

MENSTRUAL PRACTICES IN OPERATIONAL MILITARY WOMEN

by

Angela K. Phillips

Dissertation submitted to the Faculty of the
Daniel K. Inouye Graduate School of Nursing Graduate Program
Uniformed Services University of the Health Sciences
In partial fulfillment of the requirements for the degree of
Doctor of Philosophy 2019



**GSN PhD Program in Nursing Science
PhD Degree Certification**

NAME: Angela Phillips

Degree Date: November 2019

Total Course Units



Date passed dissertation proposal oral examination: 27 August 2018

Date passed dissertation oral defense: 26 August 2019

Date dissertation accepted by the GSN: 26 August 2019

I certify that the above named student has fulfilled all requirements for the PhD degree.

Chairperson:

Dr. Mary B Engler

Signature: _____

Approved/Disapproved

Director, Doctoral Program: _____ Date: _____

Mary B. Engler PhD, RN, MS, FAHA

Approved/Disapproved

Dean, Graduate School of Nursing _____ Date: _____

Carol A. Romano PhD, RN, FAAN

Dean and Professor



UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

DANIEL K. INOUE
GRADUATE SCHOOL OF NURSING

4301 JONES BRIDGE ROAD
BETHESDA, MARYLAND 20814-4799
www.usuhs.edu



BOARD OF REGENTS

Candidate Presented for Certification for the Doctor of Philosophy

Tisha Crowder-Martin
Maj Angela Phillips, USAF

COPYRIGHT STATEMENT

The author hereby certifies that the use of any copyrighted material in the dissertation manuscript entitled: Menstrual Practices in Operational Military Women is appropriately acknowledged and, beyond brief excerpts, is with the permission of the copyright owner.

A black rectangular box redacting the signature of the author.

Angela K. Phillips

November 5, 2019

DISCLAIMER

The views presented here are those of the author and are not to be construed as official or reflecting the views of the Uniformed Services University of the Health Sciences, the Department of Defense or the U.S. Government.

Distribution Statement

Distribution A: Public Release.

The views presented here are those of the author and are not to be construed as official or reflecting the views of the Uniformed Services University of the Health Sciences, the Department of Defense or the U.S. Government.



UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES
DANIEL K. INOUE
GRADUATE SCHOOL OF NURSING
4301 JONES BRIDGE ROAD
BETHESDA, MARYLAND 20814-4799
www.usuhs.edu



September 4, 2019

MEMORANDUM FOR PRESIDENT, USU

THROUGH: CHAIR, BOARD OF REGENTS

SUBJECT: Certification of Doctoral Student

The graduate student listed below is presented for certification to receive the Doctor of Philosophy effective upon your approval:

ANGELA PHILLIPS

DOCTOR OF PHILOSOPHY

DOCTOR OF NURSING SCIENCE PROGRAM

Attached is the candidate's Certification of Successful Completion of the Final Examination. Also attached are the Dissertation Approval Form, Certification of Authorized use of Copyrighted Materials, Dissertation Abstract, Dissertation Title Page and Curriculum Vitae.

Carol A. Romano PhD, RN, FAAN

Dean and Professor

ABSTRACT

Menstrual Practices in Operational Military Women

Angela K. Phillips, PhD, 2019

Dissertation directed by: Mary B. Engler, PhD, Program Director, GSN PhD Program in Nursing Science

Previous studies on menstruation for military women have addressed hygiene and menstrual suppression during deployment. One of the important gaps in the research on the preparedness of military women to deploy is their menstrual practices and related needs while at their home duty station, functioning in an operational military setting.

This study used a qualitatively-driven mixed-method design with ethnography as the core qualitative component to address the specific aim: to explore how active duty U.S. Air Force women manage their menstruation while living day-to-day in a military culture. Feminist theory provided a lens for conducting the study. Air Force Security Forces women were recruited to participate in interviews (n=6), focus groups (n=2), and a questionnaire (n=16); observational data were collected; and interviews were conducted with leadership (n=2).

Data were analyzed at multiple points of interface to evaluate qualitative and quantitative data separately, then analyzed cohesively to provide a comprehensive evaluation of women's menstrual practices in an operational setting. Three themes

emerged from the qualitative data: 1) Knowledge, 2), Cop Culture, and 3) Support. With the supplementary data from the questionnaire, the comprehensive themes in the study focused on 1) Knowledge, 2) Military Culture, and 3) Menstrual Practices. Women gained knowledge from a variety of settings including upbringing and military experience. Women working as military police were committed to serving in the mission, and required support to perform their duties. Menstrual practices were only minimally influenced by military culture, in that many women stated they would not change their practices in the event of a military deployment.

Military culture had limited impact on menstrual practices overall. Women determined their menstrual practices based on knowledge from their family and friends, and from their attitudes and beliefs about menstruation. Women were able to adapt to make any changes in their menstrual practices with experience in the military culture, and wanted support from men, women, peers, and leaders. Findings from this study contribute to overall military nursing science and growing body of literature for collaboration to provide care to military women.

GSN PhD Dissertation Defense Doctor of Philosophy in Nursing Science Degree

NAME: Major Angela Phillips

TITLE: "Menstrual Practices in Operational Military Women"

Date of Defense: 08/26/2019

The decision of the Dissertation Committee is:

PASS

☐

A. Both the dissertation and the oral defense are satisfactory:

☒

B. Minor changes are recommended by the Dissertation Committee that is to be made to the satisfaction of the Dissertation Chairperson:

DEFER

☐

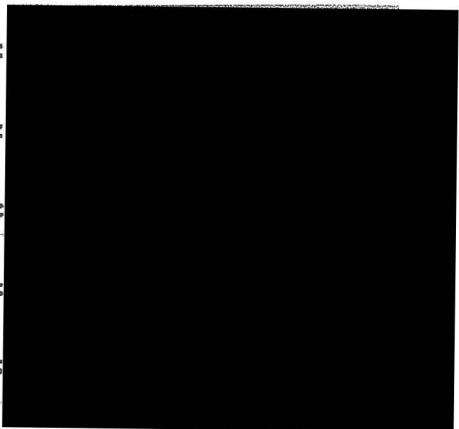
A. Major changes in the dissertation are required. Changes must be made to the satisfaction of the Dissertation Chairperson:

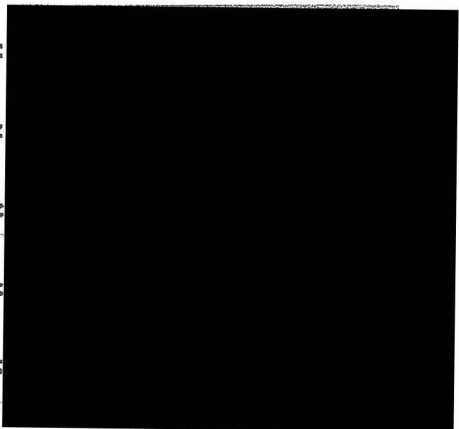
☐

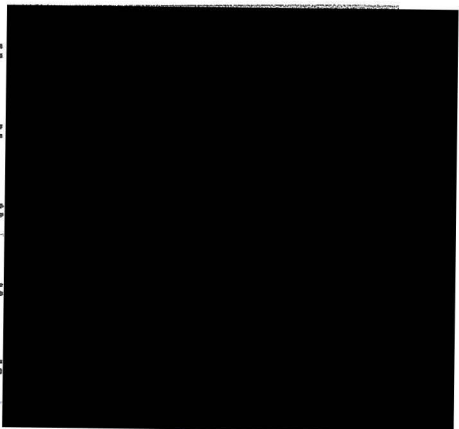
B. Major changes in the dissertation are required. Changes must be made to the satisfaction of the Dissertation Committee and at that time the oral defense will be rescheduled:

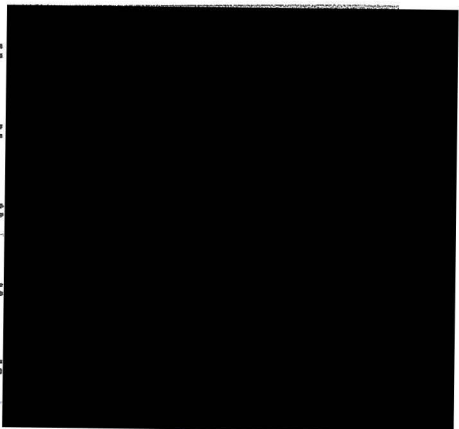
FAIL: ☐ Neither the oral performance nor the dissertation is adequate:

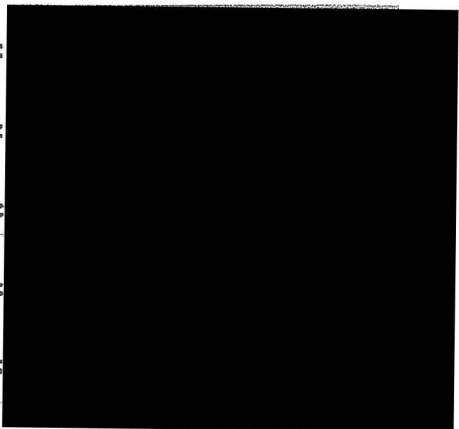
SIGNATURES OF THE COMMITTEE:

Chairperson: Mary B. Engler PhD Signature: 

Member: James A. Koster PhD Signature: 

Member: William H. Catherine Signature: 

Member: Candy Wilson Signature: 

Member: Dr. Nancy Woods Signature: 

Approval ☒ Disapproval ☐

Director, Doctoral Program/Date 

Approval ☐ Disapproval ☐

Dean, Graduate School of Nursing/Date 



**GSN PhD Program in Nursing Science
PhD Degree Certification**

NAME: Tisha Crowder-Martin

Degree Date: November 2019

Total Course Units: GPA: 3.674 Credits: 120.5

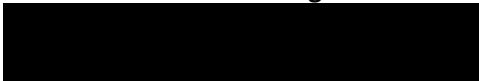
Date passed dissertation proposal oral examination: 27 August 2018

Date passed dissertation oral defense: 26 August 2019

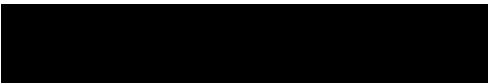
Date dissertation accepted by the GSN: 26 August 2019

I certify that the above named student has fulfilled all requirements for the PhD degree.

Chairperson:
Dr. Mary B Engler

Signature 

Approved/Disapproved

Director, Doctoral Program: 

Date:

APPROVED

Mary B. Engler PhD, RN, MS, FAHA

Approved/Disapproved

Dean, Graduate School of Nursing

Date:

**Carol A. Romano PhD, RN, FAAN
Dean and Professor**

MENSTRUAL PRACTICES IN OPERATIONAL MILITARY WOMEN

by

Angela K. Phillips

Dissertation submitted to the Faculty of the
Daniel K. Inouye Graduate School of Nursing Graduate Program
Uniformed Services University of the Health Sciences
In partial fulfillment of the requirements for the degree of
Doctor of Philosophy 2019

[Dissertation approval form inserted here]

ACKNOWLEDGMENTS

I would like to thank the Air Force Security Forces women who participated in this study. It was an honor to hear their stories and experiences. I also thank the faculty and staff at Uniformed Services University, as well as prior and current students for their encouragement.

I thank my Dissertation Chair Dr. Mary Engler, as well as my committee members Dr. Nancy Fugate Woods, Dr. William Catherino, Dr. Elizabeth Kostas-Polston, and Dr. (Col) Candy Wilson for their support and guidance throughout this study. Their expertise and time were valuable to my development as a researcher and as a military officer. Their continued support through both successes and failures was something I hope to emulate in my own career. I also specifically thank Joy Miedema, Dr. Stacey Iobst, Jill Raps, Melissa Troncoso, and Jennifer Diven for their time, encouragement, and support. This study would not have been possible without financial support from Uniformed Services University and the TriService Nursing Research Program. Finally, I thank my family for supporting my lifelong dreams.

DEDICATION

Dedicated to the Defenders of Freedom

COPYRIGHT STATEMENT

The author hereby certifies that the use of any copyrighted material in the dissertation manuscript entitled: Menstrual Practices in Operational Military Women is appropriately acknowledged and, beyond brief excerpts, is with the permission of the copyright owner.

Angela K. Phillips

November 5, 2019

DISCLAIMER

The views presented here are those of the author and are not to be construed as official or reflecting the views of the Uniformed Services University of the Health Sciences, the Department of Defense or the U.S. Government.

ABSTRACT

Menstrual Practices in Operational Military Women

Angela K. Phillips, PhD, 2019

Dissertation directed by: Mary B. Engler, PhD, Program Director, GSN PhD Program in Nursing Science

Previous studies on menstruation for military women have addressed hygiene and menstrual suppression during deployment. One of the important gaps in the research on the preparedness of military women to deploy is their menstrual practices and related needs while at their home duty station, functioning in an operational military setting.

This study used a qualitatively-driven mixed-method design with ethnography as the core qualitative component to address the specific aim: to explore how active duty U.S. Air Force women manage their menstruation while living day-to-day in a military culture. Feminist theory provided a lens for conducting the study. Air Force Security Forces women were recruited to participate in interviews (n=6), focus groups (n=2), and a questionnaire (n=16); observational data were collected; and interviews were conducted with leadership (n=2).

Data were analyzed at multiple points of interface to evaluate qualitative and quantitative data separately, then analyzed cohesively to provide a comprehensive evaluation of women's menstrual practices in an operational setting. Three themes emerged from the qualitative data: 1) Knowledge, 2) Cop Culture, and 3) Support. With the supplementary data from the questionnaire, the comprehensive themes in the study focused on 1) Knowledge, 2) Military Culture, and 3) Menstrual Practices. Women gained knowledge from a variety of settings

including upbringing and military experience. Women working as military police were committed to serving in the mission, and required support to perform their duties. Menstrual practices were only minimally influenced by military culture, in that many women stated they would not change their practices in the event of a military deployment.

Military culture had limited impact on menstrual practices overall. Women determined their menstrual practices based on knowledge from their family and friends, and from their attitudes and beliefs about menstruation. Women were able to adapt to make any changes in their menstrual practices with experience in the military culture, and wanted support from men, women, peers, and leaders. Findings from this study contribute to overall military nursing science and growing body of literature for collaboration to provide care to military women.

TABLE OF CONTENTS

LIST OF TABLES

11LIST OF FIGURES

12	CHAPTER 1: Introduction
13	Background of the Problem
13	Military Readiness
13	Organizational Military Readiness
14	Individual Military Readiness
15	Menstruation and Menstrual Suppression
16	Attitudes and Beliefs
16	Endocrinology of the Menstrual Cycle
17	Menstrual Suppression
18	Military Women
20	Ethnography
22	Statement of the Problem
23	Purpose of the Study
24	Research Question
24	Significance of the Study
25	Definition of Terms
26	Assumptions
26	Summary
27	CHAPTER 2: Review of the Literature
28	Conceptual Framework
28	Feminist Theory and Research
28	Ways of Knowing
28	Intersectionality
29	Language
30	Implications
31	Literature Search
31	Results
33	Quality Appraisal
34	Themes
34	Identified Gaps
35	Deployment
35	Single-service
36	Options for Menstrual Suppression
36	Hesitance to Suppress Menstruation
37	Provider Practices
37	Stagnant Research
37	Discussion of the Literature Review
38	Summary
39	CHAPTER 3: Methods

	40Design
	40Methods
	41Setting
	42Recruitment
	43Observations
	43Artifacts: Questionnaire.
	44Artifacts: Interviews with leadership
Collection	44Focus groups and Individual Interviews44Data
	45Ethnographic Data Collection
	46Observational Data
	47Artifacts: Questionnaire
	47Artifacts: Interviews with leadership
	49Focus Groups or Individual Interviews
	49Analysis
	50Rigor
	52Protection of Human Subjects
	53Observations
	54Artifacts: Questionnaire
	54Artifacts: Interviews with Leadership
	55Focus Groups or Individual Interviews
	55Intersectionality
	55Conclusion
	56CHAPTER 4: Results
	56Questionnaire Findings
	58Menstruation
	59Contraception
	59Menstrual Suppression
	60Qualitative Findings
61Observations and On-Location Interviews	
	61Leadership Interviews
	63Focus Groups and In-depth Interviews
	64Qualitative Analysis
	64Knowledge & Experience
	65Friends, Family
	65Experience67Cop
Culture	68Becoming a Cop
	68Speak Up
	70Support & Connection
	71Support from Men
	72Support from Women
	74Comprehensive Analysis
	75Knowledge
	75Military Culture
	76Menstrual Practices

	76	Rigor
	77	Conclusion
	79	CHAPTER 5: Discussion
	80	Comparison to Other Studies
	81	Feminist Theory
	84	Implications
	86	Contribution to Military Research
	87	Contribution to Nursing Science
	89	Strengths
	90	Limitations
	90	Future Directions
	92	Conclusion
	92	REFERENCES
	94	APPENDIX A: Johns Hopkins Quality Appraisal
	99	APPENDIX B: Literature Tables
	100	APPENDIX C: Surveys for Population Norms
	106	APPENDIX D: Feminist Constructs for Questionnaire
	107	APPENDIX E: IRB-Approved Questionnaire
110		APPENDIX F: IRB-Approved Focus Group and Interview Questions
	122	APPENDIX G: Codebook
	123	

LIST OF TABLES

Table 1. Search Terms for Menstrual Suppression in U.S. Military Women	32	Table 2.	
Demographics of Questionnaire Participants	58	Table 3. Rates of Contraceptive Use	
	59	Table 4. Demographics of Interview or Focus Group Participants	61
Table 5.		Table 6. Participant Identification for Qualitative	
Security Forces Cultural Terms	62	Table 7. Codes, Categories, and Themes	65
Analysis	64	Table 8. Total Air Force Female	
Enlisted Security Forces	87	Table 9. Research Literature Table	100
Literature Table	104	Table 10. Review	
Population Norms	106	Table 11. Validated Surveys on Menstrual Suppression; used for	
		Table 12. Feminist Constructs for Questionnaire	107
Codebook	123	Table 13.	

LIST OF FIGURES

Figure 1. PRISMA diagram for literature review	32
Figure 2. Initial Proposed Study	
Methods	41
Figure 3. Data Collection	46
Figure 4. Analysis Plan	51
Figure 5.	
Participation Per Data Collection Strategy	57

CHAPTER 1: Introduction

The purpose of this qualitatively-driven mixed-method study using ethnography was to explore military women's menstrual practices in an operational setting. Supporting women in the military is critical to the success of the military. This support includes the care of unique health needs such as menstruation. Previous research on menstruation among military women has focused on urogenital hygiene management during deployment; however, military readiness means that ultimate preparation for deployment begins at home.

BACKGROUND OF THE PROBLEM

Military readiness is essential to the background of this study, as well as an understanding of menstruation and menstrual suppression. Ethnography is discussed as a philosophical underpinning.

Military Readiness

The United States (U.S.) military must be ready to defend our national security immediately when called. Therefore, all members of the volunteer Force are required to be ready to deploy anywhere in the world with minimal notice. Military readiness is structured from the top down, beginning with the President of the United States and continuing down to the individual soldier, sailor, Marine, or airman. Current military readiness is of utmost importance to our nation's national security, even appearing in discussions in daily government agencies as well as news reports.

In a memorandum addressing all personnel of the Department of Defense, Secretary of Defense Mattis asserted, "We are a Department of War," (46). He then addressed three lines of effort to maintain international status as a fighting force. The first of these lines of effort is to

restore military readiness. Military readiness is the most prominent focus of the U.S. military and its senior leadership and commanders.

The concept of military readiness first appeared under President Ronald Reagan in the 1980s, in the post-Vietnam era and during the Cold War, when positive military publicity was rare (29). President Reagan propelled the use of military force in politics and national security, a significant change from the decade before. The concept “Military Readiness” is historically related to Reagan’s concept of “Peace through Strength,” demonstrating that peace and security can be maintained through the strength of the military (6).

More contemporary uses of the terms of military readiness include a useful definition, offered by Congressional Research Service (69):

CRS has identified two principal uses of the term readiness. One, readiness is used in a broad sense to describe whether military forces are able to do what the nation asks of them. In this sense, readiness encompasses almost every aspect of the military. Two, readiness is used more narrowly to mean only one component of what makes military forces able.

Military readiness is discussed in this dissertation as a whole concept in terms of organizational readiness and individual readiness.

Organizational Military Readiness

As an organization, all branches of the military fall under the Department of Defense and report to the President of the United States as Commander in Chief. In current times of war, the U.S. military fights on multiple fronts to include, for example, the Middle East, Africa, and Southeast Asia. Because wars are fought on multiple fronts and in unconventional styles, readiness is even more critical at this time. Readiness at the organizational level requires that all

forces and units be ready to fight at any moment.

Organizational readiness includes military members and military equipment. For example, aircraft require pilots who are skilled and trained, and require proper maintenance for functioning. Significant funding is required to maintain organizational readiness of members and equipment.

Individual Military Readiness

Individual military readiness includes training and physical fitness. Annual computer-based training, job-specific training, and pre-deployment training are intended to equip military members with the knowledge and skills of a ready warfighter.

Physical fitness standards are enforced in terms of weight, endurance, and strength. Regular fitness tests are used to measure individual fitness. Routine preventive health examinations are another aspect of physical fitness, as annual vision, hearing, and dental exams are required (15). Immunizations are mandated to prevent infection and disease. Age-appropriate health screenings to ensure health and wellness are also mandated to support physical fitness. Further, annual preventive health assessments are used to screen for other potential concerns such as mental health issues, nutritional deficits, and sleep dysfunction (15). Additional screenings are required prior to deployment as well (16) to ensure optimum health before relocation to an area with potentially limited resources. This approach to preventive healthcare supports individual readiness so that all military members are *fit to serve* in response to any military threat—at home or abroad.

Promoting readiness through women's health adds to the overall strength of the military. Because women comprise over 15% of today's military force (14), readiness for military women has obtained increased attention in research and health practice. Some advancements include

research on anatomical differences between men and women, leading to considerations in prevention of musculoskeletal injury (77); research on iron levels in female recruits versus male service members (86); and research for female-specific health concerns including development of urogenital hygiene kits (70). A woman's personal health contributes to her personal readiness, which contributes to unit, mission, and operational readiness.

Menstruation and Menstrual Suppression

Women have unique needs for maintaining military readiness and personal health. Menstruation is a sex-specific experience that must be part of the consideration for individual military readiness. In terms of military readiness, hormonally suppressing menstruation is one way that women can maintain optimal readiness in all settings, through eliminating a monthly withdrawal bleed and promoting optimal hygiene.

Attitudes and Beliefs

Historically, menstruation has been thought of as a link to basic nature; an unclean and sinful process placing women as lesser creatures than men, making menstruation shameful and traditionally contributing to the oppression of women (1, 22). Menstruating women are sometimes viewed in terms of their body parts, limited to a uterus (1) and risk cultural objectification. In short, menstruation has historically been a *taboo* subject.

