

# Health of the Female Soldier

## 2023 SUMMARY

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U.S. ARMY





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# Health of the Female Soldier

**2023 SUMMARY**

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# Welcome to the 2023 *Health of the Female Soldier Summary*

**This inaugural *Health of the Female Soldier Summary* aims to increase awareness of female Soldiers' health at the individual, unit, and community levels and empower senior leaders with the knowledge and context to improve Soldier health and readiness. Modeled after the *Health of the Force* report, this summary is focused on the Army female Active Component (AC) population to which health has not been previously characterized in a deliberate and systematic manner. This *Health of the Female Soldier Summary* serves as an important tool for creating awareness of health issues that impact and influence medical readiness. The goal of this report is to assess the health status of female Soldiers and provide comprehensive population health surveillance to inform senior Army leaders.**

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## INTRODUCTION

In 2016, the Department of Defense (DoD) lifted its restrictions and allowed all military occupations and positions to be open to women, without exception. As the number of women in the U.S. military grows, a concerted effort is needed to highlight the health and health needs of the female population. With more women serving in all military occupational specialties, attention to unique health risks and additional research to examine gaps in women's health care is needed. By improving availability and transparency of Army population-level health status information, focused on women's health, leaders are empowered to advance and promote programs and strategies which improve medical readiness and the health and well-being of this population.

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## BACKGROUND

Women's health encompasses much more than just reproduction, contraception, fertility, and maternal health. This report incorporates both female-specific conditions and general health conditions that may affect women differently or disproportionately. Women's health also encompasses the emotional, social, cultural, spiritual, and physical well-being which can be influenced by the biological, social, political, and economic context of women's lives (Phillips 1995). Women's wellness includes the lifespan from childhood into adolescence, through the childbearing period, and into older age (Pettiford 2016). It not only includes wellness issues related to cardiovascular disease, cancer, and other chronic conditions, but also includes the consequences of intimate partner violence and mental health issues. Improving the health of women is an important issue that requires collective attention. Not only is every woman impacted by her own health status, but her health also influences her entire family.

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## OVERVIEW

This report represents a cross-sectional assessment of female Soldier health status based on information from existing medical surveillance and health-related data available at the time of analysis, which covers the 2017–2021 timeframe. Medical surveillance aims to enhance soldier health and readiness by providing information to develop programs that decrease and, ultimately, prevent illness and injury. This 2023 *Health of the Female Soldier Summary* includes data from chronic disease diagnoses, gynecological exams, cervical cancer screening, and behavioral health (BH) surveillance. Calls to action to increase readiness and health are incorporated throughout the report. Spotlight sections are included to provide clarity and additional information in expanded topics that cover aspects of health readiness in oral health, nutrition, sexually transmitted infections, reproductive healthcare, and behavioral health (BH) resources.

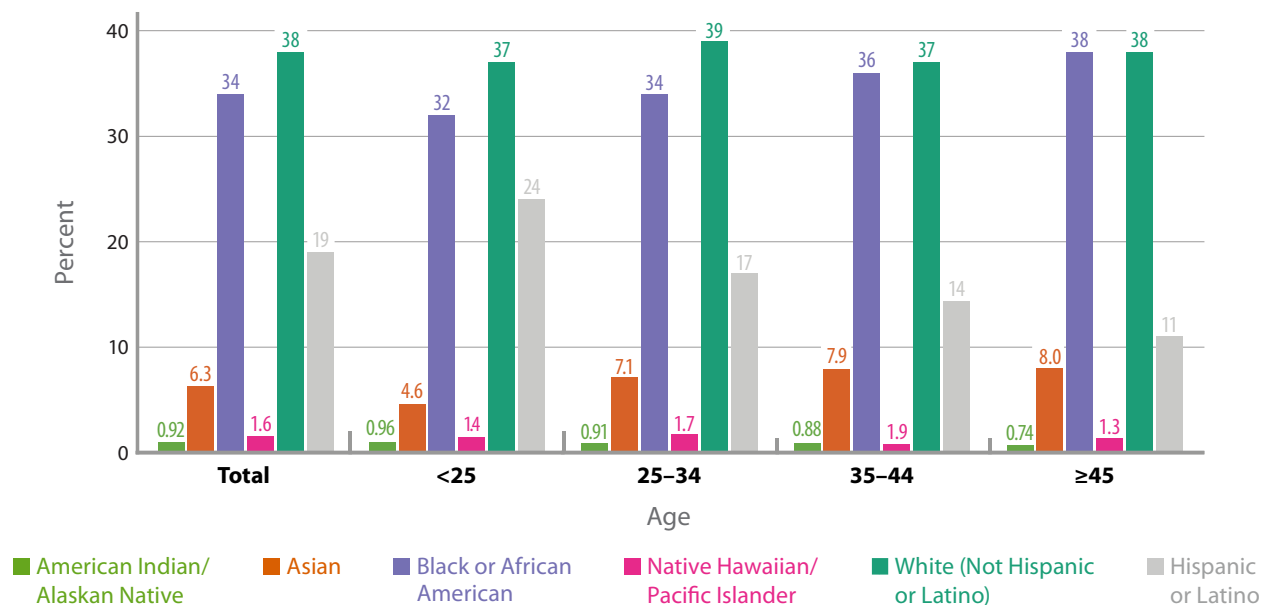
# Demographics

In 2021, there were 74,125 female Soldiers in the AC Army, making up 16% of the AC Soldier population (DCPH-A 2023). This percentage differs significantly from the 47% of the U.S. civilian employed workforce population of adults 18 years or older who are female (BLS 2022a). The female AC Soldier population also differs with respect to the distribution of age, race, and ethnicity compared to the female U.S. civilian employed workforce population. For example, 79% of female Soldiers are <35 years old, compared to only 34% of the female U.S. civilian employed workforce population. Further, 34% of female Soldiers are Black or African American, compared to approximately 14% of the female U.S. civilian workforce, and roughly 19% of female Soldiers are Hispanic or Latino ethnicity, compared to 16% of the female U.S. civilian workforce population (BLS 2022b). It is important to keep these comparisons in mind, as health status and health disparities are often linked with age, race, and ethnicity. When possible, this report presents metrics stratified by age group, race, and ethnicity to facilitate meaningful comparisons among populations of female AC Soldiers.

Although demographics on sexual orientation and gender identity are not available in DoD administrative records, the presence of LGBT Service members has been polled in recent DoD surveys. Data from the 2021 Workplace and Gender Relations survey found that an estimated 8.6% of AC Army women identified as lesbian or gay, 11.2% identified as bisexual, and 70% identified as heterosexual or straight (OPA 2022). The presence of LGB women in the AC Army is 2.4 times higher than among U.S. adult women at 8.3% (Jones 2022). About 1.0% of AC Army women identified as transgender, which was consistent with U.S. adult women at 0.8% (OPA 2022; Jones 2022).

The following chart displays the distribution of race and ethnicity, by age, of female AC Soldiers who are included in this report. Soldiers who identify only as Hispanic or Latino with an “other” or unknown race, or Hispanic or Latino and White race, are only included in the “Hispanic or Latino” category. Soldiers who identify as Not Hispanic or Latino with an “other” or unknown race, i.e., less than 1% of the female AC Soldier population, are not represented in the chart but are included in the population to calculate the metric values.

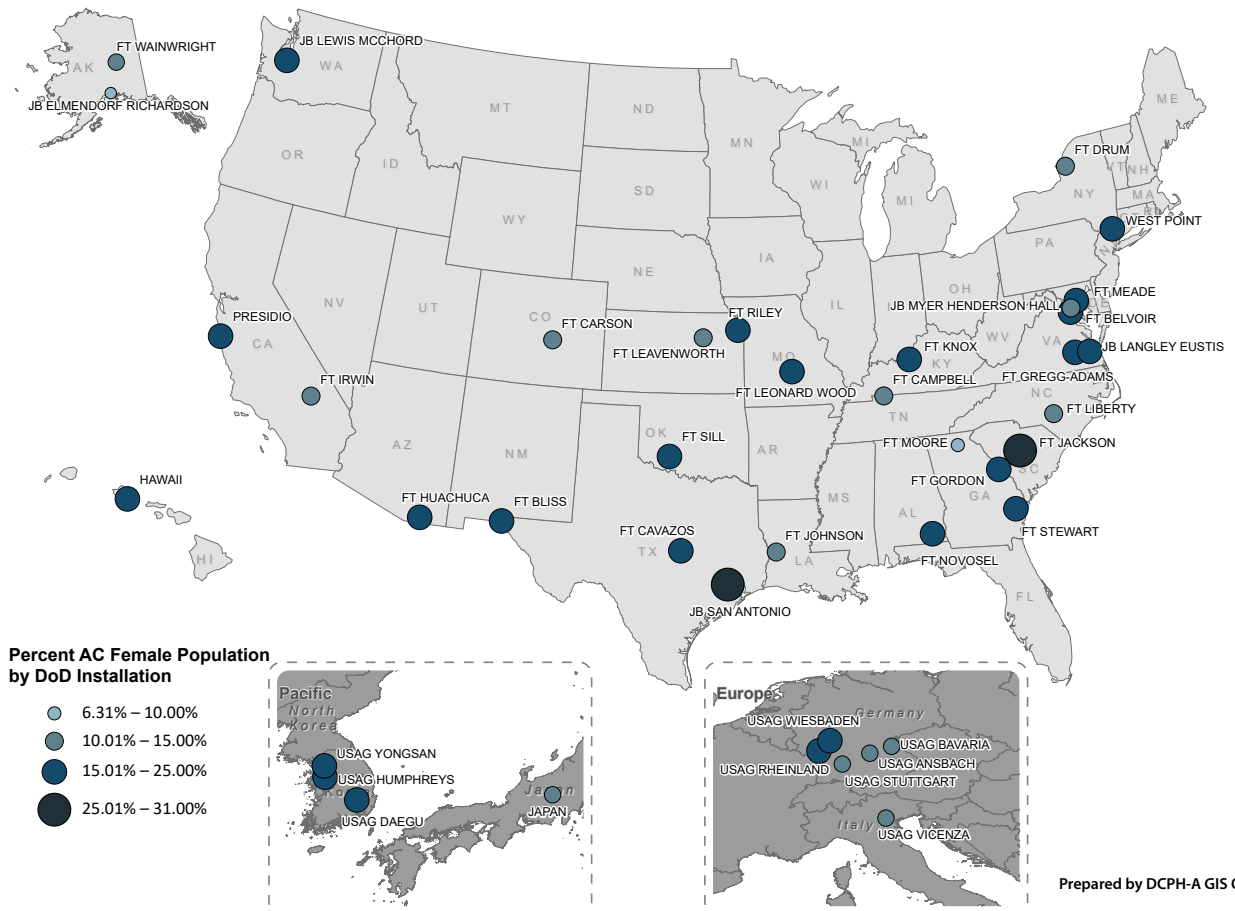
**Distribution of Race and Ethnicity by Age, Female AC Soldiers, 2021**





### Population by Installation, Female AC Soldiers, 2021

At least 10% of the Soldier population is female on the majority of installations. At most OCONUS locations, less than 15% of Soldiers are female.



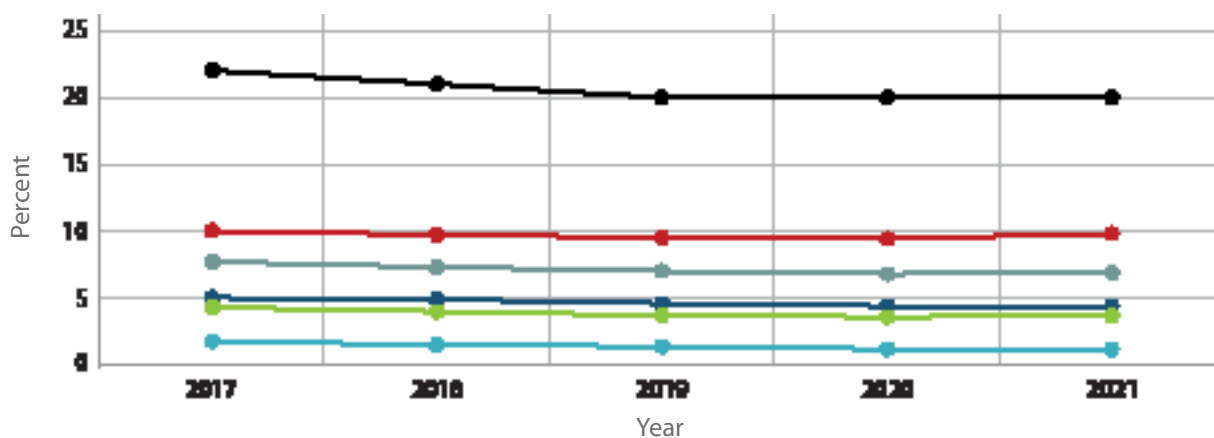
# Chronic Disease

Chronic diseases cause persistent, recurrent, or long-lasting health effects, which in turn can affect military readiness. Compared to their male counterparts, female AC Soldiers have a higher prevalence of chronic disease (DCPH-A 2023). Many chronic diseases can be prevented and/or managed in part by adopting healthy lifestyle choices such as maintaining a healthy diet, exercising regularly, and avoiding tobacco use (CDC 2023a; HHS 2021b).

The chronic diseases assessed in this report include cardiovascular disease, hypertension, cancer, asthma, arthritis, chronic obstructive pulmonary disease (COPD), and diabetes. The prevalence of chronic diseases was determined using specific diagnostic codes from inpatient and outpatient medical encounter records in the Military Health System Military Data Repository (MDR). Female Soldiers may have more than one chronic disease. The overall prevalence of chronic disease represents the proportion of female AC Soldiers who have at least one of the chronic diseases assessed.

In 2021, 20% of female AC Soldiers had at least one chronic disease. The prevalence of any chronic disease decreased from 2017 to 2019 before stabilizing through 2021. In that year, the most prevalent chronic disease among female AC Soldiers was arthritis (9.8%), followed by cardiovascular disease (6.9%) and asthma (4.4%).

