

## ABSTRACT

Title of Document: **EXPLORING HEALTH IN MILITARY  
FAMILIES: DOES CONTINUITY OF  
CARE INFLUENCE PATIENT  
SATISFACTION?**

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To ensure mission-readiness for military members, support for their families is essential. Military family health and health care satisfaction has been a neglected area of study in this population. Satisfaction can be defined in terms of patient-, provider-, and practice-level factors and is influenced by continuity of care, which is often poor in transient military populations. Using a modified patient satisfaction survey, this study found that both the number of moves and assigned providers were significantly associated with continuity of care in military spouses. Further, continuity of care was a significant predictor of satisfaction with military health care.

EXPLORING HEALTH IN MILITARY FAMILIES: DOES CONTINUITY OF  
CARE INFLUENCE PATIENT SATISFACTION?

By

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## Table of Contents

Chapter 1: Introduction .....	1
Problem Statement .....	1
Study Overview.....	2
1.3 Definition of terms .....	4
Chapter 2: Background .....	6
2.1 Literature Review .....	6
2.1.1 Significance of patient satisfaction.....	6
2.1.2 Patient satisfaction in military families .....	6
2.1.3 Defining patient satisfaction.....	8
2.2 Conceptual Framework: Describing patient satisfaction in terms of a modified social ecological model .....	17
2.3 Research questions and hypothesis .....	20
Chapter 3: Examining Associations between Relocation, Continuity of Care, and Patient Satisfaction in Military Spouses .....	22
Chapter 4: Summary .....	45
Appendix 1: Methods and Measures.....	50
A1.1 Study Sample and Recruitment .....	50
A1.2 Measurement .....	51
A1.2.1 Questionnaire.....	51
A1.2.1.1 Demographic Information and Individual-level factors .....	51
A1.2.1.2 Military dependent history.....	51
A1.2.1.3 Patient-level factors .....	52
A1.2.1.4 Continuity of Care .....	52
A1.2.1.5 Provider-level factors.....	52
A1.2.1.6 Practice-level factors .....	53
A1.2.1.7 Patient Satisfaction .....	53
A1.2.2 Psychometric properties.....	53
A1.3 Pilot-testing .....	54
A1.4 Analysis .....	55
A1.4.1 Sample Requirements .....	55
A1.4.2 Variables and analyses of research questions .....	55

3.5 Timeline .....	56
Appendix 2: Tables .....	57
Appendix 3: Questionnaire .....	60
Appendix 4: Institutional Review Board Documentation.....	69
4.1 Consent document.....	69
4.2 IRB Application .....	69
4.3 IRB Approval Letter.....	74
References.....	76

# Chapter 1: Introduction

## Problem Statement

Military spouses have long been recognized for their importance in supporting their partners' mission readiness (Albano, 1994). Since the 1960s, the branches of the Armed Forces have funded family centers on military installations worldwide, including Army Community Service, Airman Family Readiness, and Naval Fleet and Family Support centers. The purpose of these centers is to ease the frequent stress of geographic instability due to their spouses' reassignments, uniting families with local resources and services. They also provide resiliency training and counseling for families undergoing separations due to deployments and temporary duty assignments (Huebner, Mancini, Bowen, & Orthner, 2009).

Military families move more often than civilian families, with one-third relocating annually, leading to constant upheaval in children's education and spouses' employment (Drummet, Coleman, & Cable, 2003). Given this constant upheaval, it makes sense that there has been a substantial focus on resilience in families. Numerous studies have been written examining resilience through frequent moves and deployments (Paley, Lester, & Mogil, 2013; Palmer, 2008), and many others have examined spousal relationships after a service member returns from deployment (Lester et al., 2010). The mental health of both spouses and service members has been studied extensively (Mansfield et al., 2010). However, little has been written about the general health of military service members (Butler, Linn, Meeker, McClain-Meeder, & Nochajski, 2015), and less has been written about the health of military families (Harriott, Williams, & Peterson, 2005). The Military Millennium Cohort Study began in 2001 with the goal of determining the long-term impact of military life on service members and veterans. While this study is unprecedented in its aim and scope, it has only recently begun collecting data

from military spouses, meaning it will be many years before longitudinal data can be collected and analyzed (Crum-Cianflone, Fairbank, Marmar, & Schlenger, 2014).

For military families, navigating the Military Health System can be challenging, and the management of military treatment facilities varies worldwide, leading to a new set of protocols to navigate each time a family relocates to a new military installation (Schafer, 2008). Added to this potential confusion is an ever-changing landscape of military health care providers who are subject to the same deployments as other service members, and who tend to receive orders to relocate every two to three years. Between frequent moves, lack of information about clinic protocols, and high provider turnover, military families are subject to a discontinuity of care that is unmatched in the average insured civilian's health care (Lewis & Holcomb, 2012).

Continuity is essential to quality health care, and is consistently associated with better health outcomes, as described in **section 2.1.3**. Despite service members and their families having access to nearly unlimited healthcare with no out-of-pocket expenses, it is unclear whether their health outcomes are any better than the general population (Crum-Cianflone et al., 2014). It has been hypothesized that military families experience poorer outcomes as a result of a lack of continuity of care, but little research exists to describe this phenomenon in terms of general health outcomes in military populations (Kennedy et al., 2009).

## **Study Overview**

The purpose of this study was to answer the following research questions:

1. Are the number of PCS moves related to continuity of care for military families?
2. Is frequently changing providers related to continuity of care for military families?
3. Is continuity of care associated with patient satisfaction in military families, and if so, is it the strongest predictor of satisfaction in this population in comparison to other factors?

To answer these questions, a questionnaire was developed, adapted from the Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey. CAHPS is a patient satisfaction survey used extensively in civilian health care settings, and adapted by the Department of Defense for their quarterly assessment of satisfaction among TRICARE beneficiaries. In the absence of being able to assess overall quality of military health care, patient satisfaction among spouses was used as a proxy measure.

Participants were recruited via Facebook to take the questionnaire through the online platform, Qualtrics. After two months of Facebook recruitment, 178 spouses, mostly female, completed the questionnaire anonymously, which took an average of seven minutes to complete. After completion, spouses were given instructions on how to enter a raffle, in which they had a one in ten chance of winning \$25. Despite 178 participants completing the questionnaire, only 44 entered the raffle, after which four prizes were awarded.

Due to the responding sample being overwhelmingly female (n=175, 98.3%), male responses were eliminated from final analyses. Research questions one and two were addressed by comparing the number of PCS moves and number of primary care providers to a continuity of care composite score using analysis of variance (ANOVA). Post-hoc analyses using Least Significant Difference (LSD) testing indicated a negative significant effect of both moves and number of providers on mean continuity of care composite scores. Similarly, for research question three, mean continuity of care composite scores were compared across levels of patient satisfaction using ANOVA. Once again, LSD indicated a positive significant difference between mean continuity scores and the level of satisfaction, where patients with higher continuity scores were, on average, more satisfied with their health care.



Several variables were identified from previous studies as having a consistent impact on patient satisfaction. In addition to continuity of care composite scores, these variables were used in a bivariate logistic regression model comparing respondents reporting being satisfied vs. dissatisfied with their care. Continuity of care and courtesy and helpfulness of office staff were both significant predictors of satisfaction. These results indicate the importance of continuity of care in determining patient satisfaction in military families. While promoting continuity can be challenging in a transient population such as this, it raises questions about the current model of frequent moves and high provider turnover, and whether this frequent upheaval is truly necessary when it may impact the health of military families.

Chapter two of this thesis presents an extensive literature review describing studies to define patient satisfaction and continuity of care. Chapter three is the complete manuscript that resulted from this study, and will be submitted for publication to the journal, *Military Medicine*, in April 2016. Chapter four provides a brief summary of the study findings and public health implications. Finally, the appendices contain a detailed account of the methods employed (Appendix 1), tables to present the main findings (Appendix 2), the full questionnaire (Appendix 3), and all appropriate institutional review board documents (appendix 4), followed by the references cited throughout.

### **1.3 Definition of terms**

*Service member*—Refers to any member of one of the Armed Forces—Army, Navy, Marines, Air Force, or Coast Guard (*e-CFR*, 2015).

*Military dependent*—A spouse or child of a service member (National Military Family Association, 2005).

*Military Treatment Facility (MTF)*—A military clinic or hospital in which a service member or dependent receives their primary care (Tricare, 2014).

*Military Health System*—The portion of the Department of Defense (DOD) that provides health care to service members and their dependents. Includes the military health management organization, TRICARE (Health.mil, 2015).

*Provider*—Refers to any physician, physician’s assistant, or nurse practitioner providing medical care (Tricare, 2014).

*Primary care provider (PCP)*—A physician, physician’s assistant, or nurse practitioner who provides primary care to a patient, which includes routine care. The PCP is the “gatekeeper” to obtaining referrals for specialty care in the Military Health System. Other names for PCP include general practitioner (GP) and Primary Care Manager (PCM) (Health.mil, 2015).

*Permanent Change of Station (PCS)*—Occurs when a service member receives military orders from their command to relocate to a new duty station, which is most often another military installation (*e-CFR*, 2015).

*Continuity of Care*—An essential component of primary care that can be described as an ongoing and direct relationship between a patient and their provider (Adler, Vasiliadis, & Bickell, 2010; IOM, 1996).

## **Chapter 2. Background**

### **2.1 Literature Review**

#### *2.1.1 Significance of patient satisfaction*

In 1966, Avedis Donabedian published a groundbreaking paper where he asserted that the quality of medical care should not be assessed by outcomes alone, but should take into account the process of care and the settings in which care occurs. Although he mentions satisfaction only briefly in this paper, he is credited as one of the first to consider patient satisfaction to be an important factor in the quality of medical care. Numerous papers have expounded on this idea that patient satisfaction is not simply a matter of patient attitude, but can characterize the quality of care received. Patient satisfaction scores have been positively correlated with the quality of care provided, and shown to increase patient adherence to treatment recommendations (Jha, Orav, Zheng, & Epstein, 2008). Similarly, higher satisfaction rankings have been associated with lower hospital readmission rates (Boulding, Glickman, Manary, Schulman, & Staelin, 2011), lower inpatient mortality rates (Glickman et al., 2010), and may influence a patient's decision to seek future care (A. D. Moore, Hamilton, Pierre-Louis, & Jennings, 2013). These studies, and many others, emphasize the importance of patient satisfaction not only as an indicator of quality, but as a potential pathway for improved health outcomes (Manary, Boulding, Staelin, & Glickman, 2013).

#### *2.1.2 Patient satisfaction in military families*

The Health Care Survey of DOD Beneficiaries (HCSDB) was developed in the early 1990s by the Defense Health Agency (DHA) to fulfill a congressional mandate to monitor the opinions and experiences of DOD beneficiaries related to their health care (Defense Health Agency,

2015). Conducted quarterly since 1995, the survey utilizes protocols modeled from the Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey, which is employed extensively in the civilian sector to gauge consumer opinions of health care (Agency for Healthcare Research and Quality, 2015). DHA takes benchmark data from the CAHPS survey to provide comparisons for their own collected data. Results are then analyzed using t tests, and scores significantly different from benchmark at the 0.05 level of significance are labeled (DHA, 2015). Scores can be viewed by region or category of beneficiary. Consumer ratings are presented as composite scores in the categories of: getting needed care, getting care quickly, how well doctors communicate, customer service, health plan, health care, personal doctor, and specialty care.

Viewing data for active duty dependents for the last ten years, from 2005 to 2014, military patient satisfaction is significantly lower than civilian satisfaction for all of the aforementioned categories except health plan, in which patients generally reported being significantly more satisfied. When examining breakout data from each of the categories, active duty dependents reported more problems getting to see a specialist, getting treatment, and getting information than their civilian counterparts. Ratings for courteous customer service, providers who listen, explain, show respect, and “spend time with you” were also lower than national benchmark data. These ratings appear to generally improve over the years, but so do their coinciding benchmarks, leaving military rankings consistently below benchmark for all years in nearly all categories. Little is written about patient satisfaction in military families, and the results of the HCSDB paints a bleak picture of the state of satisfaction in active duty dependents.

### *2.1.3 Defining patient satisfaction*

The idea of patient satisfaction and utilizing surveys for its elicitation is relatively recent. Surveys and requests for feedback are prolific in modern society, but this was not always the case, as demonstrated by the following excerpt from a 1960s report on hospital patients: “It was apparent during the interviews that some of the patients were disturbed profoundly. Some of them cried when they were given an opportunity to talk about their concerns” (Tagliacozzo, 1965). A profusion of studies emerged in the 1970s and 1980s, feeding in to a “patient satisfaction movement” toward creating a more consumer-oriented healthcare enterprise (Sitzia & Wood, 1997). The shifting nomenclature from “patient” to “consumer” may have been to modify the traditional view of “patient” as a passive participant in their medical care, legitimizing their professional relationship with a provider. This is similar to public health and social service workers referring to “clients” to give them a more active role in services sought.

The term “patient satisfaction” is widely used but poorly understood, and much of the early research into this field proliferated despite a lack of consensus on the definition of what was being measured (Sitzia & Wood, 1997). Providers initially objected to satisfaction surveys because they believed patients would be overwhelmingly negative in their responses, despite later evidence to the contrary (Fitzpatrick, 1991). While satisfaction surveys are routine in the majority of medical practices nationwide, some researchers still question their value, although this may simply be due to providers’ dissatisfaction with their patients’ assessments of them. Regardless, many studies have been conducted to both define patient satisfaction and determine which factors have the most impact on satisfaction. Several themes have emerged, which can be categorized in terms of patient, provider, and practice.

### *Individual factors influencing patient satisfaction*

Early studies of patient satisfaction focused on sociodemographic factors as the source of variability in reported outcomes, but an early meta-analysis found these patient-level factors to be inconsistent predictors of satisfaction (Hall & Dornan, 1990). For example, results for gender and ethnicity have varied widely, showing weak or no relationships (Fox & Storms, 1981; Pascoe, 1983; Quintana et al., 2006). However, three exceptions have yielded consistent results across numerous studies: patient age, educational attainment, and overall health status (Fox & Storms, 1981; Hall & Dornan, 1990; Jackson et al., 2001; Quintana et al., 2006). A 2009 study conducted in the Netherlands found that older age and better health status were each positively associated with higher satisfaction, while higher educational attainment was moderately associated with higher dissatisfaction (Hekkert, Cihangir, Kleefstra, van den Berg, & Kool, 2009).

These factors may be related to patient expectations, as some researchers have simply defined patient satisfaction as the difference between what is expected in a health care interaction, and what is experienced (Conway & Willcocks, 1997). Expectations can be categorized in terms of background, previous experiences in the healthcare system; interaction, related to an individual's exchanges with their provider; and action, the provider's recommendations for a course of action (Stinson & Webb, 1975). In a 2001 study of patients at the Walter Reed Army Medical Center, researchers noted a strong correlation between unmet expectations and lower satisfaction (Jackson et al., 2001). Namely, patients with no unmet expectations were significantly more likely to report visit satisfaction immediately post-visit, and the rate of satisfaction increased with the amount of time passed (measured at 2 weeks and 3 months post-visit). Healthier patients may see their healthcare provider less frequently, lacking

the background to form expectations of the healthcare setting. Similarly, those with lower educational attainment may have no expectations regarding what course of action their provider will suggest or what information will be provided during a consultation (Sahin, Yilmaz, & Lee, 2007). In both cases, expectations may be low, leading to less of a gap between what is expected and what is experienced (Jackson et al., 2001).