Attitudes and beliefs about menstruation are complex, as not all women believe the same thing or have the same attitudes. Some women view menstruation as nonfunctional, while others view it as essential (34, 36). However, evidence of cultural taboo can be seen in many situations. For example, while growing up, many magazines had embarrassing stories about a young girl accidentally dropping a tampon out of her backpack and everyone laughing at her. In some

contemporary research, women report their normal menstruation as bothersome (1, 22), and this phenomenon may be further complicated by cultural taboo (49). A bothersome menstrual cycle may be due to symptoms or to psychosocial issues such as embarrassment. Despite these attitudes and beliefs, menstruation continues to be a normal monthly function that women experience.

These attitudes and beliefs also contribute to women's preferences on the use of hormonal contraception, and whether or not to suppress menstruation through the use of hormonal contraception (34, 36). Some researchers have demonstrated that women with greater body appreciation and less severe menstrual symptoms have more positive views about menstruation, and are therefore less likely to desire menstrual suppression (1, 9, 81). Contemporary literature continues to demonstrate a lack of research on menstruation, the menstrual cycle, and women's health due to the treatment of menstruation as a taboo topic (74). Attitudes and beliefs about menstruation are closely related to the individual woman's morals and the culture in which she lives and works.

Endocrinology of the Menstrual Cycle

An understanding of menstrual suppression requires a basic understanding of the normal menstrual cycle. The structure and function of the female reproductive system is controlled by the hypothalamic-pituitary-ovarian (HPO) axis, a network of neurologic and hormonal communications that lead to sexual maturation and reproduction capability. Extra-hypothalamic factors cause the hypothalamus to release Gonadotropin-releasing hormone (GnRH), which stimulates release of follicle stimulating hormone (FSH) and luteinizing hormone (LH) from the anterior pituitary gland (25, 48).

These hormones stimulate the ovaries to secrete the female sex hormones, estrogen and

progesterone, which control the menstrual cycle and are produced cyclically with ovarian and uterine changes associated with the menstrual cycle. The menstrual (ovarian) cycle consists of ovulation and is divided into the follicular/proliferative and luteal/secretory phase. The luteal phase lasts 14 days, while the follicular phase can be variable, and therefore a normal menstrual cycle can last anywhere between 21-35 days. Between these 2 phases, ovulation occurs and if implantation of the blastocyst does not occur in the late luteal phase, menstruation occurs in the ischemic/menstrual phase. The endometrium becomes ischemic and disintegrates with menstrual discharge and blood flow lasting typically 3-7 days.

Exogenous hormones in the form of hormonal contraceptives alter the normal menstrual cycle. Methods with combined estrogen and progesterone (e.g. pills, patch, and vaginal ring) maintain a steady state of hormones throughout the month, compared to a normal menstrual cycle when hormones fluctuate to promote ovulation (25). Progesterone-only methods (e.g. depo medroxyprogesterone acetate, and levonorgestrel intrauterine systems) thin the lining of the uterus, either systemically or locally (25). These hormonal methods essentially override the normal cycle, preventing proliferation of the endometrium. Therefore, ischemic shedding of the endometrium (menstruation) does not occur. A withdrawal bleed experienced while on hormonal contraceptives is not an actual menstrual bleed, but results from the pause in the use of exogenous hormones.

Menstrual Suppression

Women with prolonged or absent menstrual cycles outside of the use of hormonal contraceptives risk hyperproliferation of the endometrial lining, increasing the risk for uterine hyperplasia and uterine cancer (25). Additionally, some women who do not have regular menstrual cycles may have symptoms of hypogonadotropic hypogonadism, in which the

hypothalamus has decreased function and can cause significant risks to bone health (25). These events do *not* occur with the use of hormones for menstrual suppression. Menstrual suppression with contraceptives does *not* increase the risk of endometrial hyperplasia because use of hormonal contraceptives does *not* create a state of unopposed estrogen. Additionally, hormonal menstrual suppression does *not* cause a state of hypogonadotropic hypogonadism, reducing the risks to bone health (25).

In the U.S., menstrual suppression has not been easily accepted because of the adverse medical concerns mentioned above. Debates have occurred about whether menstrual suppression is truly a safe practice, since long-term effects of menstrual suppression remain unknown (33). Menstrual suppression is now considered safe and is supported by leading professional organizations for use in women with severe symptoms such as dysmenorrhea or menorrhagia, those with learning disabilities, and for women that for whatever reason request it (27). Some advocacy groups continue to debate the long-term effects of menstrual suppression, claiming it is a long-term medical experiment that does not yet have results (74). Although use of long-acting reversible contraceptives (LARC) may still remain low in some populations such as women in midlife (39), historical aspects have contributed to increased uptake of intrauterine devices (IUD's) in recent years. For example, as the current political climate has changed, there has been at least a 900% increase of IUD use in the United States. While some of this increase is attributed to political atmosphere, the increase was also due to targeted advocacy of LARC and the Affordable Care Act (20). Increases in LARC use has led to increases in menstrual suppression in American women in general, due to the use of progesterone-only LARC methods that prevent thickening of the endometrial lining.

Menstrual suppression is a way for women to potentially control the timing of their

withdrawal bleed, thus suppressing menstruation can be a useful way for women to improve their military readiness. While menstruation may not be debilitating or distracting for all women in operational settings, exploring women's menstrual practices including menstrual suppression allows for understanding how women manage their military readiness.

Military Women

The military has been defined as its own culture (51, 59), and women comprise 15.5% of the U.S. military and can serve in any role, to include direct combat (14). Part of military culture includes military readiness, and for women that includes menstruation. Women in the military experience unique factors that apply specifically to this cultural group.

Military culture includes a system of indoctrination and integration through basic training, immersion into the warrior ethos, and acculturation to specific defined organizational structures (50, 67). Many aspects of military culture are clearly defined, even expressed as law (50, 68). However, there are other aspects of the culture such as stigma about health-seeking behaviors that are more candid, but still permeate through the organization as a whole (26, 43). Military culture is complex, and so lasting that many military members *identify* as being military much like one would *identify* with gender, parental status, or trade occupation (50). Women within the military are part of a distinct and unique culture which includes an occupation and has several implications throughout their life, but especially during the time in which they serve.

Menstrual suppression has been studied in military women, specifically, the use of oral contraceptive pills during deployment (65). Deployed military women have challenges managing menstruation, and suppressing menstruation altogether can be beneficial in these settings (79). Many military women are not aware that menstrual suppression is an available option for managing their menstrual cycle, personal hygiene, and any untoward menstrual symptoms (45,

61, 64, 66, 78). Further, women who are aware of or interested in menstrual suppression have been reported not to practice it for a variety of reasons such as concerns about side effects, concerns about lack of access in a deployment environment, and safety (64-66, 79).

Limitations to this previous research included that all studies centered around the time of deployment and not overall military readiness; studies were conducted primarily among Army women; and there has not been any further research since the time when these initial studies were completed, creating a gap in knowledge about menstrual practices for military women. Further, the recently published Defense Health Agency (DHA) Procedural Instruction (17) on contraception, recommends that military members be counseled about menstrual suppression annually to support military readiness. While this recommendation is an admirable step in progressing military women's health, there is a paucity of research to support the policy. This study addresses the significance of women's menstrual practices in operational settings, adding voice to the culture. Research about menstrual suppression for military women, not just during times of deployment, will support the new DHA Procedural Instruction, in addition to supporting women in the military culture.

Security Forces women are part of the military culture and serve as the military police and law enforcement within the base in which they are stationed or located. They are required to attend a 6-month specialized training course, in addition to routine military "boot camp", prior to serving as a Security Forces member. Security Forces are highly operational and can serve in any location around the world, and can deploy at any time. Training for Security Forces includes advanced firearm training, base security training, and first responder training. The career field is male-dominated, and women serving within the subculture of military Security Forces have even more unique and specialized needs.

Ethnography

Because the military is its own culture (51), using ethnography to explore the cultural aspects and impacts on menstrual practices was appropriate in this study. Ethnography stems from anthropology and is guided by the stories of individuals and groups of people within a culture. Culture includes observable behaviors as well as the knowledge, attitudes, and beliefs within a group of people (23). These may be observable, but may also be implicit, requiring inferences about the culture and discovering the *meaning* of knowledge, attitudes, and beliefs within that group. Culture refers to a specific way of life; the way groups of people behave (75). Culture is not just an individual, but an entire group of people and how they are influenced, and provide influence, among one another. The military is a type of culture (51, 59), with its own purpose, behavior, and knowledge.

Philosophically, ethnography aims to learn from people, rather than study people (75). From this worldview, learning from people allows for understanding of the culture. This type of learning involves how people ascribe meaning to objects (75). *Meaning* cannot be directly observed (75), and therefore cultural inferences must be made.

Cultural inferences can be gathered through collecting data on what people say, how they act, and the resources they use within their culture. Cultural inferences include information gathered about both explicit knowledge and tacit knowledge. Explicit knowledge is what an individual or a group directly expresses, such as in directions. Tacit knowledge is not as easily deciphered, and must be carefully gleaned through immersion in the culture. In ethnography, this is done through prolonged exposure to the cultural group of interest, and selection of key informants to the cultural meaning being explored (23, 75). In ethnography, information can come from many sources including observations, artifacts, and interviews with individual

informants. Language is critical in ethnographic studies. Similar to feminist theory, it allows the researcher to interpret meanings of tacit knowledge within the culture (5). Language is the gateway to making cultural inferences.

This study used a feminist approach to ethnography. Feminist ethnography explores cultural practices of groups of people within a specific context (5). Feminist ethnography began in the 1970s, and moved quickly from exploring women's individual experiences, to learning about those experiences in a new culture, and eventually developing an agenda to improve the workforce for women (5). Current feminist ethnography acknowledges the importance of giving a voice to women or oppressed groups. Using ethnography as a philosophical underpinning in this study guided cultural exploration and provided a lens for studying military women.

STATEMENT OF THE PROBLEM

Military women are critical to the success of the military mission. In 1995, the National Academy of Medicine (formerly one of the three Academies that made up the Institute of Medicine) published, *Recommendations for Research on the Health of Military Women* (37), driving new sex-specific research on the unique population of women in the U.S. military. Since that publication, numerous studies on military women's health have been conducted, including several on urogenital health and hygiene (61, 76, 87), as well as menstruation and menstrual suppression (45, 61, 64-66, 78, 79, 83). Despite the research completed to date, focused research on deployment menstrual management does not capture a true assessment of readiness and preparedness to deploy in a moment's notice. Experts suggest additional research on menstruation, menstrual suppression, and military readiness is needed to advance military women's health (89).

Previous studies on menstruation for military women have addressed hygiene and menstrual suppression during deployment (64-66, 79, 83). One of the important gaps in the research on the preparedness for military women to deploy is their menstrual practices and related needs while at their home duty station, functioning in an operational military setting. Sustaining military readiness requires all military members be ready to deploy at any time. Therefore, assessing menstrual practices and menstrual suppression in a daily operational setting helps further this important body of research.

PURPOSE OF THE STUDY

The purpose of the study was to explore how active duty U.S. Air Force women manage menstruation while living day-to-day in a military culture. The study was a qualitatively-driven mixed-method design using ethnography as the core component and incorporating a questionnaire using feminist theory as a lens throughout the study. Data were collected through questionnaires, observations, focus groups and individual interviews, and interviews with leadership.

RESEARCH QUESTION

The study's **research question** is: What are active duty U.S. Air Force women's practices and experiences towards menstruation and menstrual suppression?

The **primary objective** of this study was to explore how menstruation impacts women's military readiness using feminist ethnography. There were no hypotheses due to the exploratory nature of the study. The specific aim was to:

Explore how active duty U.S. Air Force women manage their menstruation while living day-to-day in a military culture.

RQ1: What observable aspects of the culture influence women's menstrual practices?

RQ2: How do knowledge, attitudes, beliefs, and military culture impact women's menstrual practices?

This qualitatively-driven mixed-method research study design with ethnography explored these unique aspects in the military culture. Results from this innovative study focusing on military women and their readiness while at home adds to a growing body of women's health research, contributing to military readiness and preparing warfighters. Ethnography was used as the core qualitative component, and received institutional review board (IRB) approval by Uniformed Services University.

SIGNIFICANCE OF THE STUDY

This study aimed to fill gaps in the literature on military women's menstrual practices while at home, and how those practices are tied to military readiness. The study made new contributions to military healthcare research by expanding information on readiness, as well as by contributing to nursing science through the use of innovative research methods in a qualitatively-driven mixed-method design seldom seen in nursing literature.

This study is significant to research, practice, and policy. For research, this study uses innovative research methods to contribute to a notable gap in military healthcare science and nursing science. For practice, the findings of the study can be used in collaboration with previous research to advance practice recommendations for military women. This includes incorporating knowledge from their own experiences and learning from their need for military readiness and to

support the mission, and their desire for support to perform at their best capabilities. Finally, this study can add to policy contributions such as providing evidence for current DHA policies and improving overall care of military women.

DEFINITION OF TERMS

For the purpose of this study, the following terms were defined as:

Women was defined in accordance with National Institutes of Health (NIH) (62) recommendations as being culturally defined and associated with gender, in comparison to “female” which would address physiological aspects only. The term *female* is used in direct quotes and in summarizing participant statements.

Military readiness was defined as a woman’s ability to participate in any military mission at any given time.

An *operational setting* was a setting in a routine day-to-day work environment; deployment environments were excluded from this operational definition.

Menstrual suppression was defined as a woman’s status of choosing when menstrual bleeding occurs; through the use of hormonal contraceptives such as continuous oral contraceptives, depo medroxyprogesterone acetate, or levonorgestrel intrauterine devices.

ASSUMPTIONS

Assumptions in this study included: the assumption that some women would be suppressing menstruation; the assumption that Security Forces women would be a good representative of operational military women; and the assumption that military readiness and menstruation are linked.

The assumption that some women would be suppressing menstruation was based on the

Principal Investigator's (PI) clinical experience and a literature review. Clinical experience as a women's health nurse practitioner led the PI to think that military women desire menstrual suppression as an option, and from a patient advocate perspective, that they deserve education on options to manage their individual healthcare. The literature review that led to this assumption is presented in Chapter 2. The assumption that Security Forces would be a good representative sample of operational military women also came from the PI's clinical experience in working with a group of Security Forces women in the southwest U.S., where the PI learned that Security Forces women worked long hours in austere settings (even while stationed at "home", not just during deployment), and they could work at any base in the world, and could deploy at any time. These assumptions, although based on a review of the literature and clinical experience, did contribute to the study purpose and design.

SUMMARY

This dissertation study used a qualitatively-driven mixed-method design with ethnography to explore how operational military women manage menstruation within the military culture. The study contributes to nursing science and military health research through the findings and use of innovative methods. The following chapters are organized to display the literature search, methodology, findings, and discussion.

CHAPTER 2: Review of the Literature

In order to conduct this qualitatively-driven mixed-method study using ethnography on menstrual practices in operational military women, feminist theory was used as a conceptual framework, and a review of the literature on menstruation and menstrual suppression in military women was conducted.

CONCEPTUAL FRAMEWORK

Feminist theory serves as a conceptual framework for this study. As a conceptual framework, it is inductively derived and evolves with the study, serving as a template for data collection and analysis (52). The conceptual framework “grounds itself in the local elements of a particular, unique study” (52), and served as a lens through which to design the study and collect data.

Feminist Theory and Research

Feminist theory universally aims to give a voice to individuals who have previously not had a voice. The tenets of feminist theory provide an effective and rigorous framework to guide this research study. Feminist theory can be used to guide mixed methods research, with certain critical aspects that influence the research process. These tenets include multiple *ways of knowing*, intersectionality, and the importance of language.

Ways of Knowing

Ways of knowing is a way to frame the concept of feminist epistemology (30). From the feminist perspective, there is no distinct way in which women gather information about the world around them (30). Knowledge is not limited to hard facts and gathering information, and may also be obtained through experience.

In feminist research, there are two avenues in which to approach the multiple epistemologies and ways of knowing. The first is with strong objectivity (30); the practice of completely separating oneself as researcher from the research subject, or separating the knower from the known, remaining completely objective throughout a research study. The aim of this practice is to remain as unbiased as possible, not allowing one's own experience and knowledge to influence the research process. The purpose of maintaining strong objectivity is to avoid convoluting the voice of the study subjects into the researcher's own agenda. A second approach to feminist research is one of immersion; most commonly seen in feminist ethnography (5). From this approach, it is appropriate to involve one's own experiences into the research process, adding to the voice of the research subjects. Using the approach of immersion allows the researcher to be involved in the culture of the group being studied. It should be stated that the majority of feminist research projects involve both of these avenues, not restricting their research approaches to either method. These processes further solidify that in feminist research, there are multiple ways of knowing.

Intersectionality

Intersectionality is a term that was originally coined by Crenshaw (11), to highlight the synergy of experiences about gender, race, and class. Crenshaw's original work highlighted how being a woman and being Black are not the same as being a Black woman. In other words, the intersection of womanhood and Blackness is a source of its own research and experiences.

Since this original work, intersectionality has been applied to multiple settings including gender and how it relates to lesbianism, racism in a global sense, and class structures (3, 88). The purpose of acknowledging intersectionality in feminist research is to address how the complexities of demographics can influence an individual's lived experience. Not all women will

have the same experiences just because they are women, but these experiences may be further classified in terms of race, class, and sexuality. All feminist research aims to address intersectionality as a fundamental characteristic of the research method. Addressing intersectionality is required in order to address complex social structures (8). While it continues to be a debate among feminist theory scholars whether or not intersectionality should be strictly related to the gender+race+class triad (8), or can include other social components, for the purposes of this study intersectionality applied to any intersecting and complex social structures that emerged within the data. Ignoring intersectionality would not allow the range of experiences to be expressed, risking perpetuating oppression in the population being studied.

Language

Language is another important distinction in feminist research, referring both to the language of the research study as well as the language of the study participants. How questions are asked, whether in interview form or in survey form, is of utmost importance in feminist research. Addressing intersectionality in the language of how questions are asked can be extremely difficult (3). Because of this challenge, semi-structured and open-ended interviews are often valuable to feminist research, allowing participants to provide their own responses to what they think the question is asking. In mixed methods research, the language in both surveys and interviews can be evaluated together to give a more complete assessment of the culture. This further illustrates how the language women use in their responses is important as well. Credibility and rigor in feminist research comes from the expression of language and what it means to experience a certain phenomenon (18). Language must not be limited to the experiences of the researcher, but incorporating the richness of information gathered from research participants (7).

Implications

Feminist ethnography allows for immersion in and exploration of unique cultures (5). Additionally, many feminist researchers suggest and support the use of mixed methods to answer complex research questions (32). Rarely can a research question with a feminist perspective be answered simply with qualitative or quantitative methods, but requires both to address the dynamic features of the individuals being studied. Considering these principles of ways of knowing, intersectionality, and language in research, feminist research has a lot to offer as a lens for exploring the experiences of military women, their readiness, and their unique health needs.

LITERATURE SEARCH

Menstrual suppression is the ability to use hormonal contraceptives to purposefully limit or prevent bleeding. There are multiple methods available for menstrual suppression including oral contraceptive pills, depo medroxyprogesterone acetate, progesterone-releasing intrauterine devices, transdermal patches, and vaginal rings (33). Menstrual suppression is considered safe. The practice of menstrual suppression is supported by multiple professional organizations (27) and can be used among military women to manage menstruation and personal readiness. Articles published between January 2001 and January 2018 were identified using PubMed and The Cumulative Index for Nursing and Allied Health Literature (CINAHL) with the terms “women” AND “military” AND “menstrual suppression” OR “continuous cycling” OR “extended cycle.” Extending the search back to 2001 allowed for assessment of the most current post-9/11 military events and processes. The complete list of search terms and limiters is available in Table 1. A librarian was consulted to finalize the search strategy. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) served as a framework for reviewing articles (73). The PRISMA diagram for this literature review is available in Figure

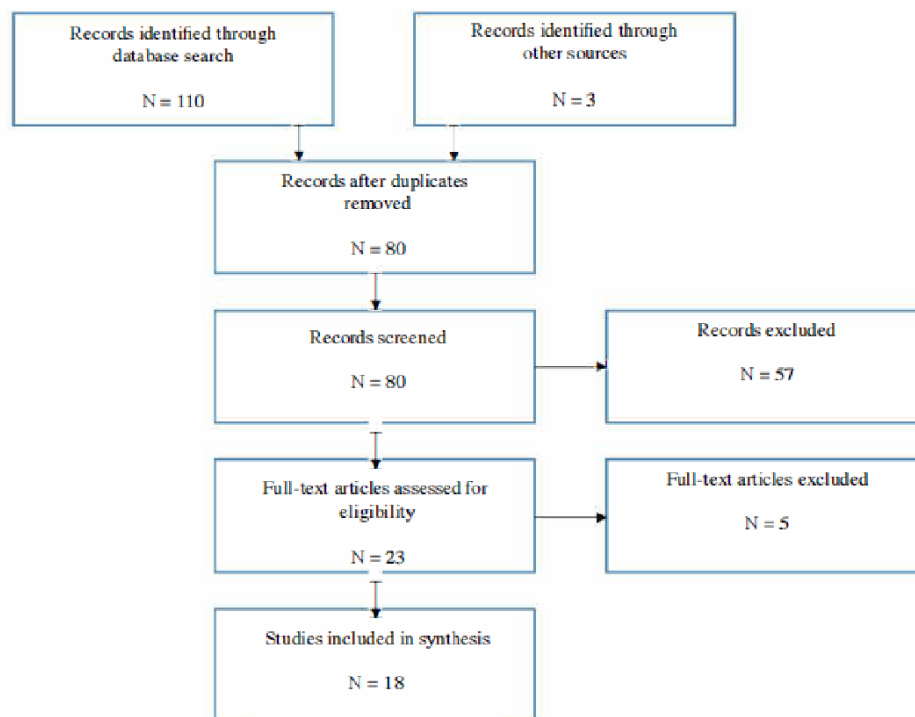
1.

Table 1. Search Terms for Menstrual Suppression in U.S. Military Women

Database	Search Terms	Results
PubMed	(“Military Personnel”[MAJR] OR military[tiab] OR army[tiab] OR navy[tiab] OR “air force”[tiab] OR soldier* OR marines OR service member* OR servicemember* OR “armed forces”[tiab]) AND (“menstrual suppression” OR “menstrual” OR “menstruation” OR “extended cycle” OR “continuous cycle” OR “continuous cycling”) AND English[lang] AND ("2001/01/01"[PDat] : "3000/12/31"[PDat])	72
CINAHL	(MH“Military Personnel+”) OR (TI military OR AB military) OR (TI army OR AB army) OR (TI navy OR AB navy) OR (TI “air force” OR AB “air force”) OR soldier* OR marines OR “service member*” OR servicemember* OR (TI “armed forces” OR AB “armed forces”) AND (“menstrual suppression” OR “menstrual” OR “menstruation” OR “extended cycle” OR “continuous cycle” OR “continuous cycling”) Limits to English only, since 1/1/2001	38

A total of 113 studies were identified, reviewed, and included if they specifically addressed U.S. military women and menstrual suppression. Research and review articles were included. The purpose of including both research and review articles was to provide a comprehensive literature review, and to acknowledge any repeating themes that occur within review articles. All articles were limited to post-9/11 events, and articles were excluded if they addressed only Veteran women, manuscripts from conference proceedings or presentations, opinion pieces/commentaries, or case studies. After removal of duplicates, 80 articles were screened for inclusion criteria, and 23 articles met criteria. Five articles were excluded during full text review because they addressed contraceptive use, unintended pregnancy, or urogenital health management only, and did not address menstrual suppression. A quality appraisal was conducted using the Johns Hopkins Nursing Evidence-Based Practice Rating Scale (60) (Appendix A).

