Spring 5-4-2024

A Literature Review of Societal Obesity and its Impact on United States Military Recruitment

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24 April 2024

Abstract

In recent decades, obesity rates have increased in the United States, raising significant health and societal concerns, especially in terms of military readiness. The ever-rising rates of weight-related health obstacles present a critical national security issue as it impacts the effectiveness of recruitment. This literature review aims to analyze how obesity impacts military recruitment and readiness to serve while utilizing the socio-ecological model to help determine gaps in evidence. Data was drawn from Embase, PubMed, and PsychInfo. Inclusion criteria consisted of academic journals and reports from government and non-profit organizations written in English. They focused only on the United States and its military population, specifically military recruits. Results from this literature review showed the steady rise of obesity throughout the United States and its military recruits, the subsequent decline in recruitment numbers for the military, and discovered programs implemented by specific branches to help military recruits reach the requisite standards.

Chapter 1: Introduction

Obesity rates in the United States have risen significantly over the past few decades, posing a multifaceted societal challenge extending beyond an individual level of concern. This is especially poignant regarding United States military recruitment and, by extension, the national security concerns arising from decreased recruitment. Obesity has long been referred to as a rising epidemic (Mitchell et al., 2011). Within the United States, the Centers for Disease Control and Prevention (CDC) reports one in three adults struggle with obesity (CDC, 2022).

The United States military currently relies on voluntary commitments to meet their readiness standards. In the most basic breakdowns, the US military is comprised of an enlisted, officer, and civilian workforce. Within the uniformed enlisted and officer members, there are different components of support, such as National Guard, Reserves, Warrant Officers, and Active Duty. The civilian population is comprised of contractors and government service employees. This literature review will focus exclusively on the individuals joining the US military in an active-duty capacity, either through enlisting or becoming an officer.

The enlisted recruitment process begins with an individual meeting the standards based on age, education, citizenship, and health/fitness levels. Typically, recruits make initial contact with a serving military recruiter, who provides further information, conducts tests, and offers consultation before finalizing the commitment paperwork. Once the individual meets and passes the qualifications, they proceed to basic training for the branch they are joining, marking the start of their military journey.

For officer recruitment, individuals join in one of four ways. The first is through earning a college degree while being part of the Reserve Officers' Training Corps (ROTC). The second is through attendance at one of the military academies. The third option is via a 9-12 week officer

training program, depending on the branch of services, and is designed for enlisted service members and civilians with college degrees to earn a commission to become an officer (MiltaryOne Source, 2021). The last avenue is direct commission, which directly appoints civilians with professional experience to an officer rank (MilitaryOne Source, 2021).

Over the past few years, there has been a drop in military recruitment numbers due to several factors. The issue the US military is facing is a decreasing pool of those eligible to join the military due to obesity, drug use, or criminal records (Kube & Boigon, 2022). This paper aims to investigate how obesity impacts military recruitment and readiness. In an article about military recruitment in the fiscal year 2023, journalist Mark Satter reported on branch-specific recruitment actual rates compared to the goal rates. The Army's recruitment number was nearly 55,000 with a goal of 65,000, the Air Force recruited 26,877 but fell short of their goal by 2,700, and the Navy missed their goal by 7,450, ending the year with 37,700 new recruits (Satter, 2023).

My objective for this project is to conduct a literature review to describe the relationships between obesity and military recruitment, recruitment and readiness, and the rising obesity trend alongside the military recruitment crisis. Additionally, I will utilize the socio-ecological model to examine my findings in relation to public health knowledge. The project aims to assess the impact of obesity on the military recruitment process and the resulting implications on readiness, as well as gain an understanding of the policies established to assist recruiters and what can be done moving forward.

Chapter 2: Background

Obesity

Obesity is a public health issue that has skyrocketed in prevalence around the world, particularly in the United States. Globally, the World Obesity Federation estimates over 4 billion people may be affected by 2035, compared to over 2.6 billion in 2020 (Lobstein et al., 2023). In order to analyze the effects of obesity on military personnel, it is essential to determine a common definition of obesity. The World Health Organization (2023) defines obesity as abnormal or excessive fat accumulation that presents a risk to health. A body mass index (BMI) over 25 is considered overweight, and over 30 is considered obese (WHO, 2023). In the United States, according to the CDC, obesity affects 100.1 million (41.9%) adults and 14.7 million (19.7%) children, and it accounts for approximately $147 billion in annual healthcare costs (CDC, 2023).

Since the 1970s, the presence of obesity has increased throughout the U.S. adult population – among men and women of all racial/ethnic groups, ages, and educational and socioeconomic levels (Mitchell et al., 2011). It's crucial to note obesity isn't just a health concern for adults but for children and adolescents as well. Obesity is prominent in some children as young as two years of age. In the United States, from 2017-2020, the prevalence of childhood obesity was 19.7% and affected about 14.7 million children and adolescents (CDC, 2022). Its risks can follow an individual throughout their lifetime, contributing to various diseases like diabetes, cancer, cardiovascular disease, and high blood pressure, which have serious negative implications on an individual's livelihood and can lead to early death (CDC, 2022).

