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Examining the Barriers and Facilitators of Breastfeeding Duration Among Active-Duty
Military Mothers

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Advisory Committee

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Abstract

Objective: To describe breastfeeding duration, as well as barriers and facilitators experienced, by active-duty women in the United States military.

Design: A cross-sectional design guided the study.

Setting: The setting was a social media site offering breastfeeding education and support for military mothers.

Participants: The sample included 292 mothers who reported having a baby, initiating breastfeeding postpartum, and returning to work while serving active-duty in the United States within the last five years.

Methods: An investigator-designed Qualtrics survey with multiple choice, Likert, and open-ended questions was used. Analysis procedures focused on descriptive statistics, chi-square, and logistic regression. Content analysis was used to identify common themes in qualitative data.

Results: Participants reported breastfeeding at a rate in line with Healthy People 2020 goals. Enlisted as compared with officer mothers were less likely to meet their breastfeeding goals (32% vs 50%) and more likely to report job barriers as the primary reason for cessation (42% vs 26%). The most frequently reported job-related barriers were lack of time and proper accommodation. Facilitators included self-motivation, proper accommodations, schedule flexibility, workplace support and policy. Perception of the military as being a hindrance was the primary predictor of not meeting

breastfeeding goals. The need for providing leadership with education on breastfeeding was a major theme.

Conclusions: Addressing issues that might ease the difficulties in balancing career and family are vital for retention in the military which is now experiencing 30% greater loss of childbearing age women than men. Military policies related to maternity leave and lactation are a work-in-progress, but findings from this study show that perception of support from the military is a critical factor in meeting one's breastfeeding goal.

Examining the Barriers and Facilitators of Breastfeeding Duration Among Active-Duty Military Mothers

Breastfeeding is the optimal source of infant nutrition, providing illness prevention and health promotion to both mother and baby. While breast milk offers numerous benefits (American Academy of Pediatrics [AAP], 2012; Moore, 2001; Stanley, Chung, Raman, Trikalinos, & Lau, 2009), the decision to initiate and sustain lactation is complex. Personal challenges, such as maternal difficulty with milk supply, mechanical difficulty with latching, perceived inconvenience, and life stress can lead to early cessation (Bales, Washburn, & Bales, 2012; Lewallen et al., 2006). Various other factors have been shown to be influential, including maternal age, race, socio-economic status, education level, social support, and participation in the workforce (Augustin, Donovan, Lozano, Massucci, & Wohlgemuth, 2014).

Women in the United States comprise 51.7% of the population and 46.8% of the workforce (U.S. Department of Labor: Bureau of Labor Statistics [BLS], 2014a).

Women with children are the fastest growing segment among labor participants. There has been a 30% increase in participation among mothers in the last 50 years (from 54.4% in 1962 to 70.5% in 2012). Of these working mothers, 57.3% have a child less than 1 year old (BLS, 2014b), which means working mothers will need to combine lactation with employment in order to comply with infant feeding recommendations.

The AAP (2012) recommends exclusive breastfeeding from birth to 6 months, with continued breastfeeding to at least 12 months of age as supplemental food is introduced. Previous studies have demonstrated that work status and workplace support

can influence breastfeeding duration (Augustin et al., 2014; Ortiz, McGilligan, & Kelly, 2004; Rojjanasrirat, 2004). Workplace setting was found to be a factor influencing duration, with women working in professional occupations more likely to breastfeed for longer duration than sale, technical, or clerical occupations (Kurinu, Shiono, Ezrine, & Rhoads, 1989). Studies specifically evaluating the military setting are limited.

The United States military has seen exponential growth in its female representation. According to Patten and Parker (2011), “Among the ranks of the enlisted, 14% are now women (up from 2% in 1973), and among commissioned officers, 16% are now women, compared with 4% in 1973.” This shift in demographics makes women’s healthcare an increasingly important focus for the wellness of the defense community as a whole. With 65.6% of active-duty personnel younger than age 30, and 25.6 years being the average age at birth of a first child, it is clear that active-duty military women are having children while serving (Military One Source, 2013).

Servicewomen who want to comply with the AAP recommendations for breastfeeding will need to combine lactation with their employment. The military may be a setting that offers unique facilitators and/or barriers to breastfeeding duration. Rank, access to private facilities, time to pump, temporary assignments/deployments, physical fitness/weight standards, hazmat concerns, and peer response are all variables that may be influencing breastfeeding duration in the military workplace (Stevens & Janke, 2003; Uriell, Perry, Kee, & Burress, 2009). The purpose of this paper is to describe breastfeeding duration among active-duty military mothers, and to identify barriers and facilitators experienced.