Figure 1. PRISMA diagram for literature review



RESULTS

Twelve research articles and six review articles were included in the final synthesis. All twelve research articles focused on menstrual suppression during military deployment. Findings are summarized in Appendix B. Seven articles were quantitative descriptive (61, 64-66, 78, 80, 83), using cross-sectional surveys or questionnaires. Four articles were qualitative (19, 45, 79, 87) and one was theory development (81). Of the six review articles, three were literature reviews (4, 35, 42), and three were clinical practice reviews (10, 40, 82).

Research articles addressed military women's attitudes, experiences, and practices of menstrual suppression in deployed settings. Knowledge about menstrual suppression ranged from 46% (66) to 93% (65). Pre-deployment counseling about menstrual suppression was low at 26% (78) and 33% (61). Desire for menstrual suppression was consistently high at 66% (64, 65), 77% (79), and 86% (66). During deployment, common reasons for desiring menstrual

suppression included managing symptoms in austere settings where dirt, dust, and heat were a significant challenge (19, 81, 83, 87).

Quality Appraisal

The Johns Hopkins Nursing Evidence-Based Practice Rating Scale (60) was used for quality appraisal. All articles (n=18) in this literature review were level of evidence III (n=14) or V (n=4). The majority of articles were good quality (n=15), meaning methodology was adequate for the chosen design, but results are not generalizable. The remaining three articles were low quality. While the majority of literature was of good quality, the level of evidence on menstrual suppression in U.S. military women remained low, adding to potential bias.

Biases in these studies included small populations, potential for response bias in quantitative descriptive survey studies, qualitative studies with questionable data collection methods such as email conversations, and a limitation to the Army population. Quality appraisal and potential for overall bias in this body of research must be considered when making recommendations among the military population.

Themes

Nine articles addressed Army women only (61, 64-66, 78-81, 83). Articles that addressed menstrual suppression methods included oral contraceptive pills and depo medroxyprogesterone acetate only (19, 45, 61, 64-66, 83).

Military women desired menstrual suppression, however did not necessarily practice it (64-66, 79). Barriers to practicing menstrual suppression included lack of knowledge (64-66), lack of access to contraceptives during deployment (45, 79, 80, 87), and individual concerns about safety (19, 64, 65). The prominent theme among all research articles was a recommendation to provide pre-deployment counseling to all military women including

education on managing urogenital health symptoms during deployment and options for menstrual suppression.

All review articles addressed menstrual suppression during deployment, citing the same few available studies. The lack of scientific studies limited generalizability of findings, yet literature reviews continued to cite the limited findings and make recommendations based on them. One review included recommendations for future research (4). Five reviews included recommendations for clinical pre-deployment educational programs (10, 35, 40, 42, 82). The review articles, all addressed military women as a whole, even though the majority of research studies were primarily on Army women. It remains unknown if there are significant differences between services, as this has not been addressed in the literature.

IDENTIFIED GAPS

Six research gaps were identified in this literature review. Gaps were identified based on current military women's health needs, and were confirmed with a group of military women's health experts. The six gaps were: 1) Deployment, 2) Single-service, 3) Options for menstrual suppression; 4) Hesitance to suppress menstruation, 5) Provider practices, and 6) Stagnant research.

Deployment

Deployment was identified as a gap in that all articles only focused on the time of deployment. Military readiness requires that service members be ready to deploy at any time, meaning that education, resources, and practices should be active at all times. Previous research has identified that deployments are challenging, especially for managing menstruation (79); therefore, promoting optimal any-time military readiness would include teaching and equipping women at their routine duty assignments prior to a deployment. Military readiness begins at

home, and adequate preparation for military women to manage menstruation would therefore also begin at home.

Another significant consideration was that deployment has been used as a synonym for austerity. However, austerity can occur outside of deployments in situations such as field trainings, exercises, and inspections. Investigating deployment-only does not encompass the extent of military service. Depending on occupation, such as pilots, security forces, and field artillery, many women may serve in austere locations on a daily basis.

Single-service

The majority of articles included only Army women (61, 64-66, 78-81, 83). Those articles which included all Services did not have sufficient sample sizes to make statistical comparisons between the Services (19, 45, 87). Further information is needed. Single Service research lends itself to potential biased information in the experiences of military women in general; that is, there may be differences in experiences dependent on branch of service, but this cannot be determined from the current available literature. Another consideration is to include women from a variety of occupational backgrounds, as there may be variations in menstrual management and experiences dependent upon occupation.

Options for Menstrual Suppression

All articles addressed oral contraceptives as the primary option for menstrual suppression. There is a lack of research on additional methods such as intrauterine devices. Further examination on menstrual suppression options other than OCPs would explore which method is best for military women in military environments.

This gap also acknowledges a significant area of military women's health research: unintended pregnancy. Providing comprehensive options for menstrual suppression, would also

imply options for contraception and pregnancy prevention, thereby also addressing unintended pregnancy. Although that is not the purpose of this dissertation or this literature review, it is critical to acknowledge prevention of unintended pregnancy as part of military women's health.

Hesitance to Suppress Menstruation

Hesitance to suppress menstruation has been identified as a theme in descriptive studies, however there is a lack of information as to why this occurs. Several studies address that even if women have knowledge or interest in menstrual suppression, they do not necessarily practice it (64-66, 79). Safety has been identified as a concern for menstrual suppression (64-66, 79), but any other factors in relation to hesitance have not been explored directly. Exploring hesitance of military women would contribute to ways to provide education, counseling, and resources to military women to support their decisions.

Provider Practices

There were no studies identified through this systematic search that addressed the practices of healthcare providers including their knowledge of menstrual suppression, if they counsel patients, and what their perceptions are. Because a prescription is required for any hormonal contraceptive use in the U.S. at this time, exploring provider practices regarding menstrual suppression is necessary for a complete picture on the practices of women. One of the themes that has presented in the research in this review was women's knowledge about menstrual suppression: if providers do not provide this knowledge to their patients (or lack the knowledge themselves), what are other sources of knowledge for military women?

Stagnant Research

This gap deals primarily with the review articles. All review articles included the same

limited research studies, and provided the same recommendations: women should be counseled prior to deployment, and further research is needed. Reviews continued to be completed on limited and insufficient research. Using the same limited data drawn from a similar sample (Army women) to make claims about a large group of women (the entire military) highlights that there is insufficient information available in the literature.

Each of the gaps that have been presented can be used to create recommendations for research, practice, and policy. Research, practice, and policy recommendations were written for military women specifically, with some comparison to other work done within civilian populations.

DISCUSSION OF THE LITERATURE REVIEW

Menstrual suppression is a health practice for military women in any setting, at any time. Menstrual suppression is a safe way for women to control when and where menstruation occurs and has been used in other populations including astronauts, women working in severe weather climates, women who participate in adventure travel, and women taking their Hajj pilgrimage (38, 47, 53).

In a scoping review on women's responses to contraceptive-induced menstrual bleeding changes, the authors found that amenorrhea as a side effect of contraception was more desirable to North American women and women in higher-income countries, compared to women living in other regions (63). Additionally, younger women such as adolescents and older women such as those near menopause thought more positively about amenorrhea as a side effect compared to women who were in middle age categories. The scoping review addressed civilian women across the world and focused primarily on bleeding side effects of contraception, to include amenorrhea. The authors note that 28 of 100 included studies addressed deliberate menstrual suppression (63). Of those studies, the majority addressed OCP use. Reasons for suppression

included convenience and management of menstrual side effects; reasons for not suppressing included concerns about long-term use and health, concerns about fertility, and the desire to know pregnancy has not occurred (63). The findings in the scoping review are similar to those in this literature review on military women.

SUMMARY

Gaps exist in the literature regarding menstrual suppression in military women. This dissertation aims to contribute to the gaps of Deployment, Single-Service, Hesitance to Suppress Menstruation, and Stagnant Research. This dissertation aims to fill gaps in the literature on menstrual suppression and menstrual practices among military women using feminist theory as a conceptual framework. The methods were designed to explore military women's menstrual practices other than during deployment.

CHAPTER 3: Methods

This study was designed based on the gaps in the literature on military women and menstrual suppression using feminist theory as a conceptual framework. The primary objective of this study was to explore how menstruation impacts women's military readiness using feminist ethnography.

DESIGN

The study was a qualitatively-driven mixed-method study with ethnography as the core method. The methods were shaped following Morse's (55, 56) guidelines for mixed-method designs using a qualitative (QUAL) method as the core component of the study, with a supplementary quantitative (quant) component. Ethnography served as the theoretical drive in this study and therefore the core QUAL component of the project. The purpose of using ethnography was to explore the culture. A questionnaire was incorporated as the supplemental quant component. The quant component preceded the QUAL component due to access to the study sample, but both components were analyzed simultaneously therefore this study was a QUAL + quant design. Each component was a point of interface, meaning that each component was analyzed as a distinct point of interface, with a final comprehensive analysis as the results point of interface.

Many ethnographic studies have used mixed data collection, including questionnaires as part of artifacts within the greater ethnographic purpose to explore a culture (23, 72). The purpose of using a qualitatively-driven mixed-method design was to add additional description to a larger population than what ethnography alone would require. The core QUAL component was methodologically rigorous enough to stand on its own, but the supplementary quant component

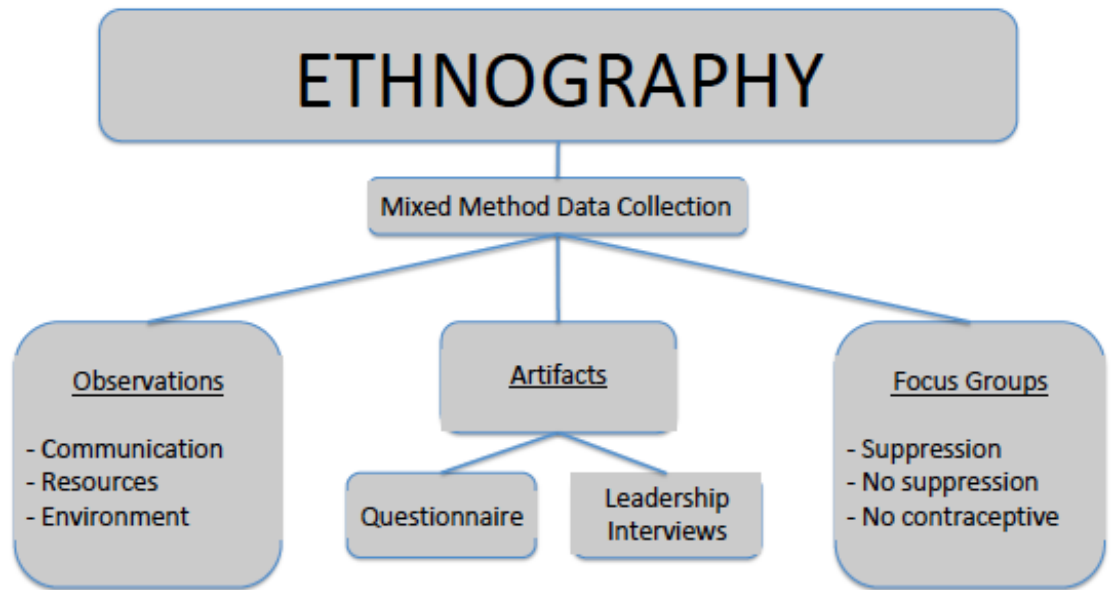
added an additional aspect to the study. The supplementary quant component (in this study, a questionnaire) was not a complete study in itself. The purpose of the questionnaire was to add a component of certainty to the overall study. Certainty, as defined by Morse, means that the results of the supplementary component can be explained but are not sufficient enough to stand on their own. With a questionnaire specifically, the results were compared to external norms from previously-validated surveys, adding to the strength of the supplemental quant component; however, the questionnaire in this study was not a validated tool, power was not calculated due to the supplemental nature. In this study, the questionnaire was also viewed as an artifact within the overall ethnographic method.

Ethnography served as the overarching foundational method of this study, providing guidance for data collection and analysis procedures. Spradley (75) emphasized the importance of observations, field data, and artifacts which can include interviews and questionnaires (2, 23, 72). Ethnography can include quantitative data, particularly in the form of questionnaires to strengthen the interpretation of data about the culture being studied (23, 72).

METHODS

The methods are depicted in Figure 2. Each part of the study including observations, artifacts, and focus groups, served as *sources of information* to the overall ethnographic design. In this study, observational and artifact data collection were ongoing through the duration of the study. A questionnaire was used to gather basic artifactual data about 1) menstrual knowledge, 2) menstrual history, 3) menstrual practices, and 4) knowledge, attitudes, and beliefs about menstrual suppression. Focus

Figure 2. Initial Proposed Study Methods



groups and in-depth interviews were also conducted to highlight key aspects of the culture and women's menstrual practices. Overall data from observations, the questionnaire, and focus groups were analyzed at each *point of interface* and *cohesively* to provide a complete description of findings.

Methods in this study were intended to fit with feminist research principles, including the acknowledgement of multiple *ways of knowing* through the use of mixed method data collection, with particular attention to the language used when discussing the military culture, and an assessment of the relationship of intersectionality to the culture. While some critics have asserted that mixed methods which include questionnaires are not *feminist*, particular attention to the language used in the questionnaire itself and in focus group data collection was strongly associated with the feminist research lens of this study.

Setting

The setting for the study was a Security Forces unit in the northeastern United States. Questionnaire, observational, and leadership interview data were collected on-site within the

Security Forces unit. Focus group data were collected in a private room on the same military base as the unit, but separate from the unit. Individual interview data were collected in individual offices or over the phone, per the request of participants.

Recruitment

The population of participants were Air Force Security Forces women stationed at a military base in the United States. Security Forces are commonly known as military police, and women serving in this role have the potential to work in a variety of environments to include prolonged shift hours, field training, and deployments. Additionally, women serving with Security Forces can be assigned to duty stations all over the world, requiring optimum military readiness.

These women were selected as a target study population due to their highly operational work environment. Security Forces women work 12-14-hour shifts on a rotating schedule, which fluctuates between 2-3-day shift cycles. Locations for work in these environments are typical gate guard shacks and personnel locations, where time for restroom breaks may be limited. Some women may also be assigned to serve on special duties such as executive transport support and the protection of high-ranking military officers.

The study focused on women assigned to a specific unit. Like all who serve in Security Forces, these professional women are responsible for the safety and security of the base to which they are assigned; potentially working prolonged hours without a break. Specific recruitment strategies are described below for each of the *sources of information* in this ethnographic study.

Observations

Using ethnography for the conduct of this study, observations of communication, resources, and environment were ongoing. The PI was able to spend a day to tour the unit's

workspaces, dedicated to observational data. Observations occurred in the public space of the unit, and therefore no specific recruitment was necessary.

Artifacts: Questionnaire.

Inclusion criteria for questionnaire participation included: woman, assigned to the Security Forces unit at the pre-selected military base, age 18-49. Women who were postmenopausal or had a hysterectomy were not eligible to participate in this portion of the study. There were approximately 95 women in the unit at the time the study was designed, but only 30 at the time the study began, and all who met the inclusion criteria were invited to participate.

Participants were recruited through flyers sent to all women via email, and through direct recruiting through a point of contact (or in ethnography, the “gatekeeper”) that was approved through the IRB. Women who met criteria for the study gave consent to participate in the questionnaire and completed the questionnaire at the same time. Consent for participating in the questionnaire also included consent for me to contact them to participate in future focus groups, and optional consent to allow questionnaire responses to be used in a future survey pilot study.

Artifacts: Interviews with leadership

Additional members of leadership were also invited to participate in the study as *artifacts*, in that their contribution was as part of the culture and not as a direct informant. These interview participants may be male. Members of leadership were recruited through face-to-face conversations during time spent at the unit. The purpose was to provide artifactual information to contribute to and enhance the experiences that women described.

Focus groups and Individual Interviews

Focus groups have been used in previous research exploring military women's health issues (85). Women were invited to participate in focus groups based on their responses to the questionnaire, and any woman who left contact information was invited to participate. Because only a few women left contact information ($n = 5$), IRB modifications were requested to allow for snowball sampling and direct recruiting, as well as a request for the ability to conduct individual interviews in the event that women were not available or declined focus group participation. Krueger and Casey (41) recommend homogenous groups for focus group data collection, that is, groups which share a common interest, philosophy, or response within the study. The sample for focus groups in this study were recruited from questionnaire responses, with target homogenous groups of women who suppress menstruation, women who use hormonal contraceptives but do not suppress menstruation, and women who do not use any hormonal contraceptives.

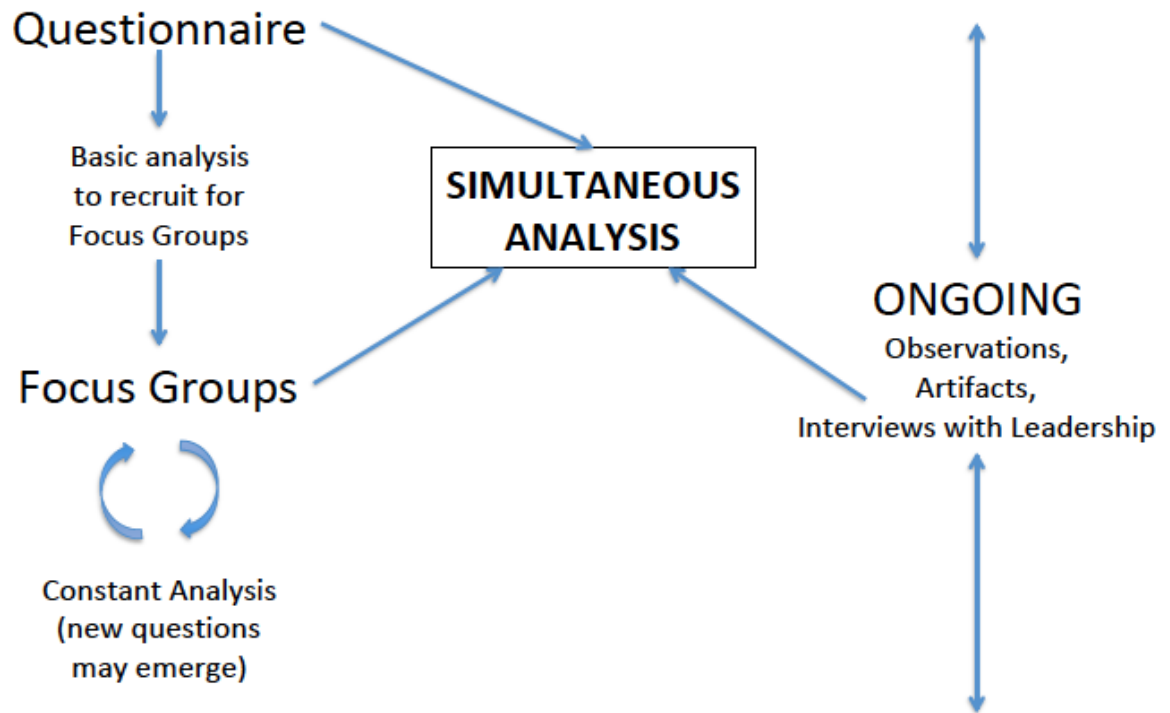
During the course of the study, there were limited numbers of women who consented on the questionnaire to be re-contacted for focus group participation. Therefore, modifications were made to allow for direct recruitment, snowball sampling, and individual interviews to meet the needs of the research study and the women who were participating. Interviews were conducted following the same guide that was used for focus groups.

DATA COLLECTION

Data collection occurred at multiple points. Observations, artifacts, and interviews with leadership were *ongoing*. The questionnaire was administered, followed by focus groups or individual interviews. Analysis also occurred at multiple points, with analysis required to recruit focus group participants from their questionnaire responses, and analysis as an inherent aspect of running focus groups. Finally, an overall cohesive analysis of all data was conducted to evaluate

convergent findings regarding menstrual practices within the context of a military culture, through the lens of feminist theory. The overall data collection process is diagrammed in Figure 3.

Figure 3. Data Collection



Ethnographic Data Collection

Ethnographic principles were used to guide data collection in this study. Using ethnography, the PI was the primary instrument of data collection, and in-depth interviews were essential to investigating the culture from the emic perspective, or insider view. Ethnographic methods were used through all phases of data collection including observational data, artifacts in the forms of questionnaires and interviews with leadership, and focus groups / interviews as an in-depth collection method. During the focus group, the PI was accompanied by a mentor who served as a moderator. The same mentor also attended the initial individual interviews to provide

guidance and feedback. Focus groups and interviews were recorded and transcribed, and both the PI and the mentor reviewed all transcripts.

To maintain ethnographic data collection principles, the PI met with a mentor who is experienced with ethnography at least weekly to discuss focus group and interview findings along with observations that were made. The purpose of these meetings was to: (a) share information, (b) receive mentoring, (c) triangulate data across sources and researchers, (d) share referential data (i.e., observations), (e) debrief with each other through conversations related to the direction of study and methodological concerns, and (f) identify the need to confirm findings with study participants. We were able to identify patterns and the cultural meaning of the findings.

Ethnographic data collection was iterative through the multiple *sources of information*. As new data was collected, either through observation or artifact, focus group structure and questioning strategies developed to target new areas of information.

Observational Data

Observational data were collected through observations of communication between service members, the local environment such as location of restroom facilities and health messages, available resources, and interactions between members within the culture. Observational data were kept in a field note journal. In accordance with ethnographic principles and the mentorship plan addressed above, all observations were discussed with an experienced mentor. Analysis of observational data occurred in an ongoing iterative process throughout the study, and contributed to formal analysis at the end of the study.

Artifacts: Questionnaire

The questionnaire assessed knowledge, attitudes, beliefs, and practices regarding

menstruation in an operational setting. Questions were selected based on how they measured the constructs of knowledge, attitudes, beliefs, and practices. There were 34 questions in the questionnaire, plus a demographic data section. Questions were drawn from previously validated surveys, which are outlined in Appendix C. An example of how questionnaire questions were constructed in terms of the feminist principles is shown in Appendix D. The IRB-approved questionnaire that was developed for this study is attached in Appendix E.