U.S. Military

Another effect of obesity – and the crux of this project – is decreased military recruitment within the United States and, more critically, national security. The US military includes the following branches: Army, Marine Corps, Air Force, Space Force, Navy, Coast Guard, and National Guard. Each branch is unique in its mission capabilities, operations, and service. Similarly, each branch is committed to physical fitness and readiness, but the physical fitness testing and capability level varies among the branches. During recruitment, the regulation lies within Department of Defense (DoD) Instruction 1304.26, which establishes policies for military recruitment, establishes the standards for age, aptitude, citizenship, education, medical, character/conduct, physical fitness, and other disqualifying conditions, and sets standards to ensure individuals are able to perform military duties successfully (DoD, 2018). To enlist in the military, individuals meet with a recruiter actively serving in the military and undergo initial questioning to determine eligibility. Once through that phase, the recruit will go to a military entrance processing station (MEPS) for testing and medical examinations. After MEPS, recruits will either Direct Ship to Basic Training, where they'll spend 7-13 weeks, branch dependent, acquiring knowledge of military customs, history, and discipline through fitness training, classroom experience, and combat development. The second entry option after MEPS is through the Delayed Entry Program (DEP). This is commonly applicable to those who commit to a branch while finishing high school.

Today, the military relies on voluntary commitment, or All-Volunteer Force (AVF), to fulfill their recruitment goals and military engagement. However, the AVF has been a fairly new recruitment strategy compared to the long-standing history of the United States military. In the 1960s, the United States was in the midst of the Vietnam War and facing antiwar protests. Public

opinion on the military and the government was growing in opposition to the war and the draft, arguing the state had no right to impose military service on young men without their consent (Rostker, 2006). In March 1969, President Nixon appointed an Advisory Commission on the All-Volunteer Armed Force under former Secretary of Defense Thomas Gates, later known as the Gates Commission, to advise him on creating an AVF (Ath, 2022).

The Gates Commission detailed a formal plan to end the draft and presented key points such as an all-volunteer force more aligned with a free nation's principles. Men forced to serve lacked the passion for doing so compared to a man volunteering to defend freedom. Additionally, the financial and economic standpoint of the military was in poor condition and needed to encourage competition to compete with market conditions (Ath, 2022). In 1971, President Nixon signed a new law to end the draft, and after a two-year extension, the end of the draft was formally announced in January 1973 (Rostker, 2006). In recent years, military leadership has faced dwindling recruitment numbers. This has caused national concern amongst military and governmental leadership. In June 2022, Army Chief of Staff Gen. James McConville testified before Congress that only 23% of Americans ages 17-24 are qualified to serve without a waiver to join, down from 29% in recent years (Kube & Boigon, 2022).

The Socio-Ecological Model

In the 1970s, the socio-ecological model (SEM) was first developed by Urie Bronfenbrenner and further refined by McLeroy to become the model it is today (Scarneo et al., 2019). The model created and refined by Bronfenbrenner and McLeroy is a five-level model (Figure A1). The public health field uses this model to explain and understand the unique complexities in motion between individuals and their environment in varying health outcomes while recognizing the ripple effects a change at one level can have throughout the system. The

socio-ecological model I chose for my literature review is a more simplified, condensed model from the Centers for Disease Control and is divided into the following categories: individual, relationship, community, and societal (Figure A2) (CDC, 2015). I chose this model for my literature review as I felt it most fitting for capturing the different levels of military influence. The socio-ecological framework of either version of the model emphasizes multiple levels of influence and supports the idea that behaviors both affect and are affected by various contexts (Scarneo et al., 2019). Using a model like this can help to highlight risk factors and bring attention to areas of intervention across multiple interconnected levels.

Factors at various levels of the socio-ecological model contribute to obesity. At the individual level, research efforts may focus on identifying risk factors contributing to obesity, such as socioeconomic factors, dietary habits, and physical activity levels. Moreover, research could investigate the efficacy of interventions to decrease obesity rates in both civilian and military communities. Targeting obesity prevention tactics at earlier ages, can help to resolve part of the recruitment process by taking a preventative approach based on individual levels of influence.

The next level of the socio-ecological model focuses on relationships. The value of relationships is a critical component to ensuring a healthy population. This not only has impacts on physical health but can contribute to mental and emotional health. Public health, in and of itself, is a relational field consistently relying on connections with other agencies, communities, and individuals. The community level of the socio-ecological model emphasizes how larger groups can impact change. Lastly, policies are addressed in the socio-ecological model's societal ring. The military is known for its policies when meeting requirements such as fitness levels,

education/testing benchmarks, and medical histories. These policies are created and maintained on a need basis for the communities they serve.

Throughout this literature review, one focus was on applying scientific theories and models to health promotion systems. Using the socio-ecological model for the topic of obesity and its impact on military recruitment helps to reinforce the ripple effect obesity has on multiple levels (individual, relationship, community, and societal) of a larger platform, i.e., recruitment for the US military. Using this model while analyzing data for the literature review allowed for a more comprehensive understanding and structuring of the factors influencing the current recruitment crisis, specifically related to obesity.

Chapter 3: Methodology

Literature Search Strategy

UNMC library services provided database access. The databases searched were PubMed, Embase, and PsychInfo. Grey literature was used from sources such as Google Scholar to supplement results from the database searches. I also conducted hand searches for reports from government and non-profit organizations and Department of Defense databases, specifically the Defense Technical Information Center (DTIC), the U.S. Government Accountability Office (GAO), and RAND Corporation. Key terms used during the literature search are overweight, obesity, military recruitment, enlistment, and the United States. Boolean operators were utilized to the fullest extent during the search to optimize search results (Figure B1).