**Prevalence of Chronic Disease by Disease Category, Female AC Soldiers, 2017–2021**



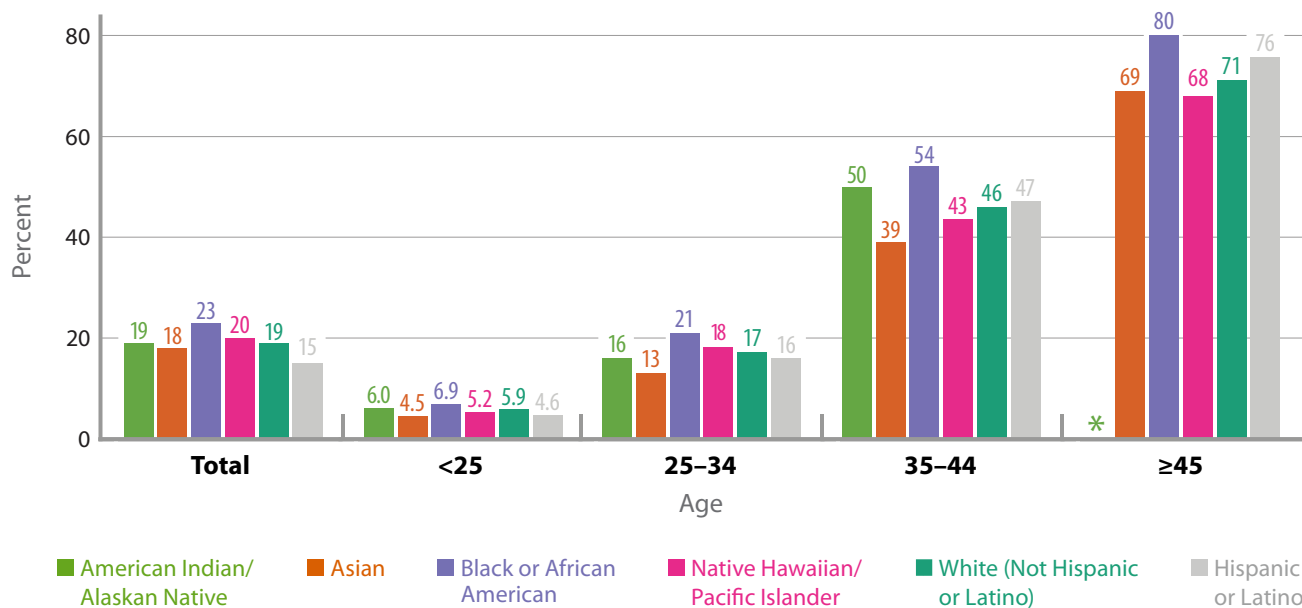
—●— Any (%)	22	21	20	20	20
—●— Arthritis (%)	10	9.7	9.5	9.4	9.8
—●— Cardiovascular (%)	7.7	7.3	7.0	6.8	6.9
—●— Asthma (%)	5.0	4.9	4.6	4.4	4.4
—●— Hypertension (%)	4.3	4.0	3.7	3.6	3.7
—●— COPD (%)	1.8	1.5	1.4	1.2	1.2

Note: Less than 1% of female AC Soldiers were diagnosed with cancer or diabetes. The sum of disease categories is greater than the overall chronic disease prevalence, as Soldiers may have more than one condition.



## Prevalence of Chronic Disease by Age, Race, and Ethnicity, Female AC Soldiers, 2021

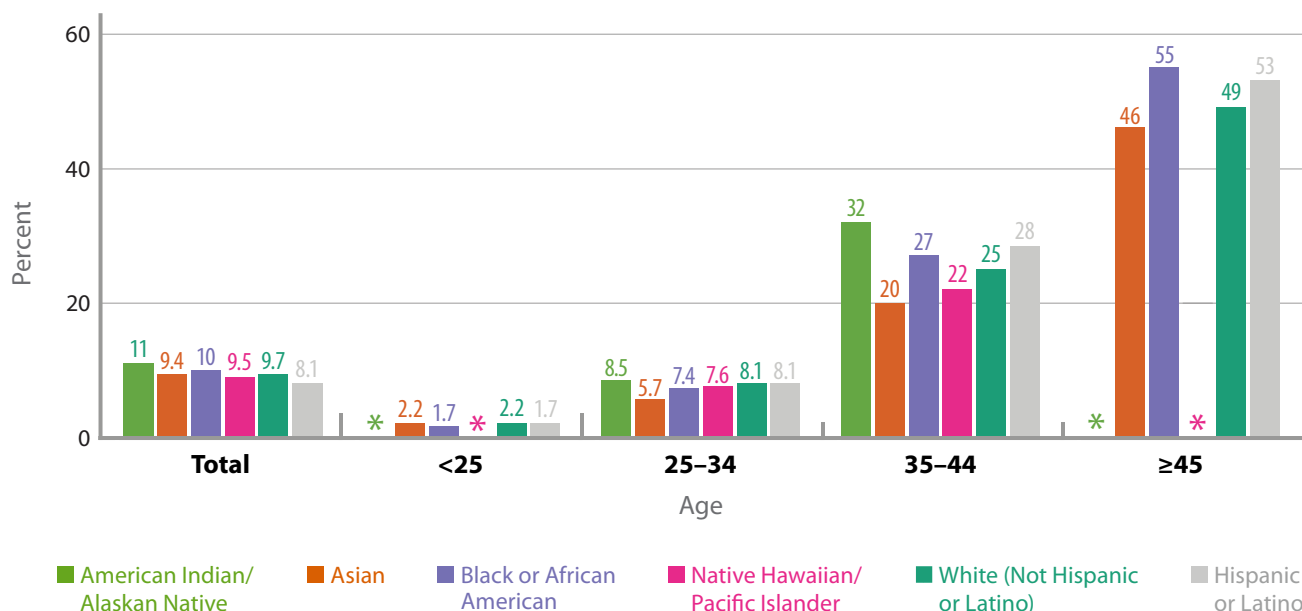
The prevalence of chronic disease among female AC Soldiers increased with age. Across each age group, Black or African American female Soldiers had the highest prevalence of chronic disease compared to female Soldiers identifying as any other race. Hispanic or Latino female Soldiers had the lowest overall prevalence of chronic disease.



\*Data suppressed due to small case numbers (<20 cases)

## Prevalence of Arthritis by Age, Race, and Ethnicity, Female AC Soldiers, 2021

Arthritis is the common name for a group of inflammatory conditions that affect joints, the tissue around the joints, and other connective tissue. Nationally, among U.S. adults, arthritis is the leading cause of disability (Theis 2021). In the AC Soldier population, arthritis is consistently the most prevalent chronic disease (DCPH-A 2023). Arthritis can be related to over-use injuries and severe injuries to the joints and is most common among Soldiers ≥45 years old. Black or African American Soldiers had the highest prevalence of arthritis among female Soldiers ≥45 years old, and American Indian/Alaskan Native Soldiers had the highest prevalence of arthritis among female Soldiers for all age categories combined.

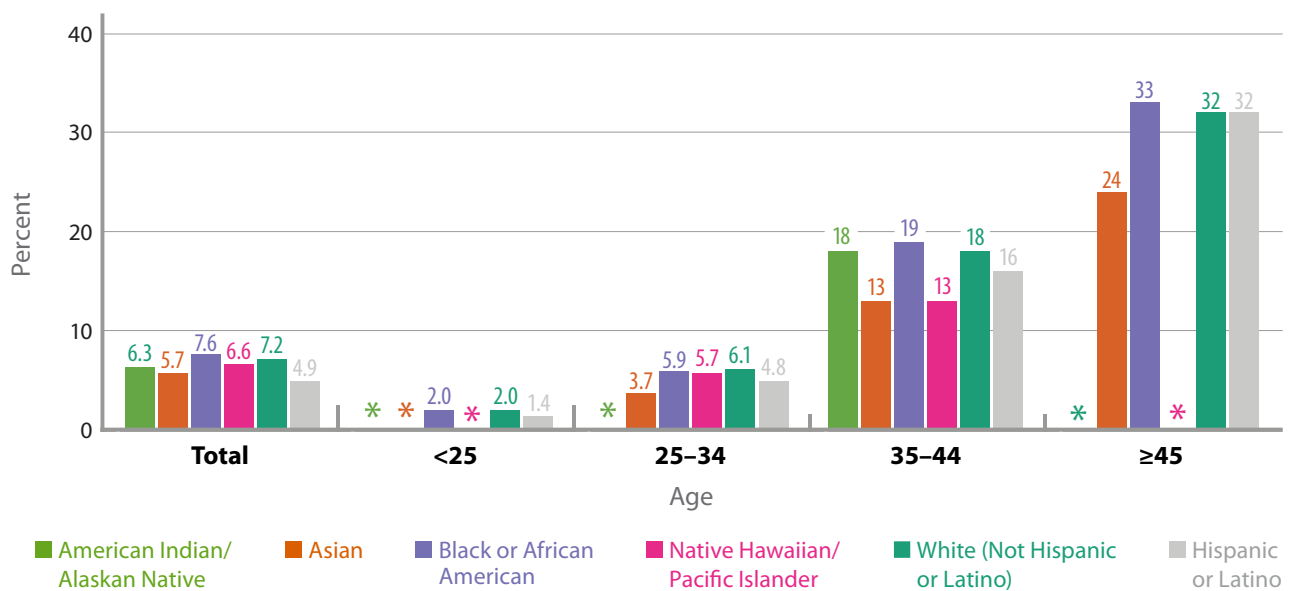


\*Data suppressed due to small case numbers (<20 cases)

## Prevalence of Cardiovascular Disease by Age, Race, and Ethnicity, Female AC Soldiers, 2021

Cardiovascular disease, or heart disease, is a group of disorders of the heart and blood vessels. Hypertension (high blood pressure), although a contributor to cardiovascular disease, was analyzed as a separate chronic condition. Among female Soldiers, cardiovascular disease was most common among Soldiers  $\geq 45$  years old. While Black or African American Soldiers had the highest prevalence, and Hispanic Soldiers had the lowest prevalence of cardiovascular disease among female Soldiers. Overall, among those  $>45$  years old, the percentage of disease is almost equal across the Black or African American, Native Hawaiian/Pacific Islander, and Hispanic or Latino female Soldier groups.

National U.S. data show that Black or African American and American Indian/Alaskan Native females are at increased risk for heart disease compared to females of other races and ethnicities (HHS 2021b). Age, family history, hypertension, high cholesterol, diabetes, smoking, overweight and obesity, unhealthy diet, physical inactivity, and excessive alcohol use are also risk factors for heart disease. While female AC Soldiers are younger and generally more active than the U.S. female adult population, it is still important to recognize that cardiovascular disease increases with age, which is nonmodifiable. Thus, a focus on modifiable health behaviors is needed across the life course and notably by 35 years of age.



\*Data suppressed due to small case numbers (<20 cases)

### Improving Women's Health at Any Age

#### ➔ Optimize your health.

- » **Make sleep a priority.**
  - Plan for 7 or more hours of sleep when you are in training, in tactical environments, or when your work schedule changes.
- » **Increase physical activity and work towards regular physical activity.**
  - Being physically active can improve your brain health, help manage weight, reduce the risk of disease, strengthen bones and muscles, and improve your ability to do everyday activities.
- » **Improve your diet.**
  - Healthy eating improves heart health and lowers risk of chronic disease. Consider adding more fruits and vegetables to your diet.



U.S. Army photo by 1st Lt. Angelo Mejia

## Quit tobacco products for good.

- ➔ The harmful effects of tobacco product use include reduced physical performance, delayed healing from injury, and increased likelihood of illness.
- ➔ Tobacco-free living is adopting a lifestyle that avoids using all tobacco product types and living free from second-hand smoke exposure.

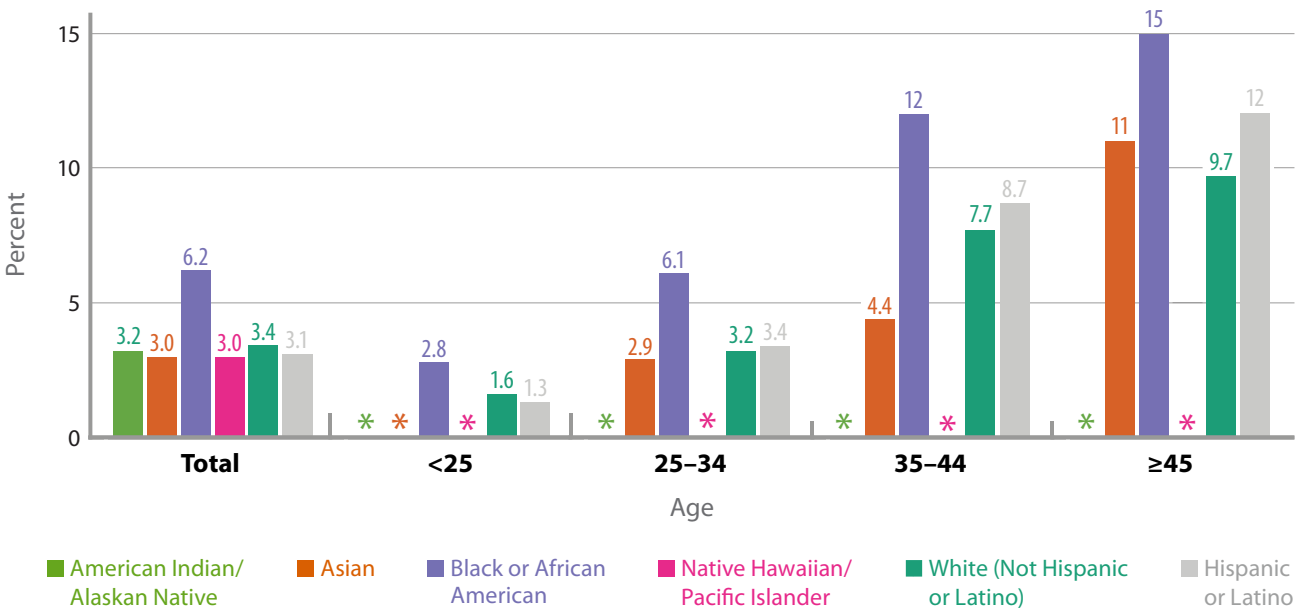


DCPH-A photo by Graham Snodgrass

### Prevalence of Asthma by Age, Race, and Ethnicity, Female AC Soldiers, 2021

Asthma is a chronic condition of the lungs where airways can become inflamed, narrow, and produce extra mucus, causing wheezing, difficulty breathing, chest tightness, and coughing. National asthma surveillance data from the Centers for Disease Control and Prevention (CDC) show that consistently over the past decade, females  $\geq 20$  years old are more likely than males to be diagnosed with asthma (Moorman 2012).

In the female AC Soldier population, asthma is most common among those  $\geq 45$  years old. Black or African American Soldiers had the highest prevalence of asthma among female Soldiers in every age category. The prevalence of asthma for Black or African American Soldiers was also nearly twice as high as the prevalence of asthma for any other race and ethnicity. Overall, the prevalence of asthma for Black or African American Soldiers was nearly twice as high as the prevalence of asthma for any other race and ethnicity.



\*Data suppressed due to small case numbers (<20 cases)

## Oral Health and the Stages of Life

Throughout the stages of life, females experience changes in hormonal levels that affect all of the body's systems. Due to the hormonal fluctuations that can negatively impact the mouth, women can become particularly susceptible to oral health problems (ADA 2023b; NIH 2021). The hormonal changes that women experience not only affect the blood supply to the gums but also affect the body's response to the toxins produced by gingival plaque buildup. This response can cause the gums to become red, inflamed, swollen, and bleed easily; and can lead to gingivitis (NIH 2021; Markou et al. 2009).

### Puberty

At puberty, the increase in the production of the sex hormone (estrogen and progesterone) levels correlates with increased prevalence of gingivitis. An overgrowth of red, inflamed gum tissue may appear in areas of the mouth where food debris, tartar, and plaque have accumulated. The gums may bleed when one is eating (ADA 2023b; Kessler 2017). It is important to practice good oral hygiene by brushing teeth and gums at least twice a day and flossing at least once daily.

### Menstruation

Although most women experience no changes in oral health during the menstrual cycle, some may experience gingivitis. Hormonal changes during this time may exacerbate any pre-existing gum disease (Markou et al. 2009; NIH 2021). The increased progesterone levels can cause the gums to become swollen, irritated, red, and bleed more than usual. Women may experience aphthous ulcers (nonherpetic lesions); the activation of recurrent herpes infections; and prolonged bleeding after an oral surgery procedure (ADA 2023b; AAP 2023b; NIH 2021; Kessler 2017).

### Menopause

Menopause is accompanied by many changes within the body, including those within the mouth. Reported oral discomforts include dry mouth, burning sensations, pain, and altered taste perception. In addition to the hormonal shift, women who are older are more likely to be taking more medications, some of which may also cause dry mouth. Because salivary flow is needed to rinse away bacteria and food particles, dry mouth increases the likelihood of tooth decay and gum disease (Dutt 2013; Kessler 2017; NIH 2021; ADA 2006).

