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Rurality as a Moderator of Perception of Need for Medical Care and Patient Satisfaction

Kyndal Grammer
East Tennessee State University

Rurality as a Moderator of Perception of Need for Medical Care and Patient Satisfaction

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Kyndal N. Grammer

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Julia C. Dodd, Ph.D., Chair

Andrea D. Clements, Ph.D.

Kelly E. Moore, Ph.D.

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ABSTRACT

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Many individuals experience barriers to accessing medical care, especially in rural areas. Some barriers are attitudinal and represent perceptions of quality care. Patient satisfaction and perceived need for medical care are two such attitudinal barriers related to health care utilization, yet the relationship between these variables has not been explored. Using data from an online survey, the current study examined the association between these variables, and further, whether rurality status moderated this association. Results indicated a significant correlation between patient satisfaction and perception of need. Although the overall moderation model was significant, perception of need was not significantly associated with patient satisfaction, and rurality status did not significantly moderate the relationship. However, the covariates of sexual orientation and income did significantly predict patient satisfaction. This study highlights the complex associations of patient satisfaction, as well as the importance of social determinants of health in patients' perceptions of quality of care.

TABLE OF CONTENTS

Chapter 1. Introduction

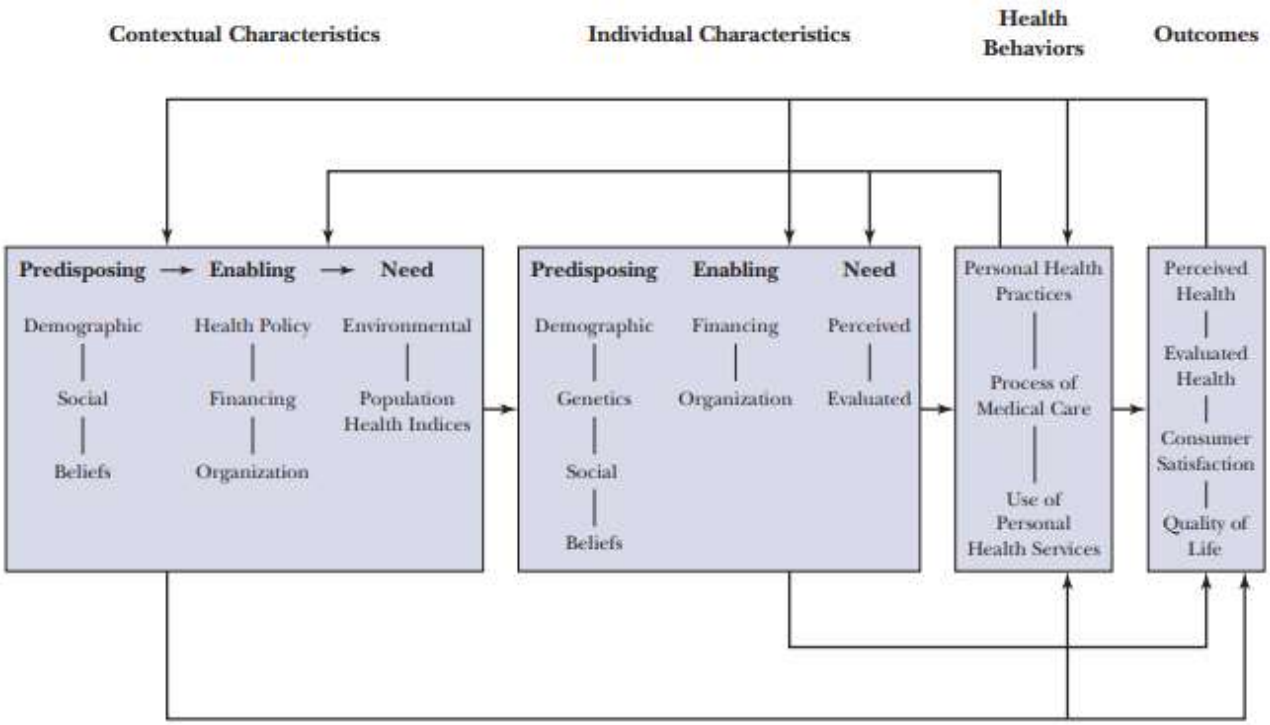
Individuals across the United States experience many barriers that prevent them from accessing appropriate medical care, some of which include geographic location, inadequate transportation, and financial concerns (Carrillo et al., 2011). For rural populations, barriers that interfere with access to care are especially prominent and affect these individuals' use of health care services, which significantly correlates with their health outcomes (Douthit et al., 2015; Nelson & Gingerich, 2010). Aside from structural (e.g., distance, transportation) and financial (e.g., health insurance status) barriers, attitudes and beliefs, such as perceived quality of care, may also hinder health services utilization. While attitudes and beliefs do not physically prevent individuals from seeking treatment, they may influence use and avoidance of health services, which contributes to the health disparities found in residents of rural areas (Spleen et al., 2014; Taber et al., 2014). Given that access to quality health care is a concern in rural populations (Gamm et al., 2002), understanding patients' attitudes and beliefs is important when discussing utilization and access to care.

In Andersen's Behavioral Model of Health Services Utilization, patient satisfaction and perceived need for medical care are both factors related to utilization (see Figure 1; Andersen et al., 2013). Stifkin (2002) questioned why some rural areas have similarly high rates of patient satisfaction compared to urban areas, despite accessibility differences. It may be that individuals who believe they have a high need for medical services experience the barriers to care that impede use, while those with low need do not; low perceived need may be a contributing factor to high satisfaction reported by some rural residents. In other words, because these individuals do not believe they need medical care, they are not seeking it out and potentially encountering obstacles to care, and therefore, their satisfaction is relatively high, even though they are not

accessing services. However, the relationship between perceived need and patient satisfaction has not been studied, especially within rural populations. Research within these regions may ultimately contribute to a better understanding of differing satisfaction levels within rural populations.