Inclusion and Exclusion Criteria

Certain inclusion and exclusion criteria were applied to help narrow down the information pool. Inclusion criteria consisted of academic journals and reports from government and non-profit organizations written in English. They focused only on the United States and its military population, specifically the recruits. All articles used are based in the United States of America, as this literature review focuses on how obesity impacts the US specifically. Criteria for publication type included peer-reviewed articles, government reports, or editorial pieces. Interventions or programs that aim to help reduce obesity or incentivize military recruitment efforts were included. These programs were referenced in peer-reviewed journal articles that met inclusion criteria and researched further by accessing news and media sources.

I conducted my search in the fall of 2023 through the spring of 2024. The publication dates for my project ranged from 1970-2023, which captured the noticeable trend of rising obesity rates from the beginning of AVF through the present day. Including such a large data

range allowed for surveillance of obesity trends and the ebb-and-flow of military recruitment. Exclusion criteria included reports not in the English language, populations focused on foreign countries and their military, and reports published before 1970.

Screening and Data Collection

During data collection, I utilized Rayyan, a web-based application that aids in screening and extracting data from articles, to assist in screening the data (Mourad et al., 2016). Using Rayyan helped to keep the extraction process organized and streamlined as it allowed me to structure my search into the reports that didn't meet my criteria and annotate why, as well as with the reports that did meet my criteria. Once the results from my search strategies populated in Rayyan, I was able to filter and remove duplicate results before moving on to title and abstract applicability. Finally, I reviewed the fourteen articles that met the inclusion criteria for title and abstract to assess whether the article's entirety fit my study purposes. Another tool within Rayyan's wheelhouse is the PRISMA flow chart. The PRISMA chart is a visual aid of the data extraction process, and it can be seen in Figure B2.

I extracted the following data points: title, year of publication, purpose of study, measurements of obesity or military recruitment, population, study design, methods, and outcomes. I created a Microsoft Form that included all data collection fields and allowed data points to be saved in one location, which was later exported into a Microsoft Excel spreadsheet. This step was fundamental to data organization, allowing for centralized comparison and review of the articles. Lastly, as I collected information on which articles would be used for the literature review, I assembled my citations in conjunction with Zotero.

Chapter Four: Results

Search Results and Selection Process

Sixty-six articles were identified using a similar search strategy amongst three databases. The databases used were PubMed, PsychInfo, and Embase. Of the sixty-six articles identified, twelve were removed as they were duplicates. Fifty-four articles were reviewed for title and abstract, with forty being excluded. The reasons for excluding these articles were for health conditions that were not focused on obesity, such as rheumatoid arthritis and respiratory illnesses; the premises of the article were about veterans or deployed populations/locations, or injuries of Active-Duty military. While screening these articles, I reviewed the author's reference list. While hand-searching for data, I selected two additional articles to include in my literature review. Fourteen full-text articles were screened for eligibility for the literature review, and six were excluded. These six were excluded as it became clear throughout the article that the active-duty population or the military member and their family was the target population, or the articles mentioned weight as a descriptor or risk factor for the illness being studied. As a result of the data screening, ten articles were included and reviewed as part of this literature review.

At the start of my literature review, I intended to utilize the Defense Technical Information Center (DTIC), a large government data hub whose mission is to preserve, curate, and share knowledge from DoD's annual multi-billion dollar investment in science and technology, multiplying the value and accelerating capability for the warfighter (DTIC, 2024). In the beginning, this appeared to be a valuable resource for my literature review as DTIC reports to the Under Secretary of Defense (Research and Engineering) (DTIC, 2024). However, as I began to hand-search through DTIC's databases, I learned this would not provide the type of literature

that met my requirements. Most of my searches led to technical or research reports submitted as research to DTIC that were not peer-reviewed.

Description of Studies

The study designs included were cross-sectional studies, literature reviews, cohort studies, and observational studies. Figure C1 thoroughly displays the key characteristics of the articles assessed in this project, including authors, titles, study design, and purpose of the study. There were variances in who the study populations were, as it ranged from branch-specific recruits to surveys that collected data from all branches and didn't identify if the population was sourced from a specific branch. Throughout these studies, obesity was measured through BMI (Body Mass Index) calculations, and military recruitment data was obtained through military sources such as the Military Entrance Processing Stations. An additional component discovered throughout article reviews was the mention of other key factors, such as health behaviors, contributing to a rise in obesity among military recruits and the civilian population.

Summary of Findings

As a result of the data extraction process, ten sources were identified. Four were cohort studies, four were observational studies, one was a cross-sectional study, and the last was a literature review. While reviewing these studies, I used the socio-ecological model as part of my analysis to examine how it related to my health issue of obesity and military recruitment and readiness.

Socio-ecological model: Individual Level

This level of the socio-ecological model focuses on the individual health patterns of an individual and how these patterns and behaviors either aid or hinder a health issue. An example of an individual component is eating habits. One study addressed the eating behaviors linked to

military recruits and their health status, as obesity may not be related to what one eats but also how one eats. Specifically, eating fast, reducing reliance on internal hunger and satiety cues, and eating in the absence of hunger have been associated with increased BMI and overweight/obesity (Fagnant et al., 2019). Researchers studied how recruits ate before, during, and after basic military training (BMT). During BMT, recruits are given set amounts of time to eat meals, and as a result, meals are rushed, and eating is not a casual experience. The rushed experience over the course of training led to reduced reliance on internal satiety cues, an area of concern as previous studies have associated eating fast and low reliance on internal satiety cues with increased overweight and obesity measurements (Fagnant et al., 2019). If, from the start, recruits are expected to maintain practices for a duration of time, roughly eight weeks for basic military training (BMT), then there is the potential for that to become a habit. If habits, such as time allotments to eat, become a permanent fixture, then there is a risk to the overall readiness being impacted from one of the earliest stages of recruitment.