The decline in estrogen during menopause places women at greater risk of developing osteoporosis. Osteoporosis, a disease that weakens bones and makes them more likely to break, is the most common metabolic disease (ADA 2006). According to the Bone Health and Osteoporosis Foundation (BHO), 1 in 2 women over age 50 will have an osteoporosis-related bone break (BHO 2023). Osteoporosis may contribute to bone loss of the jaws, thus making removable dental prosthetics ill-fitting, which may increase the need for new dentures, partials, and other removable oral prosthetics. Those desiring dental implants may require bone regeneration therapies for the jaw prior to implant placement (ADA 2023c; Wan 2020). To treat osteoporosis, an individual may be prescribed drugs called bisphosphonates and denosumab. Dental examinations with appropriate preventive therapies should occur prior to treatment with osteoporosis medications (ADA 2023c; Wan 2020).





## Eating Disorders and Oral Health

Eating disorders such as bulimia nervosa and anorexia nervosa disproportionately affect women (90%) compared to men (10%) (ADA 2006). According to the National Institute of Mental Health, the median age of onset for both bulimia and anorexia is 18 years old (NIH 2023b). Bulimia affects approximately 1% to 5% of the population, with most individuals affected in their late teens to early adulthood (ADA 2006). Anorexia affects nearly 1% of females ages 12 to 30 (ADA 2006).

Bulimia, characterized by recurrent episodic eating binges, is accompanied by self-induced vomiting, laxative and/or diuretic use, fasting, or exercising to prevent weight gain. Bulimic individuals and a subgroup of anorexic individuals both engage in self-induced vomiting (NEDA 2022). Most oral health problems seen in individuals with eating disorders stem from self-induced vomiting. The most common oral health problem is the erosion of the enamel from the teeth caused by the repeated flow of stomach acid over teeth surfaces. The loss of enamel can cause teeth sensitivity, cavities, and changes in teeth color, length, and shape. The edges of teeth become thin and can easily break (ADA 2023a; Rangé et al. 2021; Kessler 2017). The practice of self-induced vomiting, along with the nutritional deficiencies, can cause oral soft tissue lesions/ulcerations, as well as dehydration and dry mouth, which result in decreased salivary flow (Lumbau and Spano 2017).

To prevent further loss of tooth surfaces, recommended measures include fluoride applications, both in the dental office and at home, and a water rinse followed by a fluoride rinse immediately after vomiting. Rinsing with baking soda can help neutralize the effects of stomach acid. Tooth brushing immediately after a vomiting episode is not recommended because brushing can result in further enamel erosion (ADA 2023a; Rangé et al. 2021; ADA 2006).

# Fuel for Optimal Health

Healthy eating is a way of eating that improves health and provides fuel to function optimally. Healthy eating is important for everyone, but women have some unique nutritional needs, including—

- Iron
- Calcium
- Folic acid/folate (Vitamin B9)
- Fiber

## IRON

Many women, especially pregnant women, do not get enough iron from food alone. This can put women at risk for iron-deficiency anemia. This condition causes the heart to work harder to pump blood so that more oxygen can be delivered to the entire body. Anemia can result in tiredness, weakness, or dizziness.

The amount of iron women need varies throughout life:

- Ages 19 to 50: 18 milligrams (mg) each day
- During pregnancy: 27 mg each day
- Ages 51 and older: 8 mg each day

Good sources of iron are lean red meats, chicken, seafood, cereals/breads with iron added, oysters, beans, dark chocolate, liver, spinach, tofu, and canned tomatoes.

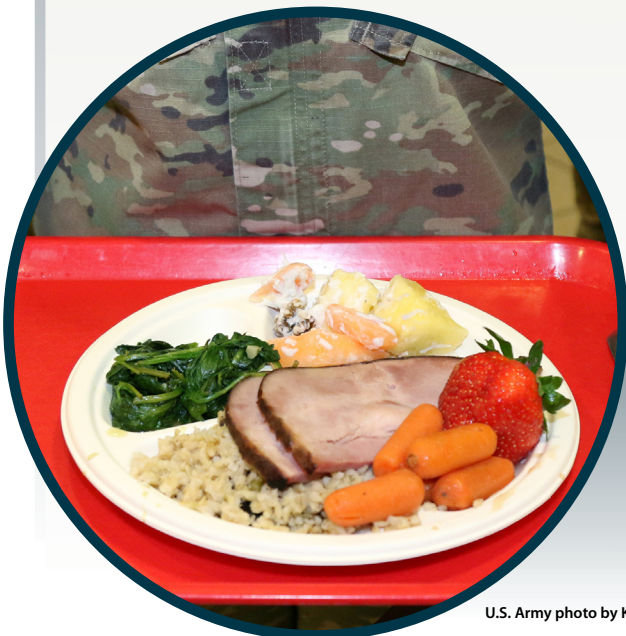
## CALCIUM

Calcium helps protect and build strong bones and reduces the risk of osteoporosis. The body stores calcium in the bones. If insufficient calcium is obtained from food, the body will take calcium from the bones, making them weak and easily breakable.

The amount of calcium needed varies throughout life:

- Girls ages 9 to 18 need 1,300 mg of calcium each day. During this time, bones absorb calcium and build strong bones for adulthood and older age.
- Adult women need 1,000 mg of calcium each day.
- After menopause, women need 1,200 mg of calcium each day to help slow the bone loss that comes with aging.

Good sources of calcium are low-fat or fat-free yogurt, cheese, and milk; foods with calcium added, such as some soy beverages, 100% orange juice, tofu, and cereals; canned salmon; and dark green leafy vegetables.

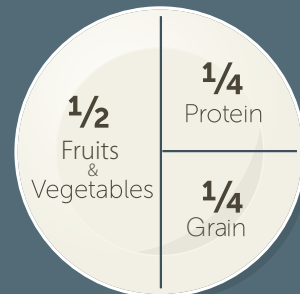


U.S. Army photo by K. Kassens

*Healthy eating is important for everyone, but women have some unique nutritional needs.*

## Tips for a healthier plate.

- ➔ Regularly fill half of your plate with fruits and vegetables.
- ➔ Check the Nutrition Facts Label on food packages for the amount of fiber, iron, and calcium per serving.
- ➔ Talk with your healthcare provider if you need a supplement.



SCAN HERE



Nutrition Facts Label  
information

SCAN HERE



More information on  
healthy eating

### **FOLIC ACID/FOLATE**

Folic acid/folate helps prevent certain birth defects called neural tube defects, which happen in the first 3 months of pregnancy. It also helps prevent premature births and low birth weight. Nearly half, or 45%, of all pregnancies in the U.S. are not planned (Finer and Zolna 2016). So, it is important that females get enough folic acid even if they are not planning on becoming pregnant.

All women who might get pregnant or are pregnant need to get 400–800 micrograms (mcg) of folic acid each day from either dietary supplements (most prenatal vitamins have this amount) or fortified foods like many breakfast cereals.

Good sources of folic acid/folate are spinach and other dark green leafy vegetables; oranges and pure orange juice; nuts, beans, chicken, and lean beef; and whole grains and cereals with added folic acid/folate.

### **FIBER**

Most women do not consume enough fiber, which can contribute to constipation and increase the risk for other health problems. Fiber helps lower the risk for diseases that affect many women, such as heart disease, diabetes, irritable bowel syndrome, and colon cancer. Because fiber is also filling, its consumption can help maintain a healthy weight.

The amount of fiber women need varies throughout life:

- Ages 19 to 30: 28 grams (g) each day
- Ages 31 to 50: 25 g each day
- Ages 51 or older: 22 g each day

Good sources of fiber include fortified cereal, many whole-grain breads, beans, fruits (especially berries), dark green leafy vegetables, all types of squash, and nuts.

# Gynecological Examination

Annual well-woman visits to the gynecologist can be important for women’s reproductive and overall health. The U.S. Preventive Services Task Force (USPSTF) has found inconclusive evidence on the benefits of an annual pelvic examination in asymptomatic females with low risk of gynecological issues (USPSTF 2017). The American College of Obstetricians and Gynecologists (ACOG) recommends routine physical, pelvic, and breast examinations only if they are clinically indicated due to the presence of symptoms or if an individual is at higher risk of certain gynecological conditions or breast cancer (ACOG 2018). However, these annual visits can provide an important setting for discussing medical and sexual history, conducting intimate partner violence screening, and counseling on healthy behaviors, contraception, and family planning.



## What is a Gynecological Exam?

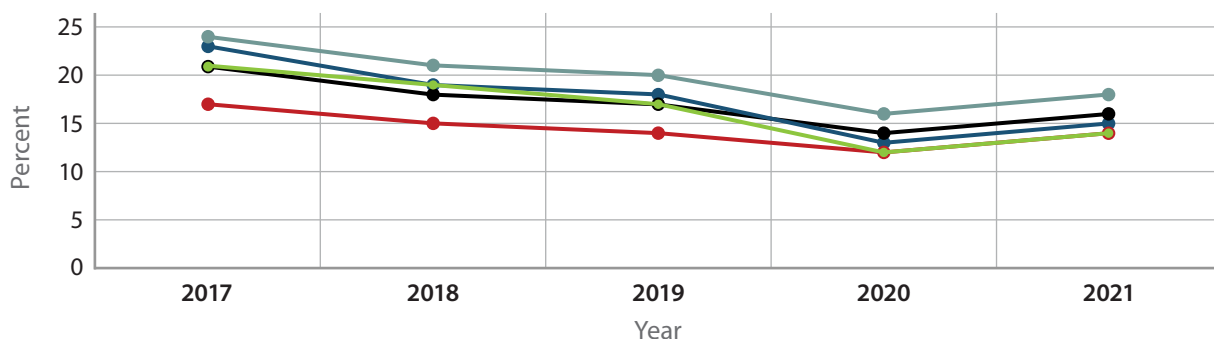
Whatever your age, an annual gynecological exam includes—

- » An assessment of your current health status.
- » A breast exam to check for lumps, skin changes, or nipple discharge.
- » A pelvic exam to assess your sexual and reproductive health. A pelvic exam will check your vulva, vagina, cervix, uterus, ovaries, rectum, and pelvis for masses, growths, or other abnormalities.

The prevalence of routine gynecological examinations was estimated using specific diagnostic codes from outpatient medical records in the MDR. The diagnostic code for a routine gynecological examination captures well-woman visits both with and without a pelvic examination by the healthcare provider.

## Routine Gynecological Examinations by Age, Female AC Soldiers, 2017–2021

In 2021, 16% of female AC Soldiers had a routine gynecological examination. The prevalence of female Soldiers who had a routine gynecological examination decreased steadily from 2017 to 2020 but increased again in 2021. The lower prevalence in 2020 was most likely due to delay of care during the height of the Coronavirus Disease 2019 (COVID-19) pandemic. This prevalence does not capture female Soldiers who chose to see their primary care provider for their annual wellness visits, which may account for the overall low prevalence.

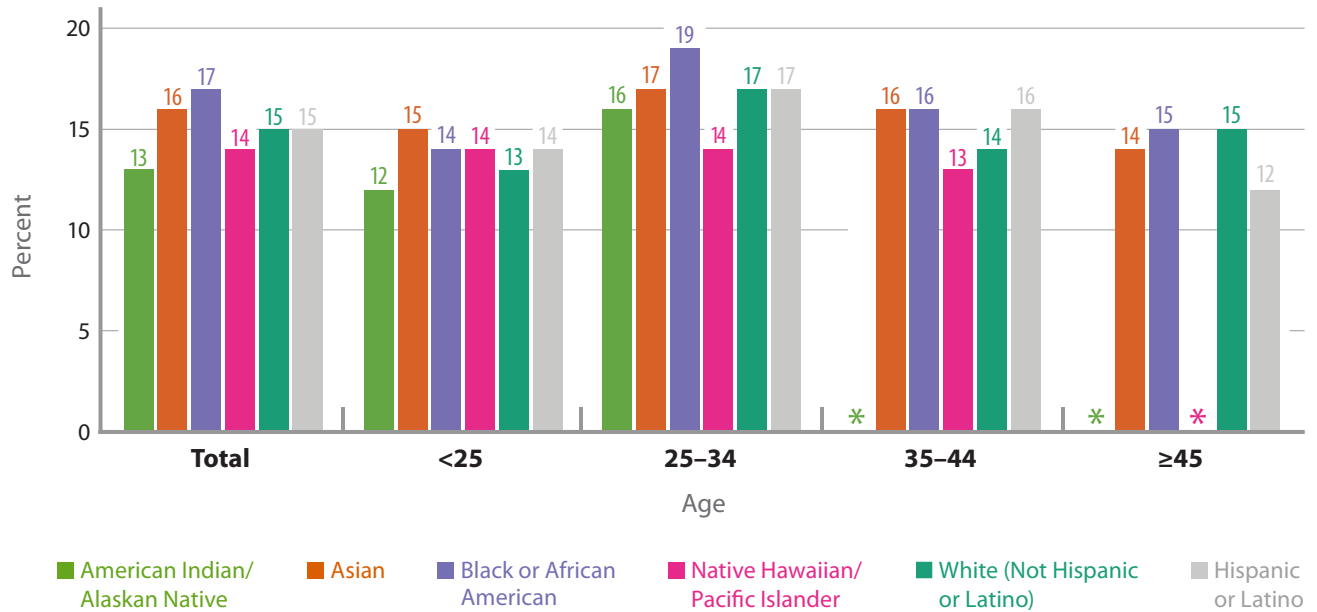


● Total (%)	21	18	17	14	16
● <25 (%)	17	15	14	12	14
● 25–34 (%)	24	21	20	16	18
● 35–44 (%)	23	19	18	13	15
● ≥45 (%)	21	19	17	12	14



## Prevalence of Routine Gynecological Examinations by Age, Race, and Ethnicity, Female AC Soldiers, 2021

With the exception of the youngest age group (<25 years old), Black or African American female AC Soldiers had the highest prevalence of routine gynecological examinations.



U.S. Army photo by 1st Lt. Vernicia Ford

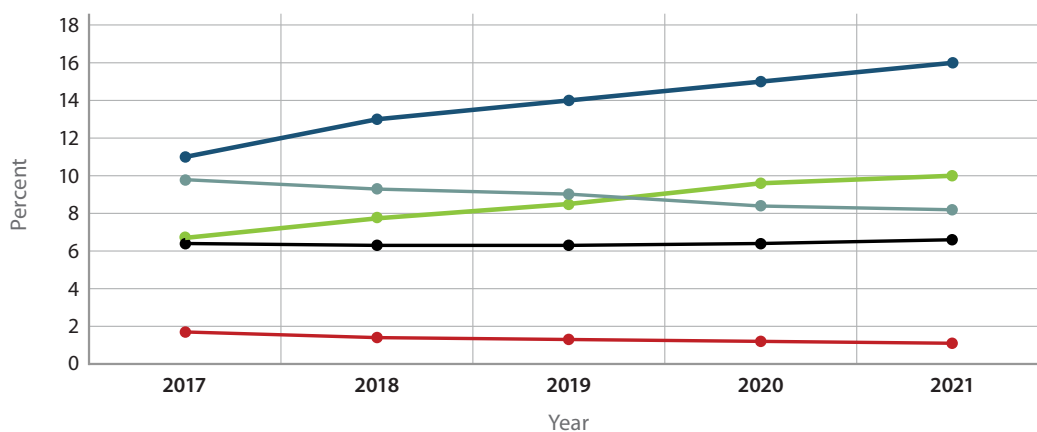
## Human Papillomavirus

Human papillomavirus (HPV) is the most common sexually transmitted infection in the U.S. (CDC 2022a). HPV is so common that almost every sexually active person will be infected at some point in their lives. Most HPV infections resolve on their own, but when the infection does not clear on its own, some strains of the virus can cause genital warts. Additionally, a few strains of HPV cause 90% of cervical cancer cases and can also cause anal, vulvar, vaginal, and oropharyngeal cancer (CDC 2022a).