While lower expectations may explain patient satisfaction in relation to health status and educational attainment, the consistent phenomenon of higher satisfaction in older individuals cannot be accounted for as easily. In fact, the original theory that older patients have lower expectations as a result of an austere upbringing during the Great Depression and World War II has been systematically debunked as the older patient population has evolved into the Baby Boomer generation, and studies show that older patients actually have higher expectations for their care than their younger counterparts (Bowling, Rowe, & McKee, 2013). This phenomenon remains unexplained, despite demonstration that older patients, particularly those over the age of 65, consistently report higher satisfaction after provider consultations (Bowling et al., 2013; Jackson et al., 2001).

One final element of individual patient-level satisfaction is respect for personhood and level of patient involvement in their own care. While these may seem like unrelated concepts, they both stem from what one researcher labeled “autonomy,” or the patient’s feeling that they are being respected enough to be considered capable of participating in their own care (Butler et al., 2015). This concept of autonomy is most frequently noted in studies of military and veteran populations, who continually report a lack of meaningful communication with providers as a result of a failure to recognize special health circumstances related to military service (Jennings, Loan, et al., 2005). Specifically, in a qualitative study to describe unmet patient needs in the

Veteran's Administration (VA) healthcare system, veterans reported one reason for leaving the VA system was due to feeling that providers did not recognize them as a person with a unique military identity, and instead herded them through the system (Butler et al., 2015). Soldiers at an army medical center reported similar feelings, adding that providers often treated them like they were malingering instead of seeking care for a real issue (Jennings, Loan, et al., 2005). In an inpatient childbirth satisfaction survey for military hospitals, women reported care-related scores that were significantly poorer ( $p < 0.0001$ ) than the national average in terms of feeling respected and being "involved in decision-making" (Harriott et al., 2005). All of these factors have contributed to overall lower patient satisfaction in veterans, service members, and their families (Defense Health Agency, 2015), as described in the previous section (2.1.1).

#### *Provider factors influencing patient satisfaction*

Autonomy and feelings of involvement in care may be patient-level attributes, but they are directly related to interactions with the provider. Veterans and military members who feel their autonomy is not being respected have cited lack of provider competence (Butler et al., 2015). In Jennings's qualitative study of Army soldiers' experience with military health care (2005), soldiers noted that even military providers were unaware of the specific physical requirements of their job-related duties, although this may be more of a review of the provider's cultural competence as opposed to an indictment of their technical competence. A Taiwanese study assessed dimensions of patient satisfaction related to doctor's technical skills and interpersonal skills (Tung & Chang, 2009). This study found that patients who perceived their doctors to have high technical skills were 19.8 times more likely to be satisfied with their care than patients who perceived their doctors to have low technical skills. In the same vein, they found that patients



with a better relationship with their doctor were 5.4 times more likely to be satisfied than patients with a poor relationship. Marcinowicz et al. (2009) found that physician competences were related only marginally to satisfaction, whereas nearly 40% of patients (n=1305) listed interaction with their doctor as the primary reason for providing a negative evaluation. There are several dimensions to the relationship between provider and patient: length of relationship, depth of relationship, and trust.

The majority of studies analyzing patient-provider relationships examined the longitudinal quality of the relationship, and at least 19 different instruments have been developed to assess how long a patient has been seeing their primary care provider (PCP) (Eveleigh, Muskens, & van Ravesteijn, 2012). In a study of nearly 5,000, participants were grouped into four categories based on how long they had been seeing their current provider: (1) one year or less (0-12 months), (2) one to two years (13-24 months), (3) three to five years (25-60 months), and (4) more than 5 years (61 months or more) (Donahue, Ashkin, & Pathman, 2005). Patients in this study were then asked about overall satisfaction with their care. In comparison to the reference group of patients who had been with their provider for five or more years, participants who had been with their provider one to two years were 1.78 times more likely to be dissatisfied with their care ( $p=0.04$ ), and those who had been with their provider less than one year were 2.34 times more likely to be dissatisfied ( $p=0.001$ ). The odds ratio for the three to five year group did not reach significance. This study was conducted in a relatively homogeneous rural population, which limits the generalizability of its results, but length of patient-provider relationship has been positively associated with satisfaction in studies across decades (Kao, Green, Davis, Koplan, & Cleary, 1998; Katz, McCoy, & Sarrazin, 2014; Platonova, Kennedy, & Shewchuk, 2008; Wasson et al., 1984), and is essential to defining overall patient satisfaction.

Length of relationship has also been associated with poorer communication with providers. In a study of VA outpatient care (n=4,397), shorter duration of patient-provider relationship decreased the odds of communication by 65% (Katz et al., 2014). Poor patient-provider communication may be an issue not only associated with the length, but the depth of the relationship. Merriel and associates (2015) sought to describe the idea of depth of relationship by videotaping patient-provider interactions during real consultations, coding topics discussed during the consultation, and then asking patients to fill out the Patient-Doctor Depth of Relationship (PDDR) scale to capture patients' perceptions of their relationships with their PCPs. Based on responses to the PDDR scale, patients were classified as having a deep, intermediate, or shallow relationship with their PCP (Merriel, Salisbury, Metcalfe, & Ridd, 2015). After coding consultation themes, patients reporting moderate or deep relationships with their providers were more likely to discuss issues and problems related to their health than patients reporting a shallow relationship with their provider.

The final factor related to the patient-provider relationship is trust, which can be associated with both length and depth of relationships. Patient trust can be defined as the belief that a provider will act in the best interest of the patient and recommend the most appropriate course of action when providing medical care (L. A. Anderson & Dedrick, 1990). Utilizing structural equation modeling to examine trust, interpersonal relationships, and their impact on patient satisfaction, researchers found that patient satisfaction was strongly and positively associated with trust and a personal patient-provider relationship (Platonova et al., 2008).

One early study of patient satisfaction noted the importance of a close, continuing relationship between patients and providers in Norway (Hjortdahl & Lærum, 1992). Employing a random sample of 133 Norwegian general practitioners, Hjortdahl and Laerum analyzed

information provided by both practitioners (length of relationship) and patients (provider's communication skills, technical skills, perception of patient-provider relationship, and overall satisfaction). They found that patients reporting a personal relationship with their provider were seven times more likely to report being satisfied with their most recent consultation. In line with previously mentioned results on length of relationship, patients with a longer relationship with their provider were twice as likely to report being satisfied.

Given the results of the above studies, good patient-provider relationships are essential to promoting high patient satisfaction. Patient-provider interactions separate from the relationship are also essential to satisfaction. As discussed previously, provider respect for their patients is critical (Butler et al., 2015; Jennings, Loan, et al., 2005), as are factors like provider personality traits (e.g., whether providers seem friendly in their interactions with patients) (Marcinowicz, Chlabicz, & Grebowski, 2009), which may be less modifiable than a factor like length of time spent with patients. Anderson et al. (2007) found that while longer wait times at a provider's office are associated with lower patient satisfaction, time spent with the provider was the strongest predictor of satisfaction.

#### *Practice factors related to patient satisfaction*

The final category of attributes traditionally cited in the literature regarding patient satisfaction are those related to the medical practice itself, and include the provider's office, staff, and administrative practices. In a study of women's perceptions of quality and satisfaction in childbearing in 44 military hospitals, Harriott (2005) mailed surveys to a random sample of women (n=2,124) who had given birth in an included hospital asking how satisfied they were with certain aspects of their care. These results were compared with the Picker national average,

an average problem score for civilian hospitals. Participants reported significantly higher problem scores (i.e., elements of care they found problematic) than the Picker average, specifically highlighting a lack of courteous and available staff, lack of information and education provided by nurses, a lack of physical comfort, and poor coordination of care (Harriott et al., 2005).

A qualitative study of patient satisfaction in military populations identified information provision as an essential component of overall satisfaction (Jennings, Heiner, Loan, Hemman, & Swanson, 2005), specifically naming the importance of being given information about procedures, clinic and pharmacy protocols, and provision of test results in a timely manner. A study of veterans and military families similarly cited the importance of being given test results and information regarding clinic procedure (e.g., where to get lab work done, how to fill prescriptions), but specified the critical nature of a friendly, helpful staff at the receptionists' desk (Butler et al., 2015). Time spent in the waiting area and access to appointments are also important practice attributes which determine patient satisfaction, with shorter wait times associated with higher satisfaction (R. T. Anderson, Camacho, & Balkrishnan, 2007). A study of patients at a Hawaiian military treatment facility found a positive correlation between perceived access to care and patient satisfaction (A. D. Moore et al., 2013), which is remarkable given that, as military beneficiaries, all participants had full health insurance coverage.

### *Continuity of Care*

One critical element of patient satisfaction that has not yet been discussed is continuity of care, which is composed of several previously-described factors influencing satisfaction. The Institute of Medicine (1996) asserts that continuity of care is a central and important component of

primary care, and numerous studies support that assertion and further describe its importance in maintaining patient satisfaction and improving patient health outcomes (Gulliford, Naithani, & Morgan, 2007; Hjortdahl & Lærum, 1992; Jennings, Heiner, et al., 2005). Similar to patient satisfaction, there are a variety of definitions, but for the purposes of this paper, continuity of care can be defined as “an ongoing and direct relationship between a patient and their [provider]” (Adler et al., 2010). This relationship can be impacted by any of the aforementioned levels of patient satisfaction, although those most commonly cited in the literature are provider-level factors: length of relationship, depth of relationship, interpersonal patient-provider interactions, and trust.

An early randomized controlled trial of provider continuity split patients into two groups in a double-blind design—a continuity group which saw the same provider at every appointment, and a discontinuity group, which saw multiple providers (Wasson et al., 1984). At the end of 18 months, researchers found the continuity group had fewer hospital admissions and shorter hospital stays. The continuity group also reported higher individual satisfaction with their providers and care, perceiving their physicians to be more knowledgeable, thorough, and interested in patient education than the discontinuity group. A study of continuity of care and patients with type 2 diabetes also noted that patients with higher continuity reported higher satisfaction ratings than those with low continuity, who did not typically see the same provider (Gulliford et al., 2007).

A recent study utilized data from a physician-ranking website, DrScore, to examine patient satisfaction in Americans nationwide (Iaconi, Chang, Feldman, & Balkrishnan, 2011). DrScore provides free, anonymous access to patients who either want to rank their doctors or view rankings of doctors. Rankings occur objectively with Likert scales and subjectively with

open-response boxes for predetermined questions. Researchers compared rankings from doctor visits where users were returning to their provider, and visits where users reported seeing a new provider. Using regression analysis, Iaconi et al. found that patients returning to the same physician were ten times more satisfied with their care than patients visiting a new physician ( $p < .0001$ ). The researchers also noted that patients on return visits had a higher mean satisfaction score than patients visiting new physicians.

*Table 1: Summary of factors influencing patient satisfaction*

Patient-Level	Provider-Level	Practice-Level
Age	Length of relationship	Friendly, knowledgeable staff
Health status	Depth of relationship	Time to get appointment
Educational attainment	Interpersonal interaction	Time spent in waiting room
Military rank	Technical skills	
Unmet expectations (respect for personhood, autonomy)		

## **2.2 Conceptual Framework: Describing patient satisfaction in terms of a modified social ecological model**

As demonstrated in the prior section, many factors influence patient satisfaction, and it is possible to logically group these factors into a comprehensive model (see Table 1 for summary). While there are no theoretical models implicitly used to describe patient satisfaction, Donabedian’s model (1966) is widely used in evaluation of health care quality, and other models have been proposed. In 2009, researchers developed a model to test how various individual-, provider-, and system- level factors interact in a hospital setting to influence patient satisfaction (S. D. Moore, Wright, & Bernard, 2009). Basing their model on another proposed to classify communications in a medical setting (Street, 2003), Moore et al. found the model to be moderately well supported. While the theory behind the model was sound—that many factors interact to influence patient satisfaction—the model itself was overly complicated, drawing too

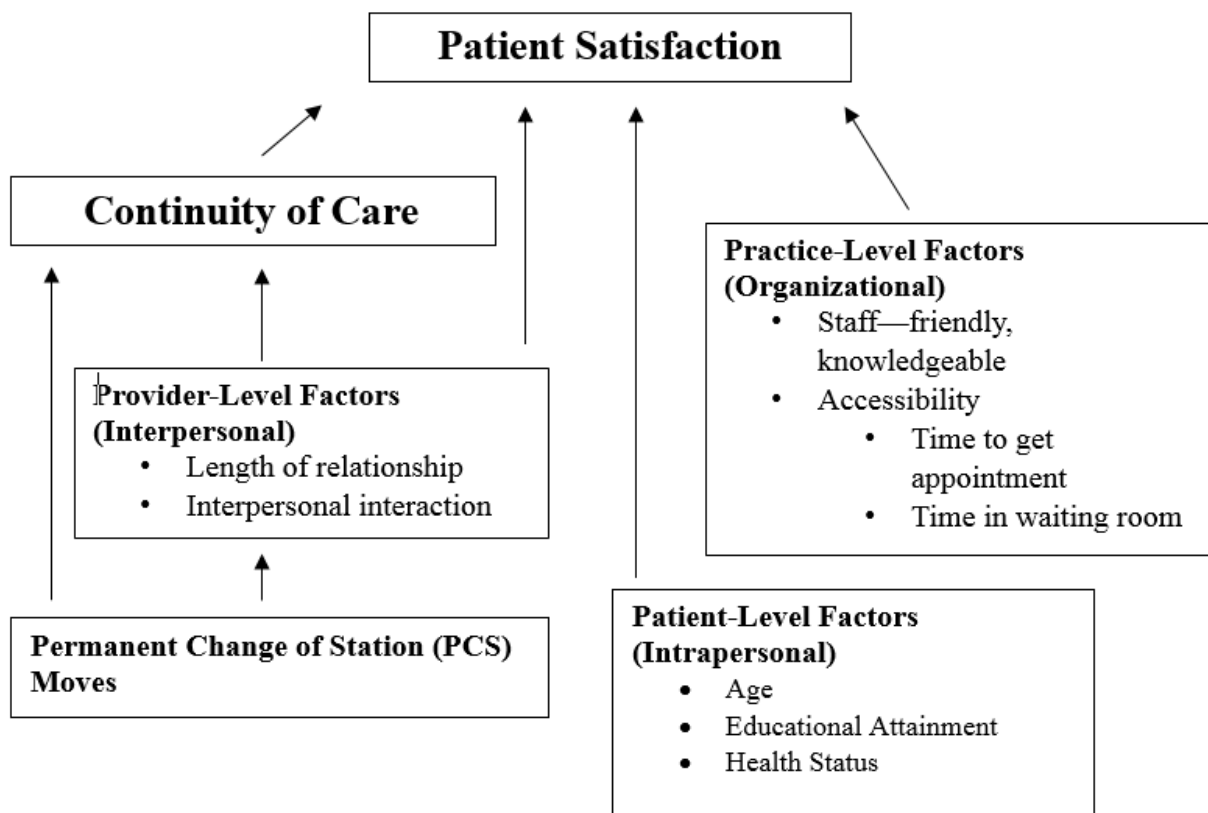
many linear connections between factors. For example, the researchers hypothesized that patient wait times affect only patient perception of physician credibility which, in turn, influences satisfaction. In reality, wait times may influence many factors, making patients feel disrespected, increasing anxiety and hindering communication, or directly impacting satisfaction. In short, the proposed model in the Moore study may be too rigid in its attempt to explain patient satisfaction.