One study on recruitment examined various causes of obesity, including an individual's health behaviors such as substance use and dietary practices (Potson et al., 2015). These factors fall within the individual level of the socio-ecological model. The study compared weight trends specific to the general population and two U.S. Air Force recruiting classes for enlistment. The researchers used data from the annual Behavioral Risk Factor Surveillance System Survey (BRFSS) for civilians and compared the results from the USAF Basic Military Training (BMT) recruits. Researchers considered the differences in BMI across gender, age, and race. Of the participant pool, the average age studied was 19 years from BMT and 24 years from BRFSS. Most participants were White in all datasets, and females accounted for 25% of the BMT records and 50% of the BRFSS (Potson et al., 2005). Additional key elements to this study were the use

of tobacco products and alcohol consumption in conjunction with health behaviors such as drinking and driving, aggressive driving, and physical fights. The study results indicate that among BMT recruits, individuals who are obese or overweight are less likely to report good health status. They also tend to engage in binge drinking and tobacco use, which has contributed to an increase in the number of obese or overweight recruits, especially in males aged 25-29. The percentage of such recruits has risen from 36.4% to 44.5% (Potson et al., 2005).

Socio-ecological model: Relationship Level

At the relationship level, a person's closest social circle - peers, partners, and family members - influences their behavior and contributes to their experience (CDC, 2018). Addressing the value of family relationships in military communities is critical in that military children are twice as likely to join the military when they become adults, and because in 2016, 80% of troops who joined the military between 2012 - 2013 came from a family with at least one military-connected family member (Stilwell, 2019). Knowing that the military relies on familial relationships for support is another reason to examine how addressing health behaviors at this level can help bolster recruitment numbers.

To put this idea into practice, the program Preventing Obesity in Military Communities (POMC) targets obesity from conception to young adulthood within U.S. military families (Spieker et al., 2015). Three locations were chosen, and randomized-controlled groups were studied at different phases of life: pregnancy/postpartum, adolescence, and young adulthood. Throughout the study, the aim was to prevent excess weight gain and improve the health and readiness of service members and their families. By participating, individuals met with counselors to create dietary and workout plans, attended group meetings about improving self-image and how to create a healthy life, and learned about potential triggers and coping strategies

(Spieker et al., 2015). This type of program not only identifies obesity contributors but also builds from relational support.

Socio-ecological model: Community Level

The model at the community level aims to improve the environment of the health issue. For this literature review, the environment includes recruiting locations, BMT, or officer training programs. In the Army, the Assessment of Recruit Motivation and Strength (ARMS) Study was designed to gain recruits and, in time, retain their military enlistment. In this study, 10,213 Army recruits participated in the program (Bedno et al., 2010). The ARMS study was aimed solely at military recruits, and its main objective was to help overweight recruits meet the physical requirements. Overweight recruits were given a waiver to join if they passed the ARMS physical fitness test, which consisted of completing a pre-determined number of pushups and passing a five-minute step test (Bedno et al., 2010). The ARMS test, developed in this study, is a pre-joining fitness assessment given to recruits before taking the fitness test at the time of enlistment. It was implemented because failure to meet weight standards was the top reason for medical disqualification for service, with approximately 10,000 enlisted applicants being disqualified for this in 2007 (Bedno et al., 2010).

The Army has started to invest in whole-person development when searching through their applicant pool, recognizing that eligible applicants are there but may need assistance to reach the Army's standards. Following an Army recruit's path once, if they received a waiver through the ARMS test, and once they've began their service commitment, the newly joined service member can be part of the Army Weight Control Program (AWCP). The AWCP program is designed for Army soldiers who completed basic training but still struggle with maintaining

the weight requirements. While in the program, soldiers receive individualized intensive exercise programs, medical evaluations, and dietary and nutritional counseling (USA, 2006).

Socio-ecological model: Societal Level

The societal level addresses the climate of a health issue. Large societal factors include health, economic, educational, and social policies that help maintain economic or social inequalities between groups in society (CDC, 2022). Army Chief of Staff Randy George noted the Army needs to improve the formal measurement and evaluation of recruiting policy decisions to determine a better return on investment and allocate resources more effectively. As such, the Army will need to establish evidence-based learning capabilities within Army headquarters to incorporate data collection with program evaluation design to meet these needs (USAPA, 2023).

One study analyzed current trends in adult obesity rates, military accession, and attrition based on weight and fitness to find the theoretical point where there would be insufficient numbers of qualified applicants to staff the U.S. Armed Forces adequately (Gagnon et al., 2015). By doing so, researchers gathered data from the Accession Medical Standards Analysis and Research Activity (AMSARA) reports provided by the Department of Defense based on information gathered at MEPS. They were unsuccessful in pinpointing the period in which there would be a significant drop in qualified applicants. However, the study led to assumptions explaining that trends in obesity and military application will remain stable over time if obesity rates in the US continue to trend at a constant rate, and the demographics of those attempting to enter the military mirror the overall population (Gagnon et al., 2015). If any of these assumptions were to change, the results would differ. While conducting this study, the researchers did not take into account changes in the current social policy pertaining to obesity, which is arguably a key contributor when attempting to pinpoint when there will be a drop in qualified recruits. This

can lead to concerns about whether the policies should have been considered and whether the outcome would change based on that consideration. How important are the policies in relation to current obesity trends in recruitment?