Literature Review

Duration

Military mothers are initiating breastfeeding at rates similar to their civilian counterparts, but may not be breastfeeding for as long. Breastfeeding rates at 6 months were found to be significantly lower than civilians in several studies (Rischel & Sweeney, 2005; Uriell et al., 2009; Bales et al., 2012). Enlisted personnel appear to be less likely than commissioned officers to breastfeed to 12 months (10.9% vs 36.5%) and more likely to report cessation due to a work related issue (Mao, Narang, & Lopreiato, 2012; Uriell et al., 2009). These findings are in need of further examination due to study limitations. The study by Uriell et al. (2009) focused exclusively on Navy personnel and may not be generalizable to all branches. Additionally, because the survey was sent to a random sample of women in the Navy, it was unknown how long ago the pregnancy/postpartum period was for which each respondent based their answers; if the pregnancy was not recent, it is possible that policies were different or military culture of that time no longer applies. The Mao et al. study (2012) found enlisted mothers were less likely to breastfeed than officer mothers, but their sample was small ($n = 29$ enlisted, $n = 18$ officers) and they did not examine differences in workplace support or differences between branches of service.

Barriers

The evidence in the literature shows that there are similar breastfeeding difficulties experienced by military and civilian mothers. Maternal difficulty, mechanical difficulty, inconvenience, and stress are all shared barriers (Bales et al., 2012; Lewallen

et al., 2006). Enlisted personnel were more likely than officers to report cessation due to workplace related issues (Mao et al., 2012; Uriell et al., 2009). However, Stevens and Janke (2003) found conflicting viewpoints in their qualitative study regarding enlisted versus officer status: one officer reported being hindered by increased levels of responsibility, while a high-ranking enlisted member reported she felt at an advantage because she had more control of her schedule than those below her. Facility accommodations are understudied across the literature. Navy personnel reported lacking a secluded environment (Uriell et al., 2009), but more specifics were not detailed. Eight of the nine women in the qualitative study reported using a bathroom to pump. A barrier from peers was identified only in the qualitative study, and none of the studies looked at pressure from commanders/supervisors. Additionally, there has been a lack of inquiry regarding mothers' perception of unique circumstances of separation from their child that are more likely to occur in military occupations than in civilian jobs (such as temporary-duty assignments, field exercises, or deployments), or the influence of work-related hazard exposure concerns.

Facilitators.

Income and education are associated with increased breastfeeding duration across the general breastfeeding literature (Haas et al., 2006; Mao et al., 2012; Rischel & Sweeney, 2005). Lactation classes are associated with breastfeeding initiation but not duration (Bales et al., 2012; Rischel & Sweeney, 2005). In Bell and Richie's (2003) evaluation of military resources for breastfeeding, the authors noted that the Department of Defense does not have their own instruction for breastfeeding education and thus

reported breastfeeding education would be based on civilian sources. The studies reviewed did not examine factors specific to those in a military work environment that may be contributory to breastfeeding duration, such as commander or peer support, military healthcare provider support, education, or knowledge of policy/rights.

There is a great deal of literature demonstrating the benefits of breastfeeding for mother and baby (Blincoe, 2005; Godfrey & Lawrence, 2010; Moore, 2001; Ip, Chung, Raman, Trikalinos, & Lau, 2009), and studies show that supportive work environments benefit the employer by increasing employee work satisfaction, decreasing absenteeism, and reducing turnover (United States Department of Health and Human Services, nd). However, military mothers are seldom included in these studies and little is known about breastfeeding while on active duty. In order for military mothers to successfully breastfeed, they must be aware of the factors that are promoting or impeding breastfeeding duration success. To address these gaps in the literature, two research questions guided the study: (1) what is currently known about breastfeeding duration among active-duty mothers? (2) What work-related barriers and/or facilitators to breastfeeding are active-duty military mothers experiencing?

Method

This study was guided by a cross sectional design. A cross-sectional design is advantageous because it has minimal associated cost, provides immediate data ready for analysis, and is useful for health planning given its ability to estimate prevalence of an outcome as well as risk factors. This design style is particularly helpful in a population like the military that is a high risk for being lost-to-follow-up given their frequent

relocations. Weaknesses of this study design include the potential for recall bias, as well as inability to track changes over time, such as may occur with policy development.

Setting

The setting for the study was a social media site, *Breastfeeding in Combat Boots*. A navy veteran and an International Board Certified Lactation Consultant who authored a book by the same name created the site. The social media site serves as a place where military mothers can share experiences as well as find information and support on breastfeeding while serving their country. The page owner granted permission for the questionnaire link to be posted to the social media page.