For the purposes of this study, a new model is proposed based on Donabedian's health care evaluation model (1966) and the social ecological model. As mentioned previously in **section 2.1**, Donabedian proposed quality be evaluated in terms of the context of care delivery (structure), the transactions between the patients and providers (process), and the health outcomes of patients and populations seeking care (outcomes) (Donabedian, 1966). The previously-described factors influencing patient satisfaction can be placed into the structure and process categories, with structure encompassing practice-level factors, and process encompassing provider-level factors. Because there is an added dimension of patient-level factors and the idea that these factors all interact, the social ecological model will be used to provide substance to the model.

Often used in health promotion, the social ecological model stems from multiple disciplines and is based on the idea that health behaviors are influenced by five levels of interactions: intrapersonal, interpersonal, organizational, community, and government/policy (Stokols, 1992). Levels in ecological models influence each other and behavior, and are well-suited to help describe interactions of factors influencing overall patient satisfaction. All factors that have been shown to influence satisfaction in the literature review can be grouped into one of three categories: practice-level factors, which are analogous to the organizational level in an ecological model, provider-level factors (interpersonal), and patient-level factors (intrapersonal).

Any one factor or combination of factors can influence overall patient satisfaction, just as the levels can influence each other. For example, practice-level factors, such as time allotted for appointments, can influence provider-level factors. Short appointment times may make doctors feel rushed, degrading the quality of their interactions with patients, which can influence satisfaction directly, or influence patient-factors (e.g., patient is left with unmet expectations) that, in turn, influence satisfaction. A diagram of the proposed model is illustrated in figure 1.

Figure 1: Conceptual model



Continuity of care may be influenced by other levels of factors, but given the breadth of literature relating it to provider-level factors, this study examines these factors in conjunction with PCS moves to measure continuity. Studies of health care in military populations consistently cite the lack of continuity of care for poor satisfaction ratings and poor health outcomes (A. D. Moore et al., 2013). In 2008, in an attempt to improve continuity in military



populations, the Navy, Air Force, and Army began pilot-testing the Patient-Centered Medical Home (PCMH), a health care delivery model that organizes care into teams of providers and nurses to better coordinate care delivery (Marshall et al., 2011). In 2010, these branches of the Armed Forces began nationwide implementation of the PCMH model to transition from a “health care system” to a “system of care” (A. D. Moore et al., 2013). One of the purposes of the PCMH in the Military Health System is to improve continuity of care by reducing the discontinuity created by the frequent deployments and Permanent Change of Station (PCS) moves of medical personnel. With teams of providers, the patient is more likely to encounter familiar faces at appointments, even if their regular PCP is gone or unavailable. The model also increases access, reducing wait times for appointments by enabling patients to schedule acute care with other members of the team, increasing the number of future appointment times for patients seeking routine care (Savage, Lauby, & Burkard, 2013). Whether intentional or incidental, the PCMH seems to specifically address the “structure” category of Donabedian’s model, but may fail to improve the “process” category if relationships cannot be cultivated between military providers and family members.

One question raised in discussions of continuity of care and military service members and their families is whether continuity is as important in a transient population that may be more accepting of a lack of continuity (A. D. Moore et al., 2013). If patient satisfaction is related to expectations, but there is no expectation of continuity, will a patient be dissatisfied with discontinuous care? One of the main goals of this project is to understand what factors are most important in influencing patient satisfaction in military families.

### **2.3 Research questions and hypothesis**

1. Are the number of PCS moves related to continuity of care for military families?

2. Is frequently changing providers related to continuity of care for military families?
3. Is continuity of care associated with patient satisfaction in military families, and if so, is it the strongest predictor of satisfaction in this population in comparison to other factors?

# **Chapter 3: Examining Associations between Relocation, Continuity of Care, and Patient Satisfaction in Military Spouses**

Examining Associations between Relocation, Continuity of Care, and Patient Satisfaction in  
Military Spouses

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Running Head: Continuity and satisfaction in military spouses

## Abstract

**Objectives:** The purpose of this study was to determine how frequent permanent change of station (PCS) moves and turnover in primary care providers are associated with continuity of care and patient satisfaction in military spouses.

**Methods:** Spouses were recruited via social media to complete a brief online questionnaire to examine factors related to continuity of care and satisfaction with military health care.

**Results:** Continuity of care scores were significantly lower as the number of moves and providers increased. Patient satisfaction was also negatively associated with continuity. In logistic regression analyses, continuity of care, office staff courtesy and information provision, and health status were significant predictors across three different measures of patient satisfaction. Qualitative results indicated that the majority of dissatisfied spouses were unhappy with their military providers and preferred being seen by civilian providers.

**Conclusion:** No studies have previously been conducted to determine why military health system beneficiaries are less satisfied with care than their civilian counterparts. Despite establishment of the Patient-Centered Medical Home in many military clinics, discontinuous care is still an issue for military families, and the results of this study indicate it clearly impacts satisfaction, which could lead to poorer health outcomes for military families. While the military culture may not allow for fewer relocations, these results indicate that taking steps to promote enduring, trusting relationships with primary care providers may improve both continuity of care and patient satisfaction.

## INTRODUCTION

Military spouses have long been recognized for their importance in supporting their partners' mission readiness.<sup>1</sup> Military families move more often than civilian families, with one-third relocating annually, leading to constant upheaval in children's education and spouses' employment.<sup>2</sup> Given this constant upheaval, it makes sense that there has been a substantial focus on resilience in families. Numerous studies have examined resilience through frequent moves and deployments,<sup>3,4</sup> and many others have examined spousal relationships after a service member returns from deployment.<sup>5</sup> Although the mental health of both spouses and service members has been studied extensively,<sup>6</sup> little has been written about the general health of military service members,<sup>7</sup> and less has been written about the health of military families.<sup>8</sup>

For military families, navigating the military health system can be challenging. Between frequent permanent change of station (PCS) moves, inconsistent protocols in military treatment facilities worldwide,<sup>9</sup> and high provider turnover, military families are subject to a discontinuity of care that is unmatched in the average insured civilian's health care.<sup>10</sup>

Continuity is essential to quality health care, and is consistently associated with better health outcomes.<sup>11</sup> Despite service members and their families having access to nearly unlimited healthcare with little to no out-of-pocket expenses, it is unclear whether their health outcomes are any better than the general population.<sup>12</sup> It has been hypothesized that military families experience poorer outcomes as a result of a lack of continuity of care, but little research exists to describe this phenomenon in terms of general health outcomes in military populations.<sup>13</sup>

Patient satisfaction has been positively correlated with the quality of care provided, and shown to increase patient adherence to treatment recommendations.<sup>14</sup> Similarly, higher

satisfaction rankings have been associated with lower hospital readmission rates,<sup>15</sup> lower inpatient mortality rates,<sup>16</sup> and may influence a patient's decision to seek future care.<sup>17</sup> These studies emphasize the importance of patient satisfaction not only as an indicator of quality, but as a potential pathway for improved health outcomes.<sup>18</sup>

The Health Care Survey of DOD Beneficiaries (HCSDB) was developed to monitor the opinions and experiences of DOD beneficiaries related to their health care.<sup>19</sup> Conducted quarterly since 1995, the survey utilizes protocols modeled from the Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey, which is employed extensively in the civilian sector to gauge consumer opinions of health care.<sup>20</sup> HCSDB results are then compared to CAHPS benchmark data. Viewing data for active duty dependents from 2005 to 2014, military patient satisfaction is significantly lower than civilian satisfaction for all but two of the 11 categories, healthy behaviors (e.g., non-smoking rate), and health plan (e.g., TRICARE). Active duty dependents reported more problems getting to see a specialist, getting treatment, and getting information than their civilian counterparts. Ratings for courteous customer service, providers who listen, explain, show respect, and “spend time with you” were also lower than national benchmark data. Little is written about patient satisfaction in military families, and the results of the HCSDB reflect poorly on the state of satisfaction in active duty dependents.

Despite prolific study in the area, there is a lack of consensus on how to define patient satisfaction.<sup>21</sup> However, several themes have emerged in studies to define predictors of satisfaction, which can be categorized in terms of patient-, provider-, and practice- level factors.

Early studies of patient satisfaction focused on sociodemographic factors as the source of variability in reported outcomes, but an early meta-analysis found these patient-level factors to be inconsistent predictors of satisfaction.<sup>22</sup> For example, results for gender and ethnicity have

varied widely, showing weak or no relationships.<sup>23-25</sup> However, three exceptions have yielded consistent results across numerous studies: patient age, educational attainment, and overall health status.<sup>22,23,25,26</sup> Older age and better health status have been positively correlated with higher satisfaction, while higher educational attainment has been related to higher dissatisfaction.<sup>27</sup> These factors may be related to patient expectations, as some researchers have simply defined patient satisfaction as the difference between what is expected in a health care interaction, and what is experienced.<sup>28</sup>

In examining provider-level factors, a Taiwanese study<sup>29</sup> found that patients with a better relationship with their provider were 5.4 times more likely to be satisfied with their health care than patients with a poor relationship. A similar result was found in another study, where 40% of patients listed poor interaction with their provider as the reason for leaving a negative evaluation.<sup>30</sup>

The final theme in studies of patient satisfaction is that of practice-level factors. In a study of satisfaction with childbearing in military hospitals, women were more dissatisfied with military care than the national average for civilian hospitals, specifically highlighting a lack of courteous and available staff, as well as a lack of information and education provided by nurses.<sup>8</sup> Other studies of patient satisfaction in military populations have identified information provision and interactions with courteous staff as essential components of overall satisfaction.<sup>7,31</sup>

Also critical in patient satisfaction is continuity of care. The Institute of Medicine (1996) asserts that continuity of care is a central component of primary care, and numerous studies support that assertion and further describe its importance in maintaining patient satisfaction and improving patient health outcomes.<sup>32-34</sup> Continuity of care can be defined as “an ongoing and direct relationship between a patient and their [provider].”<sup>35</sup> This relationship can be impacted by

any of the aforementioned levels of patient satisfaction, although those most commonly cited in the literature are provider-level factors, such as length of relationship, depth of relationship, interpersonal interactions, and trust. Iaconi et al.<sup>36</sup> found that patients returning to the same physician were ten times more satisfied with their care than patients visiting a new physician, and patients on return visits had a higher mean satisfaction score than patients visiting new physicians.

One question that emerges is whether continuity is as important in a military population that may be more accepting of transience and a subsequent lack of continuity.<sup>17</sup> If patient satisfaction is related to expectations, but there is no expectation of continuity, will a patient be dissatisfied with discontinuous care? One of the goals of this project is to understand what factors are most important in predicting patient satisfaction in military families. The research questions posed for this study are: (1) are the number of PCS moves related to continuity of care for military families?; (2) is frequently changing providers related to continuity of care for military families?; and, finally, (3) is continuity of care related to patient satisfaction in military families?

## **METHODS**

### **Recruitment and participants**

Social media plays a significant role in the lives of military families,<sup>37</sup> so participants were recruited via three Facebook groups composed of military and veteran spouses unofficially affiliated with Fort George G. Meade in Maryland, and through the research team's established network of veterans, service members, and their spouses. Those who saw the recruitment announcement were encouraged to post it in their own military spouse-affiliated groups and



private networks to encourage maximum distribution. Participants were given the opportunity to enter a raffle after taking the survey, where each individual had a one in ten chance of winning \$25.

Recruitment was active for two months, beginning December 2015, during which time 178 military spouses completed the anonymous survey. Individuals were eligible for inclusion in the study if they were (1) a current military spouse or had been a military spouse within the previous 5 years; (2) not currently serving on active duty; (3) eighteen years of age or older; and, (4) received primary care at a military treatment facility (MTF) within the last five years.

All but three respondents were female, and as a result, male cases were removed from final analyses. Given that 95% of military spouses are female, this result was not entirely unexpected.<sup>38</sup> Ages ranged from 20 to 53 years, with a mean age of 31.8 years (SD=7.1). Other sample characteristics are described in Table 1. The race/ethnicity and educational attainment demographics were similar to that of the Military Spouse Employment Report, which examines a large sample of Active Duty military spouses ( $n=2,644$ ), though results of the US Census Bureau's American Community Survey suggest both surveys under-represented those identifying as Black or African American, and over-represented those with a bachelor's degree or higher.<sup>38</sup> The Institutional Review Board at the University of Maryland approved the study's procedures.

-----Insert Table 1 here-----

## Measurement

Due to the geographic spread of military families, and the nature of social media recruiting, the questionnaire was administered through the online survey platform, Qualtrics. Questions for the instrument were adapted from the CAHPS survey, described previously. Demographic

information was collected, including military dependent history, number of PCS moves (in whole numbers), and other information provided in Table 1. The number of PCS moves were coded into categories based on the distribution of responses (*0, 1-2, 3-4, 5+ moves*).

*Individual-level factors*

Participants were asked their age, highest level of educational attainment, and overall health status (*poor, fair, good, excellent*). Due to the low number of respondents indicating poor health, the poor and fair responses were combined for analysis.

*Provider-level factors*

Due to high provider turnover at installations and potential recall bias, participants were asked to report the number of primary care providers (PCPs) to which they'd been assigned categorically (*1, 2-3, 4-5, 6-7, 8+*). Based on the response distribution, categories were re-coded for analysis into three groups (*1-3, 4-5, 6+*).

To assess perceptions of overall interactions with military PCPs, four questions were asked related to how often PCPs would: "*listen carefully to you,*" "*explain things in a way that was easy to understand,*" "*show respect for what you had to say,*" and "*spend enough time with you.*" These questions were answered on a 4-point Likert scale (*never, sometimes, usually, always*).

To determine the average length of time assigned to providers, respondents were asked how long they had been assigned to their current PCP (*<1 year, 1-2 years, 3-5 years, 5+ years*). They were also asked how many times they were assigned to a provider who had to deploy or PCS.

*Continuity of care*

Responses for the number of assigned providers who had to PCS or deploy were grouped into four categories (0, 1-2, 3-4, 5+) where “5+” was coded with the lowest value (1 point). This mirrored the coding of all other variables in this category, where low scores represent factors leading to less continuity. Scores for all questions in the provider-level category, excluding number of PCPs, were combined to calculate a composite score, which demonstrated acceptable inter-item correlation (Cronbach’s alpha=0.72).

*Practice-level factors*

Respondents were asked to report how often their doctor’s office staff had “*treated you with respect and courtesy,*” and “*give[n] you the information or help you needed (for example, scheduling follow-up appointments, providing information about procedures or how to obtain referrals.)*” Both questions were answered on a 4-point Likert scale (*never, sometimes, usually, always*). These scores were combined to create a staff courtesy and information provision composite score ( $\alpha=0.78$ ).