Quality Assessment

As stated in the inclusion criteria, all studies related to this literature review must focus on the U.S. population and the U.S. military. My exposure variable was obesity, and my outcome variables were recruitment or military readiness. Figure C2 details the quality assessment of the articles in the literature review. I utilized The Joanna Briggs Institute Critical Appraisal Tool to conduct quality assessments. JBI is an organization that supports evidence-based decisions to improve the health of communities around the world (Joanna Briggs Institute, 2017). Throughout the checklists, I analyzed various questions pertaining to each article. Common themes were the groups recruited for the study, exposures measured, confounders, identified outcomes of the study, and adequate follow-up times. I found that each article addressed the population studied, where they were recruited, and the objective of the study. I did find that while confounding was implied through the context of the studies, it was not explicitly mentioned in every article. This resulted in my own inferences about what confounding variables existed. Including specific confounding variables would have clarified the researcher's aim without consumer interpretation.

Chapter 5: Discussion

Summary

This literature review investigated how obesity impacts military recruitment and readiness while describing the relationships between obesity and military recruitment, recruitment and readiness, and the rising obesity trend alongside the military recruitment crisis. Common themes throughout the studies in this literature review were the increased need for health and lifestyle education from an early age, addressing unhealthy habits such as poor diet choices and substance abuse, and maintaining a physically active environment for individuals. When choosing to join the military, dedication and commitment are required upon acceptance. To that end, the qualifications to join have been continuously evaluated to assess current health climates and the need to revise policies that may restrict recruits. As a result of decreasing recruitment numbers, the different branches of the military are starting to develop programming to help recruits reach acceptable levels of health and wellness.

Organizational Changes

The military has started to make adjustments to the current health climate in relation to their recruitment goals. While not all branches have adopted a policy change that will adjust their strategy, the Army and Navy have started their own ways forward. The Army has established the Future Soldier Preparatory Course to mitigate the risks of recruits failing to meet eligibility criteria. During the three-week program, soldiers are given tools to improve fitness and holistic health, including an exercise regimen, nutrition, and good sleep habits (Hughes, 2022). In April 2023, the U.S. Navy launched a similar course, Future Sailor Preparatory Course, intended to help recruits meet criteria.

The Army recognized a further need for change in 2019, but instead of reinventing the wheel, they fell back on a program they had implemented in the past with much success. From

2005 to 2009, the Army recognized the need to reevaluate fitness standards and utilized the ARMS test as a result of the ARMS study. This granted enlistment waivers for otherwise qualified candidates with a body fat percentage of 2% or less above regulation (Loughran & Orvis, 2011). This helped to prevent recruitment numbers from declining further. In 2019, ARMS 2.0 was introduced by the Army, which showed soldiers enrolled in ARMS 2.0 were able to successfully complete their terms of service at the same rate as those who met height and weight standards without being in the program (USARC, 2019).

Internal Changes

Policy changes are happening inside the military structures and will have a direct impact on recruits once they graduate from BMT or officer training and begin their service commitment. In May 2021, Air Force Chief of Staff Gen. CQ Brown, Jr. announced the initial changes to the fitness assessment within the U.S. Air Force, stating they are moving away from a one-size-fits-all model (AFPA, 2021). This change comes from Airmen's feedback, health climate reviews, and analysis of the physical standards Airmen are expected to maintain for readiness. For the Air Force, this change looks like eliminating the waist measurements during the required physical fitness tests and shifting to a new body composition test that relies on a person's height-to-waist ratio rather than measuring abdominal circumference to judge their health (Mabeus-Brown, 2024). For cardio measurements, the 1.5-mile run can be substituted for a 20-meter beep test (aka HAMR, the high aerobic multi-shuttle run), push-ups can be exchanged with hand-release push-ups, and sit-ups substituted for cross-legged reverse crunches or a timed plank pose (Smith, 2022).

Former Chief Master Sergeant of the Air Force, JoAnne Bass captures the essence of the changes in physical fitness testing. "If we are truly going to get after building a culture that

embraces fitness as a lifestyle, then we have to grow beyond the mentality of a one-size-fits-all PT test. Providing our Airmen with these options is a step in the right direction toward developing an Air Force that is fit to fight, anytime, anywhere" (AFPA, 2021).

These internal changes matter to recruitment because they demonstrate the recognized call to action from within and up the ranks. To have a lasting impact, the focus should be on what can be done internally, which can then flow outward to recruitment, helping to set the standard. The creation of a policy change can be an uphill battle; it's a process that undoubtedly is circulated through multiple offices and chains of command, and once it's finalized, is often met with doubt. However, when a change from within is established, it helps establish a certain level of quality moving forward for everyone involved.

Public Health Implication

As stated throughout this project, obesity is a health concern that spans throughout the entire public health community and all different levels of the socio-ecological model. Obesity's risk factors are observed at each level: individual, relationship, community, and societal. When looking at the impact obesity has on the military and its recruitment strategies, it's possible to highlight focus areas to improve the individual's overall health and the military's readiness.