The questionnaire was submitted to a panel of subject matter experts in military women's health to determine relevance, clarity, and necessity of each question prior to administering the questionnaire to participants. Psychometric data was not conducted due to the use of the questionnaire as an *artifact* and not the focus of this study (72). Because the questionnaire was the supplemental component of the qualitatively-driven mixed-method design, the questionnaire data were not sufficient to stand as its own study (56).

The intent of the questionnaire was to provide a description of what factors influence how women manage menstruation in an operational setting, providing substantial artifactual data to support the overall ethnographic study. An initial analysis of questionnaire data was completed in order to form homogenous focus groups based on responses regarding menstrual suppression practices. Questionnaire data were analyzed using Statistical Package for the Social Sciences (SPSS) version 25.0.

Descriptive statistics were completed for each question on the questionnaire, and a comparison was done to compare one section of the questionnaire to the Military Women's Attitudes Towards Menstrual Suppression Scale 9 questions - MWATMS-9 (80). This served as a population norm comparison in accordance with Morse (55). Due to low participant availability, inferential statistics and regression were not completed as the assumptions of the

statistical tests were not met.

Artifacts: Interviews with leadership

Leadership included men and women, and the purpose of their interviews was to augment the experiences described by women in the focus groups or individual interviews. Interviews with leadership were not recorded or transcribed. However, summaries as field notes were completed in order to contribute to the overall data analysis. Because interview data were considered *artifacts* in this study, the analysis of the data was ongoing and iterative. Cohesive analysis was completed with all data at the end of the study.

Focus Groups or Individual Interviews

Focus groups and individual interviews followed Krueger and Casey's (41) methods for focus groups such as asking broad questions prior to specific questions. The focus group included 2 women from the unit who had not previously known each other to discuss their menstrual practices and culture of the work environment and lasted approximately 90 minutes. According to their questionnaire responses to questions 7 and 31, both women were taking contraceptives at the time of the focus group, but were not suppressing menstruation. Individual interviews were also conducted with permission from the IRB in the event that members were not available to schedule or did not prefer a group setting. Three individual interviews were conducted, each lasting approximately 20 minutes.

The original plan for the focus groups was to have three homogenous groups of women: those who suppress menstruation, those who use contraceptives but do not suppress, and those who do not use contraceptives. Homogeneity in this study would have been based on contraceptive usage; other demographic, attitudes and beliefs, or other factors were *not* intended to be homogenous within the groups. Focus group questions followed the questioning route from

Krueger and Casey (41) including opening questions, introductions, transitions, key questions, and ending questions. The IRB-approved initial focus group questions are in Appendix F. Focus groups and individual interviews were recorded on digital recorders and transcribed using Landmark Associates Inc. Analysis of focus group and individual interview data was continuous throughout the data collection process. Qualitative data from focus groups and individual interviews were analyzed using NVivo Version 12.

During focus groups, analysis included paying particular attention to emotional cues, changes in enthusiasm, or when individuals began to make contrary statements (41). Immediately after focus groups, the PI debriefed the interactions, fieldnotes, and findings with a mentor. The purpose of the immediate debriefing was to discuss immediate findings, and notes on hunches were taken during the debriefing (41). Descriptions were coded and analyzed for emergent themes. Coding and evaluation of themes were then organized in terms of frequency, intensity, specificity, and internal consistency *within* and *between* the groups or interviewees (41).

Focus group and individual interview questions did change as the study progressed, adding more specific probing questions and the final interview being focused on concluding the findings from the previous data that had been collected. Themes that emerged between the different groups of women were analyzed as part of the formal analysis at the end of the study.

ANALYSIS

Analysis occurred at multiple points of interface: QUAL, quant, and a final cohesive analysis during which all data were triangulated to give a picture of military women's knowledge, attitudes, beliefs, and menstrual practices within the operational setting of the military culture. These constructs were triangulated to determine their relationship with the

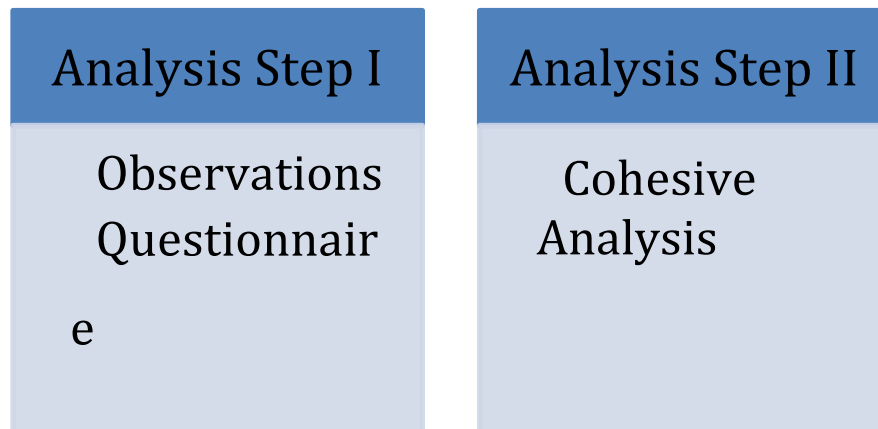
feminist principles of *ways of knowing*, intersectionality, and language.

Using ethnographic principles, focus group data enhanced the validity of the findings in the questionnaire, while the overall study focuses on the culture and meaning of behaviors (23, 72, 75). This was the purpose of using a qualitatively-driven mixed-method study, to have multiple aspects of data collection and multiple points of interface to give a complete picture of the cultural environment.

Analysis occurred at multiple points of interface. Figure 4 displays the multiple points of interface and the 2-step analysis plan. In the qualitatively-driven mixed-method design of this study, results were intended to be confirmatory, with findings from each *source of information* verifying the findings of the others. Data were analyzed as questionnaire data, observational data, and focus group / interview data (including leadership interviews). The second step of the analysis was a results point of interface, in which all data was collectively analyzed together to present final findings related to the research question. Analysis included determining common concepts between the results, comparing the results and how they confirmed each other, for a final single cohesive analysis (12). The overall purpose of this mixed data analysis was to integrate all findings in order to understand the culture in the proposed research question.

Saturation was reached with the 10 participants, in accordance with qualitative principles of data adequacy, comprehensive findings, and lack of new data. Qualitative research, especially a focused ethnography driving mixed-method approaches can have a small *n*, as long as the research question is answered (54). Data saturation is different from theoretical saturation in that data saturation occurs when informational data repeats, rather than theoretical saturation in which saturation aims to fulfill theoretical categories (71).

Figure 4. Analysis Plan



Complete data analysis in this study included all *sources of information* triangulated to converge all results. Data from observations, interviews with leadership, and focus groups will also be aligned with these same constructs and feminist principles, however additional themes did emerge and were determined during the conduct of the study, as addressed in the findings. Using all *sources of information* in this analysis of this feminist ethnographic study was innovative and contributed to new knowledge in nursing science, and new knowledge about military culture.

RIGOR

Rigor in this study was achieved in trustworthiness of the data. The components of rigor are verification, validation, and validity of data (57). Verification includes the appropriateness of the study design and cohesion of the methodology. Validation includes member checks and audit trails, and validity aims to evaluate certainty of the data. Specific aspects of rigor in qualitative research include credibility, applicability, consistency, and neutrality (44). Using data to provide an *accurate* representation of the culture is critical to feminist ethnography (5).

Credibility was achieved through prolonged exposure and refining questions as new data

become available (44). Prolonged exposure in this study occurred through immersion within the Security Forces unit, continuing conversations with the individuals in the unit, particularly women although men and leadership were included in this group. Refining questions is part of the constant comparative method of analysis that were used in focus groups, as questions were expected to become more specific as information was discovered. Participants in this study were available to be contacted and offered the opportunity to verify findings and themes about the culture and their menstrual practices, through reading final reports of findings, to ensure that their views were appropriately represented.

Applicability was maintained in thick descriptions of the meanings and experiences from participants within their culture. These thick descriptions emerged from triangulated data between observations, field notes, artifacts including the questionnaire and interviews with leadership, and from transcribed focus group data. Thick description ascribed meaning to the culture, through the language used by individuals (75).

An external audit trail was maintained to promote consistency in findings. The PI participated in member checks on a weekly basis with a mentor. Finally, computer-assisted data management was used to locate themes and enhance the overall rigor of the study (57).

The PI maintained neutrality through frequent meetings with her dissertation committee, addressing any biases. Ethnography experts recommend beginning an ethnographic study with a completely open mind (75), and using reflective journaling in order to self-reflect on any personal biases that may occur at the beginning or during the study. The PI also kept a reflective journal as part of field notes in this study.

PROTECTION OF HUMAN SUBJECTS

Institutional Review Board (IRB) approval was obtained through Uniformed Services

University of the Health Sciences. Commander support to access the unit personnel was also obtained. There were no health risks to participants in this study.

Participation in this study was voluntary. Military investigators wore civilian attire while collecting focus group and interview data to reduce the influence of military rank. The PI wore a military uniform for observations and meetings with leadership, as this was a preferred expectation from the unit. The PI maintained confidentiality for all participants for the duration of the study, and continued appropriate mentorship with the PI's dissertation committee.

No compensation was provided to participants in this study (13). Light refreshments were provided to focus group and individual interview participants.

Observations

Observations of the setting were collected in the form of field notes. Observation data consisted of information about the work environment and locations, signage throughout the unit, any advertisements for health and wellness, and notes about observed communications, without any personally identifying notes. Data in the form of field notes was secured in a locked cabinet in a locked room.

Artifacts: Questionnaire

Written informed consent was required for the questionnaire. Participants were briefed and consented on-site at the Security Forces unit. Confidentiality of questionnaire responses was maintained. However, anonymity was not guaranteed, as questionnaire responses were used to recruit for focus groups. Informed consent included consent to be contacted after completion of the survey. There was an additional option to consent to data being used for future survey development outside of this study. Contact information was kept separate from questionnaire data; each questionnaire was numbered with a unique identifier and contact information was

numbered with the same unique identifier as part of a separate database. Data analysis was completed on an encrypted and password-protected computer. Questionnaire responses were secured in a locked cabinet in a locked room.

Artifacts: Interviews with Leadership

Informed consent was required for interviews with members of leadership. Written consent was waived but available if participants desired; all participants chose to waive written consent. Anonymity and confidentiality were maintained in this phase of the study. Personal identifying information was not connected with interview notes. Interviews were not recorded, and a waiver of written consent was granted due to minimal risk in this portion of the study. Written notes from interviews were kept in a locked cabinet in a locked room.

Focus Groups or Individual Interviews

Focus group or individual interview participants required written consent as there was a potential for identifiable information to emerge. Anonymity is not possible in focus groups, but confidentiality was maintained. Ground rules were established at the beginning of the focus group, and the PI explained to all participants that anything discussed within the group is to remain within the group. There were no health risks with participating in focus groups or individual interviews. Participants were asked to provide consent for follow-up contact, in the event that the researcher needed to clarify any comments or findings in the transcripts.

INTERSECTIONALITY

Race, sexuality, and class were significant aspects of this study, and attention to these groups was important. Because experiences of menstrual suppression may be influenced by variables such as race and sexuality, especially within the military women's health culture,

gathering this information was critical to the development of this study and the impact that it may have.

Women from all races, class, and sexual orientation were encouraged to participate in this study. The survey included demographic questions about race and rank, and women noted their sexual preferences within the survey itself. Intersectionality is a vital aspect of feminist research (30), and therefore was included in this study as appropriate. There were challenges to addressing intersectionality in this research, as determining the impact that race or sexual preference may have on experiences of menstrual suppression was difficult to extract. Ensuring that both survey and interview questions have appropriate language to glean the importance of intersectionality issues was of particular significance in the methodological design of this study.

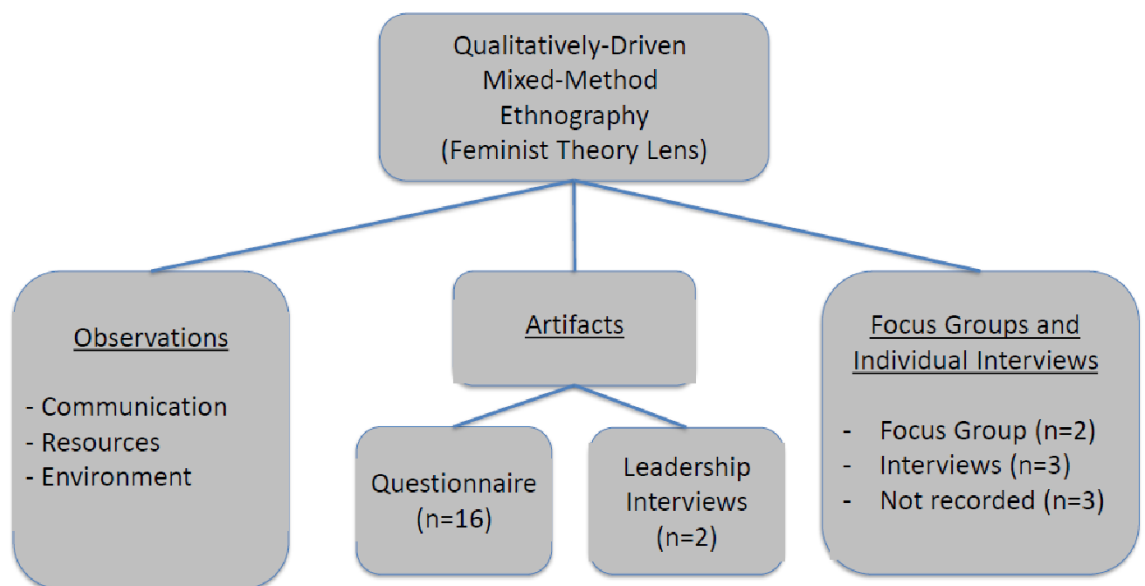
CONCLUSION

The methods in this study adhered to Morse mixed methods (55, 56) and followed ethnographic principles as theoretical guidance. The qualitatively-driven mixed-method design with ethnography that was used in this study led to significant findings about military women's menstrual practices in an operational setting.

CHAPTER 4: Results

The purpose of the study was to explore how active duty U.S. Air Force women manage menstruation while living day-to-day in a military culture. The study was a qualitatively-driven mixed-method design using ethnography as the core component and incorporating a questionnaire with an overall feminist lens driving the study. Data were collected through questionnaires, observations, focus groups and individual interviews, and interviews with leadership. Figure 5 demonstrates total recruitment numbers and methods updates that occurred during the conduct of the study.

Figure 5. Participation Per Data Collection Strategy



During the time when this study took place, there were approximately 30 women in the Security Forces unit at any given time. The exact number fluctuated throughout the duration of the study. Results emerged from observations, artifacts, and focus groups or interviews. Data were analyzed in terms of quantitative data (questionnaire artifact) as a point of interface and

qualitative data (observations, leadership interviews, and focus groups or in-depth individual interviews) as a separate point of interface. A final analysis of all data was completed as the final point of interface after analyzing all data separately.

QUESTIONNAIRE FINDINGS

Descriptive quantitative data were analyzed using SPSS v25.0. Twenty-four women accepted questionnaires, and 16 returned questionnaires (66% response rate). The mean age of participants was 27.3 ± 5.4 years and ranged from 21-36 years. Demographic data of questionnaire participants are located in Table 2. Women worked 8 to 14-hour shifts, with an average of 10-hour work days. Time in service ranged from 2-19 years, with a mean of 7.40 ± 5.22 years.

Table 2. Demographics of Questionnaire Participants

Demographic	n = 16
Education	
High School Graduate	6
Some College	2
College or Graduate Degree	6
No Answer	2
Race/Ethnicity (Total >16)	
White	8
Black or African American	5
Hispanic	6
Other	1
No Answer	2
Marital Status	
Married	7
Divorced or Separated	1
Single	7
No Answer	1
Rank	
Enlisted	14
Officer	1
No Answer	1
Deployment Experience	
Yes	7
No	8
No Answer	1

Menstruation

The majority of women (n=10) were able to change their pad or tampon as needed at work, however 6 were unable to due to work requirements. Fifteen of the sixteen women reported they would like to avoid menstruating while at work if they could. Fourteen women had heard about menstrual suppression, either from the clinic (n=9), or from a family member or friend (n=5). Only 7 women stated they thought it was safe to use hormonal contraception to suppress menstruation. Women reported that menstrual suppression increased risk of weight gain (n=9) and infertility (n=6). Seven women would never be comfortable attempting menstrual suppression, while eight women had previously attempted menstrual suppression. Of those that attempted menstrual suppression, oral contraceptives were the most common method (n=6). Six of the eight women experienced breakthrough bleeding while attempting menstrual suppression.

Women experienced an average of five symptoms during menstruation, with bloating being the most common symptom (n=13), along with irritability (n=11), and breast tenderness (n=11). The majority of women (n=13) experienced symptoms most of the day to all day. Breast tenderness (n=5) and unexpected spotting (n=6) were the symptoms that were identified as the most difficult to manage during a normal work day. The majority of women had normal menstrual cycles occurring every 21-35 days and lasting 5-7 days.

Contraception

Women used a variety of contraceptive methods over their lifetime (Range=0-8 methods) with the majority of women (n=9) using 3-5 different types of contraceptives in their life. The most common types of contraception used were oral contraceptive pills (n=12) and male condoms (n=10). Rates of contraceptive use are in Table 3.

Table 3. Rates of Contraceptive Use

Type of Contraceptive	n ever used
Oral Contraceptive Pills	12
Male Condoms	10
Withdrawal	10
Emergency Contraception	6
Abstinence	5
Transdermal Implant	3
Rhythm Method	2
IUD	2
Oral Sex	2
Anal Sex	1
Contraceptive Patch	1
Vaginal Ring	1
Same sex partner	1
Injection, Diaphragm, Sterilization	0
Never used contraception	2

Ten women correctly identified a non-contraceptive benefit of hormonal contraceptives. When asked whether or not they could get pregnant if they had sex during menstruation, four women (25%) responded no.

Menstrual Suppression

Eight women responded consistently in their responses about menstrual suppression: one woman responded that she would not avoid having her period at work, and that menstrual suppression *is not* safe; seven women responded that they would avoid having their periods and that menstrual suppression *is* safe. However, there were 8 women who responded that they would avoid having their periods at work but that menstrual suppression is not safe. Analysis, therefore, showed that there is no statistical association between desire to avoid and perception of safety of suppression ($\chi^2(1)=0.830$, $p=0.362$).

The Military Women's Attitudes Towards Menstrual Suppression survey (80) was used for population comparison norms in accordance with recommendations from Morse (55) on the use of questionnaires as the supplemental quant component in a qualitatively-driven mixed-

method study. The range for total MWATMS-comparison scores (Questions 19-27 of this questionnaire) was 17.0-45.0, with a mean of 29.2 ± 7.7 . Overall MWATMS-comparison scores are not normally distributed. The range for MWATMS-9 scores for the original MWATMS which measures attitudes towards menstrual suppression specifically during deployment (80), the range was 9.0–45.0 with a mean of 30.2 ± 7.3 . Higher scores indicate more positive attitudes toward menstrual suppression. There was not a statistically significant relationship between the number or severity of symptoms (bloating, irritability, and breast tenderness) and willingness to suppress.

QUALITATIVE FINDINGS

Qualitative findings included observational data with on-location interviews (n=3), leadership interviews (n=2), focus group and in-depth interviews due to scheduling difficulties for focus groups (n=5), for a total of 10 participants for qualitative data. Demographics for participants in interviews and focus groups are listed in Table 4.

Table 4. Demographics of Interview or Focus Group Participants

Demographic	Description, n
Rank	Junior Enlisted (E1-E4) = 2 NCO (E5-E6) = 3 Senior NCO (E7-E9) = 4 Officer (O1-O6) = 1
Gender	Man = 2 Woman = 8

*Age, race, and marital status were not collected for all interview participants. Those which were collected are included in the Questionnaire Data in Table 2.

Observations and On-Location Interviews

Observational data were ongoing throughout the study and included observations of the main office building for the unit, other work locations for Security Forces members, and any

interactions which occurred. Table 5 contains a list of cultural terms particular to Security Forces that are used throughout the description.

Table 5. Security Forces Cultural Terms

Term	Definition
“arm up”	When Security Forces members wear a firearm while on duty.
“back office”	A location in the main security building; Security Forces members who work in this building may not be required to “arm up”. Working here is primarily administrative and can be an assignment location as needed, or for prolonged periods of time such as pregnancy.
“cop side”	The operational side such as working at the gates or in a patrol vehicle; requires “arming up.”
“gatekeeper”	An ethnography term; the main point of contact.
“provide cover”	When someone else takes over the responsibilities of another Security Forces member so that member may do something personal such as use the restroom.

The main office building was a two-story structure with a single-entry point. Visitors were required to check in at the single-entry point with a Security Forces member who sat behind a heavily-tinted bullet-proof window, and were required to present their common access card (CAC, a type of military identification card), after which the unseen Security Forces member would contact the person with whom the visitor was attempting to meet. The PI met with a point of contact (in ethnography, the “gatekeeper”), a Security Forces woman who was a senior noncommissioned officer (SNCO), for each visit to the unit. The downstairs portion of the unit building included interrogation rooms, and offices for the “cop side” of operations. The upstairs portion of the building included logistical support for the Group, and offices for commanders and senior leadership.

The SNCO point of contact provided the PI with a tour of the unit. During the tour, the PI was shown each location that Security Forces members could work at during a normal day, which included: base entry gates, control access gates, and the flight line. Security Forces members provided defense, protection, and support for all operations which occurred on the military base. On a normal work day, Security Forces members could be assigned to a stationary

location such as a base entry gate, or to a roving patrol car with a partner for the day. When working on the flight line, members were required to be on standby within 3 minutes and must have someone “provide cover” for them if they needed to do something personal such as use the restroom. Members could request certain work locations if needed, although this was uncommon and working in the “back office” was typically reserved for members who were unable to “arm up” with their weapon.

During observational data collection and the tour, on-location interviews occurred. Each of these were requesting participants to take part in an interview either as leadership or for the local perspective. One male staff sergeant team leader closed his eyes and pursed his lips, while shaking his head quickly and saying no he would rather not talk about menstruation. Two others occurred asking women in the unit, one technical sergeant in the office and one flight commander, who both stated they had participated in the questionnaire and had nothing else to say. They both stated, when asked separately, that menstruation was not an issue for them and they did not think they could offer anything for an official interview. After explaining that this perspective is still valuable, both women declined to take part in a recorded interview.

Leadership Interviews

Two leadership interviews were conducted, both of whom served in group-level leadership, one was a man and one was a woman. These leaders both stated that female military police were similar to male military police in their work effort, work abilities, and healthcare concerns. The male leader stated he did not know of any concerns about menstruation. Both leaders stated pregnancy could cause concerns regarding stigmatization. The male leader’s main concern was that female Security Forces members across the Air Force tended to leave after the junior enlisted levels, just prior to becoming noncommissioned officers, usually due to serious

relationships or pregnancy. Some women cross-trained to other careers within the Air Force, and others separated from the military completely. Both leaders spoke of members' abilities to come forward to leadership with any concerns, and about leadership support of health, especially mental health. These data were coded and analyzed with the focus group and in-depth interview data for qualitative evaluation.