The study received approval from the Institutional Review Board of the University of Missouri-St. Louis. Data was anonymous and the study offered no direct benefit for participation. Participants read a brief introduction that explained the survey purpose as well as risks and benefits. Completion of the survey was stated as being indicative of participant consent.

The questionnaire was posted to the Facebook page and women were asked to participate via hyperlink. Women were able to invite friends to participate who may not have otherwise visited the Facebook site; this was done by many women through “tagging” their friends in the comments section. Women did not have to participate in the Facebook page, which has a public privacy setting, in order to view or access the survey. The survey was open to participation beginning in August 2015 and closing in September 2015.

Sample

Inclusion criteria for eligibility to participate in the study included (a) active-duty military mothers who had given birth within the last five years, (b) initiated breastfeeding postpartum, and (c) returned to work after maternity leave. Women who served in any Department of Defense branch (Air Force, Army, Navy, Marines) or with the Coast Guard could participate. There were no exclusion criteria.

During the period that our study was open for participation, 348 participants accessed the questionnaire. Fifteen respondents left the survey before completing the eligibility questions, while 33 were exited from the questionnaire for not meeting the aforementioned eligibility criteria (having had a baby while serving active-duty in the last five years, had initiated breastfeeding postpartum, and had returned to work postpartum). Demographic information was not collected until eligibility was determined. The inclusion criteria were met by 292 women.

The typical participant was 31 years of age, married, and Caucasian. Almost one-third of the sample had a Master's degree and one fourth had a Bachelor's degree. The sample was comprised of 49% enlisted compared to 51% officer mothers. Representation was from all 5 branches, with 34% Air Force, 29% Army, 27% Navy, 7% Coast Guard, and 2% Marines. This branch break-up is similar to the current branch breakdown of the current military, which is 30% Air Force, 36% Army, 25% Navy, 3% Coast Guard, and 6% Marines (Women in Military Service for America Memorial Foundation, 2011).

For some of the data analysis, statistics were based on a subsample eligible to complete questions regarding breastfeeding cessation. Skip-logic was utilized to bypass participants actively breastfeeding which created a subsample of 116 women. The demographics for the entire sample and the subsample are in Table 1.

Instrument

An investigator-designed questionnaire consisting of multiple choice, Likert, and open-ended questions was developed with Qualtrics. Questionnaire development was guided by factors previously identified as being associated with breastfeeding duration among women in general employment and/or the military (Augustin et al., 2014; Bales et al., 2012; Haas et al., 2006; Lewallen et al., 2006; Mao et al., 2012; Rischel & Sweeney, 2005; Rojjanasrirat, 2004; Stevens & Janke, 2003; Uriell et al., 2009), as well as by themes identified through an informal review of posts on the Facebook page *Breastfeeding in Combat Boots*.

Data Analysis

Data were analyzed using SPSS version 23.0. Analysis procedures focused on descriptive statistics and chi-square analysis. Logistic regression was utilized to assess the impact of identified predictors for meeting one's breastfeeding goal. Content analysis was used to identify common themes for open-ended questions.

Results

Duration

Women who had completed their breastfeeding journey were asked how long they had breastfed. More than three-fourths (83%) breastfed at least 4 months, and more than

half (61%) reported breastfeeding longer than 6 months. Among categorical durations, the most common answer was 10-12 months duration (3% breastfed less than 1 month, 14% breastfed up to 1-3 months, 22% breastfed 4-6 months, 14% breastfed 7-9 months, 24% breastfed 10-12 months, and 23% breastfed beyond 1 year).

Responses were divided between those who breastfed ≤ 6 months and those who breastfed > 6 months in order to test for relationships by chi-square analysis: there was no significance found for Caucasian versus non-Caucasian race ($\chi^2=0.3, p=0.58$), married/with partner versus single status ($\chi^2=1.11, p=0.29$), or for having obtained a 4-year college degree ($\chi^2=2.66, p=0.103$). The relationship between enlisted/officer status was statistically significant for breastfeeding duration ($\chi^2=8.56, p=0.003$) with 72.7% of officers breastfeeding more than 6 months versus 46% of enlisted.