*Patient satisfaction*

Three questions were originally adapted to measure patient satisfaction as a composite score, but due to poor inter-item correlation, they were analyzed separately in the final model. These three measures were labeled categorical satisfaction (“*How satisfied are you with the health care you have received as a military dependent?*”), rated satisfaction (“*Using any number from 0 to 10, where 0 is the worst health care possible and 10 is the best health care possible, what number would you use to rate all your health care as a military dependent?*”), and likelihood to recommend (“*How likely are you to recommend military health care to your friends and family,*

*regardless of their military status?”*). Responses for categorical satisfaction and likelihood to recommend were answered on a 4-point Likert scale. The original four responses for categorical satisfaction (*very dissatisfied, dissatisfied, satisfied, very satisfied*) were recoded for ANOVA and chi-square analyses into three categories, where very dissatisfied and dissatisfied were combined due to the small number of respondents who were very dissatisfied. For regression analysis, this measure was recoded once again to create a binary response, where the satisfied and very satisfied categories were combined. Rated satisfaction responses were coded as dissatisfied (0-6) or satisfied (7-10). Likelihood to recommend was similarly recoded as a binary response, where the very unlikely and unlikely categories were combined and compared to the combined likely and very likely categories.

#### *Qualitative data*

The instrument included one open-ended question (*“Is there anything else you would like to say about your health care or any areas of military health care you’ve been very satisfied or dissatisfied with?”*).

The survey was pilot-tested in November 2015 prior to launch.

#### **Analysis**

All analyses were conducted using SPSS version 23. To address research questions one and two, mean composite scores of continuity were compared to the number of PCS moves and the number of PCPs using ANOVA. To address research question three, mean composite scores were compared across three categories of satisfaction using ANOVA. To determine whether PCS moves or number of providers alone were associated with patient satisfaction, chi-square tests were conducted.

As an auxiliary analysis, a two-step bivariate logistic regression model was conducted. In the first step, patient-level factors were added to the model (age, educational attainment, and health status), and in the second step, practice-level factors (staff courtesy and information provision) and continuity of care were added. Provider relationship was not included as a separate variable because all but one question from this domain were used to calculate the continuity of care composite.

Qualitative data was analyzed by coding each response ( $n=81$ ) as positive, negative, both positive and negative, or neutral relative to the respondent's feelings about military health care. Negative comments were further categorized according to common themes, such as wait times, problems getting specialty care, provider issues, and inconsistent care.

## RESULTS

There was a significant negative association between continuity of care composite score and number of PCS moves ( $F=4.891$ ,  $p=0.003$ ), as summarized in Table 2. In post hoc analyses (LSD), there were significant differences in mean continuity of care composites between zero moves ( $\bar{x}=20.57$ ) and 3-4 ( $\bar{x}=17.14$ ,  $p=0.007$ ) and 5 or more moves ( $\bar{x}=16.53$ ,  $p=0.002$ ); 1-2 ( $\bar{x}=18.33$ ) moves and 3-4 moves ( $p=0.044$ ) and 5 or more moves ( $p=0.002$ ); and 3-4 moves and 5 or more moves ( $p=0.008$ ).

-----Insert Table 2a here-----

A similar effect was observed for continuity of care and number of providers ( $F=19.719$ ,  $p<0.001$ ). Post-hoc analysis (LSD) indicated significant differences between all categories, 1-3 ( $\bar{x}=19.45$ ), 4-5 ( $\bar{x}=17.29$ ), and 6 or more providers ( $\bar{x}=15.93$ ) ( $p\leq 0.020$ ).

-----Insert Table 2b here-----

Higher levels of satisfaction were related to higher mean continuity of care scores ( $F=32.226$ ,  $p<0.001$ ), with significant differences occurring between all three categories of patient satisfaction ( $p<0.001$ ) according to LSD performed in post-hoc. The same analysis was conducted for each of the other two patient satisfaction measures with similar results ( $p<0.01$ ). While the number of PCPs was significant in determining patient satisfaction ( $\chi^2=10.9$ ,  $p=0.028$ ), the number of PCS moves was not ( $\chi^2=4.986$ ,  $p=0.289$ ).

-----Insert Table 3, 4a/b here-----

As displayed in Table 5, continuity of care and staff courtesy were significant predictors of satisfaction for both categorical satisfaction and rated satisfaction, where those with higher continuity and higher staff courtesy were more likely to be satisfied in comparison to those with low continuity and staff courtesy. The likelihood to recommend military health care was higher in those with higher continuity scores (in relation to lower continuity scores) and lower in those reporting poor/fair health (in reference to the excellent health category). All three models were statistically significant ( $p < 0.01$ ).

-----Insert Table 5 here-----

Of 178 total respondents, 81 (45.5% of total) provided comments to the open-ended question. Of those comments, 17.3% were labeled positive (e.g., “I have had a great experience with the majority of my military healthcare”), 61.7% were labeled negative (e.g., “Too many hoops . . . too many times misdiagnosed with illness/treatment options”), 11.1% indicated at least one positive comment and one negative related to military health care, and 8.6% were labeled neutral (e.g., “My family has been pretty lucky, but not everyone is that lucky”). Comments coded as negative or positive/negative were further classified as provider issues (50.8%), long

wait times or problems scheduling appointments (27.1%), problems seeing a specialist (22.0%), inconsistent policies between military treatment facilities (18.6%), problems filling or obtaining prescriptions (8.5%), or medical records issues (5.1%). Some comments contained more than one complaint and were classified into more than one category. In general, these comments seem to support quantitative findings that dissatisfied spouses feel that way as a result of discontent with providers.

## **DISCUSSION**

Due to the frequent moves and provider changes intrinsic to the military lifestyle, it is not surprising that these factors were associated with continuity of care in this sample. Establishing deep, enduring relationships with PCPs is especially challenging for military spouses, and this study provides empirical evidence to support the idea that frequent upheaval is associated with poor continuity. Though it was a repeated theme in the open-response comments, one spouse said, “It is difficult to establish and maintain a consistent relationship and treatment plan when we have to refamiliarize doctors with our health care needs every time they or we move.”

While higher continuity of care scores were significantly associated with higher levels of patient satisfaction, as mirrored in previous studies examining this association, it was interesting to note that the number of PCS moves alone did not appear to be related to satisfaction. This implies that continuity of care may act as a mediating variable between the number of moves and the level of patient satisfaction. Contrastingly, the number of PCPs was significantly associated with satisfaction, indicating that the number of providers to which a patient is assigned may be a stronger predictor of satisfaction than the number of times they move, bringing up the inter-related issues of patient-provider relationships and continuity of care in patient satisfaction.

Predictors of patient satisfaction in this study seemed to reflect those identified in other studies, like courtesy and information provision of office staff, relative health, and continuity of care. The fact that continuity of care was related to patient satisfaction across all three measures of satisfaction indicates this population of spouses is not immune to the ill effects of discontinuity, despite possibly being more accepting of it as part of their lifestyle. The role of office staff in promoting patient satisfaction was an unexpected result, and while it seems unlikely that a courteous office staff alone would be enough to influence satisfaction, clinics should be mindful of office staff behavior and interactions to ensure patients are respected and receive clear information.

It is interesting to note that, while 77% of respondents reported being satisfied or very satisfied with their overall health care, only 58% of respondents would recommend their health care to friends or family. This could be explained by several comments left in the open-response section along the theme of the following: “The healthcare is free so I feel it isn’t entirely fair for me to criticize and judge.” Similar to a person who eats at a restaurant and feels full, but wouldn’t recommend the establishment to others, perhaps spouses feel their needs are met, but the services provided are not high enough quality for others. Alternatively, it could be a lack of knowledge of how other health systems work, leading spouses to feel they would likely receive better care elsewhere, or simply the belief that the care is inconsistent and family members may not receive the same quality of care. Regardless, due to its incongruence with the other two measures of satisfaction, likelihood to recommend may not be as strong a measure of satisfaction.

The majority of comments left were negative toward military health care, though it may be that people with negative experiences are more likely to document that experience than others



with positive experiences. Despite this possibility, it is telling that half of the negative comments included problems with providers, whether it was lack of control in choosing a provider, feeling like doctors were simply “filling in check boxes,” perceived misdiagnoses, feeling “like a number,” feeling rushed during appointments, or discomfort discussing problems with their provider. This once again speaks to the theme of the importance of provider relationships. Many comments (35.8%, n=29) specifically praised experiences with civilian providers in contrast to military, either from civilian PCPs contracting in military facilities, or outside civilian providers available through other TRICARE health plans.

There are several limitations to this study. First, though the sample size was determined adequate to achieve significant power, it was small in comparison to other surveys of military members and may not be representative of all military spouses. However, no significant difference was noted in satisfaction between White and minority respondents. Similarly, the sample may be biased towards career fields typically stationed at Fort Meade, though 48% of respondents reported being stationed in other locations, both in the United States and abroad. Next, the responses were all self-report, but this may not have been a significant source of bias because the survey was administered anonymously with a voluntary sample. While this study asked questions about satisfaction with children’s care, due to the necessity for questionnaire brevity, the final composite measure for children’s continuity was not deemed as strong as the individual composite, though the results mirrored the individual scores well (not reported).

Finally, continuity of care has primarily been studied in terms of provider-level factors, like length and depth of relationship, as well as trust. Military populations may face unique challenges to continuity, like problems with medical record transfer and lack of consistency in policies across military installations, both of which were mentioned in qualitative comments.

Therefore, the continuity measure used for this research, which focused only on provider-level factors, may not fully measure discontinuity, leading to an overestimation of spouses' continuity of care.

Despite these limitations, this study is the first of its kind to specifically examine the relationship between permanent change of station moves, continuity of care, and patient satisfaction in military spouses. Further, this study used three different measures of patient satisfaction, a strength when the concept of patient satisfaction is not well-defined across studies. The fact that separate analyses of these three measures yielded similar results indicates their reliability in measuring the domain of satisfaction. Additional social media recruiting was not possible in this study due to limited resources, but it hints at the potential reach of social media recruitment for future studies, particularly those with the resources to coordinate postings for military spouses at multiple installations. It should be noted that the majority (67%, n=124) of survey responses came within the first 24 hours of the first posting, which could be useful for studies with little time for recruitment.

The results of this study indicate the need for further research in patient satisfaction in military families, as well as potential associations between continuity of care and general health outcomes. More research should be conducted to define patient satisfaction with regard to specific referents (e.g., parent, military spouse, civilian) and more comprehensive instruments developed to define and measure all factors that influence continuity of care in military populations. While the DOD collects large-scale quantitative data about patient satisfaction in military spouses, more qualitative research should be conducted to understand why spouses are so dissatisfied in comparison to their civilian counterparts.

Given the importance of continuity of care and patient satisfaction in defining the quality of health care, finding a way to improve both should be a priority to military decision-makers. While it may not be possible to reduce the number of PCS moves for service members, these results indicate it may be enough to reduce the number of providers to which an individual is assigned. Despite the establishment of patient-centered medical homes (PCMH) to improve continuity of care at military installations across the nation, including Fort Meade, within this sample, lack of continuity of care may still be a significant issue. Military spouses and children have been identified as essential to force readiness, which means that keeping families healthy should not only be a priority from a financial standpoint, but from a strategic standpoint as well.

## References

1. Albano S. Military recognition of family concerns: Revolutionary War to 1993. *Armed Forces Soc.* 1994;20(2):283-302. doi:10.1177/0095327X9402000207.
2. Drummet AR, Coleman M, Cable S. Military families under stress: Implications for family life education. *Fam Relat.* 2003;52(3):279-287. doi:10.1111/j.1741-3729.2003.00279.x.
3. Paley B, Lester P, Mogil C. Family systems and ecological perspectives on the impact of deployment on military families. *Clin Child Fam Psychol Rev.* 2013;16(3):245-265. doi:10.1007/s10567-013-0138-y.
4. Palmer C. A theory of risk and resilience factors in military families. *Mil Psychol.* 2008;20(3):205-217. doi:10.1080/08995600802118858.
5. Lester P, Peterson K, Reeves J, et al. The long war and parental combat deployment: Effects on military children and at-home spouses. *J Am Acad Child Adolesc Psychiatry.* 2010;49(4):310-320. doi:10.1016/j.jaac.2010.01.003.
6. Mansfield AJ, Kaufman JS, Marshall SW, Gaynes BN, Morrissey JP, Engel CC. Deployment and the use of mental health services among U.S. Army wives. *N Engl J Med.* 2010;362(2):101-109. doi:10.1056/NEJMoa0900177.
7. Butler L, Linn BK, Meeker MA, McClain-Meeder K, Nochajski TH. “We don’t complain about the little things”: Views of veterans and military family members on health care gaps and needs. *Mil Behav Health.* 2015;3(2):116-124.
8. Harriott EM, Williams TV, Peterson MR. Childbearing in U.S. Military Hospitals: Dimensions of care affecting women’s perceptions of quality and satisfaction. *Birth Issues Perinat Care.* 2005;32(1):4-10. doi:10.1111/j.0730-7659.2005.00342.x.
9. Schafer JJ. Reaching a better management model for military medicine. *Hosp Top.* 2008;86(4):18-32. doi:10.3200/HTPS.86.4.18-32.
10. Lewis PC, Holcomb B. A model for patient-centered Army primary care. *Mil Med.* 2012;177(12):1502-1507. doi:10.7205/MILMED-D-12-00076.
11. Van Walraven C, Oake N, Jennings A, Forster AJ. The association between continuity of care and outcomes: a systematic and critical review. *J Eval Clin Pract.* 2010;16(5):947-956. doi:10.1111/j.1365-2753.2009.01235.x.
12. Crum-Cianflone NF, Fairbank JA, Marmar CR, Schlenger W. The Millennium Cohort Family Study: A prospective evaluation of the health and well-being of military service members and their families. *Int J Methods Psychiatr Res.* 2014;23(3):320-330. doi:10.1002/mpr.1446.

13. Kennedy HP, Farrell T, Paden R, et al. "I wasn't alone"--A study of group prenatal care in the military. *J Midwifery Womens Health*. 2009;54(3):176-183. doi:10.1016/j.jmwh.2008.11.004.
14. Jha AK, Orav EJ, Zheng J, Epstein AM. Patients' perception of hospital care in the United States. *N Engl J Med*. 2008;359(18):1921-1931. doi:10.1056/NEJMsa0804116.
15. Boulding W, Glickman SW, Manary MP, Schulman KA, Staelin R. Relationship between patient satisfaction with inpatient care and hospital readmission within 30 days. *Am J Manag Care*. 2011;17(1):41-48.
16. Glickman SW, Boulding W, Manary M, et al. Patient satisfaction and its relationship with clinical quality and inpatient mortality in acute myocardial infarction. *Circ Cardiovasc Qual Outcomes*. 2010;3(2):188-195. doi:10.1161/CIRCOUTCOMES.109.900597.
17. Moore AD, Hamilton JB, Pierre-Louis BJ, Jennings BM. Increasing access to care and reducing mistrust: Important considerations when implementing the Patient-Centered Medical Home in Army health clinics. *Mil Med*. 2013;178(3):291-298. doi:10.7205/MILMED-D-12-00443.
18. Manary MP, Boulding W, Staelin R, Glickman SW. The patient experience and health outcomes. *N Engl J Med*. 2013;368(3):201-203. doi:10.1056/NEJMp1211775.
19. Defense Health Agency. Health Care Survey of DOD Beneficiaries. <http://www.tricare.mil/survey/hcsurvey/annual-report.cfm>. Published 2015.
20. Agency for Healthcare Research and Quality. Consumer Assessment of Healthcare Providers and Systems. <https://cahps.ahrq.gov/index.html>. Published 2015. Accessed September 19, 2015.
21. Sitzia J, Wood N. Patient satisfaction: A review of issues and concepts. *Soc Sci Med*. 1997;45(12):1829-1843. doi:10.1016/S0277-9536(97)00128-7.
22. Hall JA, Dornan MC. Patient sociodemographic characteristics as predictors of satisfaction with medical care: A meta-analysis. *Soc Sci Med*. 1990;30(7):811-818.
23. Fox JG, Storms DM. A different approach to sociodemographic predictors of satisfaction with health care. *Soc Sci Med [A]*. 1981;15(5):557-564.
24. Pascoe GC. Patient satisfaction in primary health care: A literature review and analysis. *Eval Program Plann*. 1983;6(3-4):185-210.
25. Quintana JM, González N, Bilbao A, et al. Predictors of patient satisfaction with hospital health care. *BMC Health Serv Res*. 2006;6(1):1-9. doi:10.1186/1472-6963-6-102.
26. Jackson JL, Chamberlin J, Kroenke K. Predictors of patient satisfaction. *Soc Sci Med*. 2001;52(4):609-620. doi:10.1016/S0277-9536(00)00164-7.

