis

Types of Condition

Gender Specific Reproductive Care

- Breast Health
- Cancers of the Reproductive Track
- Genitourinary
- STD / STI
- Obstetrical
- Contraceptive Care
- Fertility
- Menstrual Cycle Disorders

General Conditions

- Bone, Joint, Rheumatic
- Cardiovascular Disease
- Endocrinology / Thyroid
- Neurological (Includes Stroke)
- Obesity
- Other

Psychiatric

- Mood Disorders
- PTSD
- General Psychiatric
- Other

Substance Abuse

- Alcohol Studies
- Smoking
- General Substance Abuse
- Other

Trauma

Setting of Research

Treatment Facility Setting

- Military Treatment Facility
- Multi-site study

Deployment Setting

- OEF / OIF
- Persian Gulf / Gulf War
- Not Specified
- Other

Other Setting

- Field Exercise / Training
- Workplace
- Fleet
- Other

Topics

- Pharmacology
- Clinical Research
- Medical Readiness
- Post-deployment Health
- Psychological Health
- Environmental and Occupational Exposures
- Teratogenicity
- Health Promotion, Risk Reduction, Disease Prevention, Nutrition
- Quality of Care / Patient Satisfaction
- Utilization and Access
- Cost Analysis
- Tools (research or clinical)
- Other

Women's Health Literature Search

Search Results

[← Back to Search](#)

Your search identified 5 articles.

Results per Page

<p>Costs of excess body weight among active duty personnel, U.S. Air Force, 1997 A. S. Robbins,S. Y. Chao,C. R. Russ,V. P. Fonseca (2002). Costs of excess body weight among active duty personnel, U.S. Air Force, 1997. <i>Military medicine</i>, 167(5), 393.</p>
<p>One-year costs of increased screening and treatment for breast cancer in the Air Force Medical Service A. S. Robbins,J. R. Keas,V. P. Fonseca,C. J. Phillips,S. Y. Chao (2003). One-year costs of increased screening and treatment for breast cancer in the Air Force Medical Service. <i>Military medicine</i>, 168(10), 784.</p>
<p>The Federal Nursing Services Award. Enlisted women with breast cancer: balancing demands and expectations M. C. Wilmoth (2003). The Federal Nursing Services Award. Enlisted women with breast cancer: balancing demands and expectations. <i>Military medicine</i>, 168(7), 514.</p>
<p>An evaluation of standardized patients in improving clinical breast examinations for military women E. A. Coleman,C. B. Stewart,S. Wilson,M. J. Cantrell,P. O'Sullivan,D. O. Carthron,L. C. Wood (2004). An evaluation of standardized patients in improving clinical breast examinations for military women. <i>Cancer nursing</i>, 27(6), 474.</p>
<p>Risk of breast cancer among enlisted Army women occupationally exposed to volatile organic compounds C. P. Rennix,M. M. Quinn,P. J. Amoroso,E. A. Eisen,D. H. Wegman (2005). Risk of breast cancer among enlisted Army women occupationally exposed to volatile organic compounds. <i>American Journal of Industrial Medicine</i>, 48(3), 157.</p>

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Women's Health Literature Search

Article Summary

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You selected the following article:

Costs of excess body weight among active duty personnel, U.S. Air Force, 1997

A. S. Robbins, S. Y. Chao, C. R. Russ, V. P. Fonseca (2002). Costs of excess body weight among active duty personnel, U.S. Air Force, 1997. *Military medicine*, 167(5), 393.

Study Design: A retrospective cohort study design.

Total Sample Size: 4974

Female Sample Size: 1137

Sample Setting:

Summary

Data Collection: Data regarding body weight, exercise, smoking, and alcohol consumption were collected from the US Air Force Health Enrollment Assessment Review (HEAR). Data regarding medical encounters were collected using the Corporate Executive Information System.

Findings: Approximately 20% of both male and female active duty Air Force personnel that volunteered for this study exceeded body weight for height standards. When extrapolated to the entire Air Force population, excess body weight resulted in a significant financial burden.

Limitations as stated by the author: Body weight and height data self-reported; classifications of medical conditions that may have resulted directly from excess body weight are unsubstantiated.

Hierarchy of Evidence Rating System: VI

Level of Quality: B

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Appendix C: Acronyms

AFHSC – Armed Forces Health Surveillance Center
CENTCOM – Central Command
CL – Core Leaders
COCOM – Combatant Command
DCoE (Psychology) – Defense Centers of Excellence For Psychological Health And Traumatic
Brain Injury
DNBI – disease nonbattle injury
DoD – Department of Defense
FY – Fiscal Year
GAO – Government Accountability Office
HAWHIWG – Health Affairs Women’s Health Issues Working Group
HSR&D – Health Services Research and Development
IMHS – Integrated Mental Health Strategy
IUD – intrauterine device
MeSH – Medical Subject Headings
MHS – Military Health System
MWHRIG – Military Women’s Health Research Interest Group
NDAA – National Defense Authorization Act
OASD(HA) – Office of the Assistant Secretary of Defense for Health Affairs
OCP – oral contraceptive pills
PDHRA – Post-Deployment Health Reassessment
PHA – Periodic Health Assessment
SME – Subject Matter Experts
STI – sexually transmitted infection
TSNRP – TriService Nursing Research Program
USUHS – Uniformed Services University of the Health Sciences
UTI – urinary tract infection
VA – Veterans Affairs
WDH – Women’s Deployment Health
WHTF – Women’s Health Task Force