Participants were asked if they had met their breastfeeding goals, to which 58% responded “no.” Chi square analysis found no significance between achieving breastfeeding goal and demographic factors of marital/partner status, or educational degree. While the relationship between meeting goal and Caucasian/non-Caucasian race was not found to be significant ($\chi^2=0.071, p=0.789$), it was noted that 100% of the African American respondents ($n=6$; 3 officers, 3 enlisted) did not meet their goal. This was consistent with research showing African Americans infants have the lowest rates of breastfeeding initiation and duration (CDC, 2013). While 50% of officers reported achieving their goal, a lower percentage of enlisted (32%) reported the same. The relationship between enlisted/officer status and meeting one’s breastfeeding goal

approached significance ($\chi^2=3.23, p=0.052$). These findings suggest that differences related to rank itself may be influencing breastfeeding duration.

Barriers

Primary reason for cessation. There are many reasons that a woman chooses to stop breastfeeding. Participants not currently breastfeeding were asked to indicate their primary reason for cessation, with the highest percentage (33%) indicating job-related barriers as the primary reason. The additional responses included: maternal difficulties such as low supply, pain, or infection (16.4%), mechanical difficulty such as not latching well or baby not interested (3%); inconvenience (3%); and lack of a support system (2%). The remaining 23% chose “other” and provided in a written response. Three repeated themes were identified by content analysis, including supply dropping as a result of a new pregnancy, baby “self-weaned,” or a desire to get pregnant again.

The data describing primary reason for breastfeeding cessation was examined for differences between race, education, and rank. 45% of non-Caucasians cited job related barriers as the primary reason for cessation versus 31% of Caucasians. In order to have adequate cell counts to test chi-square significance, maternal and mechanical factors were combined into one category, and convenience, support and “other” were combined into another. Unfortunately this did not provide adequate cell counts to evaluate significance for race. Significance was not seen for education ($\chi^2=4.681, p=0.20$), but was demonstrated for rank ($\chi^2=9.485, p=0.023$). While 42% of enlisted respondents indicating job-related barriers as the primary reason, only 26% of officers indicated the

same. The number one reason for cessation among officers was meeting goal (30%), which was echoed by only 8% of enlisted mothers.

Exploring work barriers. More than half of the women (53%) answered affirmatively when asked if the military was a hindrance to meeting breastfeeding goals. Work-related factors influencing breastfeeding duration in the military work setting had not previously been fully explored. This questionnaire asked women to select from a list of work barriers all that applied: (1) lack of time (2) lack of private place to pump (3) field exercises/ TDY/ deployments (4) hazmat exposure concerns (5) peer pressure (6) commander/supervisor pressure or (7) none of the above. Chi-square analysis was completed to examine the relationships between enlisted versus officer status in respect to these individual barriers and statistical significance was not reached, indicating that barriers are shared between ranks.

Accommodations. The most frequent accommodation among all respondents was a personal office, which 15 enlisted and 44 officer mothers indicated. The second most frequent accommodation reported was a lactation room, which was reported by 45 of the 119 women who wrote in answers to the option “other.” Use of a bathroom was reported as the third most frequently chosen option, accounting for 16% of responses, with 30 enlisted and 14 officers reporting it as their accommodation. Other choice responses included an office assigned to someone else being made (13%) or a meeting room (6%). There were 74 responses under “other” that wasn’t reported to be a lactation room: responses included rooms such as locker rooms, break rooms, storage rooms, closets, car, home, and multi-purpose rooms.

The rooms women used varied in terms of needed equipment. Most women had access to an outlet and a refrigerator or cooler in which to store their breastmilk (88% and 80%, respectively). About half (46%) had access to water.

The most frequently chosen work barriers reported were lack of time to pump (30%) and lack of private space to pump (22%) for the sample as a whole. These two barriers persisted when the response set was analyzed by branch. Rank was a significant factor for reports of space as a barrier for Army women but not Air Force or Navy women (69% of enlisted, 31% of officers ($\chi^2=4.47, p=0.04$). Sample sizes were too small for Marines or Coast Guard to analyze differences.

Time away from baby. Field exercises/TDY/deployments was most likely to be reported as a barrier for members of the Army, with 46% of Army respondents indicating it. The Navy mothers were least likely to choose this response, accounting for just 9% of their total selections.

Lactation safety. Hazmat exposure concerns received the least number of responses accounting for just 43 selections out of the total 659 selections. When reported, it was most seen within Army and Marine respondents. There was a significant relationship seen for rank with reporting hazmat exposure as a barrier among Army respondents ($\chi^2=5.39, p=0.02$).