27. Hekkert KD, Cihangir S, Kleefstra SM, van den Berg B, Kool RB. Patient satisfaction revisited: A multilevel approach. *Soc Sci Med*. 2009;69(1):68-75. doi:10.1016/j.socscimed.2009.04.016.
28. Conway T, Willcocks S. The role of expectations in the perception of health care quality: Developing a conceptual model. *Int J Health Care Qual Assur*. 1997;10(3):131-140. doi:10.1108/09526869710167058.
29. Tung Y-C, Chang G-M. Patient satisfaction with and recommendation of a primary care provider: associations of perceived quality and patient education. *Int J Qual Health Care*. 2009;21(3):206-213. doi:10.1093/intqhc/mzp006.
30. Marcinowicz L, Chlabicz S, Grebowski R. Patient satisfaction with healthcare provided by family doctors: primary dimensions and an attempt at typology. *BMC Health Serv Res*. 2009;9:1-5. doi:10.1186/1472-6963-9-63.
31. Jennings BM, Loan LA, Heiner SL, Hemman EA, Swanson KM. Soldiers' experiences with military health care. *Mil Med*. 2005;170(12):999-1004.
32. Gulliford MC, Naithani S, Morgan M. Continuity of care and intermediate outcomes of type 2 diabetes mellitus. *Fam Pract*. 2007;24(3):245-251. doi:10.1093/fampra/cmm014.
33. Hjortdahl P, Lærum E. Continuity Of care in general practice: Effect on patient satisfaction. *BMJ*. 1992;304(6837):1287-1290.
34. Jennings BM, Heiner SL, Loan LA, Hemman EA, Swanson KM. What really matters to healthcare consumers. *J Nurs Adm*. 2005;35(4):173-180. doi:10.1097/00005110-200504000-00006.
35. Adler R, Vasiliadis A, Bickell N. The relationship between continuity and patient satisfaction: a systematic review. *Fam Pract*. 2010:cmp099. doi:10.1093/fampra/cmp099.
36. Iaconi AI, Chang J, Feldman S, Balkrishnan R. Toward continuous primary care in the United States: Differences in patient satisfaction between first and return visits to primary care physicians/Analysis of DrScore—The national e-Survey data. *J Prim Care Community Health*. 2011;2(2):127-132. doi:10.1177/2150131910393252.
37. Matthews-Juarez P, Juarez PD, Faulkner RT. Social Media and Military Families: A Perspective. *J Hum Behav Soc Environ*. 2013;23(6):769-776. doi:10.1080/10911359.2013.795073.
38. Maury R, Stone B. *Military Spouse Employment Report*. Institute for Veterans and Military Families: Syracuse University; 2014.

Table 1: Sample Characteristics

Race or Ethnicity, <i>n</i> (%)		
Asian/Pacific Islander	6 (3.4%)	3.4
Black/African American	3 (1.7%)	1.7
Latino or Hispanic	17 (9.8%)	9.8
Native American	2 (1.1%)	1.1
White/Caucasian	139 (79.9%)	79.9
Other	7 (4%)	4
Education Level		
High school graduate/GED	9 (5.2%)	5.2
Some College	54 (31%)	31
Trade/Technical/Vocational	10 (5.7%)	5.7
College Graduate	69 (39.7%)	39.7
Some Graduate-Level Coursework	9 (5.2%)	5.2
Graduate or higher degree	23 (13.2%)	13.2
Employment Status		
Employed	64	36.8
Unemployed	110	63.2
Parent		
Yes	132	75.9
No	42	24.1
Spouse's Branch of Service		
Air Force	47	27.2
Army	79	45.7
Coast Guard	1	0.6
Marines	17	9.8
Navy	29	16.8
Pay Grade Category		
Enlisted	133	77.3
Commissioned	39	22.7
Military Status		
Active Duty	140	82.8
Reserve	8	4.7
Separated/Retired	21	12.4
Military Health Plan Utilized		
TRICARE*	138	84.7
US Family Health Plan	25	15.3
Primary location of care		
Military Treatment Facility	105	63.6
Civilian Treatment Facility	60	36.4

\*Includes TRICARE Prime, Standard, Extra, and Plus

**Table 2a: Continuity of Care by PCS Moves**

Moves	Continuity of Care Composite		
	<i>n</i>	Mean	Std Dev
0	7	20.57	2.07
1-2	57	18.33	3.38
3-4	58	17.14	3.24
5+	36	16.53	2.78
Total	158	17.58	3.27

**Table 2b: Continuity of Care by PCPs**

PCPs	Continuity of Care Composite		
	<i>n</i>	Mean	Std Dev
1-3	53	19.453	3.073
4-5	48	17.292	3.073
6+	55	15.927	2.666
Total	156	17.545	3.271

**Table 3: Patient Satisfaction by Continuity of Care**

	Continuity of Care Composite		
	<i>n</i>	Mean	Std Dev
Dissatisfied	35	14.69	2.43
Satisfied	94	17.73	2.84
Very Satisfied	26	20.19	2.65
Total	155	17.46	3.22

**Table 4a: Patient Satisfaction by PCS Moves**

	1-2	3-4	5+	Total
Dissatisfied	8 (5.3%)	17 (11.3%)	9 (6.0%)	34 (22.5%)
Satisfied	39 (25.8%)	32 (21.2%)	23 (15.2%)	94 (62.3%)
Very Satisfied	11 (7.3%)	8 (5.3%)	4 (2.6%)	23 (15.2%)
Total	58 (38.4%)	57 (37.7%)	36 (23.8%)	151 (100%)



**Table 4b: Patient Satisfaction by Number of Providers**

	1 to 3	4 to 5	6 or more	Total
Dissatisfied	7 (4.5%)	10 (6.5%)	18 (11.6%)	35 (22.6%)
Satisfied	30 (19.4%)	31 (20%)	33 (21.3%)	94 (60.6%)
Very Satisfied	14 (9.0%)	8 (5.2%)	4 (2.6%)	26 (16.8%)
Total	51 (32.9%)	49 (31.6%)	55 (35.5%)	155 (100%)

**Table 5: Adjusted Odds Ratios (AOR) for Dimensions of Satisfaction\***

Significant Predictors	Dimension of Satisfaction ( <i>n</i> = 140)		
	Categorical Satisfaction	Rated Satisfaction	Likelihood to Recommend
Age	NS	0.92 (0.854-0.99)	NS
Poor/Fair Health	NS	NS	0.232 (0.07, 0.83)
Staff Courtesy/Info	1.62 (1.03, 2.551)	1.79 (1.21, 2.66)	NS
Continuity of Care	1.50 (1.18, 1.91)	1.43 (1.19, 1.73)	1.33 (1.14, 1.55)

\*All AORs significant at the level of  $p < 0.05$  unless indicated by NS

## Chapter 4: Summary

After completing all analyses, all three research questions were answered in the affirmative. In this study, the number of permanent change of station moves was negatively and significantly associated with continuity of care, where those with a lower number of moves had higher continuity of care scores, and those with a higher number of moves had lower continuity of care scores. Similarly, the number of primary care providers was also negatively and significantly associated with continuity of care, where respondents with fewer providers had higher mean continuity of care scores. Continuity of care also had a significant effect on level of satisfaction, where respondents with lower mean continuity of care scores were more dissatisfied with military health care. PCS moves alone was not significantly associated with patient satisfaction, indicating the possibility of continuity of care acting as a mediator between these two variables. Continuity of care, along with courtesy and information provision of medical office staff, was one of the main predictors of patient satisfaction in a bivariate logistic regression model.

These results conform with what is expected from the literature, but they are important because it is the first time patient satisfaction has been explored in-depth in populations of service member spouses. Traditional patient satisfaction surveys have been administered for many years in this population, but it is unclear what, if anything, is being done with the results. Further, the purpose of these studies appears to be related to whether or not patients are satisfied, with no way to gauge or describe specific issues causing dissatisfaction.

To add dimension to the results of this study, it was possible to analyze qualitative data from one open-response question, which asked respondents if they had anything else they wanted

to say about their health care, and to describe specific points of satisfaction or dissatisfaction with military health care. While 77% of spouses indicated satisfaction with their health care, only 58% would recommend military health care to their friends or family, regardless of military status. Nearly half of the respondents included comments, which was unanticipated, but provided valuable information to help understand why spouses may be dissatisfied with some components of their care, making them less likely to recommend military health care.

The most repeated themes across comments were that respondents were unhappy with military providers, feeling “like a number” when they go to appointments, and generally preferring civilian providers. Further, when asked if they would prefer civilian or military health care if they had a choice (**A3**: q43), only 14% would choose military health care (15% indicated no preference). While this sample was small in comparison to the millions of individuals receiving care through the military, given the overall dissatisfaction with providers revealed in quarterly DOD assessments of satisfaction in TRICARE beneficiaries via the HCSDB, these results suggest there may either be failings in training military providers in patient-provider interactions, or military providers could simply be overloaded with patients.

The initial intent of this study was to examine both individual satisfaction with health care, and parental satisfaction with children’s health care. However, when calculating composite scores for children’s continuity of care, the provider-level factors measured were not as robust a measure of parental satisfaction as they were of individual satisfaction, and the children’s continuity composite was abandoned. Parental satisfaction results mirrored those of individual satisfaction results in terms of associations between satisfaction and both PCS moves and number of providers, but these results were not reported due to the lack of confidence in the continuity measure.

Given military spouses' poor ratings of military providers, future research should be conducted to elucidate the patient-provider relationship in this population, and define what aspects of this interaction cause dissatisfaction. Results of this research could help leaders in the military health system make decisions regarding provider deployments, training, and workload, all of which could separately or synergistically impact patient-provider relationships and continuity of care. Further research should also be conducted to develop better measures of continuity of care in military populations. While this concept has traditionally been defined in terms of the provider relationship, in military populations, there may be the added burden of mishandled medical records and inconsistent policies across military treatment facilities contributing to poor continuity of care. Results of continuity studies could reveal a multi-faceted problem that cannot be solved by addressing provider-level factors alone; the DOD may need to enact system-wide changes.

As the results of this study reveal, a good starting point to improving continuity of care for military families could be to limit deployments and PCS moves for primary care providers. As a cost-saving measure, both the Army and Air Force have announced changes in stateside assignments for their branches, theoretically lengthening the amount of time service members remain at one duty station. While these changes have not yet been widely implemented, they are indicative of the feasibility of restructuring the way primary care providers are assigned to duty stations. An alternative solution could be to contract all primary care positions to civilian providers, who are more likely to remain in one place. In this scenario, military medical schools would focus their training on field medicine and specialty care, and use the funds budgeted for primary care training to incentivize civilian primary care providers to work for the military health system. Regardless of the choice of solution, to improve continuity, providers should

either remain constant at a duty station, or service members should move less in general. Given the dynamic personnel needs across duty stations worldwide, having providers remain constant may be the more feasible choice.

The solution adopted in some military treatment facilities is the patient-centered medical home (PCMH), described in **section 2.2**, which increases continuity by providing a team of providers for patients, so they are more likely to see a familiar face at each appointment. The problem with this model in a military population is that first, it has not been enacted across the military health system, creating inconsistencies as service members and their families move from one duty station to another. Second, patients may prefer seeing one provider for each appointment, which is not possible when providers from the team are deploying and being reassigned. While this model has the potential to improve continuity of care for military families, more research must be done to determine whether it is effective across the military health system.

This study was only a small contribution to helping military researchers understand health in military families, but it was an important first step. It is certain that military family members are exposed to discontinuous care as a result of their transient lifestyle, and this study is one step toward confirming that theory, as well as introducing the theory that continuity of care may be a strong predictor of patient satisfaction with military health care, and the potential quality of that health care. The Armed Forces has a unique opportunity to influence the health of service members and their families. The provision of free healthcare eliminates many barriers to receiving care, but DOD cannot rely on free care alone to ensure healthy beneficiaries. With health problems like obesity and overweight rising in military spouses, and their linked comorbidities of cardiovascular disease and diabetes, improving the quality of care should be a

top priority. A higher-quality system would improve the health of the millions-strong military community, and could significantly reduce health care spending on preventable conditions.

# Appendix 1: Methods and Measures

## A1.1 Study Sample and Recruitment

### *Eligibility Criteria*

Participants must be:

- Current military spouses;
- OR were a military spouse within the last five years (separated or divorced no earlier than 2011);
- 18 years of age or older; and,
- Have received their primary care at a military treatment facility (MTF) within the last five years.

### *Sampling Procedure*

Participants were recruited via Facebook. The researcher, by virtue of being a military veteran and spouse for over ten years, has cultivated an extensive social network composed of service members, veterans, and their families. A link to a Qualtrics survey was sent to individuals in this social network, inviting them to take the survey if eligible, and/or post the link for their networks. The link was also posted in three Facebook groups unofficially affiliated with Fort George G. Meade, in Maryland, and several of the researcher's associates volunteered to post the survey link in their unofficial installation groups, including installations in Germany, Georgia, Texas, Alabama, and California. Members of one Fort Meade Facebook group alone number over 6,000, and while not all members would meet eligibility requirements, this demonstrates the potential reach of social media.

In addition to being posted in message boards and Facebook groups, those viewing the survey were encouraged to distribute the link within their own social networks, with the intent of snowball sampling and increasing the number of participants. Because the survey was not affiliated with the Department of Defense or any one installation, recruitment did not extend to the official pages of military installations.

Participants were incentivized by being given instructions to enter a raffle in which they had a one in ten chance of winning \$25 cash. Raffles were held at the end of each month of sampling (December and January).

## **A1.2 Measurement**

### *A1.2.1 Questionnaire*

Participants were asked to fill out an online Qualtrics survey, which consisted of questions to assess demographics, their history as a military dependent, and their experiences with the various levels identified in the modified ecological model (**section 2.3**). It utilized questions adapted from the CAHPS survey, unless otherwise indicated in the following sections. Reliability for each section is indicated in its respective introduction. All questions have been validated in various military populations, including service members and their adult dependents.

#### *A1.2.1.1 Demographic Information and Individual-level factors*

Personal information collected included age, gender, race, ethnicity, highest level of educational attainment, and employment status. Age and educational attainment were used in the analysis of individual-level factors related to patient satisfaction.