The HPV vaccine, approved in 2006, provides protection against four HPV strains, and the updated vaccine approved in 2016 protects against nine HPV strains (Kaiser Family Foundation 2021). The CDC recommends HPV vaccination for females  $\leq 26$  years old regardless of sexual activity, prior exposure to HPV, or sexual orientation. However, the vaccine is licensed for females through 45 years old, and clinicians may recommend vaccination in females  $>26$  years based on risk of new HPV infection and whether the patient may benefit from the vaccine (ACOG 2020). The HPV vaccine is also approved for males, with the same age-based recommendations as females for receiving the vaccine. Since there is no approved HPV test for males, those with HPV can unknowingly transmit the virus to their sex partners.

### Prevalence of HPV by Age, Female AC Soldiers, 2017–2021

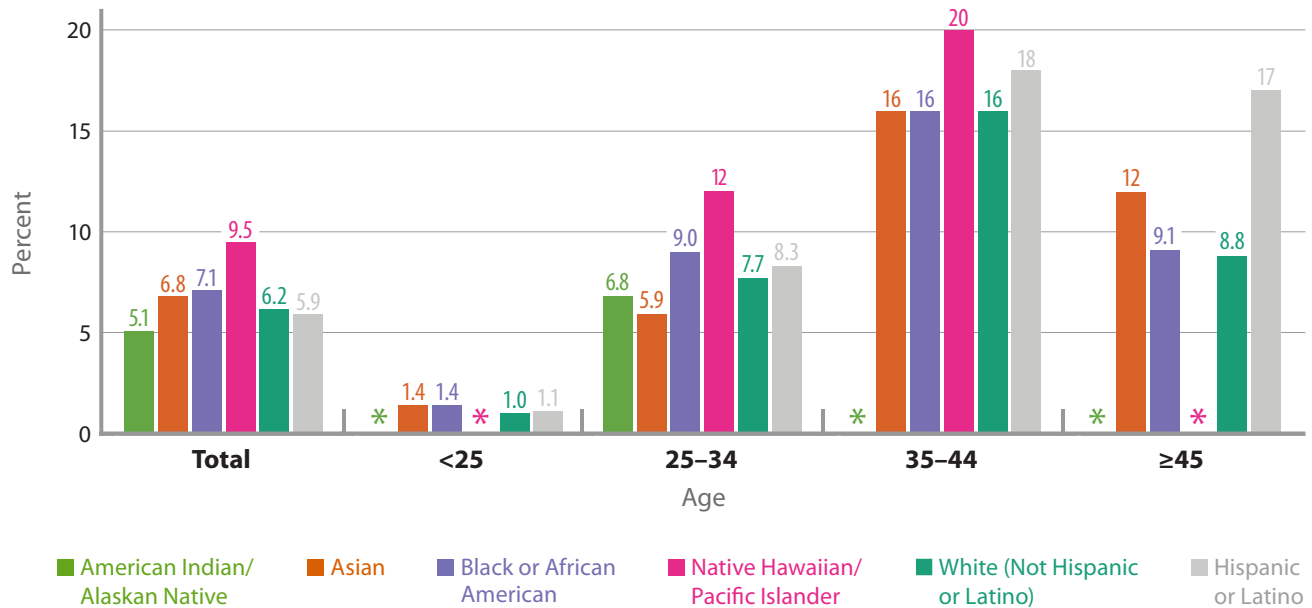
Over a 5-year period, the prevalence of HPV remained stable among female AC Soldiers. However, the prevalence of HPV in older female Soldiers ( $\geq 35$  years old) increased from 2017 to 2021, while the prevalence of HPV decreased slightly among younger female Soldiers ( $<35$  years old) over that same time period. The lowest percentage is among those  $<25$  years old, which may be related to HPV vaccination received as adolescents prior to entering the Army. The 25–34 age group may not have as high a vaccination rate despite being in the target demographic  $<26$  between 2006 and 2016. Although the vaccine is licensed for females through 45 years old, the highest percentage of HPV detected is among those 35–44 years old, as the HPV vaccine was not yet widely adopted when they were in the target demographic (17–26 years old). The prevalence of HPV was estimated using specific diagnostic codes from outpatient medical records in the MDR.



● Total (%)	6.4	6.3	6.3	6.4	6.6
● <25 (%)	1.7	1.4	1.3	1.2	1.1
● 25–34 (%)	9.8	9.3	9.0	8.4	8.2
● 35–44 (%)	11	13	14	15	16
● $\geq 45$ (%)	6.7	7.7	8.5	9.6	10

## Prevalence of HPV by Age, Race, and Ethnicity, Female AC Soldiers, 2021

In 2021, the prevalence of HPV increased among female AC Soldiers 25 to 44 years old compared to those <25 years old. Within this age range, Native Hawaiian/Pacific Islander Soldiers had the highest prevalence of HPV among female Soldiers, which may indicate the need for education in this demographic group. A history of infection with certain strains of HPV is an important risk factor for the development of cervical cancer. Since the HPV vaccine is not required for readiness, all Soldiers (female and male) should be informed about the availability of the HPV vaccine and provided the opportunity to get vaccinated following the annual Periodic Health Assessment (PHA) or other appointment. Local immunization clinics will have information about the HPV vaccine. The next section of this report discusses the prevalence of cervical cancer screening among female AC Soldiers.



DCPH-A photos by Graham Snodgrass

## Learning More About HPV

**HPV is the most common sexually transmitted infection in the U.S. In most cases, HPV goes away within 2 years, but in some cases, HPV does not go away and can result in genital warts and cancer (e.g., cervical cancer).**

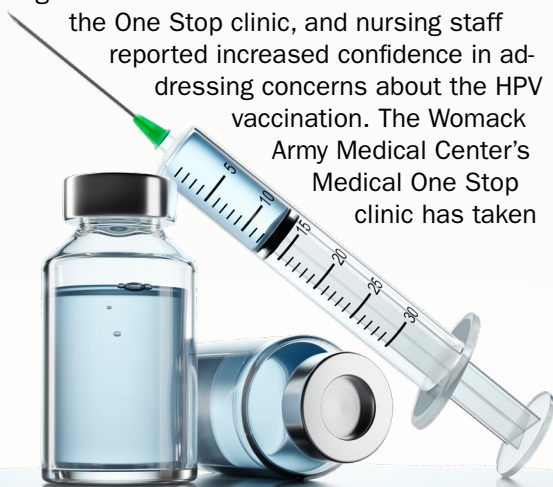
According to the Military Health System's (MHS) updated report, *Sexually Transmitted Infections Among Active Component Service Members, U.S. Armed Forces, 2014–2022*, “the rates of genital HPV infections decreased 47.3% among all AC Service members from the start of the surveillance period until the end, with the most marked absolute decrease among women” (AFHSB 2023). Even with this decrease over an 8-year period, research shows military members are half as likely as civilians to receive the HPV vaccine, and AC military and veterans are twice as likely as civilians to develop cancers associated with HPV.

Although there is no requirement for AC military to receive the HPV vaccine, studies have been conducted within the military to improve HPV vaccination coverage among Soldiers. At Fort Liberty (formerly Fort Bragg), the Womack Army Medical Center's Medical One Stop clinic, which conducts medical in- and outprocessing, participated in a 2021 study where the clinic nursing staff was provided training (e.g., role-play and group discussions) about HPV vaccine communication and administration adapted from evidence-based interventions. Four weeks after receiving the HPV training, the nursing staff reported that 38% of eligible Soldiers received the HPV vaccine from the One Stop clinic, and nursing staff reported increased confidence in addressing concerns about the HPV vaccination. The Womack Army Medical Center's Medical One Stop clinic has taken

“Continued education focused on high-risk behaviors, cervical cancer screenings, HPV vaccine promotion, and reporting standards will contribute to the reduction in transmission of HPV.”

a step in the direction of using health education methods to increase HPV vaccination rates within the military (Penick et al. 2022). Continued education focused on high-risk behaviors, cervical cancer screenings, HPV vaccine promotion, and reporting standards will contribute to the reduction in transmission of HPV.

Most people with HPV do not know they have the infection. At your next appointment, ask your provider or immunization clinic about getting the HPV vaccine. The CDC recommends that the HPV vaccine be given to girls and boys ages 11 to 12 to protect against HPV cancers later in life and recommends the vaccination for everyone through age 26 years, if not adequately vaccinated when younger. Although the HPV vaccination is not typically recommended for everyone older than age 26 years; some adults ages 27 through 45 years might decide to receive the HPV vaccine based on a discussion of risk versus benefits with their healthcare provider.



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## Sexually Transmitted Infections in Military Women

Sexually transmitted infections (STIs) are bacterial, viral, and parasitic infections transmitted from an infected individual to an uninfected individual through oral, anal, or vaginal sexual activity. Bacterial STIs include chlamydia, gonorrhea, and syphilis and are treated with antibiotics; however, there are concerns regarding the threat of antibiotic resistance. Viral STIs include HPV, herpes simplex virus (HSV), human immunodeficiency virus (HIV), and hepatitis B. Although these viral infections cannot be cured, and the virus remains in the body, symptoms might not be present at all times. The lack of visible or physical symptoms may mislead individuals to think that they are not infectious. Long-term effects of untreated STIs, especially syphilis, can result in organ damage or illnesses such as pelvic inflammatory disease, cancer, pregnancy complications, and infertility (CDC 2023c).

General risk factors for contracting STIs include unprotected sex; incorrect application of barrier protection, such as condoms; multiple sex partners; anonymous sex partners; and sex under the influence of drugs or alcohol (CDC 2022b). Women in the military may face additional risk factors such as a higher prevalence of binge drinking (34%) compared to the civilian population (27%) which is associated with risky sexual behavior (Meadows et al. 2021). Several other risk factors to consider include living and working within young, physically fit, and sexually active populations in the military.

Data collected from 2014 to 2022 show that AC military women tested positive for chlamydia, gonorrhea, HSV, and HPV at higher rates than their male counterparts (MHS 2023a). STI rates ranged from 1.3 times higher for gonorrhea to 10.5 times higher for HPV. Detection bias is present. As per the CDC, there is currently no approved HPV test for males (CDC 2022c). Females are required to have HPV tests as part of their well-woman exam, which occurs every 3 to 5 years depending on age, or more frequently if abnormalities are detected (ACOG 2021b). Also of note: From 2020 to 2022,

### When was your last STI Screening?

Women's walk-in STI testing and full-scope contraceptive services are offered at military medical treatment facilities (MTFs). Check with your local MTF for the designated walk-in day and hours, or schedule an appointment with your provider.

Adobe Stock image licensed to DCPH-A

the rate of syphilis increased by 40% for AC women (MHS 2023). This trend mirrors their civilian female counterparts, who experienced a 55% increase in syphilis from 2020 to 2021 (CDC 2023d). Although rates for chlamydia, gonorrhea, HSV, and HPV have been on the decline since 2019, STIs remain one of the top infectious disease healthcare burdens within the AC military population (MHS 2023).

STIs affect the health of the Force by decreasing Service members' readiness and ability to perform their mission. Individuals who choose to be sexually active can protect themselves and their partners from STIs by getting tested for STIs, maintaining a mutually monogamous relationship, and using barrier protection with every sexual encounter. Having a mutually monogamous relationship with an uninfected partner is one of the most reliable methods of protection. Typically, a higher number of sexual partners is associated with a greater risk for encountering an STI. Consistent and proper use of barrier protection such as latex condoms during oral, anal, or vaginal sex provides protection, although not absolute protection. Vaccination series are available for hepatitis B and certain cancer-causing strains of HPV (CDC 2023e).

## Cervical Cancer Screening

The USPSTF recommendations for cervical cancer screening, which the ACOG also follows, differ by age (USPSTF 2018; ACOG 2021). The USPSTF recommends against screening for cervical cancer in females <21 years old. Females 21 through 29 years old should be screened every 3 years using cervical cytology. Females ≥30 years old should be screened every 3 years using cervical cytology alone, every 5 years with high-risk HPV testing alone, or every 5 years with co-testing of cervical cytology and high-risk HPV testing. In addition to these cervical cancer screening methods, which are effective in detecting precancerous lesions and early-stage cervical cancer, HPV vaccination is an important preventive measure against cervical cancer. The prevalence of cervical cancer screening was estimated using specific diagnostic codes from outpatient medical records in the MDR.

### Prevalence of Cervical Cancer Screening by Age, Female AC Soldiers, 2017–2021

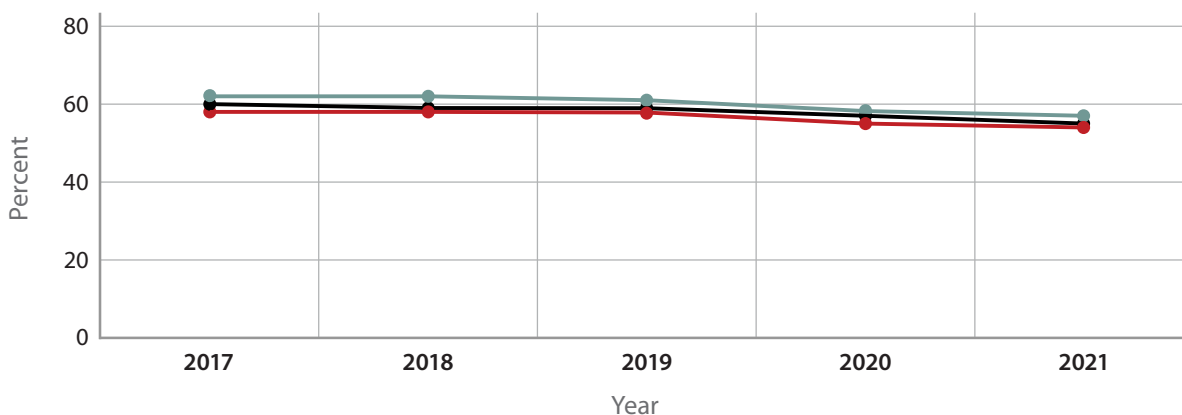


#### What is a cervical cytology?

Cervical cytology, also called a Pap test or a Pap smear, collects cervical cells to be tested for changes caused by HPV. If untreated, the cells may develop into precancerous cells and possibly cervical cancer.

The prevalence of cervical cancer screening (i.e., Pap test or Pap smear) decreased slightly over the 5-year period between 2017 and 2021. In 2021, 54% of female AC Soldiers 21 to 29 years old had cervical cytology in the past 3 years. Approximately 57% of female AC Soldiers ≥30 years old had at least one of the following: cervical cytology in the past 3 years, a high-risk HPV test in the past 5 years, or co-testing in the past 5 years.

The U.S. Department of Health and Human Services (HHS) estimated that in 2021, almost 74% of females 21–65 years old received a cervical cancer screening based on USPSTF guidelines (HHS 2023). **The Army is below the national screening rate at only 55%.** Ensuring that Soldiers are screened for cervical cancer according to USPSTF and ACOG recommendations is important for early detection, intervention, and treatment, with the aim of decreasing the number of cervical cancer cases in the Soldier population.