Focus Groups and In-depth Interviews

One focus group with two junior-enlisted participants was conducted. The women had not previously met and worked in different squadrons within the Security Forces unit. Both women were junior enlisted, and both had been stationed at other bases in Security Forces prior to being stationed at this unit, one in Hawaii and one in Turkey. The focus group lasted two hours.

Three in-depth interviews were conducted: one with an officer, and two with SNCOs. Interviews lasted approximately 22 minutes. Focus group and interview data were analyzed together with leadership interviews. Participant Identification for Qualitative Analysis is presented in Table 6.

Table 6. Participant Identification for Qualitative Analysis

Participant	Rank Identification
Participant 1	Officer
Participant 2	Junior Enlisted
Participant 3	Junior Enlisted
Participant 4	Senior NCO
Participant 5	Senior NCO

QUALITATIVE ANALYSIS

Twenty-nine codes were derived from the data (see Appendix G for original codebook), which were compounded into nine categories, making up three themes (Table 7). The themes identified were: Knowledge & Experience, Cop Culture, and Support & Connection. Interview questions were specifically about menstruation and menstrual suppression; however, participants would speak openly about many aspects of the culture and what it meant to be a cop. These cultural aspects were evident throughout the data collection and analysis phases and underpin the overall qualitative analysis using ethnographic methods.

Knowledge & Experience

Knowledge and experience emerged as a theme that encompassed knowledge about menstruation and contraception, focusing mainly on sources of knowledge such as friends and family and knowledge gained through personal experience and the culture.

Friends, Family

Women described knowledge that was supplied to them from friends and family. Mothers of the participants were a significant source of knowledge. Mothers provided guidance on how to manage menstruation and what contraceptive options were safe to use. The

Table 7. Codes, Categories, and Themes

Codes	Categories	Themes
Contraception	Knowledge	Knowledge & Experience
Knowledge		
Pregnancy		
Mom		
Dealing with Menstruation	Menstruation	
Menstrual Pattern		
Menstrual Suppression		
Acculturation	Acculturation	Cop Culture
Back Office		
Speak Up		
Suck it Up		
Job Responsibilities	The Mission	
The Mission		
Work Requirements		
Clogging	Resources	

Resources		
Advice & Leadership	Sphere of Influence	
Just Be Yourself		
Sphere of Influence		
Connect	Connect	Support & Connection
Empowered		
Lack of Female Leadership		
Support		
Medical Care	Medical	
Tension Between Health/Career		
Disgust	Working with Men	
Men Don't Understand		
Taboo		
Working with Men		

participants stated their mothers also served as examples through their own experiences with contraception. One participant described that she would never use an IUD because of how her mother had not done well with it:

“My mom was honestly such a ***** when she got her IUD in and was like, there was two times because my mom got the Mirena, and oh my god, that one was worse, and then she got the Paragard and I’m like yeah, no, I don’t want to deal with that.” (Participant 3)

Another described her mother using depo-medroxyprogesterone acetate:

“... and then my mom when she had the Depo, she blew up, and I didn’t want to.” (Participant 2)

Women in leadership positions and women who had children also served as sources of knowledge regarding pregnancy and motherhood.

Friends or coworkers were also a source of knowledge, in that women would observe or have discussions with other peers in their lives about contraception and menstruation. One participant described,

“One of my neighbors, her eggs were frozen. She’ll never have kids ever again. She can’t because the Depo froze her eggs.” (Participant 2)

Knowledge from friends and family occurred in many settings and may not have been correct.

For example, although depo-medroxyprogesterone acetate may delay return to fertility, it has not

been shown to cause permanent infertility.

Women also described observing others who did not have knowledge. One particular story that highlighted this was Participant 3's experience at military basic training or boot camp. During her training, women stayed in one tent together and had a flight chief who was a woman that oversaw their daily activities. She explained that some of the other women in the tent didn't know how to manage menstruation or how to properly dispose of pads and tampons. Her perspective was that their mothers didn't teach them what to do, so then the flight chief had to step in and teach them.

Experience

Women gained knowledge through experience within the culture. This knowledge included how to manage menstruation at work and which contraceptive options were best. Managing menstruation included taking ibuprofen, staying hydrated, and keeping supplies on hand:

“All the females make sure that they pack extra pads and tampons.” (Participant 1)

“I put my tampons with my notepad and my weapons cards and stuff in this pocket, and then my cigarettes in this pocket with my Chapstick.” (Participant 3)

Experience with contraception at work was also important:

“The pills made me ***** off at work... Tried the NuvaRing, didn't like it. Uncomfortable. ... And I was so emotional at work. My emotions were crazy.” (Participant 2)

“I know with the shot, because I had it when I was younger, I knew [my period] would go away. I did enjoy that.” (Participant 4)

One woman also described a scenario with a woman coworker with whom she did not get along. Both women reconciled their differences by sharing their experiences and perceptions about birth control and the impact it may have had on their emotions while at work.

Personal experience also occurred prior to military service. One woman described her experience with attempting menstrual suppression:

“Yeah when I was like 17 and like my boyfriend at the time was going to football camp, so we were trying to like get it on right before. He didn’t want to like have sex with me while I was on my period and I didn’t want to either at the time. That’s how I’m like still – yeah, but instead of taking the placebo pills, the sugar pills, I just started the next cycle and everything like that, but I didn’t feel comfortable. I’m like yeah that’s not safe. ... I thought I might get pregnant.” (Participant 3)

Women could gather information to make their own decisions by using the Internet or seeking medical care. Women also described the importance of finding a contraceptive method that worked best for them:

“Like my cousin took the pill. I know she wasn’t taking [what I’m on now] ... I don’t know what she was taking, but she got like severely depressed and I was like Oh man. I felt so bad. People have to go through trial and error with so I definitely am glad that I was able to trial and error with too you know. I thought it held up.” (Participant 3)

Knowledge from others and from personal experience within the culture illustrated how women fit within the culture of Security Forces, and part of the operational Air Force and military.

Cop Culture

Cop culture was the essence and underpinning of all statements the women made. Cop culture included becoming a cop, and a critical and unique sub-theme of being able to speak up to leadership and to peers. The women described how the culture of being a cop had to be a certain way in order to accomplish the greater military mission.

Becoming a Cop

Women described their perspectives of becoming a cop, and the majority wanted to be a cop within the military; that is, they were not just assigned to be cops but chose Security Forces as their career field. The culture of becoming a cop was difficult to distinguish from the sections

of quotes available in the qualitative findings, as the culture was evident in everything women had to say and was pervasive throughout each discussion.

Key aspects of becoming a cop included: attending a technical school for hands-on training; learning how to wear the gear and manage equipment such as protective vests, fire arms, and police vehicles; smoking cigarettes or vaping; learning and respecting chain of command; cursing; avoiding the “back office” unless it was necessary; being confident as a woman and as a police officer; putting the military mission first; working long shifts, especially during military drill exercises that could last greater than 18 hours for a single shift; having limited resources depending on the duty location; being genuine; providing advice for other women in everything from hairstyles to helping arrange medical care visits; and learning new ways of being a leader depending on rank, time in service, and experience.

Younger, lower-ranking women stated sometimes they perceived that within the Security Forces culture that women were judged more harshly if they were unable to meet physical work requirements. For example, when women become pregnant they were unable to use their firearms (“arming up” in cop culture), and therefore must work in the “back office” (a stationary building location with primarily administrative purposes), which was culturally taboo as it was viewed as a location where an individual would not be able to serve in the full capacity of being a cop. Leadership members stated that this perception was not upheld within the command leadership structure, but tended to be peer-to-peer in nature. Further, leadership stated they saw no difference in physical work capabilities between men and women, and that any member who required medical attention was supported to pursue that need so they could return to work as soon as possible.

Women also described changes in resources depending on their duty location for the day.

In some more austere settings, such as the flight-line or at weapons ranges, restrooms were not available. One participant described:

“We finally got porta potties out there. Actually, this past week, I was on my period and I was out there. They don’t have any trashcans or receptacles out there for throwing away any tampons or pads or anything. I was thinking, ‘Oh my god, how do we not have trashcans out there? ... Ladies have to put – you know, you can’t throw that stuff in the porta potty because I know that clogs up the drainage system. You’re forced to either, A, throw it in the porta potty and get yelled at for clogging the drain system or, B, you have to put it back in your pocket and wait until you drive all the way back to the facility, which is usually a couple hours away, and you have tampons in your pocket.”
(Participant 1)

Having to manage or deal with resources was also seen in situations when women worked long shifts and may not have access to a restroom for several hours. One participant described bleeding through her uniform onto the seat of her Humvee, and then had to clean it up at the end of the day. The mission came first. Removing gear such as protective vests and firearms took at least 5 minutes, then time to use the restroom, and more time to put gear back on. Women stated they focused on the mission and would sometimes forget that they were menstruating. This was engrained in the culture and was a point of pride among all participants, from the youngest airman, to enlisted leadership, to a woman officer.

Speak Up

“Speak up” was a unique and culturally-universal theme throughout the interviews and observations. Women would verbally express their thoughts to peers and to leadership, to self-advocate for their health and needs. One participant explained this dynamic as part of participating in an exercise:

“One time, I was just like, ‘I have to go to the bathroom. Can you call for relief?’ Called for relief three times, and I’m like, all right. I told the sergeant, ‘You know what? If I leak through my pants, no one’s briefing me that my pants are out of regs. I’m not listening to it. If I get paperwork because like I came to work with blood on my pants, like I don’t want to hear it.’” (Participant 2)

The cop culture and the ability to speak up were distinctly intertwined; it is just a part of who they are:

“Speak up. Don’t take no ****. Don’t let someone walk over top of you no matter what their rank is.” (Participant 2)

“You let your leadership know, you let them know, and if they don’t help you, you go higher. If they say ‘Oh why’d you go to the first shirt?’ Yeah, they always say don’t jump the chain of command but sometimes you have to.” (Participant 3)

“Yes, you learn to speak up... they would just push through things, it’s part of their culture. I don’t know if anyone’s suffering in silence but usually when things are bad, they go to the doctor.” (Participant 4)

“They speak their mind, they don’t sugar coat anything, a little rough around the edges. The same between the men and the women. They’re very straightforward.” (Participant 5)

This type of verbal expression was a significant part of the underlying cultural scene for women who are cops. The participants in the leadership interviews also communicated that their unit members were able to voice concerns or needs directly to them, and were encouraged to do so. They stated women and men would all speak up when they needed to, and that this behavior was respected and taught throughout the unit. To be a cop, was to speak up.

Support & Connection

When they discussed women’s health specific topics, Security Forces women echoed one sentiment: the need for support. This included support from men in their units and support from other women. Support to them meant an understanding of women’s needs, along with time to manage those needs, specifically menstruation. Connection was closely related to support in that connection and feeling connected to others was often a requirement to receiving support. When women talked about support and connection, they would naturally give examples of good support and lack of support. Either way, support was necessary, and having support helped ease

the tension between health and career. For example, if a woman had to work in the back office because she was restricted from arming up, support would help to promote her success in getting back to the mission as soon as possible.

Leadership acknowledged that women in Security Forces, at all locations throughout the Air Force, required more support in order to continue on with their careers. Women may experience stigma for becoming pregnant, and need particular support for family planning, to include preventing pregnancy *and* promoting desired pregnancy.

Support from Men

Support from men required men to understand women's perspectives. Women in this study stated that men who understood the best usually had strong female relationships with girlfriends, wives, or daughters.

Receiving support from men who didn't understand women's experiences was a challenge. For example, these two stories occurred during the focus group, when women were discussing needing support from their male colleagues:

"I'm like Oh my god, well I'm telling you like after we leave here, I need to go home and change my stuff. And he said 'After we leave here, you're going to do that case.' No I'm not. No I'm not. I will literally drop my gear right now and go to my house a street away and change myself. I'm not kidding. Like that's disgusting. I don't make you walk around with **** in your pants. I don't want to walk around with a **** stain on my pants, or a period stain. Like that's disgusting. It was a dude. It was a male. It was a tech sergeant. I remember. Like they just get freaked out and I'm like, 'You can't relate? Of course you can't.'" (Participant 2)

"I was like 'All right here's my card. I need you to get me tampons. The box looks like this.' He's like 'Do I have to?' I mean we're like two hours into shift. Like I have 10 hours left and I really don't want to get blood everywhere, and he's like 'Ah.' He's like 'What if I don't?' I'm like, 'I'll call the flight chiefs and ask the flight chiefs. Like I'll ask the tech sergeant or the master sergeant because they'll get it for me.' He's like, 'Oh all right. I'll get it. I'll be back.' An hour and a half later, you know, like small base, but I had to wait an hour and a half." (Participant 3)

Women recommended that their male colleagues be educated on women's health issues including menstruation, hormones, pregnancy, and physical body changes. They thought educating men would help them to understand, but to some degree the men had to want to understand as well. Some men viewed menstruation as taboo:

“When it comes to periods too though, they don't want to talk about it at all. One time I did have a tampon fall out of my bag one time, and they're like ‘Oh my god. Pick that up. It's gonna like explode or something. You've gotta call EOD to come neutralize the threat.’” (Participant 3)

Men who did understand women's health issues were seen as more supportive, and women were more comfortable speaking to those individuals if they had concerns or an issue that required attention.

“If I have cramps or something like that, my commander was – I didn't even have to explain it to him. I could just say I'm not feeling well and he's like Ok take care of yourself.” (Participant 4)

“I have that connection with some of the guys that I work with now. I came to my sergeant and was like, ‘Yeah dude offline, I'm in pain. I don't feel good.’... And he's like, ‘All right. Say no more. You're on your period. Cool. Do you need anything?’” (Participant 2)

A focus group participant also described a male colleague that tried to connect with her by asking about menstrual cups and if they were better for the environment. She reported this as a positive experience of him trying to demonstrate that he understood and cared about her experiences.

Women described their experiences in working with men as overall positive, and something they had become accustomed to. They acknowledged that men brought other expertise to the team, and valued these working relationships.

“Sometimes the perspectives are absolutely on two different spectrums, um which is not a bad thing though... I would say don't try so hard to fit in with the male crew. Just be yourself. Do your job well. Know it well. If you're doing well at your job, then they'll respect you no matter what. You don't have to go out and prove yourself in the way that

they prove themselves.” (Participant 1)

“They did a pretty good job of keeping equal opportunity even though the men – there were more men than women. They still, women were still in flight leadership roles and things like that. No one ever felt denied or, that I’m aware of, or that women were given more opportunity because they were a woman. It wasn’t any discussions like that.” (Participant 4)

Support from men was valuable and overall contributed to success in the unit. Women desired support from other women as well.

Support from Women

Having support from women was also valued among the women in this study. Because Security Forces is a male-dominated career force, that support was needed and included support for menstruation and support for career advancement. Support for menstruation included other women sharing supplies or allowing time to manage. The opposite of this support was seen in women who pretended they didn’t menstruate:

“So basically like the people at my last base were not as understanding, which is weird because there’s more girls. You would think they would be more understanding, but we had like this one like female master sergeant. She as like such a *****. She was like not like understanding like at all. I know you get your period, woman, like come on. Give me some leverage, at least a little bit.” (Participant 3)

Women desired connection with female leadership and officers:

“I had an LT female that was on m flight, but she was never there. She showed up maybe once a cycle and that was Panama 12. I only saw her like maybe twice a week. I didn’t see her often enough. She tried to like make a connection and everything like that, but I tried to as well, but tried to connect.” (Participant 3)

Similar to the discussions about desiring support from men, there were both successful and harmful examples of female support.

The overall findings from qualitative analysis demonstrated that women could gather knowledge about menstruation and contraception many ways, and needed support to continue on

the mission within the culture. These findings, along with the questionnaire findings were compared in one final comprehensive analysis to evaluate the cultural scene.

COMPREHENSIVE ANALYSIS

Comprehensive analysis was the mixed-method analysis of all data and the final point of interface. After analyzing at each point of interface, the final findings included an analysis of knowledge, military culture, and menstrual practices including menstrual suppression. The benefit of a comprehensive mixed-method analysis in a qualitative study is to provide an overall gestalt of the information gleaned from the data.

Knowledge

Women in this study were knowledgeable about normal menstruation, menstruation practices, and menstrual suppression. All women who responded to the questionnaire could accurately identify normal menstrual symptoms and discern them from abnormal symptoms. Women had personal preferences for how to manage menstruation and could share that knowledge with others. The majority of women had at least heard about menstrual suppression.

Most women could identify at least one non-contraceptive benefit of hormonal contraception, most commonly noting that taking contraception can decrease menstrual flow and regulate cycles. Knowledge deficits regarding contraception existed in that many women could not correctly identify contraceptive options.

Male leadership admitted lack of knowledge about menstruation, including menstruation physiology and management. Younger women stated they wanted to be supportive of contraceptive knowledge to other women in the Security Forces career field as they progressed in their careers:

“Birth control options is a huge thing, like whether they’re having sex or not. You want

to be prepared no matter what the situation is so I definitely would talk to them, make sure that they know that they can always come to me for anything like that, whether it's on duty, off duty, just have that.” (Participant 3)

Women lacked knowledge about pregnancy timing, which can be detrimental to both preventing pregnancy, and to achieving pregnancy when it is desired.

Military Culture

Military culture was noticeable throughout the data. The questionnaire responses were specific to military health needs such as during military deployment, austere work settings, the uniform, and typical duty days.

In this study, the primary aim was to determine how the military culture influences menstrual practice. It was determined that, while women did have specific examples of menstrual practices within the military culture, the military culture had little impact on knowledge, attitudes, and beliefs about menstruation. These aspects were rooted more in experience and information from family and friends.

Menstrual Practices

No women in this study were currently suppressing menstruation, but many had tried in the past. When asked about deployment, women stated they would not change their menstrual practices; that is, they would not begin menstrual suppression just because of deployment, but that they would plan to go prepared with supplies. This was an unexpected finding in the study, as demonstrated by the below Chi Square test:

$$\begin{aligned}\chi^2 &= (O - E)^2 / E \\ \chi^2 &= (0 - 16)^2 / 16 \\ \chi^2 &= (-16)^2 / 16 \\ \chi^2 &= 16, \text{ d.f. } 1 \quad p < 0.001\end{aligned}$$

Zero women were observed suppressing menstruation, although maximum participation 16 women suppressing menstruation was expected. This is a significant, although unexpected finding.

Women were interested in menstrual suppression as a concept, as in it might be nice not to have a menstrual cycle. However, when actually considering taking contraceptives to suppress menstruation, they were not willing to attempt it for two main reasons: 1) they perceived it as not safe, or 2) they wanted confirmation that they were not pregnant.

The specific aim in this study was to explore how active duty U.S. Air Force women manage their menstruation while living day-to-day in a military culture. Women managed menstruation through carrying supplies, speaking up about their menstrual needs, and desiring support. The research question that asks what observable aspects of the culture influence women's menstrual practices was answered through the many aspects of data collection in this study. While women served in austere locations or on prolonged duty shifts, and women could and would adapt to these settings, their overall practices were only minimally related to their military aspects. Finally, when answering how knowledge, attitudes, beliefs, and military culture impact women's menstrual practices, it was found that military culture was minimally impactful while attitudes and beliefs were more strongly connected to actual practices.

This was an unexpected finding in this study, and both enhances and contradicts previous research that has been conducted.

RIGOR

Rigor in qualitative research depends upon the study design and interpretation of the results. Classical language for rigor in qualitative research has to do with the trustworthiness of the data and analysis in the study and includes credibility, transferability, dependability, and

confirmability (44).

Credibility ensured that the study produced findings that are as true as possible and was achieved through multiple techniques. *Prolonged engagement* was achieved in that the researcher spent time on location in the unit, observing cultural interactions, and interviewing key informants for the study. *Persistent observation* occurred throughout the study in the search for pervasive themes within the culture. *Triangulation* was used in the form of multiple data collection methods that were analyzed comprehensively to demonstrate a cohesive assessment of the culture. *Peer debriefing* occurred when the mentor met with the researcher to discuss findings in focus groups and interviews, as well as through regular check-ins with dissertation committee members. Finally, *member checks* were used by checking the findings with the primary point of contact (in ethnography, the “gatekeeper”) in the study, who confirmed the findings were accurate to her knowledge of the culture.

Transferability occurred through thick description of the findings in the study including the use of field notes and multiple points of interface for analysis. Transferability in this study also occurred naturally in the stories that women told. All participants in this study had been stationed at other Air Force bases, as Security Forces members, and made comparisons between their experiences at their current base and their experiences at other locations. Therefore, the context of this particular unit and base can be *transferred* to other Security Forces locations. It should be noted that women made some negative comparisons about their other locations (that is, working in this unit has been a particularly positive experience), but the overall context of menstrual practices was applicable in multiple settings.

Dependability of the data in this study was achieved through the multiple methods used in data collection. Data from all sources: observations, questionnaires, leadership interviews, and

focus groups all elicited complementary findings. If dependability as a concept was compared to reliability, the findings in this study were reliable across the data collection methods, adding to the strength of the study.

Finally, *confirmability* was achieved through the use of an audit trail in notes taken throughout the duration of the study from initiation to completion of disseminating findings. There were notes taken at each step in the form of field notes, data collection steps, modifications made to recruitment, and analysis plan. The findings in this study should be able to be replicated within the context of Security Forces women at this military base.

CONCLUSION

The findings in this qualitatively-driven mixed-method study using ethnography included core QUAL findings with three themes: Knowledge & Experience, Cop Culture, and Support & Connection. Supplementary quant findings were descriptive questionnaire data from a larger group of participants. Comprehensive findings addressed three main themes in accordance with the research question and addressed Knowledge, Military Culture, and Menstrual Practices. The final analysis addressed military culture and the little impact it has on menstrual practices; women require support of menstruation in order to participate to their fullest extent within the culture.

CHAPTER 5: Discussion

This study on menstrual practices of operational military women was a qualitatively-driven mixed-method study that explored military culture, knowledge, and menstrual practices including menstrual suppression. Military culture has a unique set of values, beliefs, and lifestyles that were evident through the language, thick descriptions, and observations of the Security Forces unit in this study. Participants in this study demonstrated aspects of the Air Force Core Values of Integrity First, Service Before Self, and Excellence in All We Do (24). Women and leaders addressed the importance of promoting health in all aspects, to include menstruation, to perform at one's best to accomplish the mission. The purpose of Security Forces is to defend the United States and the base in particular, as first responders, and as police who promise to serve and protect. In consideration of menstrual practices, women strived to maintain their best menstrual practices in order to serve the mission first. Although the military culture did not directly impact menstrual practices, women maintained health in order to participate in the culture, and wanted their needs supported to continue on in the mission.