#### *A1.2.1.2 Military dependent history*

The purpose of this section was to assess how long the participant had been a military dependent, to which branch of service their spouse belongs, whether their spouse is enlisted or



commissioned, spouse military pay grade, how many duty stations they have been assigned to during their tenure as a dependent, the type of military insurance used, where they have received the majority of care as a dependent (e.g., MTF or civilian facility) and whether their spouse is still currently active duty or separated.

#### *A1.2.1.3 Patient-level factors*

Information on age and educational attainment was gathered in the demographic portion of the survey (Q2 and Q5). Participants were asked to rate their health in one question (Q19), which has been shown to demonstrate test-retest reliability as a single question to assess self-rated health (polychoric correlation coefficient = 0.75) (Zajacova & Dowd, 2011).

#### *A1.2.1.4 Continuity of Care*

To measure continuity of care, one of the primary outcome variables, items were taken from the military dependent history (A1.2.1.2) and provider-level factors (A1.2.1.5) sections to assess length and depth of relationship. Participants were asked how many PCS moves they had experienced (A3: Q16). To calculate the continuity of care composite, answers to questions about provider relationship depth (A3: Q31-1 through Q31-4) and length of relationship (A3: Q23 and Q25) were scaled from 1 to 4 and the responses added to create a composite score, where lower scores indicated lower continuity. The reliability of this subscale was good, with a Cronbach's alpha of 0.72.

#### *A1.2.1.5 Provider-level factors*

The purpose of this section was to assess perceptions of patient-provider interactions. The reliability of the four questions used (A3: Q31-1 through Q31-4) has previously been assessed at 0.92 (Chong, Damiano, & Hays, 2012). For this study, the Cronbach's alpha was 0.96.

#### *A1.2.1.6 Practice-level factors*

This section asked participants to rate issues related to accessibility (**A3**: q33), availability (**A3**: q35, q36), and staff courtesy and information provision (**A3**: q37, q38). Reliability was assessed for courtesy of office staff ( $\alpha=0.82$ ) (Chong et al., 2012). Only staff courtesy and information provision were used in the final analysis because the items in this category did not correlate well with each other, and the majority of literature reviewed for this study specifically mentioned these two concepts in relation to practice-level factors. These two items were added together to create a composite score ( $\alpha=0.75$ ).

#### *A1.2.1.7 Patient Satisfaction*

The purpose of this section was to measure the dependent variable, patient satisfaction. Reliability for these items has been assessed at 0.73 (**A3**: q43), 0.75 (**A3**: q44, q45), and 0.91 (**A3**: q39, q40, q42) (Chong et al., 2012; Mangelsdorff & Finstuen, 2003). Based on the reliability of these measures, the intention was to develop a composite score by adding responses scaled from 1 to 4 for five questions (**A3**: Q39, 40, 42, 44, 45). However, the collective scores for these items were not internally consistent ( $\alpha = 0.58$ ), and only question 40 appeared to truly address patient satisfaction. While this question had the most face validity, specifically asking respondents about their level of satisfaction, responses to two other questions (**A3**: Q39, Q42) were independently compared to the continuity of care composite, and in logistic regression analysis, to probe different potential areas of satisfaction, creating a total of three measures of patient satisfaction used in final analyses.

#### *A1.2.2 Psychometric properties*

The Consumer Assessment of Health Providers and Systems (CAHPS) survey has had multiple versions, all of which have demonstrated acceptable reliability and validity. Each section is

validated separately, but the median reliability has a Cronbach's alpha of 0.78. The section from which the majority of questions were taken for this survey had the highest reliability in a previous study (alpha=0.92), and other sections range from alpha=0.70 for "getting needed care" and alpha=0.82 for "office staff courtesy and respect" (Chong et al., 2012).

### **A1.3 Pilot-testing**

Five military spouses were asked to take the survey to determine length of time required for completion, which averaged seven minutes. The spouses submitted the survey, but results were deleted without being viewed. Volunteers were informally interviewed to assess the readability and appropriateness of the instrument items. The following questions were asked:

1. How long did it take for you to complete the survey?
2. Did any of the questions seem difficult to understand?
3. Everybody has different expectations and experiences regarding their health care, do you think the questions in this survey accurately captured some of the experiences that may have left you feeling satisfied or dissatisfied with your health care as a military spouse?
4. What do you think is missing?

In general, the comments were positive related to the readability and appropriateness of the survey questions, though three participants had comments related to the survey not being specific enough to capture every unique situation related to satisfaction. However, these comments seemed to suggest changes beyond the scope of this project, and the open-ended question at the end of the questionnaire (A3: q46) seemed to capture some of that information. Therefore, the survey was not altered before official launch.

## **A1.4 Analysis**

### *A1.4.1 Sample Requirements*

After conducting a power analysis utilizing G\*Power 3.0.10, where  $\alpha=0.05$  and Power=0.80, the ideal sample size for this study was 191. A sample of 191 would have the ability to detect a small to medium effect size (0.20). A sample size of 120 would have the ability to detect a slightly larger effect size of 0.25.

### *A1.4.2 Variables and analyses of research questions*

1. The dependent variable in both the first and second research questions is continuity of care, which was represented by a composite score calculated from the questions in section A.1.2.1.4. To test whether PCS moves, the independent variable in the first research question, was related to continuity of care, analysis of variance (ANOVA) was used to compare continuity of care mean scores across categories of number of PCS moves (0, 1-2, 3-4, 5+).
2. To test whether the number of providers was related to continuity of care, ANOVA was used to compare continuity of care means across categories of number of primary care providers (1-3, 4-5, 6+).
3. A two-part analysis occurred to test the association between continuity of care and patient satisfaction. First, ANOVA was conducted to determine whether differences existed in mean continuity scores across varying levels of patient satisfaction. Because significant differences existed between groups, a bivariate regression model was constructed to determine whether continuity of care, or another factor, as described previously, was the strongest predictor of patient satisfaction in military families.

### 3.5 Timeline

Research activities	Nov	Dec	Jan	Feb	Mar	Apr
Pilot testing	X					
Recruitment and data collection		X	X			
Data analysis				X		
Final write-up					X	
Presentation of results						X

## Appendix 2: Tables

**Table 2: Sample Characteristics**

	<i>n</i>	%
<b>Race or Ethnicity</b>		
Asian/Pacific Islander	6	3.4
Black/African American	3	1.7
Latino or Hispanic	17	9.8
Native American	2	1.1
White/Caucasian	139	79.9
Other	7	4
<b>Education Level</b>		
High school graduate/GED	9	5.2
Some College	54	31
Trade/Technical/Vocational	10	5.7
College Graduate	69	39.7
Some Graduate-Level Coursework	9	5.2
Graduate or higher degree	23	13.2
<b>Employment Status</b>		
Employed	64	36.8
Unemployed	110	63.2
<b>Parent</b>		
Yes	132	75.9
No	42	24.1
<b>Spouse's Branch of Service</b>		
Air Force	47	27.2
Army	79	45.7
Coast Guard	1	0.6
Marines	17	9.8
Navy	29	16.8
<b>Pay Grade Category</b>		
Enlisted	133	77.3
Commissioned	39	22.7
<b>Military Status</b>		
Active Duty	140	82.8
Reserve	8	4.7
Separated/Retired	21	12.4
<b>Military Health Plan Utilized</b>		
TRICARE*	138	84.7
US Family Health Plan	25	15.3
<b>Primary location of care</b>		
Military Treatment Facility	105	63.6
Civilian Treatment Facility	60	36.4

\*Includes TRICARE Prime, Standard, Extra, and Plus

**Table 3a: Continuity of Care by PCS Moves**

Moves	Continuity of Care Composite		
	<i>n</i>	Mean	Std Dev
0	7	20.57	2.07
1 to 2	57	18.33	3.38
3 to 4	58	17.14	3.24
5 or more	36	16.53	2.78
Total	158	17.58	3.27

**Table 3b: Continuity of Care by PCPs**

PCPs	Continuity of Care Composite		
	<i>n</i>	Mean	Std Dev
1 to 3	53	19.453	3.073
4 to 5	48	17.292	3.073
6 or more	55	15.927	2.666
Total	156	17.545	3.271

**Table 4: Patient Satisfaction by Continuity of Care**

	Continuity of Care Composite		
	<i>n</i>	Mean	Std Dev
Dissatisfied	35	14.69	2.43
Satisfied	94	17.73	2.84
Very Satisfied	26	20.19	2.65
Total	155	17.46	3.22

**Table 5a: Patient Satisfaction by PCS Moves**

	1-2	3-4	5+	Total
Dissatisfied	8 (5.3%)	17 (11.3%)	9 (6.0%)	34 (22.5%)
Satisfied	39 (25.8%)	32 (21.2%)	23 (15.2%)	94 (62.3%)
Very Satisfied	11 (7.3%)	8 (5.3%)	4 (2.6%)	23 (15.2%)
Total	58 (38.4%)	57 (37.7%)	36 (23.8%)	151 (100%)

**Table 5b: Patient Satisfaction by Number of Providers**

	1 to 3	4 to 5	6 or more	Total
Dissatisfied	7 (4.5%)	10 (6.5%)	18 (11.6%)	35 (22.6%)
Satisfied	30 (19.4%)	31 (20%)	33 (21.3%)	94 (60.6%)
Very Satisfied	14 (9.0%)	8 (5.2%)	4 (2.6%)	26 (16.8%)
Total	51 (32.9%)	49 (31.6%)	55 (35.5%)	155 (100%)

**Table 6: Adjusted Odds Ratios (AOR) for Dimensions of Satisfaction\***

Significant Predictors	Dimension of Satisfaction ( <i>n</i> = 140)		
	Categorical Satisfaction	Rated Satisfaction	Likelihood to Recommend
Age	NS	0.92 (0.854-0.99)	NS
Poor/Fair Health	NS	NS	0.232 (0.07, 0.83)
Staff Courtesy/Info	1.62 (1.03, 2.551)	1.79 (1.21, 2.66)	NS
Continuity of Care	1.50 (1.18, 1.91)	1.43 (1.19, 1.73)	1.33 (1.14, 1.55)

\*All AORs significant at the level of  $p < 0.05$  unless indicated by NS



## Appendix 3: Questionnaire

Q1 This is a research study being conducted by Jessica Gleason and Dr. Kenneth Beck through the University of Maryland. The purpose of this project is to understand how military spouses feel about military health care, and how PCS moves may impact those feelings. There is no more than minimal risk to participating in this study, and participation is completely voluntary. You may stop taking the survey at any time, and you may skip any question that makes you feel uncomfortable. This survey should take no more than 10-15 minutes to complete. Your responses are anonymous and will not affect health care or any other benefits to which you otherwise qualify. If you choose to complete this survey, you will be given instructions at the end on how to enter a raffle to win \$25. There is a one in ten chance of winning the raffle.

If you would like a copy of this information, please print this page for your records, or email [jgleason@umd.edu](mailto:jgleason@umd.edu) to request a copy.

In order to take this survey, you must be (1) a military spouse (or were a military spouse in the last five (5) years), (2) not currently serving on active duty, and (3) at least 18 years of age.

Have you read the above information and would you like to participate? Please choose one of the following:

- YES, I am eligible and I would like to participate in this research study. (1)
- NO, I am ineligible or do not want to participate in this research study. (2)

If NO, I am ineligible or do n... Is Selected, Then Skip To End of Survey

Q2 As of today, what is your age (in years)?

Q3 To which racial or ethnic group do you most identify?

- Black/African-American (non-Hispanic) (1)
- Asian/Pacific Islander (2)
- White/Caucasian (Non-Hispanic) (3)
- Latino or Hispanic (4)
- Native American (5)
- Other (6)

Q4 What is your gender?

- Female (1)
- Male (2)

Q5 What is the highest level of education you have completed?

- Some high school (1)
- High school graduate/GED (2)
- Some college (3)
- Trade/technical/vocational training (4)
- College graduate (5)
- Some graduate-level coursework (6)
- Graduate or higher degree (7)

Q6 Are you currently employed?

- Yes (1)
- No (2)

Answer If Are you currently employed? Yes Is Selected

Q7 In which industry are you currently employed?

- Admin, support (1)
- Arts, entertainment, or recreation (2)
- Construction (3)
- Education (4)
- Finance or insurance (5)
- Forestry or agriculture (6)
- Health care (7)
- Home-based business (8)
- Hospitality or food services (9)
- Information technology (10)
- Management (11)
- Manufacturing (12)
- Professional, scientific or technical services (13)
- Real estate or rental and leasing (14)
- Retail (15)
- Social work (16)
- Transportation or warehousing (17)
- Utilities (18)

Q8 Are you the parent or guardian of a child (or children) who received health care as a military dependent?

- Yes (1)
- No (2)

Answer If Are you the parent or guardian of a child (or children) who received health care as a military dependent? Yes Is Selected

Q9 How many children, under the age of 18, do you or your spouse have living at home either part-time or full-time?

Answer If Are you the parent or guardian of a child (or children) who received health care as a military dependent? Yes Is Selected

Q10 What are your children's ages? (please select all that apply)

- Infant (0-23 months) (1)
- Toddler (2-3 years) (2)
- Preschool (4-5 years) (3)
- Elementary school-aged (6-11) (4)
- Middle school-aged (12-14) (5)
- High school-aged (15-18) (6)
- Adult (over the age of 18) (7)

Q11 What military branch does your spouse currently belong to (if separated/retired, what branch did he/she separate/retire from)?

- Air Force (1)
- Army (2)
- Marines (3)
- Navy (4)
- Coast Guard (5)

Q12 Is your spouse enlisted or commissioned?

- Enlisted (1)
- Commissioned officer (2)

Answer If Is your spouse enlisted or commissioned? Enlisted Is Selected

Q13 What is your spouse's current pay grade (if separated/retired, what was his/her last pay grade)?

- E1 (1)
- E2 (2)
- E3 (3)
- E4 (4)
- E5 (5)
- E6 (6)
- E7 (7)
- E8 (8)
- E9 (9)

Answer If Is your spouse enlisted or commissioned? Commissioned officer Is Selected

Q14 What is your spouse's current pay grade (if separated/retired, what was his/her last pay grade)?

- O1 (1)
- O2 (2)
- O3 (3)
- O4 (4)
- O5 (5)
- O6 (6)
- O7 (7)
- O8 (8)
- O9 (9)
- O10 (10)
- W-1 (11)
- W-2 (12)
- W-3 (13)
- W-4 (14)
- W-5 (15)

Answer If What is your spouse's current military status? Separated/Retired Is Not Selected

Q15 Where are you currently stationed? (Please enter the name of the installation or city)

Q16 Including any training assignments where you accompanied your spouse, how many PCS moves have you experienced?

Q17 What is your spouse's current military status?

- Active duty (1)
- Reserve (2)
- Separated/Retired (3)

Answer If What is your spouse's current military status? Separated/Retired Is Selected

Q18 What year did your spouse separate/retire?

- 2011 (1)
- 2012 (2)
- 2013 (3)
- 2014 (4)
- 2015 (5)

Q19 In general, how would you rate your overall health?

- Poor (1)
- Fair (2)
- Good (3)
- Excellent (4)

Q20 Which military health plan have you primarily used as a military dependent?