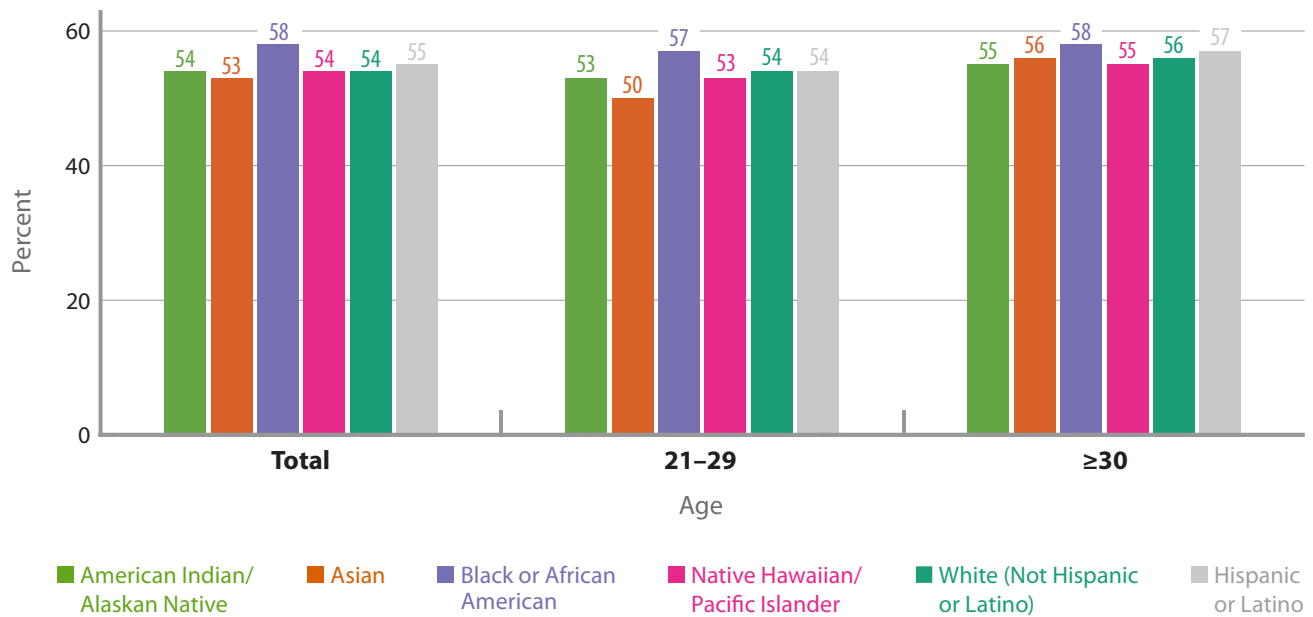
Year	Total (%)	21–29 (%)	30+ (%)
2017	60	58	62
2018	59	58	62
2019	59	58	61
2020	57	55	58
2021	55	54	57

\* Females <21 years old are excluded from this analysis. The total population for this analysis is the population of female AC Soldiers ≥21 years old.

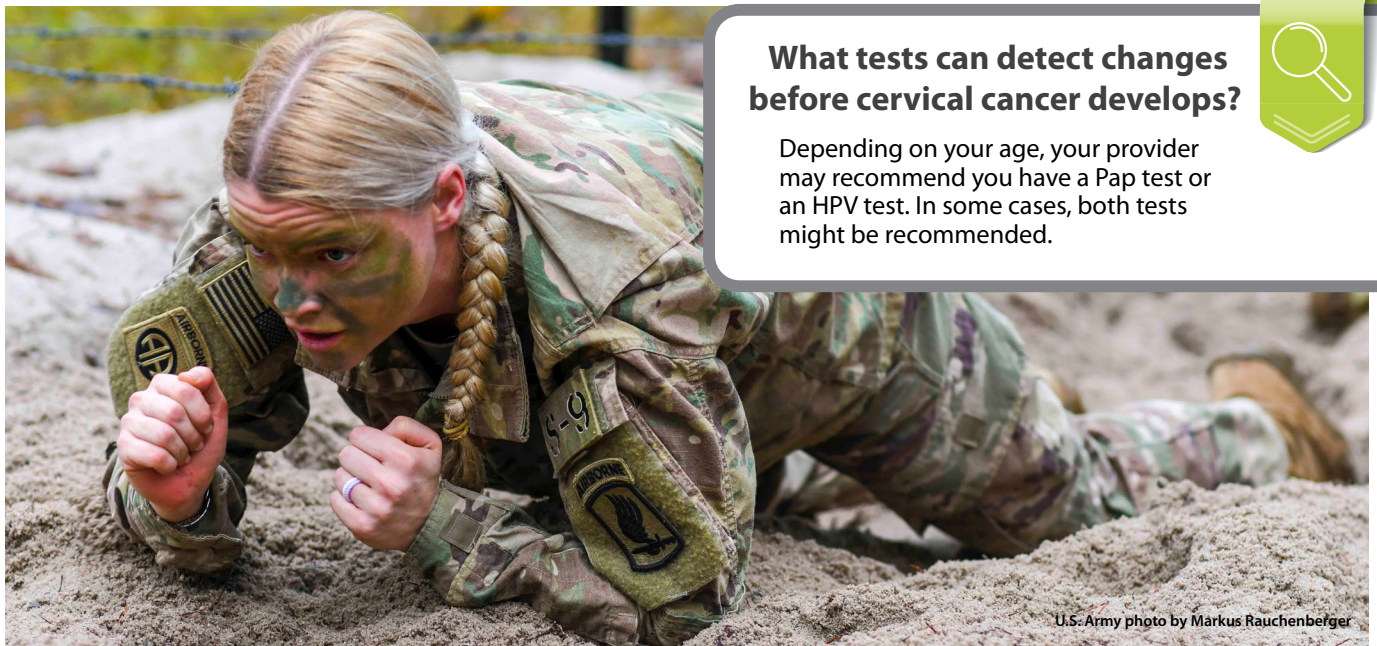
## Prevalence of Cervical Cancer Screening by Age, Race, and Ethnicity, Female AC Soldiers, 2021

In 2021, on average, Black or African American female AC Soldiers had the highest prevalence of cervical cancer screening, with 58% screened according to USPSTF guidelines. Early on, cervical cancer may not cause signs and symptoms. All women are at risk for cervical cancer. It occurs most often in women over age 30. Cervical cancer screening is vital preventive medicine. All female Soldiers are encouraged to ask their provider about scheduling for cervical cancer screening.

The CDC's national cancer data show that the rate of cervical cancer increases sharply in females  $\geq 30$  years old compared to females  $< 30$  years old, and that Hispanic, Black or African American, and Native Hawaiian/Pacific Islander females, when disaggregated from the Asian population, have increased rates of cervical cancer compared to White (Not Hispanic or Latino) females (CDC 2022e; HHS 2021a). Despite constraints on in-person exams during the COVID-19 pandemic, 50% or more of the target population were screened for cervical cancer. The goal of the MHS is to increase rates of screening in accordance with national standards and medical readiness requirements.



\*Females  $< 21$  years old are excluded from this analysis. The total population for this analysis is the population of female AC Soldiers  $\geq 21$  years old



U.S. Army photo by Markus Rauchenberger

# Reproductive Healthcare Access for Female Soldiers and Beneficiaries

On June 24, 2022, the Supreme Court of the United States repealed *Roe v. Wade*, the legal precedent governing access to abortion in the U.S. As a direct result, access to abortion health care is now governed by state laws, which are inconsistent across the U.S. Some states ban abortion completely, while others restrict access depending on time from date of conception, ranging from 6 to 24 weeks. Many states are updating statutes pertaining to abortion, and the legal landscape will likely be in flux for some time.

As of November 2023, abortion is banned or mostly banned in 17 states, all of which are home to military beneficiaries. In 2021, these states were the duty station for 44% of Army female beneficiaries of reproductive age (12–44 years old) who were active-duty Soldiers or Family members (116,000 individuals); and 40% of female beneficiaries of reproductive age who were Army National Guard and Army Reserve Soldiers or Family members (114,000 individuals) (DoD 2023) (see figure).

Current Federal law authorizes federal entities, including the DoD, to provide abortion care only when the life of the mother is in danger or when the pregnancy is the result of rape or incest (i.e., covered abortions) (CRS 2021). Recent DoD and Service policies have reiterated that the DoD will continue to provide covered abortion care to beneficiaries residing in states with abortion bans. Further, DoD policies will enable female Soldiers to manage their reproductive health by providing extended time for pregnancy notification, authorized absence to seek care, and travel allowances for Soldiers and their dependents to leave a duty station, when needed, to access non-covered abortion care (DoD 2022b). These policies reflect the DoD's commitment to ensuring beneficiaries' access to reproductive healthcare regardless of where they are stationed.

However, interviews with military women who have had an abortion reveal numerous barriers to contraception access in the Military Health System (MHS), including inadequate counseling, inability to access their preferred contraception method, the demands of military service, and the structure and functioning of the MHS (Seymour et al. 2019, 2020). While the new DoD policies will remove some impediments to access and awareness of resources, some structural barriers remain. For example, TRICARE does not cover

counseling, referral, preparation, and follow-up care for non-covered abortions (DHA 2015). Army policy dictates that Soldiers who seek elective care outside the MHS without prior approval of the MTF responsible for providing their primary medical care do so at their own risk (DA 2014).

*Stigma surrounding unintended pregnancy (UIP) and abortion, perceived hostility from chain of command, and privacy concerns impact decision making on how and whether to seek care. Living, or being stationed, in a state with an abortion ban could exacerbate these concerns and lead to poorer health outcomes.*

Certain DoD beneficiaries are at higher risk for UIP and abortion. A recent scoping review of UIP in military women found that young (<25 years old), single, enlisted women were at higher risk for UIP than older, married officers (Wilson et al. 2021). In the U.S., Black or African American women experience the highest rate of maternal mortality compared to all other racial groups and have a three to four times greater rate of maternal mortality than White women (Peterson et al. 2019). In 2021, 33% of female AC Soldiers identified as Black or African American (DoD n.d.), compared to 14% of adult women in the U.S. workforce (U.S. Census Bureau 2022). Given that Black or African American women experience increased health risks associated with pregnancy and birth and are disproportionately affected by barriers to abortion access (Dehlendorf et al. 2013), Black or African American Service members are also likely to experience worse outcomes related to UIP compared to the U.S. general population. Of the most



vulnerable female Soldiers (enlisted, non-white <25 years old), approximately 51% (12,000 individuals) were stationed in states that now ban all or most abortions (DoD 2022c).

The prevalence of sexual assault in the military places female Service members at elevated risk for UIP resulting from rape (DoD 2019). In 2018, an estimated 6.2% of AC women experienced a sexual assault in the past 12 months (OPA 2019a). This risk was even greater for the youngest female Soldiers. Among those 17–20 and 21–24 years old, an estimated 11.9% and 9.4%, respectively, experienced a sexual assault in the past 12 months (OPA 2019a). MHS allows for abortions in the case of rape or incest, but a physician must note in the patient’s medical record that it is their good faith belief, based on all available information, that the pregnancy was the result of rape or incest (DHA 2015). Female Soldiers may fear revealing a

sexual assault if they engaged in underage drinking, visited an off-limits establishment, used controlled substances, behaved in a manner subject to punishment, or when the assailant was another Service member (90% of cases for Army women [OPA 2019b]). Failure to disclose the assault would make these women ineligible for MHS abortion care.

During a military career, many Soldiers are likely to be stationed in a state with a ban for at least a short duration, especially early in their career when they are most at risk for sexual assault. For example, basic training for most Army personnel occurs in states with abortion bans, including Fort Moore (formerly Fort Benning), GA; Fort Jackson, SC; Fort Knox, KY; Fort Leonard Wood, MO and Fort Sill, OK. It’s important that Soldiers and their families are familiar with and understand their rights and available resources. Duty station should not limit access to reproductive healthcare.

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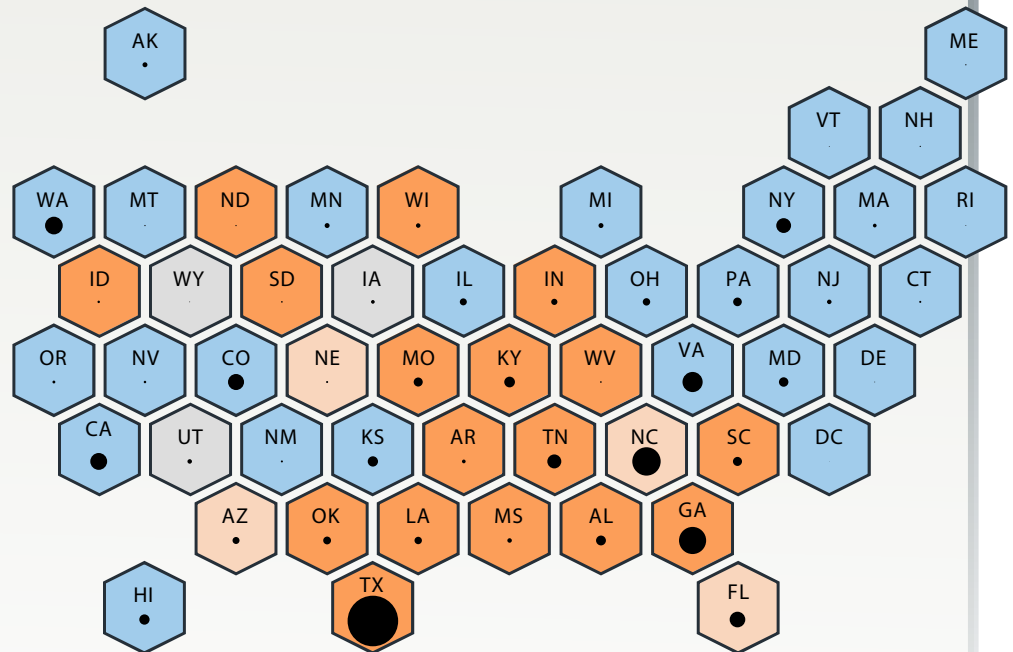


MHS Women’s Health page

SCAN HERE



Resources with printable FAQ on Reproductive Healthcare



**Abortion Status**

- Ban on all or most abortions
- Ban on abortions after 12 or 15 weeks
- Ban blocked by courts
- Legal

**Army Female Service Members and Beneficiaries, Ages 12–44**



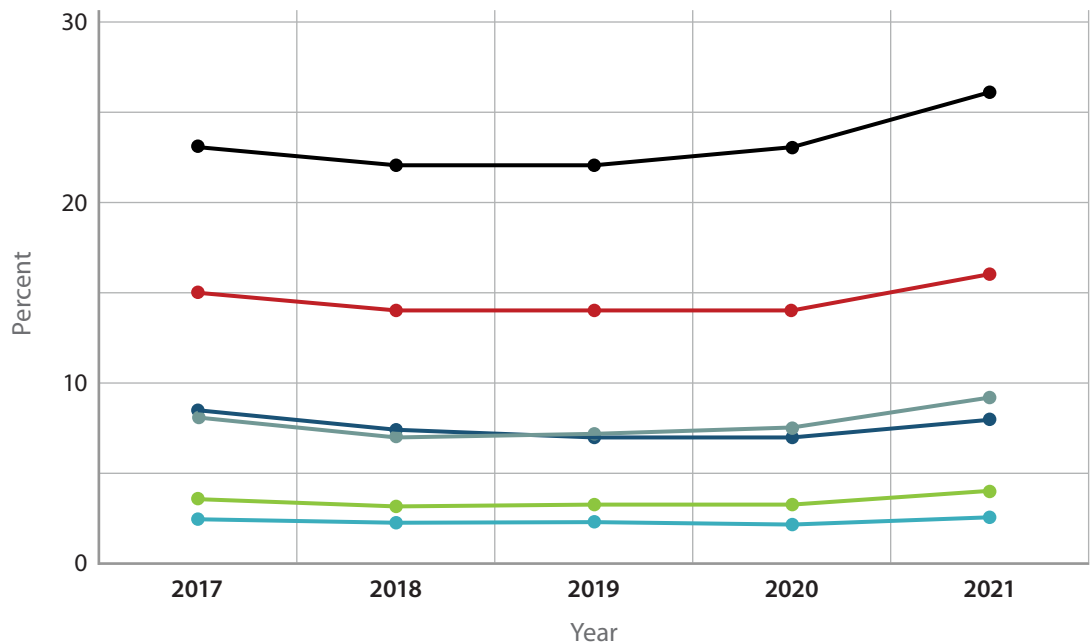
1 November 2023

# Behavioral Health

The growing population of female AC Soldiers, particularly within combat support roles in a male-dominated occupational environment, places women at increased risk of experiencing sexual harassment, sexual assault, and gender discrimination (Vogt 2011b; Street 2007; DoD 2022). These occupational and social circumstances may influence the finding that female Soldiers receive BH care more often than male Soldiers. Adjustment, anxiety, and mood disorders are the most common BH diagnoses among AC Soldiers; however, women are twice as likely to be diagnosed with these conditions when compared to men. The prevalence of the most frequent BH disorders by race/ethnicity and age are provided using specific diagnostic codes from inpatient and outpatient medical records in the MDR.