Knowledge, although part of the initial specific aim, emerged as a critical concept throughout the study in the ways that women gained knowledge about health, about being a cop in this specific culture, and about how to manage menstruation. Women gained knowledge from their families, friends, healthcare providers, and from experience. Knowledge and culture were interwoven as knowledge about the culture was part of acculturation. Knowledge was not only about the culture, however, and a significant amount of knowledge came from upbringing and family values.

Menstrual practices were central to women in this study. Women in the study had attempted menstrual suppression, although none were currently practicing it. Women had

knowledge about menstrual suppression and how to do it, but still did not view it as particularly safe, or desired to know they were not pregnant. Women did not plan to practice menstrual suppression even in the event of deployment. Women were interested in avoiding menstruation at work, but did not want to use hormonal contraceptives to achieve this.

Women in this study offered complex insights into the operational military culture, ways to obtain knowledge, and how to manage menstruation in multiple settings. Some findings were congruent with other research that has been conducted, while other findings were different from previous research. This study was conducted with the lens of feminist theory and added new contributions to nursing science through maintaining rigor.

COMPARISON TO OTHER STUDIES

Comparison to other studies included a comparison with studies on military women and civilian women and menstrual practices. Similar to other studies, women in this study were interested in menstrual suppression, but reluctant to use it. In this study, 93% of women (15 of 16 participants) desired menstrual suppression, compared to 66% (64), and 86% (66) in previous studies that focused on deploying women. Reluctance in other studies has been attributed to lack of knowledge or counseling (58, 79), concerns about safety and efficacy (64, 66, 79), desiring to menstruate (64), difficulty remembering to take oral contraceptives (64, 65). One study found that some women did not think that menstrual suppression was a safe practice, even during deployment when hygiene management was especially challenging (19). In this study, participants reported additional concerns about menstrual suppression including the belief that menstruation was normal and not bothersome, that the desire to know pregnancy has not occurred was important, and that long-term effects of menstrual suppression are not known. In a scoping review of international studies about contraceptive induced menstrual bleeding changes,

U.S. women were more likely to practice menstrual suppression, however concerns were still present regarding safety and long-term use (63), similar to the findings in this study.

Women in this study reported they would not change their menstrual practices or their contraceptive practices for deployment. The majority of women stop contraception prior to or during deployment, either due to military regulations about sexual activity during deployment, or to difficulties with contraceptive access (78). Women in this study reported they would not make changes to their current practices other than bringing additional supplies with them, primarily because menstruation was not viewed as a problem within itself. Supporting women to manage menstruation in any setting, whether that be routine operations or deployment, would help them to maintain military readiness at all times and would support their menstrual practices and contraceptive decision-making.

In one study of new military physicians, the majority (82%) provided contraceptive services, with oral contraceptive pills being the most commonly and most comfortably prescribed method (31). Implications included recommendations to expand physicians' (and providers') abilities to provide comprehensive contraceptive care including menstrual suppression. There were similar findings in this study in that the majority of women (n=12) had used oral contraceptives, and those that had attempted menstrual suppression in the past and also used oral contraceptives. It is unclear from the findings of this study whether the use of oral contraceptives was due to provider counseling or participant preference, as providers were not part of this study; this area would be an important implication for future studies.

In a research article about non-military female police officers' gender identity (84), women who experienced support within their team and work unit had less gender-work identity conflict compared to women who did not have support in the work environment. Military

Security Forces women in this study also expressed the desire to have support in the work environment to perform their duties, promote their health and menstrual practices, and ultimately support their military readiness. While this study did not measure gender-work identity, similarities using feminist theory as a lens can be drawn. In male-dominated career fields such as Security Forces, women want support.

Different than other studies, military culture and deployment requirements appeared to have minimal impact on women's decisions to suppress menstruation. This was perhaps due to how operational military women have a work life similar in austerity and hour requirements to the deployment environment. Previous research has reported that women were not counseled about menstrual suppression (45, 61, 78, 79), but the majority of participants in this study were aware of it as an option, and attempted it.

Other researchers have reported difficulties about women being able to receive an appropriate supply of contraceptives in order to suppress menstruation. In one qualitative study, deploying women who desired to suppress menstruation were not permitted to receive a one year supply prior to leaving, thus creating a barrier to suppression during deployment (87). Another survey study addressed barriers to obtaining or bringing depo medroxyprogesterone acetate on deployment (78). While at home, women would not need a year supply at one time, but prescription needs change depending on the decision to suppress menstruation or at times of deployment. In a discussion of base-specific pharmacy practices has shown that women may still encounter barriers if their provider does not specifically state "for suppression" or "for continuous use" in the directions (or *sig*) of the prescription; that is if providers use the standard statement for ordering contraceptives, despite the woman's plan to suppress menstruation, she would not be supplied with enough refills to get her through the prescription period (28). While

this concern did not present as a theme in this study, the implications of difficulty obtaining contraceptives should be acknowledged as a commonly discussed problem within the military population, and efforts to support military women's menstrual and contraceptive practices should be expanded.

The findings from this study were compared to current literature in military women's health, menstrual suppression, and male-dominated career fields. The study used Feminist Theory as a lens to guide the design and process of research, and findings had important implications within Feminist Theory as well.

FEMINIST THEORY

Using Feminist Theory as a lens, this study was conducted in mind to promote the voices and experiences of the participants. Women in this study were unique in their ability to “speak up” about their health and menstrual practices, while expressing a desire to continue to promote military women's health in general and have their voice and experience shared. Feminist Theory has many aspects, and this study focused on three key tenets: ways of knowing, language, and intersectionality. Each of these tenets was shown throughout the study from proposal, data collection, data analysis, and presentation. Without the use of Feminist Theory, particular attention to ways of knowing, language, and intersectionality would not have been included and an evaluation and discussion of these critical tenets would not have occurred.

The data in this study contribute to the feminist tenet of multiple *ways of knowing*. Military women described knowledge gained from other people, from personal experience, from living in the culture, and from their families. Ways of knowing was a critical concept to the foundation of the study. The women in this study described the military culture including multiple ways of knowing within the culture; they also described their menstrual practices and

multiple ways of knowing how to manage menstruation. Knowledge was a theme that occurred at every point of interface in data analysis, in quantitative findings regarding menstrual suppression, qualitative themes of knowledge and experience, and cohesive findings about overall cultural knowledge. Knowledge was a complex factor in how to manage menstruation within the culture, and in the end, women used culturally distinct language to describe their desire for support with the knowledge they have.

The women in the study all used a distinct *language* to describe their culture, which included the back office, cursing, discussions about smoking, and the words used to describe certain types of people within the unit. There was an understood language among members in the culture and it was a privilege for the research team to gather that information from a diverse group of participants. There was also language that was used to explain military culture in a broader sense such as chain of command, rank structure, and daily job requirements. The use of feminist theory in exploring language in this study allowed for immersion in the culture. Language was also critical in this study for how women described their experiences, most notably in the ability to “speak up.” This was a unique finding to this study. The PI is also a military member, but has not had the cultural experience of being encouraged to speak on her own behalf to peers and leaders in the same way that the women in this study described: Their language was a unique way to connect and exist within their own culture, especially through the ability to speak up about their needs and in order to gain support. Language within Feminist Theory was also used to help give a voice to the participants’ experiences; and their ability to verbally express themselves was central to this study.

Intersectionality was an important attribute in the culture in this study as well, as the data allowed for an exploration of the synergistic relationships between being a woman, being in the

military, and being a cop. These aspects of the individual participants contributed to their overall sense of value and purpose, and ultimately to their menstrual practices. Women viewed menstruation as natural, and a way to know pregnancy had not occurred, so that they could stay active participants in the military culture and serve as a cop. Although the *n* in this study small, and therefore specifics about race, ethnicity, class, and sexual orientation could not be explored directly, other aspects of intersectionality emerged in the form of woman+military+cop, and this intersection was a foundational aspect of who they are, how they manage menstruation, and how they maintain military readiness.

IMPLICATIONS

Implications for research include that further studies should be conducted among additional groups of military women such as those who do not have highly operational job responsibilities. The value in this would be to compare experiences and menstrual practices. Previous research has shown that military deployment can be particularly challenging for menstrual management (79, 80, 82), however women in this study were hesitant to suppress menstruation or to make any changes to their management practices due to deployment. Exploring women who do not have daily operational requirements may be the link between the deployment findings and the findings in this study of operational women.

A recent review publication in a top-tier women's health journal addressed menstrual suppression in military women. However, outdated literature was referenced and no new conclusions about the topic in the population were made (21), which widened the gap of stagnant research in the area of military women's menstrual practices. Although, it is beneficial that the topic remains important within the scientific arena, as demonstrated by continued review articles, continued research is needed in the topic of menstruation and menstrual suppression for

military women, and this study aimed to contribute to that timely agenda item.

Research from this study and the studies that have come before should be used to contribute to new evidence supporting the education of military women about menstruation and options. Although, military women may not choose to suppress, and these choices may be due to circumstances other than military service, providing education based on research in a clinical setting promotes empowerment of women to make decisions about their own bodies. Women in this study also recommended that men be included in educational efforts about military women's health, in order to increase understanding and support. Military women want to be able to participate in the mission, to have their military readiness maintained, and it is the responsibility of their leadership, command, and military healthcare providers to provide that type of support.

This study's findings also have policy implications which can be used to contribute to a growing body of evidence to support the upcoming shifts to the Defense Health Agency and any recommendations that come from the agency on behalf of military women. New procedural instructions regarding contraception and menstruation will emerge, such as clinical practice guidelines, and the findings in this study may provide support to those recommendations.

CONTRIBUTION TO MILITARY RESEARCH

The percentages of women who participated in this study were similar to the total Air Force Security Forces percentages of women in enlisted ranks. Table 8 demonstrates percentages from Air Force Security Forces women as of Summer 2019 as available from the Air Force Security Forces corps superintendent. Demographic data on total Security Forces was not released for the purpose of this research study.

Table 8. Total Air Force Female Enlisted Security Forces

Total Air Force Female Enlisted Security Forces
--

Rank	% Female
E1-E2-E3 (AB-Amn-A1C)	31.0%
E4 (SrA)	20.0%
E5 (SSgt)	15.0%
E6 (TSgt)	13.0%
E7 (MSgt)	11.0%
E8 (SMSgt)	8.0%
E9 (CMSgt)	0.5%

This study focused on Air Force Security Forces women, which was a new contribution to military health research in that the majority of previous research on military women has included Army women (64-66, 79-81). It remains unknown if women in different branches of service manage menstruation or military readiness in different ways, and future research should explore this.

This study also focused on military readiness as a central factor in research, and the major finding was that supporting women's menstrual practices supports their military readiness. As the military continues to move towards readiness as a central theme, this research study contributes to that standard of maintain a ready force, with women included. Using ethnography, a description of military culture and the role of readiness within the culture was explored within the study.

No women who participated in this study were suppressing menstruation which was an unexpected finding. However, all participants had attempted or practiced menstrual suppression at least once in their personal or military experiences, and further information was available in the interviews regarding women's hesitance to suppress. This finding was unforeseen, and may be unique to the Security Forces culture. That is, the women in this study described being able to speak up and different levels of support, including positive examples of support. This ability to speak up and receive support may mean that Security Forces women are able to manage

menstruation without the use of menstrual suppression; menstrual suppression may be more beneficial for women in settings that are not able to speak up and receive support within the culture. The overall findings did answer the research question and explained the connection between menstrual practices and military culture that has not been demonstrated in previous research. Research studies on operational military women who currently suppress menstruation is still lacking at the conclusion of this study, with considerations for the specific cultural environment.

Finally, this study used Feminist Theory, which was a unique contribution to military research. Feminist Theory can be misunderstood as a politically-charged term, however the main purpose is to support those whose voices have not previously been shared. With emerging policy recommendations for the promotion and improvement of women's health in the military, using Feminist Theory was a timely contribution to this burgeoning and much-needed area within military research.

CONTRIBUTION TO NURSING SCIENCE

This is the first study that has explored menstrual practices in operational military women, that is women who are serving at home and not currently on deployment. The impact of the at-home environment allows for tailored education to women who have the potential to deploy, targeting their normal routines and incorporating their attitudes and beliefs into contraceptive and menstrual suppression counseling.

This study also used qualitatively-driven mixed-method design which is a unique contribution to nursing science. Few studies within nursing have incorporated mixed-method designs to gather data. Mixed-method designs are not simply a quantitative method alongside a qualitative method; but rather the true integration of all findings together (12, 55, 56).

Qualitatively-driven mixed-method studies, such as this one, have a theoretical drive that is central to the conduct of research. In this study, ethnography was the central theoretical core, which allowed for exploration of the military culture. These methods were a unique contribution to nursing science and were a practical use of Morse's methodologies (56).

Use of feminist theory was also a unique contribution to nursing science. As nursing is an interdisciplinary research field, the use of feminist theory contributed to new emerging thoughts and a lens through which data were gathered and analyzed. The research in this study can be used in conjunction with prior research about military deployment to contribute to an evidence base. Using this evidence, nurses can collaborate to provide evidence-based practice based on research on military women, a significant step in the translation of nursing science.

STRENGTHS

This study was a qualitatively-driven mixed-method study that contributes new knowledge to military nursing about operational military women. The methods were a strength in this study in that the inclusion of a mixed-method component allowed for gathering data from a larger population than traditional qualitative methods. Data saturation was reached due to a comprehensive data set, which added to the credibility and overall rigor of the study.

Including leadership in this study contributed to its strengths, especially as leadership interviews confirmed the findings that were gathered in interviews and focus groups within women in the unit. The study also highlighted unique aspects of the military including austerity within the local military base settings. Often, austerity is assumed to be during deployment, but as this study showed, it can occur in any geographic location.

LIMITATIONS

Limitations at the outset of the study included time constraints, single location, and single

branch of service. The time constraints in the study were limited due to the military academic program timeline to complete all dissertation research activities, i.e., data collection, data analysis, and defense of findings with one calendar year. Additionally, only women in Air Force Security Forces at a single base were included in this study. While this was an advancement beyond previous work that has been limited to Army populations, there was a limitation in the question that Security Forces women may not be representative of the Air Force as a whole. Delimitations for this included significant strategizing when designing this study. Special consideration and discussion were given to Security Forces women as a whole. The PI had numerous conversations with career managers and experienced enlisted Security Forces individuals, who confirmed that Security Forces were representative of operational military women. Security Forces women work in a male-dominated career field, and daily work requirements can be in austere settings (that is, locations with limited resources and severe time constraints). They have a strong cultural identity and keep the mission first. Therefore, beyond being important to the PI from previous clinical experience, Air Force-level leadership supported this study on the Security Forces women and were agreeable they would be an appropriate sample.

The study was conducted in a single operational unit. Although, women in the study naturally compared their experiences at the current unit to previous locations in which they had served, limiting to a single location as part of focused ethnography must be considered before making assumptions about other members of the military population. Accessing a military population for recruitment posed challenges such as requirement of commander approval and careful attention to prevention of perceived coercion (51).

Recruitment in this study was challenging. The original plan to recruit based on

questionnaire responses and only conduct focus groups did not work within the setting. This was primarily due to the original sample available had decreased by two-thirds once the study started. Modifications to the IRB protocol permitted snowball sampling and direct recruiting, which aided increased recruitment numbers. A paper questionnaire was used, and it should be acknowledged that an online questionnaire may have increased recruitment within the unit due to perceptions of anonymity. At a minimum, future studies should consider the incorporation of online questionnaires either alone or as an alternative option to a paper questionnaire. Additional recruitment strategies for future studies may also include recruitment from multiple Security Forces units, or varied units across a single military base. These options have different aspects of value in that increasing Security Forces women would explore the same operational duty title, but require support from multiple command structures. The other consideration for recruiting from across a single base would allow for comparison across different duty titles of military women, but many may not be in the operational setting that the PI was intending to explore.

FUTURE DIRECTIONS

The findings in this study lend to opportunities for future research. The PI in the study plans to continue research in military women's health, including menstrual practices. Future studies will focus on provider aspects including knowledge, attitudes, and beliefs; and provider prescribing practices compared to military women's personal practices. Other future studies will also address contraceptive use for menstruation and unintended pregnancy. Finally, the PI will be appropriately positioned to collaborate with evidence-based practice experts to implement military women's health education programs and test their effectiveness in multiple settings, and to be able to include men in military women's health education efforts.

CONCLUSION

This study was the first to use a qualitatively-driven mixed-method design to explore military women's menstrual practices in an operational setting, contributing to nursing science through the unique methods used and adding to a growing body of science for military women's health. This study can be used in collaboration with other evidence to promote health of military women through clinical education and support in command environments.

REFERENCES

1. Andrist LC. 2008. The implications of objectification theory for women's health: menstrual suppression and "maternal request" cesarean delivery. *Health Care Women Int* 29:551-65
2. Axinn WG, Fricke, T. E., & Thronton, A. . 1991. The microdemographic community-study approach: Improving survey data by integrating the ethnographic method. *Sociological Methods & Research* 20:187-217
3. Bowleg L. 2008. When black + lesbian + woman black lesbian woman: The methodological challenges of qualitative and quantitative intersectionality research. *Sex Roles* 59:312-25
4. Braun LA, Kennedy HP, Womack JA, Wilson C. 2016. Integrative Literature Review: U.S. Military Women's Genitourinary and Reproductive Health. *Military medicine* 181:35-49
5. Buch ED, & Staller, K. M. 2014. What is feminist ethnography? In *Feminist Research Practice: A Primer*, ed. SN Hesse-Biber:107-44. Los Angeles, CA: SAGE Publications. Number of 107-44 pp.
6. Cannon L. 1980. Reagan: "Peace Through Strength". *Washington Post* August 19, 1980
7. Cannon LW, Higginbotham, E., & Leung, M. L. A. . 1991. Race and class bias in qualitative research on women. In *Beyond Methodology: Feminist Scholarship as Lived Research*, ed. MM Fonow, & Cook, J. A.:107-18. Bloomington, IN: Indiana University Press. Number of 107-18 pp.
8. Carastathis A. 2014. The Concept of Intersectionality in Feminist Theory. *Philosophy Compass* 9:304-14
9. Chrisler JC, Marvan ML, Gorman JA, Rossini M. 2015. Body appreciation and attitudes toward menstruation. *Body Image* 12:78-81
10. Christopher LA, Miller L. 2007. Women in war: operational issues of menstruation and unintended pregnancy. *Military medicine* 172:9-16
11. Crenshaw K. 1989. Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *University of Chicago Legal Forum* 1989
12. Creswell JW, & Plano Clark, V. L. . 2017. *Designing and Conducting Mixed Methods Research*. Thousand Oaks, CA: SAGE Publications
13. Defense Do. 2011. DODI 3216.02: Protection of Human Subjects and Adherence to Ethical Standard in DoD-Supported Research.
14. Defense Do. 2015. 2015 Demographics: Profile of the military community
15. Defense Do. 2016. DODI 6200.06 Periodic Health Assessment (PHA) Program.
16. Defense Do. 2019. DODI 6490.03 Deployment Health.
17. Defense HA. 2019. DHAPI 6200.02: Comprehensive Contraceptive Counseling and Access to the Full Range of Methods of Contraception.
18. Devault ML. 1990. Talking and listening from women's standpoint: Feminist strategies for interviewing and analysis. *Social Problems* 37:96-116
19. Doherty ME, Scannell-Desch E. 2012. Women's health and hygiene experiences during deployment to the Iraq and Afghanistan wars, 2003 through 2010. *J Midwifery Womens Health* 57:172-7

20. Dusenbery M. 2019. Set it and Forget it? *Scientific American* 320:40-7
21. Eagan SM. 2019. Menstrual Suppression for Military Women. *Obstetrics & Gynecology*
22. Edelman A. 2002. Menstrual nirvana: amenorrhea through the use of continuous oral contraceptives. *Curr Womens Health Rep* 2:434-8
23. Fetterman DM. 2010. *Ethnography: Step by Step 3rd Edition*. Thousand Oaks, CA: SAGE Publications
24. Force USA. 2019. *Air Force Mission, Vision, and Core Values*.
25. Fritz MA, & Speroff, L. 2011. *Clinical Gynecologic Endocrinology and Infertility 8th Edition*. Thousand Oaks, CA: SAGE Publications
26. Gleeson TD, Hemmer PA. 2014. Providing care to military personnel and their families: how we can all contribute. *Academic medicine : journal of the Association of American Medical Colleges* 89:1201-3
27. Gynecologists TACoOa. 2010. ACOG Practice Bulletin 110: Noncontraceptive Uses of Hormonal Contraceptives.
28. HA-WIG. 2019. Personal Email Communication between HA-WIG members on contraceptive access.
29. Halloran R. 1984. Reagan as Military Commander. *New York Times Magazine*
30. Harding S. 2015. *Ojectivity & Diveresity: Another logic of scientific researc*. Chicago, IL: The University of Chicago Press
31. Heitmann RJ, Hammons CB, Batig AL. 2017. Women's Health Knowledge and Skills Among Transitional Year Internship-Trained Military Medical Officers Serving as Independent Health Care Providers. *Military medicine* 182:e1808-e14
32. Hesse-Biber SN. 2014. Feminist appraoches to mixed methods research. In *Feminist Research Practice: A Primer*, ed. SN Hesse-Biber:363-88. Los Angeles, CA: SAGE Publications. Number of 363-88 pp.
33. Hillard PA. 2014. Menstrual suppression: current perspectives. *Int J Womens Health* 6:631-7
34. Hitchcock CL. 2008. Elements of the menstrual suppression debate. *Health Care Women Int* 29:702-19
35. Holt K, Grindlay K, Taskier M, Grossman D. 2011. Unintended pregnancy and contraceptive use among women in the U.S. military: a systematic literature review. *Military medicine* 176:1056-64
36. Howes M. 2010. Menstrual function, menstrual suppression, and the immunology of the human female reproductive tract. *Perspect Biol Med* 53:16-30
37. IOM. 1995. Recommendations for research on the health of military women, National Academy Press, Washington, DC
38. Jain V, Wotring VE. 2016. Medically induced amenorrhea in female astronauts. *NPJ Microgravity* 2:16008
39. Johnson-Mallard V, Kostas-Polston EA, Woods NF, Simmonds KE, Alexander IM, Taylor D. 2017. Unintended pregnancy: a framework for prevention and options for midlife women in the US. *Women's midlife health* 3:8
40. Kerman B. 2012. Contraception and Menses Control in the US Military. *Nurse Practitioner World News* 18:14-5
41. Krueger RA, & Casey, M. A. 2015. *Focus groups: A practical guide for applied research. 5th Edition*. Los Angeles, CA: SAGE Publications
42. Krulewitch CJ. 2016. Reproductive Health of Active Duty Women in Medically Austere