Policy implementation is one of the largest areas of change, perhaps the most impactful. Efforts to improve military training are underway through programs like the Army's ARMS and the Navy's Future Sailor Preparatory Course. However, programs such as these should be implemented across the branches. These programs address the recruit's individual abilities, foster relational connections and a sense of community in the branch they're joining, and use data-driven programs to ensure their success.

Public health efforts must be cognizant of obesity's complexities as it has the capacity to affect individuals from a young age and can follow them throughout their lifetime. A comprehensive approach to addressing obesity's presence will be critical to promote collaboration amongst health care providers, policymakers, educators, school boards, etc. Strategies that could leave an impact are improving access to healthy foods from an early age (e.g., school meal programs), encouraging increased physical activity through access to various health programs and improvement of parks, improving public transportation options, and increasing nutrition education.

Strengths and Limitations

The strengths of this study included the relevance of conducting a review that is an ongoing public health issue. Utilizing clear objectives and aims helped to remain grounded in the research, and the last strength was this project's comprehensiveness. The range of study dates allows for a larger picture to be painted of how obesity has had a long-term effect on society and military recruitment. If this was studied at a snapshot in time, the seriousness of obesity may seem small compared to its growing effect.

Limitations of this study include the availability of data from military sources and the accuracy of the sample sizes studied throughout this literature review. While comprehensiveness is a strength, it also doubles as a limitation because it leads to the challenge of gathering sample sizes that reflect an accurate recruitment field. Another limitation found in the study is the use of BMI for all obesity measurements. While it is widely known that BMI is used to track body mass index, hence the name, arguments are being made that BMI does not accurately indicate an individual's predisposition to obesity (Barrette, 2024). The last limitation is the self-reporting

nature of the survey data accumulated in some studies and the participants truthfully documenting their information.

Gaps in Evidence

Data availability may improve as this topic becomes a focus area of research and interest. A gap in this study was that while obesity rates are clearly defined and measured, there was still room for military measurements, specifically data provided by each branch and the standards each branch is using or making adaptations to. In that regard, the data on military recruitment relied on access to military databases. This study relied on the articles that provided data from those databases; however, access to military sources is a gap in evidence. Information on current military recruitment numbers was difficult to gain access to unless otherwise printed in an article or journal.

Additionally, a large gap in evidence was displayed when researching the types of policies that impact recruitment specifically. While programs have been established with select branches, overarching policy has yet to be mandated to all branches. This could be because each branch has different recruitment qualifications; however, that should not negate the need for policies that can have direct effects on recruitment strategies.

Conclusion

The ramifications of obesity are felt nationwide, including within the ranks of an entity known for its physical requirements and demands, the U.S. military. The military relies heavily on the physical and mental fitness of its personnel to achieve its objectives and maintain national security. Obesity is not a selective disease. Acknowledging the influence of early education and obesity prevention on younger populations help slow the onset of unhealthy tendencies and encourages healthier lifestyles. In the long run, this helps build a more ready recruitment pool for

the military. Based on lessons learned throughout the articles selected in this literature review, obesity can be combated with increased prevention methods, education, and resources. Still, additional discussion and research are needed to occur to fully understand and address this issue.

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Application of Public Health Competencies

HPROMPH1: Apply scientific theories and models in planning health promotion program, policy, systems, and environmental change strategies.

Justification: I will address this by evaluating scientific theories and models existing within military recruitment policies to evaluate how constructive change can be implemented. This is the basis of my capstone, as I'm focusing on how obesity impacts recruitment and how the military reacts to this public health issue.

HPROMPH2: Analyze and address contexts and key factors relevant to the implementation of evidence-informed health promotion strategies.

Justification: Throughout the literature review, I will analyze how different military branches react to the obesity crisis in recruitment strategies. Additionally, I will compare and contrast rising obesity rates from recent history with the correlated drop in recruitment numbers over the same timeline and assess the causation of the impact on national security.

MPHF7: Assess population needs, assets, and capacities that affect communities' health.

Justification: While the United States' population is vast, the military makes up only a small percentage. Furthermore, according to the CDC, 1 in 3 young adults are too heavy to serve in the military. Using this competency, I will assess the US need for a healthier population to meet military recruitment standards for physical fitness and assess the impact of efforts to address obesity's risk factors.

MPHF15: Evaluate policies for their impact on public health and health equity.

Justification: This competency will allow me to evaluate military policies for eligibility and recruitment, how the current health climate impacts their policies, and what this means for national security.