## Prevalence of Select BH Disorders, Female AC Soldiers, 2017–2021

In 2021, 26% of female AC Soldiers had a diagnosis of one or more BH disorders, which increased slightly compared to prior years. This may be due to a combination of Soldiers seeking BH services related to interruptions in care and new cases of BH disorders, which increased as a result of the many stressors experienced during the pandemic.



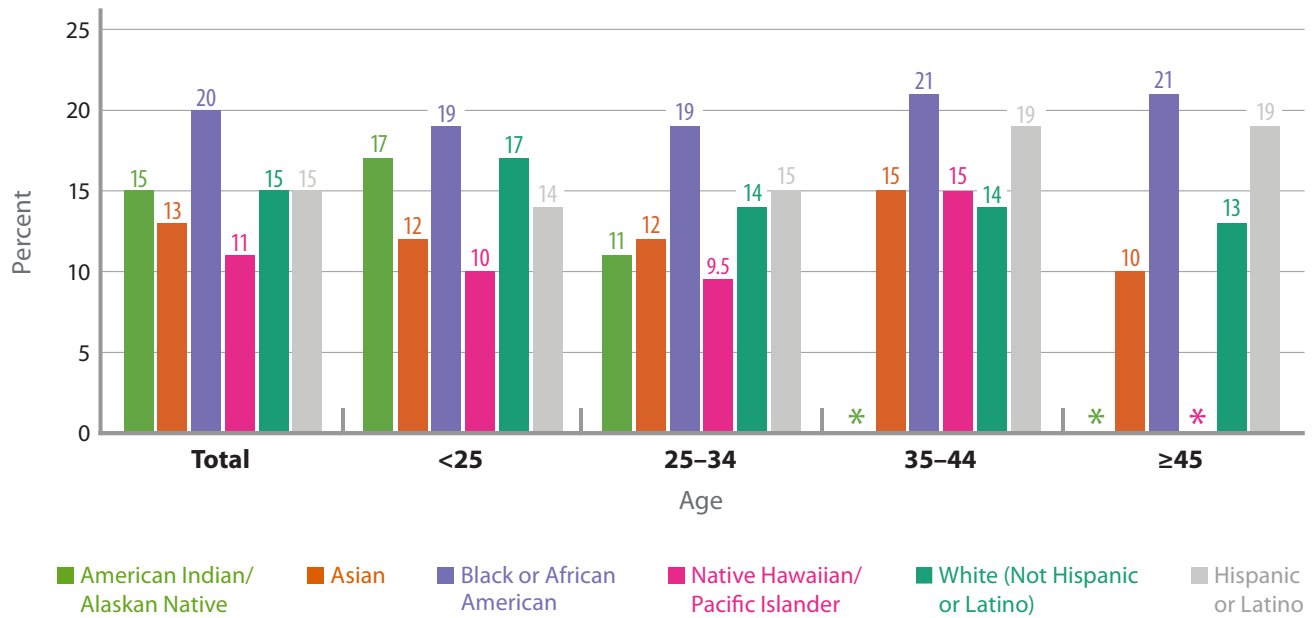
—●— Any BH Disorder (%)	23	22	22	23	26
—●— Adjustment Disorder (%)	15	14	14	14	16
—●— Anxiety Disorder (%)	8.1	7.0	7.2	7.5	9.2
—●— Mood Disorder (%)	8.5	7.4	7.0	7.0	8.0
—●— Posttraumatic Stress Disorder (%)	3.6	3.2	3.3	3.3	4.0
—●— Substance Use Disorder (%)	2.5	2.3	2.3	2.2	2.6

*Less than 1% of female AC Soldiers were diagnosed with a personality disorder or psychosis.*

*The sum of BH categories is greater than the overall BH disorder prevalence as Soldiers may have more than one BH disorder.*

### Prevalence of Adjustment Disorder by Age, Race, and Ethnicity, Female AC Soldiers, 2021

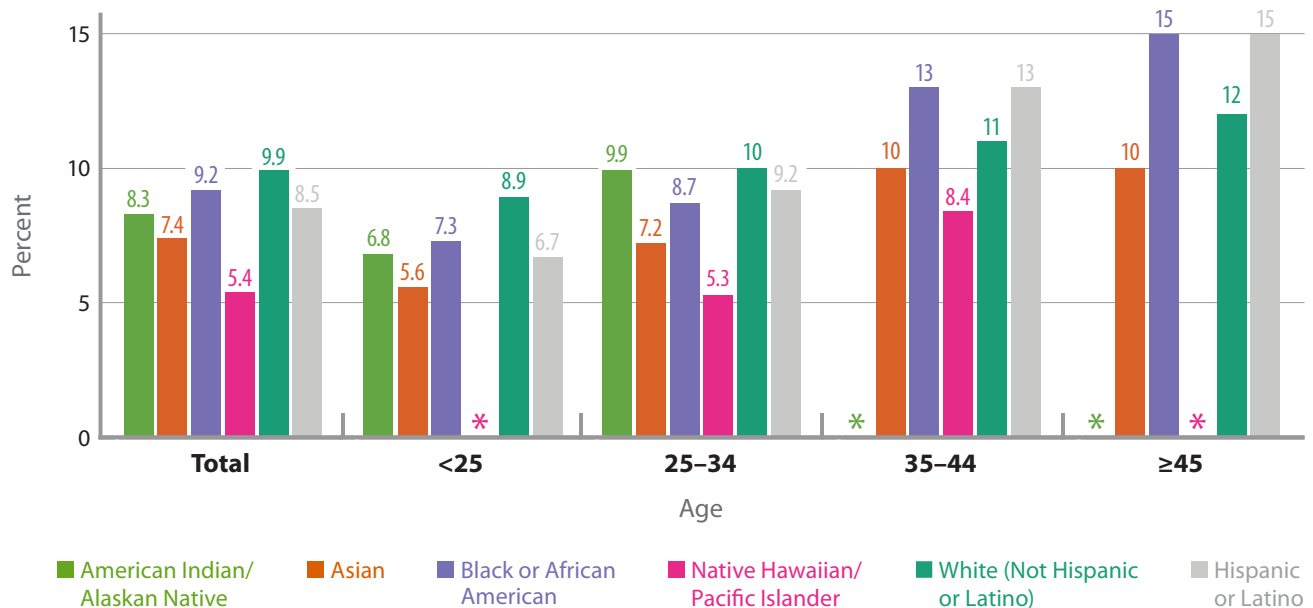
Adjustment disorder was the most common BH diagnosis among female AC Soldiers. Across all age groups, Black or African American female Soldiers had the highest prevalence of adjustment disorder.



\*Data suppressed due to small case numbers (<20 cases)

### Prevalence of Anxiety Disorder by Age, Race, and Ethnicity, Female AC Soldiers, 2021

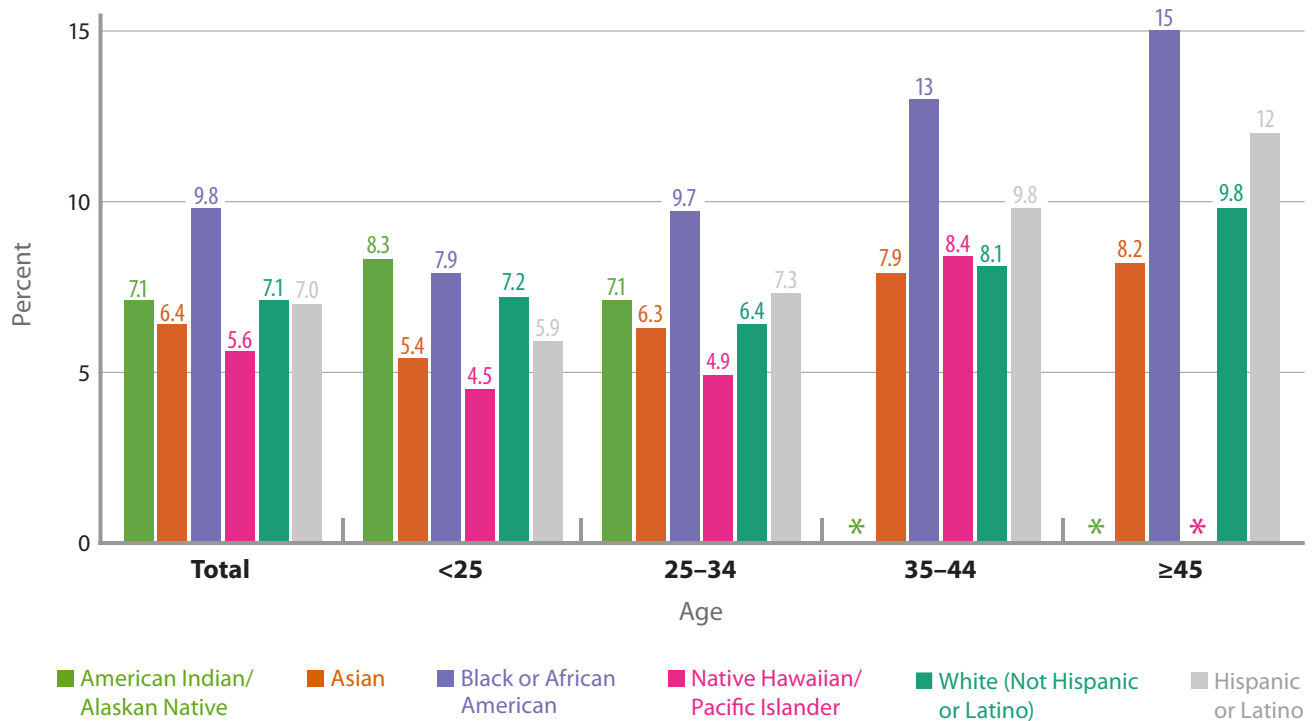
The prevalence of anxiety disorder increased with age for American Indian/Alaskan Native, Asian, Black or African American, Native Hawaiian/Pacific Islander, and White not Hispanic or Latino female AC Soldiers. Black or African American Soldiers and Hispanic or Latino Soldiers had the highest prevalence of anxiety disorder among females ≥35 years old. Among females <35 years old, White (Not Hispanic or Latino) Soldiers had the highest prevalence of anxiety disorder.



\*Data suppressed due to small case numbers (<20 cases)

## Prevalence of Mood Disorder by Age, Race, and Ethnicity, Female AC Soldiers, 2021

The prevalence of mood disorder among female AC Soldiers increased with age for most Asian, Black or African American, Native Hawaiian/Pacific Islander, and White not Hispanic or Latino groups except for American Indian/Alaskan Native. American Indian/Alaskan Native Soldiers <25 years old had a higher prevalence of mood disorder compared to American Indian/Alaskan Native Soldiers 25 to 34 years old. Black or African American Soldiers had the highest prevalence of mood disorder.



### Psychological Fitness

“Being mentally fit is the ability to integrate and improve cognitive, emotional, and behavioral practices... Emotions are a part of mental health. We all have them for a reason, and suppressing them is not the answer. Find constructive ways to express feelings and cope with difficult emotions that could detract from individual wellness and affect mission readiness” (MHS 2023b).  
 For more information, visit: <https://health.mil/Military-Health-Topics/Health-Readiness/Public-Health/Total-Force-Fitness/Psychological-Fitness>.

SCAN HERE



More information



DCPH-A photo by Graham Snodgrass

## Seeking Behavioral Health Resources

In 2021, 1 in 4 female Soldiers had a BH diagnosis, including adjustment, mood, and anxiety disorders, and female Soldiers were twice as likely to be diagnosed compared to their male counterparts (DCPH-A 2022). Although the prevalence of a BH diagnosis is notably higher among female Soldiers, there is limited and conflicting information on the use of behavioral health care within the AC female Soldier population (Lindsay 2022; Gaffey 2021; Chatterjee 2009; Hoff 1998a, 1998b; Hoff 1997). In addition to the stigma and lack of accessibility surrounding behavioral health care use in the military, women face additional barriers such as lack of sensitivity to gender-specific health needs, which undermines the quality of care received (Washington 2015, 2006; Vogt 2006a). As a result, it is critical to educate women on when and how to seek care, and the importance of self-advocacy, to improve the quality of life for female Soldiers.

According to the HHS Office of Women's Health, seek care from a mental health professional if you are experiencing a change in your thoughts, behaviors, or moods that is interfering with your work or relationships for longer than 2 weeks; or any of the symptoms listed below:


- A lack of interest in things that you used to enjoy
- Crying spells
- Lack of motivation
- Inability to concentrate
- Significant changes in your eating or sleeping patterns
- An inability to cope with problems or daily activities
- More anxiety than usual over events or situations
- Feelings of hopelessness
- Sudden changes in your personality for no reason
- An inability to stop thinking about certain ideas or memories
- Sadness for longer than 2 weeks
- Thoughts about suicide
  - **Call the National Suicide and Crisis Lifeline at 988 if you are having suicidal thoughts or considering suicide.**
- Drug or alcohol abuse or illegal use of prescription drugs
- Extreme mood swings
- Violent behavior or a lot of anger or hostility
- Hearing voices or seeing things that other people don't hear or see

**988**  
**SUICIDE**  
**& CRISIS**  
**LIFELINE**

Call if having suicidal thoughts  
 or considering suicide

The DoD and U.S. Army provide resources to help Soldiers recognize signs and symptoms and when to seek care. As soon as you recognize any of these symptoms, seek assistance. Screening for depression and anxiety is available during any primary care appointment and is part of the annual PHA. It is important to find a provider you feel connected to and who you feel understands your needs. Finding a provider you feel comfortable with must come first. There are many types of care, including clinical and community-based services to assist with behavioral health concerns. A medical assessment and treatment are essential. Additional care may include counseling with a psychologist, social worker, chaplain, or military family life consultant. For support managing life stressors, there are community services and programs available, both on and off post. Do not hesitate to reach out for assistance with symptoms of depression, anxiety, or other mental health issues, and encourage others to do the same. The next page provides a list of resources that can help with your search towards finding quality behavioral healthcare.