- Environments. *Military medicine* 181:63-9
43. Langston V, Gould M, Greenberg N. 2007. Culture: what is its effect on stress in the military? *Military medicine* 172:931-5
44. Lincoln YS, & Guba, E. G. 1985. *Naturalistic Inquiry*. Los Angeles, CA: SAGE Publications
45. Manski R, Grindlay K, Burns B, Holt K, Grossman D. 2014. Reproductive health access among deployed U.S. servicewomen: a qualitative study. *Military medicine* 179:645-52
46. Mattis J. 2017. Guidance from Secretary Jim Mattis.
47. Maurer S. 2018. *How to survive your period on the mountain*.
<https://missadventurepants.com/camping-on-your-period/>
48. McCance KL, & Huether, S. 2014. *Pathophysiology: The Biologic Basis for Disease in Adults and Children 7th Edition*. St Louis, MO: Elsevier Mosby
49. McMillan C, Jenkins A. 2016. "A magical little pill that will relieve you of your womanly issues": What young women say about menstrual suppression. *Int J Qual Stud Health Well-being* 11:32932
50. Meyer EG, Writer BW, Brim W. 2016. The Importance of Military Cultural Competence. *Current psychiatry reports* 18:26
51. Migliore LA, Killian JM. 2018. Ethical Considerations for Nursing Research With Military Populations. *Annual review of nursing research* 36:107-29
52. Miles MB, & Huberman, A. M. 2020. *Qualitative Data Analysis: A Methods Sourcebook*. Los Angeles, CA: SAGE Publications
53. Mohammed-Durosinlorun A, Raji HO, Hussain NA, Badmus SA, Ijaiya MA. 2012. Menstrual suppression among female Nigerian pilgrims during Hajj. *J Fam Plann Reprod Health Care* 38:270-1
54. Morse J. 1995. The Significance of Saturation. *Qualitative Health Research* 5:147-9
55. Morse J. 2010. Procedures and Practice of Mixed Method Design. In *SAGE Handbook of Mixed Methods in Social & Behavioral Research 2nd Edition*, ed. A Tashakkori, & Teddlie, C.:339-52. Los Angeles, CA: SAGE Publications. Number of 339-52 pp.
56. Morse J. 2017. *Essentials of Qualitatively-Driven Mixed-Method Designs*. New York, NY: Routledge Taylor & Francis Group
57. Morse J. 2018. Reframing Rigor in Qualitative Inquiry. In *The SAGE Handbook of Qualitative Research 5th Edition*, ed. NK Denzin, & Lincoln Y. S. Thousand Oaks, CA: SAGE Publications. Number of.
58. Nelson AL. 2006. Extended-regimen contraception: effects on menstrual symptoms and quality of life. *J Fam Pract* 55:S1-8
59. Nelson J, Hagedorn ME. 1997. Federal Nursing Service Award. Rhythms of War: activation experiences during the Persian Gulf War. *Military medicine* 162:233-9
60. Newhouse R, Dearholt S, Poe S, Pugh LC, White KM. 2005. Evidence-based practice: a practical approach to implementation. *The Journal of nursing administration* 35:35-40
61. Nielsen PE, Murphy CS, Schulz J, Deering SH, Truong V, et al. 2009. Female soldiers' gynecologic healthcare in Operation Iraqi Freedom: a survey of camps with echelon three facilities. *Military medicine* 174:1172-6
62. NIH NIOH. *Sex & Gender* <https://orwh.od.nih.gov/sex-gender>.
63. Polis CB, Hussain R, Berry A. 2018. There might be blood: a scoping review on women's responses to contraceptive-induced menstrual bleeding changes. *Reproductive health* 15:114

64. Powell-Dunford N, Cuda AS, Moore JL, Crago MS, Deuster PA. 2009. Menstrual suppression using oral contraceptives: survey of deployed female aviation personnel. *Aviat Space Environ Med* 80:971-5
65. Powell-Dunford NC, Cuda AS, Moore JL, Crago MS, Kelly AM, Deuster PA. 2011. Menstrual suppression for combat operations: advantages of oral contraceptive pills. *Womens Health Issues* 21:86-91
66. Powell-Dunford NC, Deuster PA, Claybaugh JR, Chapin MG. 2003. Attitudes and knowledge about continuous oral contraceptive pill use in military women. *Military medicine* 168:922-8
67. Redmond SA, Wilcox SL, Campbell S, Kim A, Finney K, et al. 2015. A brief introduction to the military workplace culture. *Work (Reading, Mass.)* 50:9-20
68. Ross PT, Ravindranath D, Clay M, Lypson ML. 2015. A Greater Mission: Understanding Military Culture as a Tool for Serving Those Who Have Served. *Journal of graduate medical education* 7:519-22
69. Rumbaugh R. 2017. Defining Readiness: Background and Issues for Congress
70. Ryan-Wenger NA, Lowe NK. 2015. Evaluation of Training Methods Required for Military Women's Accurate Use of a Self-Diagnosis and Self-Treatment Kit for Vaginal and Urinary Symptoms. *Military medicine* 180:559-64
71. Saunders B, Sim J, Kingstone T, Baker S, Waterfield J, et al. 2018. Saturation in qualitative research: exploring its conceptualization and operationalization. *Quality & quantity* 52:1893-907
72. Schensul SL, Schensul, J. J., & LeCompte, M. D. 1999. *Essential Ethnographic Methods: Observations, Interviews, and Questionnaires 2nd Edition*. Walnut Creek, CA: AltaMira Press
73. Shamseer L, Moher D, Clarke M, Ghersi D, Liberati A, et al. 2015. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. *Bmj* 349:g7647
74. Sole-Smith V. 2019. The Point of a Period. *Scientific American* 320:33-40
75. Spradley JP. 1979. *The Ethnographic Interview*. Long Grove, IL: Waveland Press, Inc.
76. Steele N, Yoder LH. 2013. Military women's urinary patterns, practices, and complications in deployment settings. *Urologic nursing* 33:61-71, 8
77. Tepe V, Yarnell A, Nindl BC, Van Arsdale S, Deuster PA. 2016. Women in Combat: Summary of Findings and a Way Ahead. *Military medicine* 181:109-18
78. Thomson BA, Nielsen PE. 2006. Women's health care in Operation Iraqi Freedom: a survey of camps with echelon I or II facilities. *Military medicine* 171:216-9
79. Trego LL. 2007. Military women's menstrual experiences and interest in menstrual suppression during deployment. *J Obstet Gynecol Neonatal Nurs* 36:342-7
80. Trego LL. 2009. Development of the Military Women's Attitudes Toward Menstrual Suppression Scale: from construct definition to pilot testing. *J Nurs Meas* 17:45-72
81. Trego LL. 2009. Theoretical substruction: establishing links between theory and measurement of military women's attitudes towards menstrual suppression during military operations. *J Adv Nurs* 65:1548-59
82. Trego LL. 2012. Prevention is the key to maintaining gynecologic health during deployment. *J Obstet Gynecol Neonatal Nurs* 41:283-91; quiz 91-2
83. Trego LL, Jordan PJ. 2010. Military women's attitudes toward menstruation and menstrual suppression in relation to the deployed environment: development and testing

- of the MWATMS-9 (short form). *Womens Health Issues* 20:287-93
84. Veldman J, Meeussen, L., Van Laar, C., & Phalet, K. 2017. Women (do not) belong here: Gender-work identity conflict among female police officers. *Frontiers in Psychology* 8
 85. Wilson C, Corrigan R, Reese S, Almonte A, Simpson D, Wilson A. 2016. Military Medics' Insight Into Providing Women's Health Care in Deployed Settings. *Military medicine* 181:e1608-e14
 86. Wilson C, McClung JP, Karl JP, Brothers MD. 2011. Iron status of military personnel deployed to Afghanistan. *Military medicine* 176:1421-5
 87. Wilson C, Nelson JP. 2012. Exploring the patterns, practices, and experiences of military women who managed genitourinary symptoms in deployed settings. *J Obstet Gynecol Neonatal Nurs* 41:293-302
 88. Winker G, & Degele, N. . 2011. Intersectionality as multi-level analysis: Dealing with social inequality. *European Journal of Women's Studies* 18:51-66
 89. Yablonsky AM, Martin, R.C., Highfill-McRoy, R.M, McAnany, J, Fitzmaurice, S, Lee, I., Rychnovsky, J.D. . 2017. Military women's health: A scoping review and gap analysis, 2000-2015. *Rep. N15-015*, Naval Medical Research Center, Silver Spring, MD

APPENDIX A: Johns Hopkins Quality Appraisal

Evidence Levels	Quality Guides
Level I Experimental study, randomized controlled trial (RCT) Systematic review of RCTs, with or without meta-analysis	A High quality: Consistent, generalizable results; sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence
Level II Quasi-experimental study Systematic review of a combination of RCTs and quasi-experimental, or quasi-experimental studies only, with or without meta-analysis	B Good quality: Reasonably consistent results; sufficient sample size for the study design; some control; fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence
Level III Non-experimental study Systematic review of a combination of RCTs, quasi-experimental and non-experimental studies, or non-experimental studies only, with or without meta-analysis Qualitative study or systematic review with or without a meta-synthesis	C Low quality or major flaws: Little evidence with inconsistent results; insufficient sample size for the study design; conclusions cannot be drawn

Evidence Levels	Quality Guides
Level IV Opinion of respected authorities and/or nationally recognized expert committees/consensus panels based on scientific evidence Includes: - Clinical practice guidelines - Consensus panels	A High quality: Material officially sponsored by a professional, public, private organization, or government agency; documentation of a systematic literature search strategy; consistent results with sufficient numbers of well-designed studies; criteria-based evaluation of overall scientific strength and quality of included studies and definitive conclusions; national expertise is clearly evident; developed or revised within the last 5 years B Good quality: Material officially sponsored by a professional, public, private organization, or government agency; reasonably thorough and appropriate systematic literature search strategy; reasonably consistent results, sufficient numbers of well-designed studies; evaluation of strengths and limitations of included studies with fairly definitive conclusions; national expertise is clearly evident; developed or revised within the last 5 years C Low quality or major flaws: Material not sponsored by an official organization or agency; undefined, poorly defined, or limited literature search strategy; no evaluation of strengths and limitations of included studies, insufficient evidence with inconsistent results, conclusions cannot be drawn; not revised within the last 5 years

Evidence Levels	Quality Guides
Level V Based on experiential and non-research evidence Includes: - Literature reviews - Quality improvement, program or financial evaluation - Case reports - Opinion of nationally recognized experts(s) based on experiential evidence	Organizational Experience: A High quality: Clear aims and objectives; consistent results across multiple settings; formal quality improvement, financial or program evaluation methods used; definitive conclusions; consistent recommendations with thorough reference to scientific evidence B Good quality: Clear aims and objectives; consistent results in a single setting; formal quality improvement or financial or program evaluation methods used; reasonably consistent recommendations with some reference to scientific evidence C Low quality or major flaws: Unclear or missing aims and objectives; inconsistent results; poorly defined quality improvement, financial or program evaluation methods; recommendations cannot be made Literature Review, Expert Opinion, Case Report, Community Standard, Clinician Experience, Consumer Preference: A High quality: Expertise is clearly evident; draws definitive conclusions; provides scientific rationale; thought leader(s) in the field B Good quality: Expertise appears to be credible; draws fairly definitive conclusions; provides logical argument for opinions C Low quality or major flaws: Expertise is not discernable or is dubious; conclusions cannot be drawn

APPENDIX B: Literature Tables

Table 9. Research Literature Table

Author, Year	Study Purpose	Design	Sample	Data Collection Methods	Findings on Menstrual Suppression	Quality Level
Doherty et al, 2012	Describe health experiences of women in deployed settings	Qualitative, Phenomenology	N=24, military women (all branches), nurses, deployed between 2003-2010	Interviews	Women had to decide if they wanted to suppress. Options for suppression were OCPs or injection. Reasons for suppressing included no restroom available, dust/heat/ dirt, general hygiene.	III C
Manski et al, 2014	Explore women's experiences and to address barriers to care in deployed settings	Qualitative, Modified Grounded Theory for Analysis	N=22, US military women (all branches, N=12 Army), deployed since 2001	Interviews	17 women in the study used contraception, and the majority were for menstrual suppression. Limited to no contraceptive counseling prior to deployment. Women who used contraceptives planned ahead for their own menstrual suppression, without counseling from a provider.	III C
Nielsen et al, 2009	Describe pre-deployment women's health screenings	Quantitative Descriptive	N=397, Army women deployed to a combat support hospital in Iraq	18-question survey, multiple choice and open-ended	33% of participants received counseling on menstrual suppression, 48% of those used OCPs for menstrual suppression.	III B
Powell-	Determine	Quantitative	N=154,	53-item	86% of women	III C

Dunford et al, 2003	attitudes about menstrual suppression with OCPs	Descriptive	Army women	questionnaire 7 items were validated, multiple choice and Likert	desired menstrual suppression; 54% lacked knowledge about menstrual suppression; 49% stated they would use menstrual suppression in a future deployment.	
Powell-Dunford et al, 2009	Describe the use of OCPs for menstrual suppression in the combat environment	Quantitative Descriptive	N = 62, deployed Army female aviators	44-question survey, Likert scale	66% desired menstrual suppression during deployment, only 33% used OCPs for menstrual suppression. Of those who did not suppress, 35% had no knowledge, 27% concerned about side effects.	III B
Powell-Dunford et al, 2011	Describe contraceptive use and menstrual symptoms	Quantitative Descriptive	N = 500, Army women age 18-45 who had returned from deployment in a combat operation within 30 days	44-question survey, including modified Shortened Premenstrual Distress Questionnaire	93% had knowledge of menstrual suppression with OCPs, 66% desired menstrual suppression, 21% used OCPs during deployment.	III B
Thomson et al, 2006	Assess perceptions of women's healthcare in deployed settings	Quantitative Descriptive	N = 251, Army women who were seen at echelon 1/2 during deployment	10-question survey	26% were counseled on menstrual suppression, 47% of those tried, 77% of those were successful in suppressing menstruation without unexpected breakthrough bleeding.	III B

Trego, 2007	Describe women's experiences with menstruation during deployment	Qualitative Descriptive	N = 9, Army women who had deployed to operations between 2001-2006	Interviews	7 women were aware of menstrual suppression, none used it. Concerns of side effects and access.	III B
Trego, 2009a	Development of a tool to measure women's attitudes toward menstrual suppression during deployment	Survey Instrument Development; Mixed Methods	N = 206 Army women with deployment experience for pilot study	Conceptualizing the instrument, construct definition, developing and refining the scale	Developed a reliable and valid measure of women's attitudes toward menstrual suppression during deployment.	III B
Trego, 2009b	Establish a theoretical model for exploring military women's attitudes towards menstrual suppression	Theoretical Substruction	Literature from CINAHL and Medline for theory construction	Ecological model compared to environment, activities, roles, physiology, beliefs, behaviors	Development of a theoretical model using women's environment and ecological perspective during deployment as a measurement for menstrual suppression attitudes and beliefs	III B
Trego et al, 2010	Determine attitudes about menstrual suppression during deployment	Quantitative Descriptive	N = 278 Army women with deployment experience	Multiple surveys: 33-item Menstrual Attitude Questionnaire, 55-item Military Women's Attitudes Towards Menstrual Suppression, 71-item Deployed Menstrual Health Practice Questionnaire	Negative attitudes about menstruation equated to positive attitudes about menstrual suppression during deployment	III B
Wilson et al, 2012	To gain a better	Qualitative, Ethnography	N = 43 military	Interviews, Observations	Menstrual management	III B

understanding of genitourinary health during military deployment	women (all branches), deployed within 1 year	created challenges during deployment. Women reported difficulty obtaining contraceptives for menstrual suppression prior to deployment. Some women reported using IUDs or injection. Some women stopped birth control due to separation from partner
---	---	---

OCPs, oral contraceptive Pills. IUDs, intrauterine devices.

Table 10. Review Literature Table

Author, Year	Study Purpose	Type of Review	Themes or Topics Addressed	Findings on Menstrual Suppression	Quality Level
Braun et al, 2016	Evaluate research on genitourinary and reproductive health care needs and gender-specific health care delivery for active duty US military women	Integrative Literature Review	Pregnancy health; Deployment and preventive health; Sexually transmitted infections; Family planning and contraceptive services; Sexual violations	Menstrual Suppression is a subheading under “Deployment and Preventive Health.” Menstrual suppression is used during deployment. Recommend improved contraceptive access during deployment for the purpose of menstrual suppression.	III A
Christopher et al, 2007	Inform military women about menstrual suppression	Clinical Article	Explains menstrual cycle, menstrual suppression, and available options	Menstrual suppression is discussed as part of overall military readiness, with impacts in operational life and not limited to deployment. Military women should be educated on contraceptive options for menstrual suppression.	V B
Holt et al, 2011	Highlight gaps in current knowledge and provide recommendations for future research on unintended pregnancy	Systematic Literature Review	Pregnancy; Unintended pregnancy; Contraception	One paragraph under the topic of contraception addresses that menstrual suppression is recommended for military readiness and specifically, deployment. Women should be educated on contraceptives and access improved during deployment. Contraception for menstrual suppression may decrease unintended pregnancy rates.	III B
Kerman, 2012	Inform healthcare providers of menstrual suppression needs and options for military women	Clinical Article	Discussion of unintended pregnancy, role of military women, methods for menstrual suppression	DMPA, OCPs, and LNG-IUS selected as best options for menstrual suppression. Recommends all providers should counsel all military women at all healthcare visits about the benefits of menstrual suppression.	V B
Krusewitch, 2016	Analyze the epidemiology and research around deployment women’s health issues	Clinical / Policy Article	Discussion of pregnancy and contraception, and pregnancy outcomes	Some military women may be using contraceptives exclusively for menstrual suppression. Women should be educated about menstrual suppression. The area of menstrual suppression needs further research.	V B
Trego, 2012	Continuing education credit	Clinical Article	Comparisons of environment and	Menstruation is difficult to manage during deployment	V B

	with recommendations for military deployment women's health		hygiene, UTIs and vaginitis, Menstruation, and Healthcare utilization	including physical, social, and psychological needs. Contraceptive use decreases during deployment. Menstrual cycle control is recommended. Education prior to military deployment is recommended	
--	---	--	---	--	--

DMPA, depo medroxyprogesterone-acetate. OCPs, oral contraceptive pills. LNG-IUS, levonogestrel intrauterine system. UTIs, urinary tract infections.

APPENDIX C: Surveys for Population Norms

Table 11. Validated Surveys on Menstrual Suppression; used for Population Norms

Validated Surveys on Menstrual Suppression			
Survey Title and Authors	Purpose	Psychometrics	Justification for Adaptation
Menstrual Attitude Questionnaire (MAQ) (Brooks-Gunn & Ruble, 1980)	Attitudes and perceptions about menstruation	- 33 items; Likert scale 1-7 - Validated in multiple populations - Cronbach's $\alpha = 0.97$.	Does not address menstrual suppression specifically. Specific questions about beliefs about menstrual symptoms and perceptions about menstruation were integrated for use in this study.
Attitudes Towards Menstrual Suppression questionnaire (ATMS) (Andrist, Hoyt, Weinstein, & McGibbon, 2004)	Personal beliefs about menstruation and how they relate to menstrual suppression	- Stem question - 17 responses options; Likert scale - Validated in a national sample - Cronbach's $\alpha = 0.72$.	Measures interest in menstrual suppression, but not validated for use in military populations. Was later adapted for military specific populations as <i>MWATMS</i> .
Military Women's Attitudes Towards Menstrual Suppression questionnaire (MWATMS-9) (Trego & Jordan, 2010)	<i>ATMS</i> as adopted for use in deployed military women	- 55 questions - Cronbach's $\alpha = 0.98$ - High scores correlate with positive attitudes towards suppression during deployment - Shortened to the <i>MWATMS-9</i> - Cronbach's $\alpha = 0.89$	The <i>MWATMS-9</i> is directly incorporated into this survey, with adjustment of language to state "at work" instead of "during deployment."
Attitudes and Knowledge about Continuous Oral Contraceptive Pill Use in Military Women questionnaire (Powell-Dunford, Deuster, Claybaugh, & Chapin, 2003)	Knowledge, attitudes, and beliefs of deployed Army women	- 53 questions 16 predictor variables - 7 questions previously validated - Cronbach's α not reported	Selected questions from this questionnaire include those regarding knowledge about contraceptive benefits.
Military Women's Readiness Urogenital Health Questionnaire (MWRUHQ) (Kostas-Polston et al., 2018)	Military urogenital health and environment survey	- 133-item questionnaire - 4 questions on menstrual suppression - Currently in pilot testing at 82d Airborne	Four questions from the <i>MWRUHQ</i> specific to menstrual suppression history were adopted in this study.

APPENDIX D: Feminist Constructs for Questionnaire

Table 12. Feminist Constructs for Questionnaire

Feminist Constructs for Questionnaire		
Question	Construct	Feminist Principle
1. Have you ever been told you have any of the following medical conditions?	Menstrual history	Intersectionality Ways of knowing
2. When you have your period, do you have any of these symptoms? Check all that apply:	Menstrual history	Intersectionality Ways of knowing
3. When you have your period, how often do those symptoms (above) bother you at work?	Menstrual history	Intersectionality Ways of knowing Language
4. How often do you have your period?	Menstrual history	Ways of knowing
5. How many days do you bleed during each period?	Menstrual history	Ways of knowing
6. Based on my answers to Questions 1-5, my periods are normal	Knowledge	Intersectionality Ways of knowing Language
7. Select all of the contraceptive methods that you have ever used to prevent pregnancy.	Knowledge	Ways of knowing Language
8. I can name one benefit that birth control offers besides preventing pregnancy.	Menstrual practices	Intersectionality
9. Which of the following are normal?	Knowledge	Ways of Knowing Language
10. I can get pregnant if I have sex during my period and am not using birth control.	Knowledge	Ways of knowing
11. During your period, how easy it for you to manage the following while at work?	Menstrual Practices	Intersectionality Ways of knowing Language
12. During your period, how often do you need to change your	Menstrual Practices Work Life	Ways of knowing Language

pad/tampon while at work?		
13. During your period, how often are you able to change your pad/tampon while at work?	Menstrual Practices Work Life	Ways of knowing Language
14. How many hours are you at work during a typical shift?	Work life	Ways of knowing
15. If I could, I would avoid having my period at work.	Menstrual Practices Work Life Attitudes/Beliefs Menstrual Suppression	Intersectionality Ways of knowing Language
16. I am aware that I can use birth control to stop my periods.	Knowledge Menstrual suppression	Ways of knowing
17. It is safe to use birth control to stop my periods.	Knowledge Attitudes/beliefs Menstrual suppression	Ways of knowing
18. These are the types of birth that can be used to stop my period: (Check all that apply.)	Knowledge Menstrual suppression	Ways of knowing
19. I think that stopping my periods is a good idea.	Attitudes/beliefs Menstrual suppression	Intersectionality Ways of knowing
20. Not having to worry about menstrual supplies (pads, tampons, panty liners) is a good reason to stop my period.	Attitudes/beliefs Menstrual suppression	Intersectionality
21. I would stop my period to avoid the inconvenience of getting it while at work.	Attitudes/beliefs Menstrual suppression	Intersectionality Language
22. The stress of work makes my period worse than usual.	Attitudes/beliefs Menstrual suppression	Intersectionality Language
23. Stress at work increases my period symptoms (For example: heavy bleeding, headache, nausea, cramping).	Attitudes/beliefs Menstrual suppression	Intersectionality Language
24. Stress at work makes my mood swings or irritability worse during my period.	Attitudes/beliefs Menstrual suppression	Intersectionality Language

25. It is difficult to deal with my period during work because there is no privacy.	Attitudes/beliefs Menstrual suppression	Intersectionality Language
26. When I am at work, it is difficult to find bathroom facilities to manage my period.	Attitudes/beliefs Menstrual suppression	Intersectionality Language
27. When I am at work, I do not have enough time to use the bathroom to manage my period.	Attitudes/beliefs Menstrual suppression	Intersectionality Language
28. Women who intentionally stop their periods with birth control are at greater risk for: (Check all that apply)	Knowledge Menstrual suppression	Ways of knowing Language
29. Which of the following do you think are true when using birth control to stop your periods?:	Knowledge Menstrual suppression	Ways of knowing
30. For how long would you be comfortable stopping your period?	Attitudes/beliefs Menstrual suppression	Intersectionality Language
31. Have you ever chosen to stop your period?	Menstrual History Menstrual suppression	Ways of knowing
32. Which methods have you used to stop your period?	Menstrual History Menstrual suppression	Ways of knowing
33. In which settings have you ever chosen to stop your period?	Menstrual History Menstrual suppression	Ways of knowing
34. While taking birth control to stop your period, did you ever have any spotting when you weren't supposed to?	Menstrual History Menstrual suppression	Ways of knowing

APPENDIX E: IRB-Approved Questionnaire

**formatted for Dissertation specifications

Menstrual Practices Questionnaire

The purpose of this questionnaire is to ask you questions about your menstrual history and about your own menstrual practices while you are at your regular duty station. The questions you answer will help explore how military women prepare their personal military readiness, with regards to menstruation.