Pressure from others. Peer pressure was most commonly reported as a barrier by those in the Army and Navy (41% and 30% respectively), while Commander pressure was most often reported by those in the Army and Marines (43% and 29% respectively). There was a significant relationship between enlisted/officer status within the Army in

regards to reporting peer pressure and commander pressure as a barrier ($\chi^2 = 5.38$, $p=0.02$, $\chi^2=6.81$, $p=0.009$). This finding was not mirrored in the other branches.

A lack of work-related barriers was an infrequent response, receiving less than 5% of the total responses. The consensus among participants was that work-related barriers exist, and the military should utilize this information to identify areas where change can be implemented.

Facilitators

Respondents were asked “What were the major work related factors that contributed to your success?” Content analysis found the following themes among facilitators described: self-motivation, proper facilities, flexibility in schedule, support from leadership, support from peers, and knowledge of policy/rights.

Lactation class. The value of prenatal lactation classes on breastfeeding duration remains unclear. Study designs varied greatly in regards to factors such as teaching modalities used, frequency of education, educator credentials, and inclusion of postpartum follow-up. Rosen and colleagues (2008) examined the impact of various breastfeeding education practices on breastfeeding duration and found that lactation consultant based education versus prenatal visit education only was associated with increased breastfeeding duration. Given the potential benefit lactation education may have on duration, participants were asked about class attendance. Of the 292 surveyed, 128 (44%) indicated they attended a prenatal lactation course. Chi-square analysis did not show a significant relationship between attending a lactation class for education level ($\chi^2=5.82$, $p=0.21$) or for race ($\chi^2=2.003$, $p=0.95$). There was a significant relationship

seen for rank: 38% of enlisted versus 50% of officers attended a class ($\chi^2=4.23, p=0.04$). The majority (83%) of those who attended a lactation class indicated that their class did not specifically address issues related to combining military employment with breastfeeding. An unexpected finding was the negative predictive relationship seen on logistic regression between lactation class attendance and meeting breastfeeding goal. This study did not examine factors that predicted lactation class attendance, such as number of children or previous breastfeeding experience; it is likely that those factors versus class attendance itself were related to meeting breastfeeding goal.

Education and support by providers. Questionnaire respondents reported that healthcare providers did not ask about intention to pump when returning to work (58%), did not offer education on continued lactation upon returning to work (70%), and did not offer any support in regards to continued lactation upon returning to work (67%).

Support from commanders. Military mothers were asked if they agreed with the following statement: “I felt comfortable discussing my breastfeeding concerns with my commander.” 25% reported they strongly agreed, 29% reported they agreed, 14% reported being neutral, 22% reported they disagreed, and 11% reported they strongly disagreed. The relationship between being an officer versus enlisted for feeling comfortable in discussing breastfeeding concerns with one’s commander/supervisor was not found to be significant. When asked about agreement with the statement “My supervisors/commanders were receptive to my pumping needs and concerns,” slightly more than half (53%) were in agreement, with again no significant relationship found for this question in regards to enlisted versus officer status. Almost all of the women

($n=266$, 95%) felt that commanders/supervisors should receive education on breastfeeding benefits and how to support breastfeeding mothers. This information offers a rationale for including the topic of breastfeeding within yearly required training modules.

Peers. Respondents were asked about presence of peer support. While 67% of officers strongly agreed or agreed that peers were supportive of their pumping at work, only 46% of enlisted mothers felt the same. 26% of enlisted reported they disagreed or strongly disagreed with the statement, versus 12% of officers. The relationship between officer/enlisted status was significant with perception of peer support ($\chi^2=13.576$, $p=0.009$). The Army had the highest percentage of respondents indicating they did not agree peers were supportive.

Policy. All branches, with the exception of the Army, had a lactation policy at the time of questionnaire participation. Policy regarding lactation is designed to provide direction to leadership and to ensure that military mothers' rights to provide breastmilk for their children is protected. A proper policy in place should in theory facilitate breastfeeding. When asked about knowledge of policy, however, only 73% reported they were well aware or had a fair understanding of their branch's policy. Perhaps equally important, only 44% felt their commander/supervisor was well aware or had a fair understanding.

At the time of this questionnaire, the Navy had just extended their maternity leave to 18 weeks (this has since been reduced to 12 weeks), and participants were asked what impact, if any, they felt a policy of 18 weeks of maternity leave would have on meeting

their breastfeeding goals. There was overwhelming response echoing the positive impact this longer leave would have on their breastfeeding goals. One mother wrote, “The first 6 weeks are the hardest, and at 6 weeks we go back to work.... with 18 weeks, we have time to research and learn how to pump and when to pump. It’s an art, pumping in the workplace.” Others wrote about how it would have allowed them to establish their milk supply as well as a pumping routine. One mom wrote it would provide “ample time to get established and produced a good freezer stash.” Several women commented that they would have breastfed longer had they had the additional time off. Some respondents commented on the difference it may have made in terms of retention: “I might have decided to stay when my enlistment is up”; “If the Air Force offered that, I probably wouldn’t have separated.” One mother did respond that she felt 18 weeks was unfair to coworkers and that 12 weeks was more appropriate. Only one participant commented on concern over her career: “I can’t imagine taking 18 weeks as an officer. It would hurt my career.”