# Behavioral Health Resources

Resource Name	Website Link	About the Organization or Resource
<b>Community Resource Guide</b>	 <a href="https://crg.amedd.army.mil/Pages/default.aspx">https://crg.amedd.army.mil/Pages/default.aspx</a>	<p><i>"The Community Resource Guide (CRG) is a comprehensive inventory of programs and services available to a military community. The CRG includes a needs-based search engine that allows the Army Family to identify and access programs and services from any Army installation in the world."</i></p>
<b>TRICARE Mental Health Resources</b>	 <a href="https://www.tricare.mil/mental-health">https://www.tricare.mil/mental-health</a>	<p><i>"It is important to seek help if you're concerned that you or a loved one may be experiencing mental illness. Mental health is an important part of overall health and well-being, yet mental illness affects millions of people worldwide... Visit the Mental Health Appointments page for information on setting up an appointment based on your TRICARE Plan."</i></p>
<b>The Real Warriors Campaign</b>	 <a href="http://www.health.mil/RealWarriors">http://www.health.mil/RealWarriors</a>	<p><i>"Mental health concerns and needs present in a variety of ways from coping with the daily stresses of military life to challenges such as depression, anxiety, suicidal ideation, or posttraumatic stress disorder. Regardless of the concern, the Real Warriors Campaign links service members, veterans and their families with mental health knowledge and provides free, confidential resources including online articles, print materials, videos, and podcasts."</i></p>
<b>U.S Department of Health and Human Services Office on Women's Health</b>	 <a href="https://www.womenshealth.gov/mental-health/get-help-now">https://www.womenshealth.gov/mental-health/get-help-now</a>	<p><i>"Good mental health is essential to overall well-being... Most serious mental health conditions cannot be cured. But they can be treated, so you can get better and live well."</i></p>
<b>The Psychological Health Resource Center</b>	 <a href="http://www.health.mil/PHRC">http://www.health.mil/PHRC</a>	<p><i>"We are a trusted source of psychological health information and resources related to combat stress, depression, reintegration, how to get into treatment, types of treatment for mental health conditions, and many other topics."</i></p>
<b>Military One Source</b>	 <a href="https://www.militaryonesource.mil/">https://www.militaryonesource.mil/</a>	<p><i>"Military OneSource is your connection to information, answers, and support when MilLife happens. We can help you overcome challenges, reach your goals, and thrive. As a member of our military family, you have access to a wealth of tools, information, and resources from the Defense Department anytime, anywhere."</i></p>



U.S. Army Reserve photo by Master Sgt. Ryan Matson

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# Conclusion

***Women’s wellness includes the lifespan from childhood into adolescence, through the child-bearing period, and into older age. It not only includes wellness issues related to cardiovascular disease, cancer, and other chronic conditions but also includes the consequences of intimate partner violence and mental health issues. Improving the health of women is an important issue that requires collective attention. Not only is every woman impacted by her own health status, but her health also influences her entire family.***

Not all aspects of women’s health were included in this report. In addition to emotional and physical well-being, women’s health encompasses social, cultural, and spiritual well-being.

Some health concerns affect women differently than men, regardless of age, race, or ethnicity. When women are aware of gender-specific health concerns, they can develop a plan to take better care of themselves. Female Soldiers are encouraged to take charge of their health, as doing so can lead to better health outcomes. Achieving optimal health and readiness requires support at all levels to facilitate informed decisions that ultimately improve the readiness, health, and well-being of our Soldiers, civilians, and families.



U.S. Army photo by Lt. Col. John Hall

## Call to Action

- ➔ Advance readiness by learning more about women’s health.
- ➔ Create a culture that works to understand women’s health and supports women’s health needs.
- ➔ Educate both men and women about the uniqueness of and challenges in women’s health.
- ➔ Discuss women’s health at the next readiness appointment.



# Health of the Female Soldier Metric Methods

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The data sources and methods used to develop the *2023 Health of the Female Soldier Summary* closely align with those of the *2022 Health of the Force* report (DCPH-A 2023). Important aspects of those methods are described below.

## I. Female Active Component Soldier Population Demographics

Female Active Component (AC) Soldier demographics (i.e., age, sex, race, and ethnicity) were obtained from Defense Manpower Data Center (DMDC) personnel rosters. Person-time was used to estimate age-, race-, and ethnicity-specific population sizes. Soldier age was calculated as the difference between the midpoint of the calendar year (1 July 2021) and the date of birth.

Race and ethnicity were defined based on Office of Management and Budget (OMB)-recommended categories (FR 1997). Hispanic ethnicity was analyzed separately from race, so measures in the Hispanic category are not independent from the racial categories presented. DMDC personnel records including race and ethnicity categories other than those specified by OMB, or including no specified race or ethnicity, were categorized as other/unknown. Soldiers in the other/unknown category contributed to AC Army estimates but were excluded from race- and ethnicity-specific summaries. DMDC data lack sufficient detail to identify Soldiers who identify as multi-racial.

The female AC Soldier populations for installations were estimated from AC Soldier person-time in DMDC personnel rosters. A Soldier's contribution to the AC person-time denominator was defined as the number of months of the year that the Soldier was on active duty and assigned to a particular installation. A Soldier on active duty for an entire year contributed 1 person-year to the denominator (female population). Similarly, a Soldier on active duty for 6 months would contribute half a person-year to the denominator (female population). Using this approach, population counts reflect the actual amount of time each Soldier contributed to the AC cohort.

Female AC Soldier demographics were compared to those of the female U.S. workforce using Bureau of Labor and Statistics data for employed U.S. female adults 18 to 62 years old (BLS 2022a; BLS 2022b). Age 62 was used as a cut-point based on the Army regulations (ARs) that set age limits for active service: AR 135-180 (DA 2015) and AR 600-8-24 (DA 2020).

## II. Medical Metrics

For the medical metrics, annual estimates are presented for the current reporting year (2021) and the previous 4 years (2017–2020). Data used to calculate medical metric estimates were abstracted from the Military Health System Military Data Repository (MDR) and the Defense Medical Surveillance System (DMSS). MDR outpatient healthcare encounters were captured through the Comprehensive Ambulatory Professional Encounter Record (CAPER) and the TRICARE Encounter Record–Non-Institutional (TED-NI). MDR inpatient admissions were captured through the Standard Inpatient Data Record (SIDR) and the TRICARE Encounter Record–Institutional (TED-I). MHS GENESIS outpatient healthcare encounters and inpatient admissions were obtained from the Armed Forces Health Surveillance Division’s (AFHSD) DMSS database.

DMDC personnel rosters were used to compute denominators for prevalence estimates for the metrics presented in this summary.

### 1. Behavioral Health

Behavioral Health (BH) disorder prevalence: Percentage of female AC Soldiers with at least one qualifying BH diagnosis in the calendar year.

The annual prevalence of each BH disorder of interest (adjustment disorder, mood disorder, anxiety disorder, posttraumatic stress disorder (PTSD), substance use disorder, personality disorder, and psychoses) among female AC Soldiers was estimated using the *International Classification of Diseases, 9th and 10th revision, Clinical Modification* (ICD-9-CM and ICD-10-CM) codes identified in Soldiers’ medical records. Case definitions established by the Defense Centers for Public Health–Aberdeen (DCPH-A) were applied for the seven disorders of interest. Female Soldiers could have one or more diagnosed BH conditions. A composite measure, “any behavioral health disorder,” included Soldiers diagnosed with any of the seven disorders.

### 2. Chronic Disease

Chronic disease prevalence: Percentage of female AC Soldiers with at least one qualifying new or existing chronic disease diagnosis in the calendar year.

The prevalence of seven chronic conditions of interest (asthma, arthritis, chronic obstructive pulmonary disease, cancer, diabetes, cardiovascular conditions, and hypertension) among female AC Soldiers was estimated from ICD-9-CM and ICD-10-CM diagnosis codes identified in the Soldier’s medical records. Prevalent cases of chronic conditions were identified by diagnoses at any point within the window of available medical encounter data (2010–2021). Female Soldiers could have one or more diagnosed chronic conditions. A composite measure, “any chronic disease,” included Soldiers with any of the seven chronic conditions of interest.

### 3. Human Papillomavirus (HPV)

HPV prevalence: Percentage of female AC Soldiers with at least one qualifying new or existing HPV diagnosis in the calendar year.

The prevalence of HPV among female AC Soldiers was estimated from ICD-9-CM and ICD-10-CM diagnosis codes identified in the Soldier’s outpatient medical records (AFHSD 2015). Since the health effects of HPV can be treated or managed, but HPV infection cannot be cured, prevalent cases of HPV were identified by diagnoses at any point within the window of available outpatient medical encounter data (2010–2021).

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#### 4. Gynecological Examination

Gynecological examination prevalence: Percentage of female AC Soldiers with an encounter for a routine gynecological examination in the calendar year.

The prevalence of gynecological examinations among female AC Soldiers was estimated from ICD-10-CM diagnostic codes identified in the Soldier's outpatient medical records. Since the metric was examining the percentage of female AC Soldiers who visited the gynecologist for an annual well-woman visit, each calendar year (2017–2021) was analyzed separately.

#### 5. Cervical Cancer Screening

Cervical cancer screening prevalence: Percentage of female AC Soldiers  $\geq 21$  years old who met the age-appropriate recommendations for cervical cancer screening in the calendar year.

The U.S. Preventive Services Task Force (USPSTF) published different cervical cancer screening recommendations based on age (females 21 to 29 years old and  $\geq 30$  years old) and timing (3 years versus 5 years, depending on the screening tests performed) (USPSTF 2018). Based on these age- and time-specific recommendations, the prevalence of cervical cancer screening among female AC Soldiers was estimated from ICD-10-CM diagnostic codes identified in the Soldier's outpatient medical records. Female AC Soldiers  $< 21$  years old were excluded from the prevalence estimate, and a separate denominator was calculated for the cervical cancer screening prevalence estimate that only included the population of female AC Soldiers  $\geq 21$  years old.

### III. Data Limitations of Medical Metrics

- The COVID-19 pandemic caused changes in healthcare use that may have affected the medical metric estimates reported for 2020 and 2021. Changes in prevalence of reported conditions over the 5-year time frame may not reflect actual changes in disease occurrence, but instead may reflect pandemic-related use of the medical system.
- Since medical metrics are based on healthcare utilization, elevated estimates may not be indicative of a problem, but rather may reflect a greater emphasis on detection and treatment.
- Metrics based on diagnostic codes (e.g., ICD-10-CM) entered in patient medical records are subject to coding errors.
- Estimates of disease frequency may be underestimates of actual disease frequencies given that individuals may not seek care or could choose to seek care outside the MHS or the TRICARE network.
- HPV estimates are likely underestimated given the high proportion of asymptomatic infections that are undetected.
- DMDC race and ethnicity data were not sufficiently detailed to determine which Soldiers identified as multi-racial. Multiple DMDC records per Soldier with different race or ethnicity specified were also possible over the 5-year time frame; in this situation, the most frequently used entry was selected and may not reflect the Soldier's actual race or ethnicity.

## References

---

American Academy of Periodontology (AAP). 2023a. "Gum Disease Information."  
<https://www.perio.org/for-patients/gum-disease-information/>

AAP. 2023b. "Gum Disease and Women."  
<https://www.perio.org/for-patients/gum-disease-information/gum-disease-and-women/>

American Academy of Sleep Medicine (AASM). "Sleep Frequently Asked Questions."  
<https://sleepeducation.org/sleep-faqs/>

American College of Obstetricians and Gynecologists (ACOG). 2021a. ACOG Practice Advisory, *Updated Cervical Cancer Screening Guidelines*.  
<https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2021/04/updated-cervical-cancer-screening-guidelines>

ACOG. 2021b. "Cervical Cancer Screening."  
<https://www.acog.org/womens-health/faqs/cervical-cancer-screening>

ACOG. 2020. ACOG Committee Opinion 809, *Human Papillomavirus Vaccination*.  
<https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2020/08/human-papillomavirus-vaccination>

ACOG. 2018. ACOG Committee Opinion 755, *Well-Woman Visit*.  
<https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2018/10/well-woman-visit>

American Dental Association (ADA). 2023a. "Eating Disorders."  
<https://www.mouthhealthy.org/all-topics-a-z/eating-disorders>

ADA. 2023b. "Hormones and Dental Health: What Every Woman Needs to Know."  
<https://www.mouthhealthy.org/all-topics-a-z/womens-hormones-and-dental-health>

ADA. 2023c. "Osteoporosis Medications and Medication-Related Osteonecrosis of the Jaw."  
<https://www.ada.org/resources/research/science-and-research-institute/oral-health-topics/osteoporosis-medications>

ADA. 2021. "Resources: Pregnancy."  
<https://www.ada.org/resources/research/science-and-research-institute/oral-health-topics/pregnancy>

- 
- ADA. 2007. "For the dental patient. Gingival recession: causes and treatment." *J Am Dent Assoc* (1939) 138(10):1404.  
<https://doi.org/10.14219/jada.archive.2007.0058>
- ADA. 2006. *Women's Oral Health Issues – Oral Health Care Series*. ADA Council on Access, Prevention and Interprofessional Relations.  
<https://ebusiness.ada.org/Assets/docs/2313.pdf>
- Armed Forces Health Surveillance Branch (AFHSB). 2023. "Sexually Transmitted Infections Among Active Component Service Members, U.S. Armed Forces, 2014–2022." *MSMR* 30(3):2-9.  
<https://www.health.mil/Reference-Center/Reports/2023/03/01/MSMR-volume-30-issue-3-March-2023>
- Armed Forces Health Surveillance Division (AFHSD). 2015. Surveillance Case Definitions, Section 11.0, Infectious Disease. "Human papillomavirus; genital" (updated 2015).  
<https://www.health.mil/Military-Health-Topics/Health-Readiness/AFHSD/Epidemiology-and-Analysis/Surveillance-Case-Definitions>
- Blakemore E. 2023, May 28. "Military members half as likely as civilians to receive HPV vaccine." *The Washington Post*.  
<https://www.washingtonpost.com/wellness/2023/05/28/hpv-vaccine-military-cancer/>
- Bone Health and Osteoporosis Foundation (BHO). 2023. *What Women Need to Know*.  
<https://www.bonehealthandosteoporosis.org/preventing-fractures/general-facts/what-women-need-to-know/>
- Bureau of Labor Statistics (BLS). 2022a. *Labor Force Statistics from the Current Population Survey, Employment status of the civilian noninstitutional population by sex, age, and race*.  
<https://www.bls.gov/cps/cpsaat03.htm>
- BLS. 2022b. *Labor Force Statistics from the Current Population Survey, Employment status of the Hispanic or Latino population by age and sex*.  
<https://www.bls.gov/cps/cpsaat04.htm>
- Care New England Health System (CNEHS). 2013. "Active Duty Military Women May Have Higher STI Risk."  
<https://www.womenandinfants.org/news/active-duty-military-women-may-have-higher-sti-risk>
- Centers for Disease Control and Prevention (CDC). 2023a. "Benefits of Physical Activity."  
<https://www.cdc.gov/physicalactivity/basics/pa-health/index.htm>
- CDC. 2023b. "Reported STDs in the United States, 2021."  
<https://www.cdc.gov/nchstp/newsroom/fact-sheets/std/std-us-2021.html#:~:text=People%20with%20STDs%20do%20not,newborn%20complications%2C%20and%20infant%20death>
- CDC. 2023c. "Sexually Transmitted Diseases (STDs)."  
<https://www.cdc.gov/std/default.htm>