Appendix A

Figure A1: Socio-ecological model (McLeroy et al., 1988)

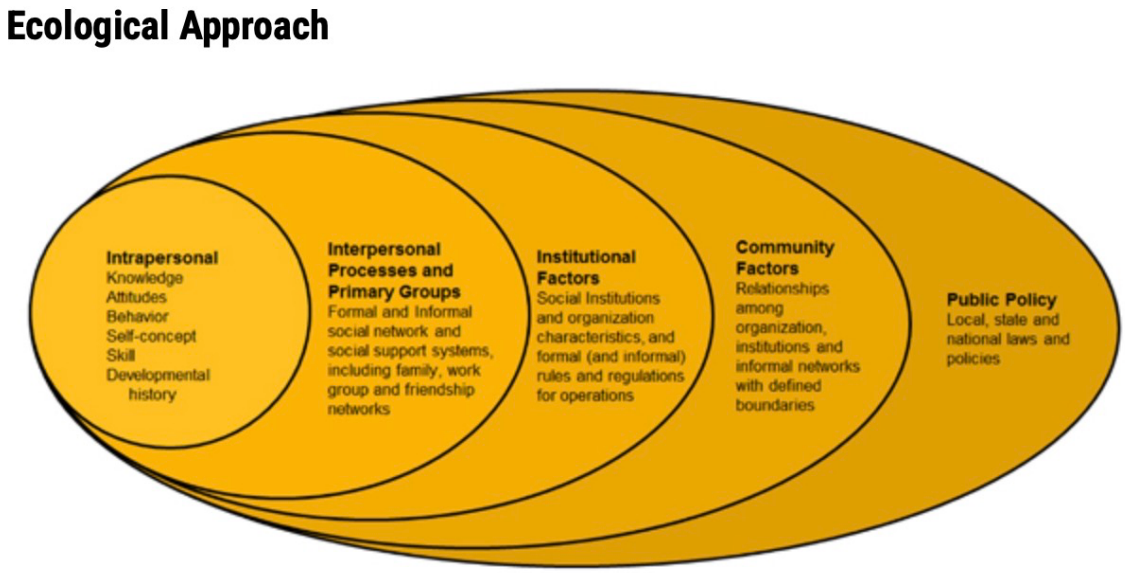
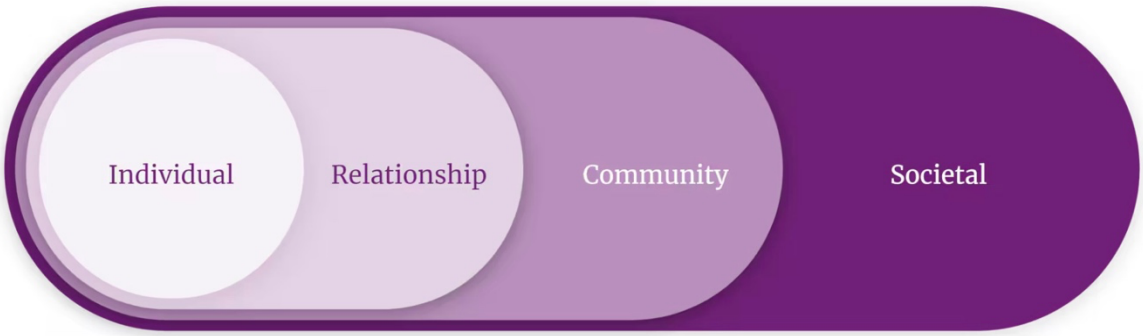


Figure A2: Socio-ecological model (CDC, 2018)



Appendix B

Figure B1: Search Strategy

Concepts	Keywords	PubMed	PsychInfo	Embase
Obesity	Overweight OR unhealthy OR heavy	("Obesity"[Mesh]) OR "Overweight"[Mesh]	DE "Obesity" OR DE "Overweight"	'normal weight obesity'/exp
Military	United States Army OR Air Force OR Navy OR Marines OR Coast Guard OR US military [active duty, service]	"Military Personnel"[Mesh] AND "United States"[Mesh]	(DE "Military Personnel") AND (DE "Military Recruitment")	'military personnel'/exp
Recruitment	Readiness OR preparedness OR enrollment OR assignment OR enlist	"Personnel Selection"[Mesh]	(DE "Military Recruitment")	