Predicting Success Meeting Breastfeeding Goal

A logistic regression analysis was conducted to assess the impact of a number of factors on the likelihood that respondents would report meeting their breastfeeding goals. Independent variables were chosen based on demonstrating achieving chi-square significance for relationship under this study, and/or previous studies showing it as a significant factor (age, race, and education). The model contained eight independent variables based on this criteria (perception of receptiveness of commander/supervisor, perception of peer support, perception of the military as a hindrance to meeting

breastfeeding goal, attendance at a lactation class, rank status and the demographic dividers of age, race, and education) The full model containing all predictors was statistically significant ($\chi^2=30.1, p=0.00, df=8$). The model as a whole explained between 26.4% (Cox and Snell R^2) and 35.3% (Nagelkerke R^2) of the variance in achieving one's breastfeeding goals, and correctly classified 71.4% of cases with 60% sensitivity and 81% specificity. As shown in Table 2, only two of the independent variables made a significant contribution to the model. The strongest predictor of meeting one's breastfeeding goal was perception of military job as not being a hindrance, recording an odds ratio of 6.98 (95% C.I., [2.249-21.67], $p=0.001$). This indicated that those who perceived the military job as not being a hindrance to their breastfeeding goals were almost 7 times more likely to meet their goal than those who did perceive their job as a hindrance. The other significant variable was lactation class attendance with an odds ratio of 0.351 (95% C.I., [0.13-0.93], $p=0.035$). This indicates that those who did not attend a lactation class were 2.85 times more likely to meet their breastfeeding goals than those who did attend a lactation class (the odds ratio was <1 for attended lactation class, thus it was inverted for interpretation of not attending class: $(1 \div 0.351 = 2.85)$). This was an unexpected finding as attendance of a lactation class would not be expected to increase a woman's odds of not meeting her breastfeeding goal. There is likely an unknown dividing factor among those who reported they attended a class versus those who did not. For example, those who reported they did not attend a class may have had previous breastfeeding experience, a factor that is known to increase breastfeeding duration.

Discussion

The findings from this study suggest that military mothers are reaching Healthy People 2020 goals of 60.6% breastfeeding at 6 months (CDC, 2016.) and doing so at a rate better than the general U.S. population (51.4% at 6 months, 29.2% at 12 months [CDC, 2014]). This was an unexpected finding given that working has been shown to be negatively associated with breastfeeding duration. While the CDC does not currently collect data among working women specifically, a 2003 study of 228,000 working mothers found only 26% were breastfeeding at 6 months (Ryan, Zhou, & Arensberg, 2006). The higher rates observed in breastfeeding duration among this study population may be a reflection of the means by which the questionnaire was distributed, as the social media site utilized advocates and offers support for breastfeeding.

Rank and branch differences. The findings from this study were not consistent with findings of previous breastfeeding research, which has demonstrated relationships between race/partner status/education and breastfeeding duration (CDC, 2012; Kaikini & Hyrkas, 2014; Mitra, Khoury, Hinton, & Carothers, 2004). The current study did, however, find a relationship between rank and breastfeeding longer than 6 months with officer women breastfeeding significantly longer than their enlisted peers. Enlisted mothers reported their peers as less supportive than the mothers who were officers, and were more likely to report their job as a hindrance to meeting their breastfeeding goals. These findings may partially explain the difference found in duration between enlisted and officer mothers.

Previous studies have not compared differences among women serving in the different military branches. This study's findings suggest that access to space, lack of support from peers, and lack of support from commanders are particularly problematic within the Army. The Army did not have a lactation policy at the time of this study; it would be interesting to see whether these findings persist with a policy now in place.

Combining breastfeeding with employment is not easy, and military mothers are not immune to the challenges. This study found that the single factor most predictive of active-duty mothers not meeting their breastfeeding goals is perception of their job as being a hindrance. The military needs to emphasize that they are supporting military mothers in breastfeeding, not just tolerating it.