---

## Appendices

- CDC. 2023d. "How You Can Prevent Sexually Transmitted Diseases."  
<https://www.cdc.gov/std/prevention/default.htm>
- CDC. 2023e. "National Overview of STDs, 2021."  
<https://www.cdc.gov/std/statistics/2021/overview.htm#Syphilis>
- CDC. 2022a. Division of Oral Health. "Pregnancy and Oral Health."  
<https://www.cdc.gov/oralhealth/publications/features/pregnancy-and-oral-health.html>
- CDC. 2022b. "STDs and HIV–CDC Basic Fact Sheet."  
<https://www.cdc.gov/std/hiv/stdfact-std-hiv.htm>
- CDC. 2022c. "HPV and Men–Fact Sheet."  
<https://www.cdc.gov/std/hpv/stdfact-hpv-and-men.htm#:~:text=No%2C%20there%20is%20currently%20no,signs%20or%20symptoms%20in%20men>
- CDC. 2022d. "Genital HPV Infection–Basic Fact Sheet."  
<https://www.cdc.gov/std/hpv/stdfact-hpv.htm>
- CDC. 2022e. U.S. Cancer Statistics Working Group. "U.S. Cancer Statistics Data Visualizations Tool, based on 2021 submission data (1999–2019)."  
<https://gis.cdc.gov/Cancer/USCS/#/Demographics/>
- CDC. 2019. "Cervical Cancer."  
[https://www.cdc.gov/cancer/cervical/pdf/cervical\\_facts.pdf](https://www.cdc.gov/cancer/cervical/pdf/cervical_facts.pdf)
- CDC. 2013. Division of Oral Health. "Periodontal Disease."  
<https://www.cdc.gov/oralhealth/conditions/periodontal-disease.html>
- Defense Centers for Public Health–Aberdeen (DCPH-A). 2023a. *2022 Health of the Force*.  
<https://phc.amedd.army.mil/topics/campaigns/hof>
- DCPH-A. 2023b. "Tobacco Free Living & Vaping."  
<https://phc.amedd.army.mil/topics/healthyliving/tfl/Pages/default.aspx>
- Defense Health Agency (DHA). 2015. TRICARE Policy Manual 6010.60-M, Chapter 4, Section 18.3, "Abortions."  
<https://manuals.health.mil/>
- Dehlendorf C, LH Harris, and TA Weitz. 2013. "Disparities in abortion rates: a public health approach." *Am J Public Health* 103(10):1772-9.  
<https://doi.org/10.2105/AJPH.2013.301339>

- 
- Deiss R, RJ Bower, E Co, O Mesner, JL Sanchez, J Masel, A Ganesan, GE Macalino, and BK Agan. 2016. "The Association between Sexually Transmitted Infections, Length of Service and Other Demographic Factors in the U.S. Military." *PLoS One* 11(12):e0167892.  
<https://doi.org/10.1371/journal.pone.0167892>
- Department of Defense (DoD). Military OneSource. n.d. *2021 Demographics Dashboards, Chapter 2: Active Duty Members*, <https://demographics.militaryonesource.mil/chapter-2-race-ethnicity> (accessed 24 July 2023)
- DoD. 2023. Defense Manpower Data Center Data Request System. Data Request #151795, Modified Report #628: DEERS Mailing Address Family Age Location Report for Calendar Years 2017, 2018, 2019, 2020, and 2021.
- DoD. 2022a. Under Secretary of Defense for Personnel and Readiness (USD(P&R)). *Continued Authority to Provide Abortion, Contraceptive, and Other Reproductive Health Services in Department of Defense Military Medical Treatment Facilities*. Washington, D.C.
- DoD. 2022b. USD(P&R) Memorandum, June 28, 2022, subject: *Ensuring Access to Essential Women's Health Care Services for Service Members, Dependents, Beneficiaries, and Department of Defense Civilian Employees*.  
<https://media.defense.gov/2022/Jun/28/2003026770/-1/-1/1/MEMORANDUM-ENSURING-ACCESS-TO-ESSENTIAL-WOMENS-HEALTH-CARE-SERVICES-FOR-SERVICE-MEMBERS-DEPENDENTS-BENEFICIARIES-AND-DEPARTMENT-OF-DEFENSE-CIVILIAN-EMPLOYEES.PDF>
- DoD. 2022c. Defense Manpower Data Center Data Request System. Data Request #149607, Demographic and population summary for Army Active Duty, Guard and Reserve women in the United States as of May 2022.
- DoD. 2019. *Fiscal Department of Defense Annual Report on Sexual Assault in the Military, Fiscal Year 2018*.  
[https://www.sapr.mil/sites/default/files/FY18\\_DOD\\_Annual\\_Report\\_on\\_Sexual\\_Assault\\_in\\_the\\_Military.pdf](https://www.sapr.mil/sites/default/files/FY18_DOD_Annual_Report_on_Sexual_Assault_in_the_Military.pdf)
- Department of the Army (DA). 2020. Regulation 600-8-24, *Officer Transfers and Discharges*.  
<https://armypubs.army.mil>
- DA. 2015. Regulation 135-180, *Retirement for Non-Regular Service*.  
<https://armypubs.army.mil>
- DA. 2014. Regulation 40-400, *Patient Administration*.  
<https://armypubs.army.mil/>
- Dutt P, S Chaudhary, and P Kumar. 2013. "Oral health and menopause: a comprehensive review on current knowledge and associated dental management." *Ann Med Health Sci Res* 3(3):320-323.  
<https://doi.org/10.4103/2141-9248.117926>
- Ebener PA, JD Acosta, M Chinman, C Farris, AL Shearer, S Smucker, M Bauman, and S Zelazny. 2022. *Getting To Outcomes® Handbook for Strengthening Sexual Assault Prevention Activities in the Military*.  
<https://www.rand.org/pubs/tools/TLA746-2.html>

---

## Appendices

- Finer LB and MR Zolna. 2016. "Declines in unintended pregnancy in the United States, 2008–2011." *New Engl J Med* 374(9): 843-852.  
doi: 10.2105/NEJMsa1506575
- Goyal V, KM Mattocks, and AG Sadler. 2012. "High-risk behavior and sexually transmitted infections among U.S. active duty servicewomen and veterans." *J Womens Health* 21(11): 1155-1169.  
<https://doi.org/10.1089/jwh.2012.3605>
- Jones JM. 2022. LGBT Identification in U.S. Ticks Up to 7.1%, Gallup,  
<https://news.gallup.com/poll/389792/lgbt-identification-ticks-up.aspx>
- Journal of the American Dental Association (JADA). 2011. "Osteoporosis medications and your dental health." *J Am Dent Assoc* 142(11):1320.  
<https://doi.org/10.14219/jada.archive.2011.0119>
- Kaiser Family Foundation Women's Health Policy. 2021. *The HPV Vaccine: Access and Use in the U.S.*  
<https://www.kff.org/womens-health-policy/fact-sheet/the-hpv-vaccine-access-and-use-in-the-u-s/>
- Kemble E, L Pérez, V Sartori, G Tolub, and A Zheng. 2022. "Unlocking opportunities in women's healthcare."  
<https://www.mckinsey.com/industries/healthcare/our-insights/unlocking-opportunities-in-womens-healthcare>
- Kessler JL. 2017. "A literature review on women's oral health across the life span." *Nurs Womens Health* 21(2):108-21.  
[https://www.nwhjournal.org/article/S1751-4851\(17\)30057-0/fulltext](https://www.nwhjournal.org/article/S1751-4851(17)30057-0/fulltext)
- Lumbau A and G Spano. 2017. "Oral Implications of Eating Disorders." In: *Eating Disorders*, ed. Ignacio Jauregui-Lobera.  
<https://www.intechopen.com/chapters/53044>
- Mariotti A. 2013. "The ambit of periodontal reproductive endocrinology." *Periodontol* 2000 61:7-15.  
<https://doi.org/10.1111/j.1600-0757.2012.00442.x>
- Markou E, B Eleana, T Lazaros, and K Antonios. 2009. "The influence of sex steroid hormones on gingiva of women." *Open Dent J* 3:114-19.  
<https://doi.org/10.2174/1874210600903010114>
- Meadows S, C Engel, C Collins, R Beckman, J Breslau, E Bloom, M Dunbar, M Gilbert, D Grant, and J Hawes-Dawson. 2021. *2018 Health Related Behaviors Survey: Substance Use Among Active Component.*  
[https://www.rand.org/pubs/research\\_briefs/RB10116z3.html](https://www.rand.org/pubs/research_briefs/RB10116z3.html)
- Military Health System (MHS). 2023a. "Update: Sexually Transmitted Infections Among Active Component Service Members, U.S. Armed Forces, 2014–2022."  
<https://health.mil/News/Articles/2023/03/01/STIs-2022>



- 
- MHS. 2023b. "Psychological Fitness."  
<https://health.mil/Military-Health-Topics/Health-Readiness/Public-Health/Total-Force-Fitness/Psychological-Fitness>
- Moorman JE, LJ Akinbami, CM Bailey, HS Zahran, ME King, CA Johnson, and X Liu. 2012. "National Surveillance of Asthma: United States, 2001–2010." *Vital Health Stat* 3(35).  
[https://www.cdc.gov/nchs/data/series/sr\\_03/sr03\\_035.pdf](https://www.cdc.gov/nchs/data/series/sr_03/sr03_035.pdf)
- National Eating Disorders Association (NEDA). 2022. *What Are Eating Disorders?*  
<https://www.nationaleatingdisorders.org/learn/by-eating-disorder/anorexia>
- National Institutes of Health (NIH). 2023a. "Periodontal (Gum) Disease."  
<https://www.nidcr.nih.gov/health-info/gum-disease>
- NIH. 2023b. "Statistics: Eating Disorders."  
<https://www.nimh.nih.gov/health/statistics/eating-disorders>
- NIH. 2021. *Oral Health in America: Advances and Challenges*.  
<https://www.nidcr.nih.gov/research/oralhealthinamerica>
- "Notice of Decision, Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity." Federal Register (FR) Vol. 62, No. 210 (October 30, 1997):58782.  
<https://www.govinfo.gov/content/pkg/FR-1997-10-30/pdf/97-28653.pdf>
- Office of People Analytic (OPA). 2022. Report No. 2022–183, *2021 Workplace and Gender Relations Survey of Military Members: Active Component Results and Trends*, by RA Breslin, A Klahr, K Hylton, A White, S Sampath and G Puckett. Alexandria, Virginia.
- OPA. 2019a. Report No. 2019–027, *2018 Workplace and Gender Relations Survey of Active Duty Members: Overview Report*. Prepared by RA Breslin, L Davis, K Hylton, A Hill, W Klauberg, M Petusk, and A Klahr. Alexandria, Virginia.
- OPA. 2019b. Report No. 2019–024, *2018 Workplace and Gender Relations Survey of Active Duty Military: Results and Trends*. Prepared by RA Breslin, L Davis, K Hylton, A Hill, W Klauberg, M Petusk, and A Klahr. Alexandria, Virginia.
- Penick E, BK Grabert, E Stockton, H Prentice-Dunn, M Ward, T Kirk, and MB Gilkey. 2022. "Feasibility and sustainability of a nurse-led intervention to integrate HPV vaccination into medical processing for active-duty Soldiers." *Hum Vacc Immunother* 18(7): 2153536.  
<https://doi.org/10.1080/21645515.2022.2153536>
- Performance Triad (P3). 2023. "Optimize Health with Sleep, Activity and Nutrition."  
<https://p3.amedd.army.mil/>

---

## Appendices

- Petersen EE, NL Davis, D Goodman, S Cox, C Syverson, K Seed, C Shapiro-Mendoza, WM Callaghan, and W Barfield. 2019. "Racial/Ethnic Disparities in Pregnancy-Related Deaths — United States, 2007–2016." *MMWR Morb Mortal Wkly Rep* 68(35):762–765.  
<http://dx.doi.org/10.15585/mmwr.mm6835a3>
- Pettiford B. 2016. "Creating a Better State of Health for Women." *N C Med J* 77(6): 385–387.  
<https://ncmedicaljournal.scholasticahq.com/article/54744.pdf>
- Phillips S. 1995. "The social Context of Women's Health: Goals and Objectives for Medical Education." *CMAJ* 152(4):507.  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1337704/pdf/cmaj00064-0057.pdf>
- Rangé H, P Colon, N Godart, Y Kapila, and P Bouchard. 2021. "Eating disorders through the periodontal lens." *Periodontol* 2000. 87(1):17–31.  
<https://doi.org/10.1111/prd.12391>
- Seymour JW, L Fix, D Grossman, and K Grindlay. 2020. "Pregnancy and Abortion: Experiences and Attitudes of Deployed U.S. Servicewomen." *Mil Med* 185(9-10):e1930.  
<https://doi.org/10.1093/milmed/usaa128>
- Seymour JW, L Fix, D Grossman, and K Grindlay. 2019. "Facilitators and barriers to Contraceptive Use Among U.S. Servicewomen Who Had an Abortion." *Mil Med*, 184(5-6):e417–e423.  
<https://doi.org/10.1093/milmed/usy340>
- Theis KA, LB Murphy, D Guglielmo, MA Boring, CA Okoro, LM Duca, and CG Helmick. 2021. "Prevalence of Arthritis and Arthritis-Attributable Activity Limitation—United States, 2016–2018." *MMWR Morb Mortal Wkly Rep* 70(40):1401–1407.  
<http://dx.doi.org/10.15585/mmwr.mm7040a2>
- U.S. Census Bureau. 2022. "QuickFacts."  
<https://www.census.gov/quickfacts/fact/table/US/LFE046221>
- U.S. Congressional Research Service (CRS). 2021. *Federal Support for Reproductive Health Services: Frequently Asked Questions*, R46785.  
<https://crsreports.congress.gov/product/pdf/R/R46785/4>
- U.S. Department of Health and Human Services (HHS). Office of Disease Prevention and Health Promotion. 2023. *Healthy People 2030: Increase the proportion of females who get screened for cervical cancer – C-09*.  
<https://health.gov/healthypeople/objectives-and-data/browse-objectives/cancer/increase-proportion-females-who-get-screened-cervical-cancer-c-09>
- HHS. Offices of Minority Health. 2021a. "Cancer and Native Hawaiians/Pacific Islanders."  
<https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=76>

---

HHS. Offices on Women's Health. 2021b. "Heart Disease."

<https://www.womenshealth.gov/heart-disease-and-stroke/heart-disease>

U.S. Preventive Services Task Force (USPSTF). 2018. *Cervical Cancer: Screening, Final Recommendation Statement*.

<https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/cervical-cancer-screening#citation10>

USPSTF. 2017. *Gynecological Conditions: Periodic Screening with the Pelvic Examination, Final Recommendation Statement*.

<https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/gynecological-conditions-screening-with-the-pelvic-examination>

Wan JT, D Sheeley, M Somerman, and JS Lee. 2020. "Mitigating osteonecrosis of the jaw (ONJ) through preventive dental care and understanding of risk factors." *Bone Res* 8:14.

<https://doi.org/10.1038/s41413-020-0088-1>

Wilson C, AK Phillips, SE Iobst, ER Myers, L Trego RJ Allard, and R Landoll. 2021. "A Scoping Review of Unintended Pregnancy in Active Duty United States Military Women." *Womens Health Issues* 31(S1):S66-S80.

<https://doi.org/10.1016/j.whi.2020.11.006>

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