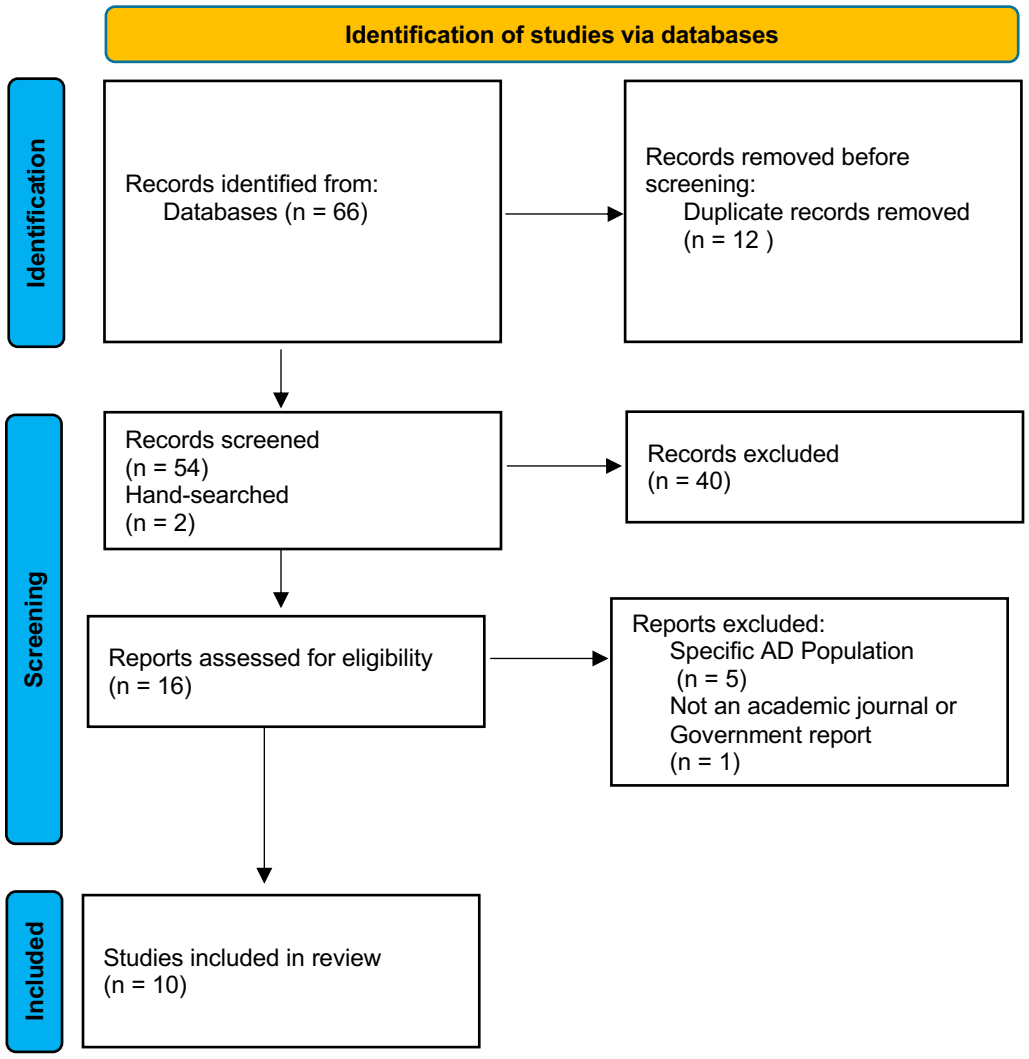
Search strategy PubMed:
(Overweight OR ("Obesity"[Mesh]) OR "Overweight"[Mesh])
AND
(“Active duty” OR military OR "Military Personnel"[Mesh] AND "United States"[Mesh])
AND
(Recruitment OR enlistment OR "Personnel Selection"[Mesh])

Search strategy PsychInfo:
DE “Obesity”
AND
(DE "Military Personnel")
AND
(DE "Military Recruitment")

***Search strategy* Embase:**
(obesity OR 'normal weight obesity'/exp)
AND
('recruitment' AND 'military personnel'/exp)
AND
'United States'
NOT
'Canada'

Appendix B

Figure B2: PRISMA Flow Chart



Appendix C

Figure C1: Description of Studies

Title	Author and Publication Year	Participants	Study Design	Purpose of Study
Association of Weight at Enlistment With Enrollment in the Army Weight Control Program and Subsequent Attrition in the Assessment of Recruit Motivation and Strength Study	Bedno et al., 2010	10,213 Army recruits	Cohort	Examine the impact of enlistment weight on Army recruits' enrollment in the Army Weight Control Program (AWCP)
Comparison of weight status among two cohorts of US Air Force recruits	Potson et al., 2005	60,116 individuals entering the United States Air Force (USAF)	Cohort	Examined weight trends in the general population and DoD are occurring among individuals entering USAF Basic Military Training (BMT)
Epidemiology of Injuries and Illnesses during the United States Air Force Academy 2002 Basic Cadet Training Program: Documenting the Need for Prevention	Billings, 2004	1,210 United States Air Force Academy (USAFA) Cadets. Basic Cadet Training (BCT) 2002, Class of 2006	Observational	Document injury and illness of Air Force Academy cadets during BCT and the impact of high BMI as a risk factor for injury
Obesity and National Defense: Will America Be Too Heavy to Fight?	Gagnon et al., 2015	Utilized data from Accession Medical Standards Analysis	Observational	Analyze trends of national obesity data and military accession records to determine a time

		and Research Activity (AMSARA) reports and Military Entrance Processing Stations (MEPS) from 1995-2012		projection of when the US will no longer have qualified military applicants
Obesity in Civilian Adults: Potential Impact on Eligibility for U.S. Military Enlistment	Yamane, 2007	2,570 men 2,876 women	Observational	Measure prevalence of obesity in civilian population as it pertains to US military recruitment
Self-reported eating behaviors of military recruits are associated with body mass index at military accession and change during initial military training	Fagnant et al., 2019	1283 Initial Military Training (IMT) recruits	Observational	Assess associations between eating speed and high BMI among military recruits. Eating behaviors at IMT leading to increased obesity/overweight.
The obesity epidemic: implications for recruitment and retention of defense force personnel	McLaughlin et al., 2009	17 papers included in review	Literature review	Review the impact of obesity on suitability for employment in defense force careers and any potential impact on long-term occupational health
Trends in Overweight and Obesity Among 18-Year-Old Applicants to the United States Military, 1993–2006	Hsu, et al., 2007	756,269 18-year-old civilian applicants from 1993-2006	Cohort	Identify trends in obesity amongst 18 year-old applicants to US military

Trends in overweight and obesity in soldiers entering the US Army, 1989-2012	Hruby, et al., 2015	1,741,070 individuals	Cohort	Examine change in weight status at entry and demographic characteristics relating to obesity
U.S. military weight standards: what percentage of U.S. young adults meet the current standards?	Nolte, et al., 2002	Data obtained from the Third National Health and Nutrition Examination Survey	Cross-sectional	Determine what percentage of US civilians, 17-20yrs, meet military weight standards

Figure C2: Quality Assessment