Your History

In this section you will be asked about your medical history including your normal cycles, birth control, and your thoughts about your period.

1. Have you ever been told you have any of the following medical conditions? (**Check all that apply.**)

- ☐ Anemia
- ☐ Endometriosis
- ☐ Fibroids
- ☐ Irregular periods
- ☐ Ovarian cysts
- ☐ Periods that are too heavy
- ☐ Periods that come too often
- ☐ PCOS (polycystic ovarian syndrome)
- ☐ Other: _____
- ☐ I have never been told I have any of these conditions

2. When you have your period, do you have any of these symptoms? (**Check all that apply.**)

- ☐ Acne
- ☐ Bloating
- ☐ Breast tenderness
- ☐ Cramps
- ☐ Feeling down or depressed
- ☐ Headache
- ☐ Heavy bleeding
- ☐ Irritability
- ☐ Mood swings
- ☐ Other: _____
- ☐ I don't have any of these symptoms

3. When you have your period, how often do the symptoms you selected in Question 2 bother you?

- ☐ All day
- ☐ Just a couple of times during the day
- ☐ I am not able to sleep because of my symptoms
- ☐ Only if I am really stressed
- ☐ My symptoms do not bother me
- ☐ I don't have any symptoms

4. How often do you have a period?

- ☐ Every 21 days or less
- ☐ Every 21-35 days
- ☐ More than every 35 days
- ☐ I don't know when my period will come
- ☐ I don't have periods

5. How many days do you bleed during your period?

- ☐ Less than 5 days
- ☐ 5-7 days
- ☐ More than 7 days
- ☐ I don't have periods

6. Based on my answers to Questions 1-5, my periods are normal:

- ☐ Yes
- ☐ No

7. Women may take birth control for many reasons. Select all of the birth control methods that you **have ever used**. (Check all that apply.)

- ☐ Abstinence (not having sex)
- ☐ Anal sex
- ☐ Birth control implant in your arm (For example: Nexplanon[®])
- ☐ Birth control shot (For example: Depo[®], Depo Provera[®])
- ☐ Birth control patch (For example: Ortho Evra[®])
- ☐ Birth control pill
- ☐ Birth control vaginal ring (For example: NuvaRing[®])
- ☐ Condoms
- ☐ Diaphragm
- ☐ Emergency contraception (For example: Morning after pill, Plan B[®])
- ☐ Fertility awareness (For example: "Rhythm method," not having sex during ovulation)
- ☐ Intrauterine Device (IUD) (For example: Mirena[®], Skyla[®], ParaGard[®])
- ☐ Oral sex
- ☐ Partner had a vasectomy
- ☐ Spermicide
- ☐ Tubal ligation ("tubes tied")
- ☐ Withdrawal ("pull-out method")
- ☐ Other (please list): _____
- ☐ I have never used any of these methods to prevent pregnancy.

In Question 7 above, please circle the method you are currently using (if any).

8. I can name one benefit that birth control offers besides preventing pregnancy.

- ☐ Yes (please list): _____
- ☐ No

9. Which of the following are normal?: **(Check all that apply.)**

- ☐ Having sex during my period
- ☐ Missing my period
- ☐ My period “syncing up” with my close friends or women I work with
- ☐ Needing to change my regular-sized pad or tampon every 2 hours
- ☐ Needing to wear a pad whenever I have a tampon in
- ☐ Needing to use a super plus tampon or pad when I have my period
- ☐ None of these are normal

10. I can get pregnant if I have sex with a man during my period and am not using birth control.

- ☐ Yes
- ☐ No

Your Work Day

This section will ask you about what your period is like during a normal work day.

11. During your period, how easy it for you to manage the following **while at work**?

	Very Easy	Somewhat Easy	Not Easy At All	Does Not Apply
Physical activity or exercising	0	0	0	0
Changing pads or tampons	0	0	0	0
Cramps	0	0	0	0
Headache	0	0	0	0
Bloating	0	0	0	0
Nausea	0	0	0	0
Breast tenderness	0	0	0	0
Mood swings	0	0	0	0
Irritability	0	0	0	0
Having my period start unexpectedly	0	0	0	0
Spotting unexpectedly	0	0	0	0

Going to the clinic for female issues	0	0	0	0
--	---	---	---	---

12. During your period, **how often do you need to** change your pad/tampon while at work?

- ☐ At least every hour
- ☐ Every 2-4 hours
- ☐ Every 4-6 hours
- ☐ Every 6-12 hours
- ☐ I don't need to change my pad/tampon while at work

13. During your period, **how often are you able to** change your pad/tampon while at work?

- ☐ At least every hour
- ☐ Every 2-4 hours
- ☐ Every 4-6 hours
- ☐ Every 6-12 hours
- ☐ I am not able to change my pad/tampon while at work
- ☐ I don't need to change my pad/tampon while at work

14. How many hours are you at work during a typical shift?

_____ HOURS

15. If I could, I would avoid having my period at work.

- ☐ Yes
- ☐ No

16. I am aware that I can use birth control to stop my periods.

- ☐ **Yes**
 - Where did you hear about this?
 - ☐ Family/Friend
 - ☐ Chain of command

- ☐ Medic/nurse/doctor
- ☐ Other: _____
- ☐ **No**

Your Menstrual Practices

The following questions are about stopping your period. Stopping your period involves using a type of birth control to avoid having monthly bleeding. Stopping your period is a choice that you make, and can be done for any length of time.

17. It is **safe** to use birth control to stop my periods.

- ☐ Yes
- ☐ No

18. These are the types of birth control that I can use to stop my period: (**Check all that apply.**)

- ☐ Birth control implant in your arm (For example: Nexplanon[®])
- ☐ Birth control shot (For example: Depo[®], Depo Provera[®])
- ☐ Birth control patch (For example: Ortho Evra[®])
- ☐ Birth control pill
- ☐ Birth control vaginal ring (For example: NuvaRing[®])
- ☐ Fertility awareness (For example: “Rhythm method,” not having sex during ovulation)
- ☐ Intrauterine Device (IUD) (For example: Mirena[®], Skyla[®], ParaGard[®])
- ☐ Oral sex
- ☐ Tubal ligation (“tubes tied”)
- ☐ None of these can be used to stop my period.
- ☐ I don’t know.

For questions 19-27:

Considering your job in the military, how do you feel about taking *birth control* to stop your period? Please circle whether you disagree or agree with the follow statements.

	Strongly Disagree	Disagree	Does not apply to me	Agree	Strongly Agree
19. I think that stopping my periods is a good idea.	0	0	0	0	0
20. Not having to worry about supplies (pads, tampons, panty liners) is a good reason to stop my period.	0	0	0	0	0
21. I would stop my period to avoid the inconvenience of starting while at work.	0	0	0	0	0
22. Stress at work makes my period worse.	0	0	0	0	0
23. Stress at work increases my period symptoms (For example: heavy bleeding, headache, nausea, cramping).	0	0	0	0	0
24. Stress at work makes my mood swings or irritability worse during my period.	0	0	0	0	0
25. When I am at work, it is difficult to manage my period because there is no privacy.	0	0	0	0	0
26. When I am at work, it is difficult to find bathroom facilities to manage my period.	0	0	0	0	0
27. When I am at work, I do not have enough time to use the bathroom to manage my period.	0	0	0	0	0

28. Women who intentionally stop their periods with birth control are at greater risk for: (**Check all that apply.**)

- ☐ Breast cancer
- ☐ Decreased sex drive
- ☐ Infertility / not being able to get pregnant later in life
- ☐ Mood swings
- ☐ Ovarian cancer
- ☐ STIs (sexually transmitted infections; like Chlamydia, HPV, or Herpes)
- ☐ Uterine cancer
- ☐ Weight gain
- ☐ None of these

29. Which of the following do you think are true when using birth control to stop your periods?: (**Check all that apply.**)

- ☐ It helps prevent pregnancy
- ☐ It helps prevent STIs (sexually transmitted infections; like Chlamydia, HPV, or Herpes)
- ☐ It helps prevent heavy flow
- ☐ Sometimes breakthrough bleeding is normal
- ☐ None of these are true
- ☐ I don't know

30. For how long would you be comfortable stopping your period?

- ☐ An extra week if I had a special event
- ☐ 3 months
- ☐ 6 months
- ☐ 12 months
- ☐ Indefinitely
- ☐ Never

31. Have you ever chosen to stop your period?

- ☐ Yes
- ☐ No

32. Which methods have you used to stop your period? (**Check all that apply.**)

- ☐ Birth control implant in your arm (For example: Nexplanon[®])
- ☐ Birth control shot (For example: Depo[®], Depo Provera[®])
- ☐ Birth control patch (For example: Ortho Evra[®])
- ☐ Birth control pill
- ☐ Birth control vaginal ring (For example: NuvaRing[®])
- ☐ Intrauterine Device (IUD) (For example: Mirena[®], Skyla[®])
- ☐ Other (please list):
- ☐ I have never chosen to stop my period.

In Question 32 above, please circle the method you are currently using (if any).

33. In which settings have you ever chosen to stop your period? (**Check all that apply.**)

- ☐ **Home Duty Station:** This is your regular place of work at your duty station.
- ☐ **Field Training or Sea Duty:** This may be during CBT/AIT/other schools, tech schools, or as part of a regularly scheduled training at your home duty station. It includes any length of time (days to weeks) in the field. This can include Joint Readiness Training Center (JRTC), National Training Center (NTC), training involving CBRNE/MOPP gear, and/or shipboard training or flying duties.
- ☐ **Deployment:** Indicates that you are removed from your home duty station assignment for the purpose of a military action. This includes Outside Continental United States (OCONUS) deployments to locations such as Iraq, Afghanistan, Kuwait, Africa, etc. Includes facilities located on and off a Forward Operating Base (FOB) or any established area of operation.
- ☐ **Non-military environment:** A civilian environment (when you were a civilian and not a service member).
- ☐ **I have never chosen to stop my period**

34. While taking birth control to stop your period, did you ever have any spotting or bleeding when you weren't supposed to?

- ☐ Yes
- ☐ No
- ☐ I don't know
- ☐ I have never chosen to stop my period

Demographics

Please complete this information to the best of your ability.

35. Your age:

36. Your ethnicity:

37. Your race:

38. Your marital status:

39. Education:

40. Year you entered the military:

41. Are you officer or enlisted? (Circle one)

42. Have you ever been deployed? Y / N

Thank you for completing this questionnaire!

APPENDIX F: IRB-Approved Focus Group and Interview Questions

Focus Group Questions

Opening Question:

- Tell us your name, how long you have been in the Air Force, how long you have been here at this unit, and your favorite hobby when you're not at work.

Introductory Questions:

- Was Security Forces your first career choice? How's it going?
- What is a typical workday like for you?

Transition Questions:

- When you think about getting your period while you're at work, what are some of the things that come to mind?

Key Questions (Group-dependent):

- What is it like to work with mostly men? Is it something that you think about, or just part of life?
- What is frustrating about having your period at work?
- What resources would be helpful during your period while you're at work? (Resource examples: location of restrooms, time to use the restroom, uniforms, privacy, support)
- Have you ever thought about using birth control to skip your periods? What are your thoughts about that?
- Do you feel like your period influences your overall readiness? Like, if you were to deploy tomorrow, would that be an issue? If so, how?

Ending Questions:

- If you could make recommendations to other women coming to your unit, what advice would you give?

Leadership Interview Questions

What kind of unique health situations have you noticed about women at work?

Have you noticed any issues regarding menstruation while women are at work? If so, what can you tell me about that?

Have you helped navigate healthcare for any women in the unit?

Do you feel like women sometimes use the "I'm a girl" or "I'm on my period" card to get out of something?

APPENDIX G: Codebook

Table 13. Codebook

Menstrual Practices

Nodes

Name	Description
Acculturation	Patterns and processes describing military culture or unit culture
Advice and Leadership	Aspects of leadership including current practices, future plans as leaders, or advice/recommendations for leaders
back office	Specific work location that is located away from the operational environment
clogging	clogging toilet while at work
Connect	When participants use the words "connect" or "disconnect", or describe examples of making connections with coworkers or leadership
Contraception	Discussion of any types of contraceptives
Dealing with Menstruation	Descriptions of practices during menstruation
disgust	use of the actual word "disgust" or descriptions of things that cause disgust
Empowered	description of empowering experiences
Job responsibilities	Likely part of The Mission, describes a day-to-day job aspect or work area
Just be yourself	Statements made or examples of personal behavior and representation while at work
Knowledge---	Knowledge statements, to be used in overall analysis of the complete study
Lack of female	Descriptions of lack of female leadership within the unit or

leadership	the culture. Lack can be literal lack of numbers, or lack of participation of existing female leaders
Medical Care	Discussion of aspects of the medical care system, including seeking care and interactions with healthcare providers
Men don't understand	Particular phrases or descriptions of how men do not understand menstruation or women's experiences
Menstrual Pattern	Description of personal menstrual patterns
Menstrual Suppression	Women speaking about menstrual suppression; typically in response to a direct question about suppression practices
mom	Role of mother
Pregnancy	Discussion of pregnancy, including personal experiences and perceptions of others
Resources	Descriptions of resources including supplies and facilities
Speak up	Phrases and descriptions of speaking up, advocating for self, sharing opinions and perspectives at work
sphere of influence	what a woman has influence over in her work life; who she is able to reach out to for support, or who she is able to offer support to
suck it up	Women being told to "suck it up", or descriptions of this statement
Support	Support from or offering support to: peers, males, females, leadership, medical. Can describe positive support or lack of support.
Taboo	How menstruation or women's health issues are taboo; can be direct usage of taboo language, or description of a situation that is interpreted as taboo
Tension between Health and Career	Taking care of health can create tension with career aspects due to the time it takes to "deal with" health needs and possible stigma around health situations
The Mission	Use of the word "THE MISSION" or phrases describing what the mission is

Work Requirements	Likely part of "The Mission", explanations of daily work experiences such as number of hours worked, requiring commander permission to do something, etc
Working with men	Descriptions of experiences in working with primarily men
yell	"getting yelled at"

Curriculum Vita

Angela Kornegay Phillips
RN, MSN, WHNP-BC, PhD Candidate

PERSONAL INFORMATION

Telephone:

Email:

angela.phillips@usuhs.edu;

angela.phillips.9@us.af.mil

I

EDUCATION AND TRAINING

<u>Dates Attended</u>	<u>Institution and Location</u>	<u>Degree</u>	<u>Major</u>
2016 – present	Uniformed Services University, Bethesda, MD	PhD	Nursing
2007 – 2009	Vanderbilt University, Nashville, TN	MSN	Nursing
2004 – 2007	Florida State University, Tallahassee, FL	BS	Psychology

LICENSURE

<u>Years</u>	<u>Licensure</u>	<u>Number</u>
2008 – present	Tennessee – RN	
2009 – present	Tennessee – APRN	16647

<u>Year Certified</u>	<u>Certification</u>
2007	Basic Life Support
2009	Women's Health Nurse Practitioner (WHNP), NCC
2010	Advanced Cardiac Life Support
2012	Colposcopy, ASCCP
2013	Sexual Assault Forensic Examiner (SAFE)

PROFESSIONAL EXPERIENCE

<u>Year(s) Completed</u>	<u>Title</u>	<u>Institution</u>
2017 – present	DNP OSCE Evaluator	Uniformed Services University, GSN
2016 – present	PhD Student, Student President	Uniformed Services University, GSN
2015 – 2016	TeamSTEPPS Master Trainer	Kadena AB, Okinawa, Japan
2013 – 2016	Women's Health Clinic Element Leader	Kadena AB, Okinawa, Japan
2012 – 2013	Guest Lecturer – EMT Paramedic Course	Kirtland AFB, Albuquerque, NM
2011 – 2013	Preceptor for Nurse Practitioner Students	University of New Mexico
2011 – 2012	Guest Lecturer	University of New Mexico
2010 – 2013	Women's Health NP	Kirtland AFB, Albuquerque, NM
2005 – 2006	Research Assistant	Florida State University, Psychology Department
2005	Teaching Assistant	Florida State University, Psychology Department

HONORS AND AWARDS

<u>Year</u>	<u>Award</u>
2019	Poster Presentation Winner, Uniformed Services University
2016	AF Commendation Medal, 1 st Oak Leaf Cluster, Kadena AB, Japan
2016	AFIT Scholarship, AF Award
2015	Poster Presentation Winner, Kadena AB, Japan
2013	AF Commendation Medal, Kirtland AFB, NM
2012	Company Grade Officer of the Year, 377MDOS, Kirtland AFB, NM
2012	Company Grade Officer of the Quarter, 377ABW, Kirtland AFB, NM
2012	AF Achievement Medal, Kirtland AFB, NM
2009	Inducted into Sigma Theta Tau Honor Society
2008	Hassenplug Scholarship, Vanderbilt University
2007	Hilliard Travis Scholarship, Vanderbilt University
2006	Inducted into Psi Chi Honor Society, Florida State University

RESEARCH/SCHOLARSHIP

Funded Studies

<u>Year(s)</u>	<u>Role</u>	<u>PI</u>	<u>Title</u>	<u>Funding Agency</u>	<u>Amount</u>
2019-present	PI	Angela Phillips	Menstrual Practices in Operational Military Women	TriService Nursing Research Program	\$24,499
2018-present	PI	Angela Phillips	Operational Military Women and Menstrual Practices	USU Intramural	\$2500
2017-present	Team Member	Elizabeth Kostas-Polston	Military Readiness in Active Duty Service Women: The Impact of the Availability of Water and Basic Sanitation on Hygiene Practices and Urogenital Health	DOD	\$1,250,000
2017-present	Team Member	Elizabeth Kostas-Polston	Pilot Testing the Military Women's Readiness Urogenital Health Questionnaire (MWRUHQ)	USU GSN	\$5,000
2005-2007	Research Assistant	Nathan DeWall, Diane Tice, Roy Baumeister	Baumeister-Tice lab; several studies as undergraduate assistant, with Nathan DeWall during his dissertation	Florida State University	n/a

Abstracts

Phillips, A. K. (2019). Menstrual Practices in Operational Military Women
Peer-reviewed, scientific Podium Presentation at Military Health Systems Research Symposium, Orlando, FL.

Kostas-Polston, E. A., **Phillips, A. K.**, Miedema, J., Hopkins, D., Buechel, J., Ryan-Wenger, N., DeVon, H. A., Montgomery, I., & Lewis, P. (2019). A checklist for survey questionnaire development: A case study for military women's urogenital health and operational

readiness through the lens of the IBM-WASH Model. Peer reviewed, scientific oral presentation at the Military Health System Research Symposium (MHSRS); Orlando, FL.

Phillips, A. K. (2019). Mixed-Method Ethnography.

Podium Presentation at Uniformed Services University Research Week, Bethesda, MD.

Peer reviewed, scientific Podium Presentation at TriService Nursing Research Program Dissemination Course, San Diego, CA.

Poster Presentation at TriService Nursing Research Program Dissemination Course, San Diego, CA.

Kostas-Polston, E. A., **Phillips, A. K.**, Hopkins, D., Buechel, J., Brown, W., Stucky, C., Miedema, J., Ryan-Wenger, N., & Braun, L. (2019). Promoting Military Women's Self-Maintenance of Urogenital Health-Operational Readiness. Peer reviewed, scientific oral presentation at the TriService Nursing Research Program, San Diego, CA.

Phillips, A. K., & Kostas-Polston, E. A. (2018). What's New in Ob/Gyn 2018.

Podium presentation at AANP Annual Conference, Denver, CO.

Phillips, A. K. (2015). Military Women's Deployment Health.

Poster presentation at Kadena, AB, Japan. Poster winner.

Teaching

<u>Year</u>	<u>Course</u>	<u>University Affiliate</u>
2018	PHD841: Emerging Scholars	Uniformed Services University, Guest Lecturer
2018	GSN712: Primary Care of the Military Member	Uniformed Services University, Guest Lecturer
2012	HED171: Personal Health Management	University of New Mexico, Guest Lecturer
2005	PSY2012: General Psychology	Florida State University, Teaching Assistant

Student Advisement

Clinical Preceptorships

<u>Year</u>	<u>Students</u>	<u>University Affiliate</u>
2013-2016	3 NP students	University of Virginia
2010-2013	2 NP students	University of New Mexico

Administrative Activities

<u>Year</u>	<u>Committee</u>	<u>University Affiliate</u>
2016-2018	Student Advisory Council	USUHS, President
2017-2018	Curriculum Committee	USUHS, Student Rep
2017-2018	Student Promotion Council	USUHS, Student Rep

PROFESSIONAL MEMBERSHIPS

<u>Dates</u>	<u>Award</u>
2017-present	American Association of Nurse Practitioners
2016-2019	American Society of Colposcopy and Cervical Pathology
2010-present	Association of Women's Health, Obstetric, and Neonatal Nurses
2009-present	Sigma Theta Tau International Honor Society in Nursing, Iota Chapter
2009-present	Nurse Practitioners in Women's Health