Improvements in accommodations. The need for a proper time and place was highlighted in this study. It was both reported as a barrier by the majority, but also described as a facilitating factor when properly provided. In November 2015, the Army became the last branch to establish a lactation policy. All branches now have a lactation policy that specifically prohibits a bathroom from being considered adequate accommodations. It would be naïve to assume that the presence of the new Army policy will in itself relieve women of struggles with having access to proper accommodation. This study demonstrated that bathrooms are being utilized across all branches despite established policies stating this is not adequate accommodation. Secretary of Defense Ashton Carter recently announced that under the Force of the Future Initiatives, the creation of lactation rooms will be required for every facility where there are 50 or more women. This translates to the creation of approximately 3600 rooms across the country

(Department of Defense, Secretary of Defense, 2016). This is a good start to making proper accommodations available to all.

Education for leadership and peers. Commanders need to be educated on not only the existence of policy that they are required to adhere to, but should also receive education regarding why the policy is important. If leadership believes that supporting breastfeeding is an investment in their individual soldiers and in retention on a greater scale, they are more likely to support the mother in her breastfeeding journey. Their support can help normalize breastfeeding in the military work setting. Many women specifically commented on the need for leadership to be educated on breastfeeding: “The majority of command staff still see pumping and lactation as a female problem. There’s no support or encouragement, only legally mandated tolerance.” “We work in a male dominated career. Many supervisors are male and a good percentage of them are uncomfortable with the topic.” Education should perhaps extend branch-wide, not to just those in leadership roles: “The biggest factors is having a supportive command and peer environment and that can only happen through either education or experience.”

Education for healthcare providers. One might suspect that healthcare provider education and support regarding lactation would positively correlate with breastfeeding exclusivity and duration. While there is some evidence that this is the case for breastfeeding during the first 3 months postpartum, evidence beyond that is lacking (Ramakrishan, Oberg, & Kirby, 2015). Data analyzed from the Infant Feeding Practices Survey II, a national longitudinal consumer based survey, found a statistically significant negative relationship between education from healthcare providers and breastfeeding

duration: this was suspected to be related to factors such as inadequate time and preparation, but possibly also a reflection of inadequate training of clinicians (Chen, Johnson, & Rosenthal, 2012). The respondents of this questionnaire reported that their healthcare providers are not offering support and education for continued lactation upon returning to work. The military should consider educating their clinicians on how they can support military mothers in combining lactation with work. Specifically they should be a knowledgeable resource on policy, and be able to offer guidance in regards to pumping in non-tradition settings (such as on a plane, when away on field exercises, etc.), irregular schedules (help with balancing supply and demand and ability to increase production as well as manage engorgement), and should be able to address concerns related to hazmat exposure.

A military specific lactation class for active-duty mothers. While lactation class attendance was actually associated with a decreased likelihood to reach breastfeeding goals in this study, it is against common sense to think that a properly planned class, isolated from other influencing factors, would have a negative impact on reaching breastfeeding goals. This study showed that military mothers need additional education regarding what policy exists that can help facilitate their breastfeeding journey. One mother wrote, “The more people who educate themselves with policy, the easier it will be for active-duty mothers to pump and store milk for their babies.” In regards to deployment deferment postpartum, 29% of military mothers have a poor understanding, or did not know policy existed for deployment deferment postpartum. In regards to lactation policy, 27% reported a poor understanding or lack of knowledge that policy

existed. A lactation class tailored to the needs of military women could empower military mothers by providing education on their rights. Additionally, with almost half of women failing to report feeling comfortable discussing their pumping needs with commanders, a tailored class could provide outlines for discussion and talking points by which “contracts” could be made to facilitate an understanding of the soldier’s needs; such contracts could possibly outline frequency of which the mother might expect to pump, establish a plan for alternative settings such as when out in the field, etc. While typical lactation courses address the basics of the nursing relationship, the transition back to work may be under-explored. A military tailored class could provide support and guidance regarding how to overcome barriers such as prolonged periods away from home, lack of access to electricity/water/refrigeration (as may occur in the field or if deployed), hazmat concerns, etc. The skill of manual expression, safe practices for storing milk when there is not access to traditional refrigeration, and guidelines on sending milk domestically and internationally, are just some examples of topics that would be unique to the needs of the military mother.