- TRICARE Prime (1)
- TRICARE Standard or Extra (2)
- TRICARE Plus (3)
- US Family Health Plan (4)

Q21 Where have you received the majority of your care as a military dependent?

- Military treatment facility (MTF) (1)
- Civilian treatment facility (2)

Q22 Throughout your time as a military spouse, approximately how many primary care providers (personal doctors) have you been assigned to?

- 1 (1)
- 2-3 (2)
- 4-5 (3)
- 6-7 (4)
- 8 or more (5)

Q23 In general, how many times have you been assigned to a military primary care provider who had to PCS or deploy? (Please give your best estimation. If none, enter "0.")

Q24 In general, how many times have you been assigned to a civilian primary care provider who moved or otherwise left the practice? (Please give your best estimation. If none, enter "0.")

Q25 How long have you been seeing your CURRENT primary care provider? (If you are no longer a military dependent, how long were you seeing the last primary care provider at your last duty station?)

- Less than 1 year (1)
- 1-2 years (2)
- 3-5 years (3)
- More than 5 years (4)

Answer If Are you the parent or guardian of a child (or children) who received health care as a military dependent? Yes Is Selected

Q26 The next few questions are about your child(ren). If you have more than one child, please think about the child who has lived with you and been a military dependent the LONGEST when answering these questions. Where has your child received the majority of his/her care as military dependent?

- Military treatment facility (MTF) (1)
- Civilian treatment facility (include US Family Health Plan Facility) (2)

Answer If Are you the parent or guardian of a child (or children) who received health care as a military dependent? Yes Is Selected

Q27 For as long as this child has been a military dependent, approximately how many primary care providers (personal doctors) has he/she been assigned to?

- 1 (1)
- 2-3 (2)
- 4-5 (3)
- 6-7 (4)
- 8 or more (5)

Answer If Are you the parent or guardian of a child (or children) who received health care as a military dependent? Yes Is Selected

Q28 In general, how many times has your child been assigned to a military primary care provider who had to PCS or deploy? (Please give your best estimation. If none, enter "0.")

Answer If Are you the parent or guardian of a child (or children) who received health care as a military dependent? Yes Is Selected

Q29 In general, how many times has your child been assigned to a civilian primary care provider who moved or otherwise left the practice? (Please give your best estimation. If none, enter "0.")

Answer If Are you the parent or guardian of a child (or children) who received health care as a military dependent? Yes Is Selected

Q30 How long has your child been seeing his/her CURRENT primary care provider? (If this child is no longer a military dependent, how long had he/she been seeing his/her last primary care provider at his/her last duty station?)

- Less than 1 year (1)
- 1-2 years (2)
- 3-5 years (3)
- More than 5 years (4)

Q31 Thinking about your time as a military spouse, IN GENERAL, how often did your personal doctor:

	Never (1)	Sometimes (2)	Usually (3)	Always (4)
Listen carefully to you (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Explain things in a way that was easy to understand (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Show respect for what you had to say (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spend enough time with you (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q32 Thinking back on your time as a military spouse, was there ever a time when you needed care right away?

- Yes (1)
- No (2)

Answer If Thinking back on your time as a military spouse, was there ever a time when you needed care right away? Yes Is Selected

Q33 When you needed care right away, how often did you get care as soon as you needed it?

- Never (1)
- Sometimes (2)
- Usually (3)
- Always (4)

Answer If Was there ever a time when you needed care right away for yourself or one of your children? Yes Is Selected

Q35 When you needed care right away, how long did you usually have to wait between trying to get care and actually seeing a provider?

- 1 day (1)
- 2 days (2)
- 3 days (3)
- 4-7 days (4)
- 8-14 days (5)
- 15 days or longer (6)

Q36 Not counting times you needed care right away, how many days did you usually have to wait between making an appointment and actually seeing a provider?

- 1 day (1)
- 2-3 days (2)
- 4-7 days (3)
- 8-14 days (4)
- 15-30 days (5)
- 31 days or longer (6)

Q37 How often did your doctor's office staff (receptionists, nurses, medical assistants) treat you with courtesy and respect

- Never (1)
- Sometimes (2)
- Usually (3)
- Always (4)

Q38 How often did your doctor's office staff (receptionists, nurses, medical assistants) give you the information or help you needed (for example, scheduling follow-up appointments, providing information about procedures or how to obtain referrals)?

- Never (1)
- Sometimes (2)
- Usually (3)
- Always (4)

Q39 Using any number from 0 to 10, where 0 is the worst health care possible and 10 is the best health care possible, what number would you use to rate all your health care as a military dependent?

Q40 How satisfied are you with the health care you have received as a military dependent?

- Very Dissatisfied (1)
- Dissatisfied (2)
- Satisfied (3)
- Very Satisfied (4)

Answer If Are you the parent or guardian of a child (or children) who received health care as a military de... Yes Is Selected

Q41 How satisfied are you with the health care your CHILDREN have received as a military dependent?

- Very Dissatisfied (1)
- Dissatisfied (2)
- Satisfied (3)
- Very Satisfied (4)



Q42 How likely are you to recommend military health care to your friends and family (regardless of their military status)?

- Very Unlikely (1)
- Unlikely (2)
- Likely (3)
- Very Likely (4)

Q43 Based on your general experience, if you were free to choose between civilian and military facilities for all of your health care, which would you prefer?

- Military treatment facilities (1)
- Civilian treatment facilities (2)
- No preference (3)

Q44 Since you started receiving health care from the military, how often was it a problem, if any, to get a personal doctor you are happy with?

- Never (1)
- Sometimes (2)
- Usually (3)
- Always (4)

Q45 How often was it easy to get the care, tests, or treatment you needed?

- Never (1)
- Sometimes (2)
- Usually (3)
- Always (4)

Q46 Is there anything else you would like to say about your health care? Are there any areas of military health care you've been very satisfied or dissatisfied with?

## Appendix 4: Institutional Review Board Documentation

### 4.1 Consent document

Due to the online nature of data collection in this study, a waiver of consent was applied for and approved. In lieu of formal informed consent documents, participants saw the following on the first page of the survey. If they clicked “no,” they were taken immediately to the last page of the questionnaire.

Q1 This is a research study being conducted by Jessica Gleason and Dr. Kenneth Beck through the University of Maryland. The purpose of this project is to understand how military spouses feel about military health care, and how PCS moves may impact those feelings. There is no more than minimal risk to participating in this study, and participation is completely voluntary. You may stop taking the survey at any time, and you may skip any question that makes you feel uncomfortable. This survey should take no more than 10-15 minutes to complete. Your responses are anonymous and will not affect health care or any other benefits to which you otherwise qualify. If you choose to complete this survey, you will be given instructions at the end on how to enter a raffle to win \$25. There is a one in ten chance of winning the raffle.

If you would like a copy of this information, please print this page for your records, or email [jgleason@umd.edu](mailto:jgleason@umd.edu) to request a copy.

In order to take this survey, you must be (1) a military spouse (or were a military spouse in the last five (5) years), (2) not currently serving on active duty, and (3) at least 18 years of age.

Have you read the above information and would you like to participate? Please choose one of the following:

- YES, I am eligible and I would like to participate in this research study. (1)
- NO, I am ineligible or do not want to participate in this research study. (2)

If NO, I am ineligible or do n... Is Selected, Then Skip To End of Survey

### 4.2 IRB Application

#### 1. Abstract:

To ensure mission-readiness for military service members, support for their family members is essential. Military family health has been a largely ignored area of study, as has patient satisfaction in this population. Satisfaction can be defined in terms of patient-, provider-, and practice-level factors and is influenced by continuity of care. Using a modified patient satisfaction survey, this thesis project endeavors to define patient satisfaction in military families and determine whether the instability caused by frequent Permanent Change of Station (PCS) moves and high provider turnover coincide with changes in continuity of care and subsequent patient satisfaction.

## 2. Subject Selection:

- a. **Recruitment:** The target population for this study is military spouses. Recruitment will take place on web forums frequented by military spouses, and through social media (i.e., Facebook groups with a large military spouse contingent).
- b. **Eligibility Criteria:** Participants must be (1) 18 years of age or older; (2) not currently serving on active duty; AND (2) either a current military spouse, OR have been a military spouse within the last five years.
- c. **Rationale:** This population has been largely overlooked in studies of general health in the military. To simplify analysis and the consent process, only adult military spouses will be included. Due to the varying nature of health care provided to servicemembers and their spouses, anyone currently serving on active duty will not be eligible to participate.
- d. **Enrollment Numbers:** The enrollment goal is 191 subjects, although at least 120 are needed for appropriate power.
- e. **Rationale for Enrollment Numbers:** According to the power analysis conducted for this study, the specified enrollment numbers are necessary to detect a moderate effect size of either 0.20 or 0.25, respectively.

## 3. Procedures:

Pilot testing—Five military spouses, who are members of the co-investigator’s social network, will be asked to take the survey and then informally interviewed through Skype. The purpose of this interview will be to (1) ensure the survey takes no more than 15 minutes to complete, and (2) ensure readability and comprehension of the questions. Results from pilot-testing will not be used in the final analysis, though the testers will be invited to participate in the survey later, at which time they will be eligible for the raffle. Participants will be recruited through Facebook groups and online forums frequently used by military spouses (e.g., military.com, militaryspouse.com, spousebuzz.com, Real House Wives of Fort Meade Facebook group). Within these groups, an ad will be posted where participants will be invited to follow a link to take one online survey, which should take no more than 10 to 15 minutes to complete. Participants are invited (in the ad) to share the ad and survey link with their social networks of military spouses to increase participation. The survey will be open until the end of February, unless the number of participants approaches a number that exceeds the amount budgeted for prizes (i.e., no more than forty \$25 prizes may be awarded, limiting the sample size to no more than 400).

The final page of the survey contains instructions on how to enter the raffle, where participants will have a 1 in 10 chance of winning \$25. To keep the survey responses anonymous, participants will be asked to email the following information to an email address established for the raffle: first and last name, city, state, zip code, and preferred contact email address. Winning participants will be contacted via email. If they reside in the DC-Baltimore metro area, the co-investigator will deliver cash in person. If they do not reside in this area, their \$25 prize will be mailed to them. Raffle winners will be chosen randomly at the end of each month of data collection, provided there are at least ten new submissions each month.

#### **4. Risks:**

There is minimal risk associated with this study. Some participants may feel uncomfortable answering some survey questions, but may skip any question.

#### **5. Benefits:**

There are no direct benefits to participants, but this may add to general knowledge about how frequent moves may impact health and continuity of care in military families, a field where few studies have been conducted.

#### **6. Confidentiality:**

Participants will submit answers to their questionnaires anonymously. Submissions to the raffle will be submitted separately from participant answers, as described in section 3. All answers will be stored electronically in password protected files on the co-investigator's desktop computer, which is also password-protected. Only the primary and co-investigator will have access to the data, which will be destroyed within five years of the final thesis defense in May 2016.

#### **7. Consent Process:**

A consent waiver is requested for this study.

This research involves no more than minimal risk. Participants may feel uncomfortable answering some survey questions, but may choose to skip any question.

All survey results will be collected anonymously and participants will be informed of their rights regarding the voluntary nature of this research on the first page of the survey.

Because military spouses may reside anywhere in the world where there is a military installation, collecting signed consent forms would be impractical.

Participants will be provided with the contact information of the co-investigator if they have any further questions or concerns.

Consent will be obtained and documented when participants click the radio button on the first page of the survey indicating they would like to participate in the study. This question is programmed to require a response, and participants may not answer any other questions without answering this one. Participants may print this page of the survey for their records, or they may email the researcher to request a copy.

**8. Conflict of Interest:**

No conflict of interest

**9. HIPAA Compliance:**

Not applicable

**10. Research Outside of the United States:**

Not applicable

**11. Research Involving Prisoners:**

Not applicable

**12. SUPPORTING DOCUMENTS**

Your Initial Application must include a **completed Initial Application Part 1 (On-Line Document)**, the information required in items 1-11 above, and all relevant supporting documents including: consent forms, letters sent to recruit participants, questionnaires completed by participants, and any other material that will be presented, viewed or read to human subject participants.

For funded research, a copy of the Awarded Grant Application (minus the budgetary information) must be uploaded. If the Grant has not been awarded at the time of submission of

this Initial Application, a statement must be added to the Abstract Section stating that an Addendum will be submitted to include the Grant Application once it has been awarded.

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**THE IRB OFFICE WILL NO LONGER STAMP CONSENT FORMS. THE CONSENT FORMS IN YOUR APPROVED IRBNET PACKET MUST BE USED. THESE ARE YOUR APPROVED CONSENT FORMS.**

### 4.3 IRB Approval Letter



INSTITUTIONAL REVIEW BOARD

1204 Marie Mount Hall  
College Park, MD 20742-  
5125 TEL 301.405.4212  
FAX 301.314.1475  
irb@umd.edu

DATE: November 6, 2015

TO: Kenneth Beck, PhD

FROM: University of Maryland College Park (UMCP) IRB

PROJECT TITLE: [817851-1] Exploring health in military families: Does continuity of care influence patient satisfaction?

REFERENCE #:

SUBMISSION TYPE: New Project

ACTION: APPROVED

APPROVAL DATE: November 6, 2015

EXPIRATION DATE: November 5, 2016

REVIEW TYPE: Expedited Review

REVIEW CATEGORY: Expedited review category # 7

Thank you for your submission of New Project materials for this project. The University of Maryland College Park (UMCP) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

Prior to submission to the IRB Office, this project received scientific review from the departmental IRB Liaison.

This submission has received Expedited Review based on the applicable federal regulations.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of November 5, 2016.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Unless a consent waiver or alteration has been approved, Federal regulations require that each participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others (UPIRSOs) and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate

reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

Please note that all research records must be retained for a minimum of seven years after the completion of the project.

If you have any questions, please contact the IRB Office at 301-405-4212 or [irb@umd.edu](mailto:irb@umd.edu). Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Maryland College Park (UMCP) IRB's records.



## References

- Adler, R., Vasiliadis, A., & Bickell, N. (2010). The relationship between continuity and patient satisfaction: a systematic review. *Family Practice*, *cmp099*.  
<http://doi.org/10.1093/fampra/cmp099>
- Agency for Healthcare Research and Quality. (2015). Consumer Assessment of Healthcare Providers and Systems. Retrieved September 19, 2015, from  
<https://cahps.ahrq.gov/index.html>
- Albano, S. (1994). Military recognition of family concerns: Revolutionary War to 1993. *Armed Forces & Society*, *20*(2), 283–302. <http://doi.org/10.1177/0095327X9402000207>
- Anderson, L. A., & Dedrick, R. F. (1990). Development of the trust in physician scale: A measure to assess interpersonal trust inpatient-physician relationships. *Psychological Reports*, *67*(3f), 1091–1100. <http://doi.org/10.2466/pr0.1990.67.3f.1091>
- Anderson, R. T., Camacho, F. T., & Balkrishnan, R. (2007). Willing to wait?: The influence of patient wait time on satisfaction with primary care. *BMC Health Services Research*, *7*(1), 1–5. <http://doi.org/10.1186/1472-6963-7-31>
- Boulding, W., Glickman, S. W., Manary, M. P., Schulman, K. A., & Staelin, R. (2011). Relationship between patient satisfaction with inpatient care and hospital readmission within 30 days. *The American Journal of Managed Care*, *17*(1), 41–48.
- Bowling, A., Rowe, G., & McKee, M. (2013). Patients' experiences of their healthcare in relation to their expectations and satisfaction: a population survey. *Journal of the Royal Society of Medicine*, *106*(4), 143–149. <http://doi.org/10.1258/jrsm.2012.120147>
- Butler, L., Linn, B. K., Meeker, M. A., McClain-Meeder, K., & Nochajski, T. H. (2015). “We don’t complain about the little things”: Views of veterans and military family members on health care gaps and needs. *Military Behavioral Health*, *3*(2), 116–124.

- Chong, K., Damiano, P., & Hays, R. D. (2012). Psychometric performance of the Consumer Assessment of Healthcare Providers and Systems (CAHPS) 4.0 Adult Health Plan Survey. *Primary Health Care, 2*(4). <http://doi.org/10.4172/2167-1079.1000123>
- Conway, T., & Willcocks, S. (1997). The role of expectations in the perception of health care quality: Developing a conceptual model. *International Journal of Health Care Quality Assurance, 10*(3), 131–140. <http://doi.org/10.1108/09526869710167058>
- Crum-Cianflone, N. F., Fairbank, J. A., Marmar, C. R., & Schlenger, W. (2014). The Millennium Cohort Family Study: A prospective evaluation of the health and well-being of military service members and their families. *International Journal of Methods in Psychiatric Research, 23*(3), 320–330. <http://doi.org/10.1002/mpr.1446>
- Defense Health Agency. (2015). Health Care Survey of DOD Beneficiaries. Retrieved from <http://www.tricare.mil/survey/hcsurvey/annual-report.cfm>
- Donabedian, A. (1966). Evaluating the quality of medical care. *The Milbank Memorial Fund Quarterly, 44*(3), 166–206.
- Donahue, K. E., Ashkin, E., & Pathman, D. E. (2005). Length of patient-physician relationship and patients' satisfaction and preventive service use in the rural south: a cross-sectional telephone study. *BMC Family Practice, 6*, 40. <http://doi.org/10.1186/1471-2296-6-40>
- Drummet, A. R., Coleman, M., & Cable, S. (2003). Military families under stress: Implications for family life education. *Family Relations, 52*(3), 279–287. <http://doi.org/10.1111/j.1741-3729.2003.00279.x>
- e-CFR: TITLE 41—Public Contracts and Property Management, TITLE 41—Public Contracts and Property Management Electronic Code of Federal Regulations § Part 302-4—

- Allowances for Subsistence and Transportation (2015). Retrieved from [http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title41/41cfr302-4\\_main\\_02.tpl](http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title41/41cfr302-4_main_02.tpl)
- Eveleigh, R. M., Muskens, E., & van Ravesteijn, H. (2012). An overview of 19 instruments assessing the doctor-patient relationship: Different models or concepts are used. *Journal of Clinical Epidemiology*, 65(1), 10–5. <http://doi.org/10.1016/j.jclinepi.2011.05.011>
- Fitzpatrick, R. (1991). Surveys of patients satisfaction: I--Important general considerations. *BMJ: British Medical Journal*, 302(6781), 887.
- Fox, J. G., & Storms, D. M. (1981). A different approach to sociodemographic predictors of satisfaction with health care. *Social Science & Medicine. Part A, Medical Sociology*, 15(5), 557–564.
- Glickman, S. W., Boulding, W., Manary, M., Staelin, R., Roe, M. T., Wolosin, R. J., ... Schulman, K. A. (2010). Patient satisfaction and its relationship with clinical quality and inpatient mortality in acute myocardial infarction. *Circulation: Cardiovascular Quality and Outcomes*, 3(2), 188–195. <http://doi.org/10.1161/CIRCOUTCOMES.109.900597>
- Gulliford, M. C., Naithani, S., & Morgan, M. (2007). Continuity of care and intermediate outcomes of type 2 diabetes mellitus. *Family Practice*, 24(3), 245–251. <http://doi.org/10.1093/fampra/cmm014>
- Hall, J. A., & Dornan, M. C. (1990). Patient sociodemographic characteristics as predictors of satisfaction with medical care: A meta-analysis. *Social Science & Medicine*, 30(7), 811–818.
- Harriott, E. M., Williams, T. V., & Peterson, M. R. (2005). Childbearing in U.S. Military Hospitals: Dimensions of care affecting women's perceptions of quality and satisfaction.

- Birth: Issues in Perinatal Care*, 32(1), 4–10. <http://doi.org/10.1111/j.0730-7659.2005.00342.x>
- Health.mil. (2015). About the Military Health System. Retrieved September 20, 2015, from <http://www.health.mil/About-MHS>
- Hekkert, K. D., Cihangir, S., Kleefstra, S. M., van den Berg, B., & Kool, R. B. (2009). Patient satisfaction revisited: A multilevel approach. *Social Science & Medicine*, 69(1), 68–75. <http://doi.org/10.1016/j.socscimed.2009.04.016>
- Hjortdahl, P., & Lærum, E. (1992). Continuity Of care in general practice: Effect on patient satisfaction. *BMJ: British Medical Journal*, 304(6837), 1287–1290.
- Huebner, A. J., Mancini, J. A., Bowen, G. L., & Orthner, D. K. (2009). Shadowed by war: Building community capacity to support military families. *Family Relations*, 58(2), 216–228. <http://doi.org/10.1111/j.1741-3729.2008.00548.x>
- Iaconi, A. I., Chang, J., Feldman, S., & Balkrishnan, R. (2011). Toward continuous primary care in the United States: Differences in patient satisfaction between first and return visits to primary care physicians/Analysis of DrScore—The national e-Survey data. *Journal of Primary Care & Community Health*, 2(2), 127–132. <http://doi.org/10.1177/2150131910393252>
- Institute of Medicine. (1996). *Primary Care: America's Health in a New Era*. (M. S. Donaldson, K. D. Yordy, K. N. Lohr, & N. A. Vanselow, Eds.). Washington DC: National Academy Press. Retrieved from <http://www.nap.edu/read/5152/chapter/1>
- Jackson, J. L., Chamberlin, J., & Kroenke, K. (2001). Predictors of patient satisfaction. *Social Science & Medicine*, 52(4), 609–620. [http://doi.org/10.1016/S0277-9536\(00\)00164-7](http://doi.org/10.1016/S0277-9536(00)00164-7)

- Jennings, B. M., Heiner, S. L., Loan, L. A., Hemman, E. A., & Swanson, K. M. (2005). What really matters to healthcare consumers. *The Journal of Nursing Administration, 35*(4), 173–80. <http://doi.org/10.1097/00005110-200504000-00006>
- Jennings, B. M., Loan, L. A., Heiner, S. L., Hemman, E. A., & Swanson, K. M. (2005). Soldiers' experiences with military health care. *Military Medicine, 170*(12), 999–1004.
- Jha, A. K., Orav, E. J., Zheng, J., & Epstein, A. M. (2008). Patients' perception of hospital care in the United States. *New England Journal of Medicine, 359*(18), 1921–1931. <http://doi.org/10.1056/NEJMsa0804116>
- Kao, A. C., Green, D. C., Davis, N. A., Koplan, J. P., & Cleary, P. D. (1998). Patients' trust in their physicians: effects of choice, continuity, and payment method. *Journal of General Internal Medicine, 13*(10), 681–686.
- Katz, D. A., McCoy, K., & Sarrazin, M. V. (2014). Does improved continuity of primary care affect clinician–patient communication in VA? *Journal of General Internal Medicine, 29*(Suppl 2), 682–688. <http://doi.org/10.1007/s11606-013-2633-8>
- Kennedy, H. P., Farrell, T., Paden, R., Hill, S., Jolivet, R., Willetts, J., & Rising, S. S. (2009). “I wasn't alone”--A study of group prenatal care in the military. *Journal of Midwifery and Women's Health, 54*(3), 176–183. <http://doi.org/10.1016/j.jmwh.2008.11.004>
- Lester, P., Peterson, K., Reeves, J., Knauss, L., Glover, D., Mogil, C., ... Beardslee, W. (2010). The long war and parental combat deployment: Effects on military children and at-home spouses. *Journal of the American Academy of Child & Adolescent Psychiatry, 49*(4), 310–320. <http://doi.org/10.1016/j.jaac.2010.01.003>
- Lewis, P. C., & Holcomb, B. (2012). A model for patient-centered Army primary care. *Military Medicine, 177*(12), 1502–1507. <http://doi.org/10.7205/MILMED-D-12-00076>

- Manary, M. P., Boulding, W., Staelin, R., & Glickman, S. W. (2013). The patient experience and health outcomes. *New England Journal of Medicine*, *368*(3), 201–203.  
<http://doi.org/10.1056/NEJMp1211775>
- Mangelsdorff, A. D., & Finstuen, K. (2003). Patient Satisfaction in Military Medicine: Status and an Empirical Test of a Model. *Military Medicine*, *168*(9), 744–749.
- Mansfield, A. J., Kaufman, J. S., Marshall, S. W., Gaynes, B. N., Morrissey, J. P., & Engel, C. C. (2010). Deployment and the use of mental health services among U.S. Army wives. *New England Journal of Medicine*, *362*(2), 101–109. <http://doi.org/10.1056/NEJMoa0900177>
- Marcinowicz, L., Chlabicz, S., & Grebowski, R. (2009). Patient satisfaction with healthcare provided by family doctors: primary dimensions and an attempt at typology. *BMC Health Services Research*, *9*, 1–5. <http://doi.org/10.1186/1472-6963-9-63>
- Marshall, R. C., Doperak, M., Milner, M., Motsinger, C., Newton, T., Padden, M., ... Mun, S. K. (2011). Patient-Centered Medical Home: An emerging primary care model and the Military Health System. *Military Medicine*, *176*(11), 1253–1259.
- Matthews-Juarez, P., Juarez, P. D., & Faulkner, R. T. (2013). Social Media and Military Families: A Perspective. *Journal of Human Behavior in the Social Environment*, *23*(6), 769–776. <http://doi.org/10.1080/10911359.2013.795073>
- Maury, R., & Stone, B. (2014). *Military Spouse Employment Report*. Institute for Veterans and Military Families: Syracuse University.
- Merriel, S. W. D., Salisbury, C., Metcalfe, C., & Ridd, M. (2015). Depth of the patient–doctor relationship and content of general practice consultations: cross-sectional study. *Br J Gen Pract*, *65*(637), e545–e551. <http://doi.org/10.3399/bjgp15X686125>

- Moore, A. D., Hamilton, J. B., Pierre-Louis, B. J., & Jennings, B. M. (2013). Increasing access to care and reducing mistrust: Important considerations when implementing the Patient-Centered Medical Home in Army health clinics. *Military Medicine*, *178*(3), 291–298. <http://doi.org/10.7205/MILMED-D-12-00443>
- Moore, S. D., Wright, K. B., & Bernard, D. R. (2009). Influences on health delivery system satisfaction: A partial test of the ecological model. *Health Communication*, *24*(4), 285–294. <http://doi.org/10.1080/10410230902889225>
- National Military Family Association. (2005). Fact Sheet: Definition of a dependent. Retrieved from [http://support.militaryfamily.org/site/DocServer/Definiton\\_of\\_a\\_Dependent\\_11-05.pdf](http://support.militaryfamily.org/site/DocServer/Definiton_of_a_Dependent_11-05.pdf)
- Paley, B., Lester, P., & Mogil, C. (2013). Family systems and ecological perspectives on the impact of deployment on military families. *Clinical Child and Family Psychology Review*, *16*(3), 245–265. <http://doi.org/10.1007/s10567-013-0138-y>
- Palmer, C. (2008). A theory of risk and resilience factors in military families. *Military Psychology*, *20*(3), 205–217. <http://doi.org/10.1080/08995600802118858>
- Pascoe, G. C. (1983). Patient satisfaction in primary health care: A literature review and analysis. *Evaluation and Program Planning*, *6*(3-4), 185–210.
- Platonova, E. A., Kennedy, K. N., & Shewchuk, R. M. (2008). Understanding patient satisfaction, trust, and loyalty to primary care physicians. *Medical Care Research and Review*, *65*(6), 696–712. <http://doi.org/10.1177/1077558708322863>
- Quintana, J. M., González, N., Bilbao, A., Aizpuru, F., Escobar, A., Esteban, C., ... Thompson, A. (2006). Predictors of patient satisfaction with hospital health care. *BMC Health Services Research*, *6*(1), 1–9. <http://doi.org/10.1186/1472-6963-6-102>

- Sahin, B., Yilmaz, F., & Lee, K.-H. (2007). Factors affecting inpatient satisfaction: structural equation modeling. *Journal of Medical Systems, 31*(1), 9–16.
- Savage, A. I., Lauby, T., & Burkard, J. F. (2013). Examining selected patient outcomes and staff satisfaction in a primary care clinic at a Military Treatment Facility after implementation of the Patient-Centered Medical Home. *Military Medicine, 178*(2), 128–134.  
<http://doi.org/10.7205/MILMED-D-12-00188>
- Schafer, J. J. (2008). Reaching a better management model for military medicine. *Hospital Topics, 86*(4), 18–32. <http://doi.org/10.3200/HTPS.86.4.18-32>
- Sitzia, J., & Wood, N. (1997). Patient satisfaction: A review of issues and concepts. *Social Science & Medicine, 45*(12), 1829–1843. [http://doi.org/10.1016/S0277-9536\(97\)00128-7](http://doi.org/10.1016/S0277-9536(97)00128-7)
- Stinson, G., & Webb, B. (1975). *Going to See the Doctor: The Consultation Process in General Practice*. London: Routledge & Kegan Paul.
- Stokols, D. (1992). Establishing and maintaining health environments: Toward a social ecology of health promotion. *American Psychology, 47*(1), 6–22.
- Street, R. L. (2003). Communication in medical encounters: An ecological perspective. In *Handbook of health communication*. Mahwah, NJ: Lawrence Erlbaum Associates Inc.
- Tagliacozzo, D. L. (1965). *The nurse from the patient's point of view* (Social Interaction and Patient Care). Philadelphia: JB Lipincott.
- Tricare. (2014). Eligibility. Retrieved September 20, 2015, from <http://www.tricare.mil/Plans/Eligibility.aspx>
- Tung, Y.-C., & Chang, G.-M. (2009). Patient satisfaction with and recommendation of a primary care provider: associations of perceived quality and patient education. *International*



*Journal for Quality in Health Care*, 21(3), 206–213.

<http://doi.org/10.1093/intqhc/mzp006>

Van Walraven, C., Oake, N., Jennings, A., & Forster, A. J. (2010). The association between continuity of care and outcomes: a systematic and critical review. *Journal of Evaluation in Clinical Practice*, 16(5), 947–956. <http://doi.org/10.1111/j.1365-2753.2009.01235.x>

Wasson, J. H., Sauvigne, A. E., Mogielnicki, R. P., Frey, W. G., Sox, C. H., Gaudette, C., & Rockwell, A. (1984). Continuity of outpatient medical care in elderly men. A randomized trial. *JAMA*, 252(17), 2413–2417.

Zajacova, A., & Dowd, J. B. (2011). Reliability of self-rated health in US adults. *American Journal of Epidemiology*, kwr204. <http://doi.org/10.1093/aje/kwr204>