Limitations and Implications

The method of recruitment for this study was advantageous because it allowed for recruitment of a population representative of both enlisted and officer rank, and which was inclusive of all Department of Defense branches and the Coast Guard. Additionally, by being anonymous and not administered through the military, participants could feel comfortable providing truthful responses without fear of repercussion. However, given that the respondents were recruited from a social media site that supports breastfeeding,

duration rates may have been falsely elevated. Our findings of breastfeeding duration were higher than those seen in previous studies of both civilian and military population, and appear to be meeting Healthy People 2020 goals. It is possible that those who view or participate in the social media site Breastfeeding in Combat Boots are more educated on breastfeeding benefits, feel more supported, and/or are more determined than the average military mother to continue to breastfeed when returning to work. Additional data may need to be collected on military mothers, representative of rank and branch differences, to determine the accuracy of our duration findings.

This study did not fully investigate formula supplementation. Among women who were actively breastfeeding, 20% (n=29) reported they were supplementing. Of those supplementing, 21% reported their child was 2-4 months old, 25% reported their child was 5-6 months old. There was no relationship seen between rank and supplementing ($\chi^2=0.02$, $p=0.963$). Future studies could examine the degree of supplementation as well as factors predictive of supplementing in this population that may be unique to military mothers.

Data found in this study could be used to guide maternity leave and lactation policies. Additionally, it can provide benchmarks on progress if combined with future questionnaires on accommodations and support. With the recent announcement of a branch-wide maternity policy, the creation of an Army lactation policy, and the push to establish thousands of lactation rooms, a future study could examine whether the barriers that were demonstrated in this study persist.

Conclusion

Women of childbearing age are 30% less likely than men to remain in the military than their male counterparts (Serbu, 2016). Several respondents reported that they would have been more likely to remain in the military had they felt more supported in breastfeeding. One woman wrote, “I would now advise all women who want a family to choose a different career path.” Another wrote, “Women have a hard time being women in the Army. Having a family and taking care of them, to me, always came in last.” The military needs to be proactive in their efforts to stop this loss of talent by making women feel they don’t have to choose between a military career and a family.

Perception of the military being a hindrance was the sole factor shown by logistic regression to increase the odds of not reaching one’s breastfeeding goal. The ball is in the military’s court: by changing the military environment by means of providing education on the value of breastfeeding, and backing that with policy mandating time and accommodations, the military is in a position to change mothers’ perception of the military as being a hindrance, which ultimately may increase breastfeeding duration.

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Table 1

Sample and Sub-Sample Characteristics

Characteristic	Total Sample (N=292)	Percent	Sub-Sample (n=116)	Percent
Maternal age				
20-25	42	14%	10	9%
26-30	84	29%	23	20%
31-35	93	32%	50	43%
36-40	50	17%	23	20%
41-45	5	2%	4	3%
Ethnicity				
Caucasian	236	81%	97	84%
Other	29	10%	1	6%
African American	12	4%	6	5%
Asian	7	2%	4	3%
Native American/Pacific slander	2	1%	1	9%
Married or with partner				
Yes	271	94%	106	91%
No	18	6%	9	8%
Education				
High School or GED	61	21%	18	16%
Associates	57	20%	23	20%
Bachelors	71	24%	31	27%
Masters	84	29%	36	31%
Doctorate	17	6%	8	7%
Rank				
Enlisted	143	49%	50	43%
Officer	147	51%	66	57%
Branch				
Air Force	100	34%	37	32%
Army	84	29%	26	22%
Navy	79	27%	39	34%
Coast Guard	20	7%	11	10%
Marines	7	2%	3	3%
Years serving				
≤2 years	5	2%	2	2%
2.01-6 years	87	30%	27	23%
6.01-10 years	83	28%	27	23%
10.01-14 years	68	23%	32	27%
14.01-18 years	37	13%	23	20%
18.01-22 years	7	2%	3	3%
≥22.01 years	3	1%	2	2%

Table 2

Logistic regression analysis of predictors for meeting one's breastfeeding goals

Variables	B	Wald	P-value	OR	95% CI	
Age (continuous)	.034	.280	.597	1.034	.913	1.172
Race (Caucasian=1)	-.344	.243	.622	.709	.181	2.782
Education (≥ 4 years=1)	-1.504	2.392	.122	.222	.033	1.495
Rank (officer=1)	1.337	1.682	.195	3.808	.505	28.719
Commander/Supervisor Receptiveness (agree=1)	-.125	.043	.836	.882	.268	2.902
Peer Support (agree=1)	.681	1.672	.196	1.976	.704	5.544
Lactation class attendance (yes=1)	-1.047	4.438	.035*	.351	.133	.930
Perception of military job as a hindrance (No=1)	1.943	11.308	.001*	6.981	2.249	21.666

Abbreviations: OR, odds ratio; CI, confidence interval.

*indicates significance at $p \leq 0.05$