Figure 1

Andersen's Behavioral Model of Health Services Use



Note. Reprinted from *Improving Access to Care*, by Andersen, R. M., Davidson, P. L., & Baumeister, S. E., 2013. In G. F. Kominski (Ed.), *Changing the US healthcare system: Key issues in health services policy and management* (4th ed., p. 35). Wiley.

Health Disparities in Rural Populations

The US Census Bureau (2018) defines rural as any "population, housing, or territory not in an urban area" (para. 2). Urban areas, which are densely developed territories, include cities and towns where a minimum of 2,500 people reside, with at least 1,500 of residing outside of group quarters (e.g., jails) and have a density of at least 1,000 people per square mile (Ratcliffe et al., 2016; US Census Bureau, 2018). In 2010, 19.3% of Americans (approximately 60 million) lived in rural areas (Ratcliffe et al., 2016). Residents of rural areas are typically older, and racial and ethnic composition of rural residents appear to vary depending on the region (Meit et al., 2014). There are higher rates of poverty, obesity, physical inactivity, opioid misuse, adolescent smoking, and uninsured or underinsured individuals (Lenardson et al., 2016; Meit et al., 2014). Rural areas are also prone to increased rates of mortality caused by chronic obstructive pulmonary diseases (COPD; e.g., chronic bronchitis, emphysema, asthma) and suicide. In addition to these findings, research has documented generally higher prevalence of limitations in activities (e.g., working, independently performing routine and personal care tasks) caused by chronic health conditions (Kegler et al., 2017; Meit et al., 2014). Predominant barriers to appropriate health care in rural populations include cultural perceptions (e.g., stigma, discrimination, confidentiality), getting to the doctor's office (e.g., transportation, distance), lack of available health services, and financial burden (e.g., insurance, poverty; Douthit et al., 2015). While health care quality trends seem to be improving, health disparities in this population still exist (Agency for Healthcare Research and Quality, 2017).

Researchers and policymakers recognize the need residents of rural areas have regarding health care-related outcomes. Due to this increase in community awareness, rural populations from all around the globe have been studied (e.g., Aldana et al., 2001; Martinez et al., 2005;

Wang et al., 2006), and access to quality health care has been viewed as a top priority for rural communities (Gamm et al., 2002). Findings have shown that there are significant differences in health care access between urban and rural communities, affecting health outcomes for these populations, which many researchers believe contribute to the health disparities in these areas (Douthit et al., 2015; Meit et al., 2014). Even when health care services are available, patients may question the quality of these services, and this perception of quality is likely to influence their use.

Patient Satisfaction with Health Care

From a business perspective, customer satisfaction is an important aspect of service quality. Service quality is composed of many dimensions, one of which is meeting and/or exceeding expectations (Harvey, 1998; Hernon et al., 1999; Reeves & Bednar, 1994). Measuring customer satisfaction is a way of determining the consumer's perspective of the service, which can ensure that their expectations are being met (Hernon et al., 1999).

From a health care perspective, patient satisfaction is similarly an important aspect of assessing the patient's perspective of quality of health care (Aldana et al., 2001; Sitzia & Wood, 1998; Yellen et al., 2002; Yildiz & Erdoğmuş, 2004). Patient satisfaction, which can be defined as someone's personal perceptions of medical services, staff, and met expectations, is a very complex concept made up of multiple dimensions, some of which include technical quality, interpersonal manner, communication, financial aspects, time with doctor, and accessibility and convenience (Marshall & Hays, 1994). However, patient satisfaction may comprise more than just these dimensions; many other factors have been associated with patient satisfaction, some of which include demographic variables (age, gender, ethnicity), health insurance status, education level, marital status, and income level (Bener & Ghuloum, 2013; Sorkin et al., 2010; Xiao &

Barber, 2008), as well as attitudes and beliefs, like perceived discrimination, racism, and medical mistrust (Benkert et al., 2009; LaVeist et al., 2000; Tajeu et al., 2015). Furthermore, satisfaction is particularly important to study, because satisfaction is a predictor of health-related behaviors, such as medication non-adherence and patient compliance (Moore et al., 2013; Sitzia & Wood, 1998; Wroth & Pathman, 2006).

Some patient satisfaction scores are similarly high in both rural and urban populations, and Stifkin (2002) suggests that these similarities are due to a "perception of need that is shaped by the reality of lower availability of services" (p. 238). In other words, individuals' perceptions of needs may be different from what they want, and their perceptions of adequate health care may be dependent upon their access (Stifkin, 2002). However, perceived need may be what is influencing the similar satisfaction scores; if a rural resident has low perceived need, regardless of the level of accessibility, they may be more satisfied because they do not interact with barriers to care as often, which would contribute to the sections of rural populations that have high satisfaction. On the other hand, if someone has high perceived need, their satisfaction scores may be low, because the barriers to care become influential in their ability to get the needed care. However, this relationship may not be as strong in urban populations, because the barriers that residents in these regions experience may be less impactful to utilization or may be perceived as less severe (Heckman et al., 1998). Therefore, this study will explore the relationship between perception of need for care and patient satisfaction with level of rurality as a proposed moderator of this relationship.

Perceived Need for Medical Care

While there are many theories of health service utilization, this study explores specific components of Andersen's Behavioral Model of Health Service Utilization. In this model,

utilization is an outcome of predisposing, enabling, and need factors within contextual, individual, and health behaviors (see Figure 1; Andersen et al., 2013). Contextual components include community and environmental factors that are associated with the individual to use health services, such as cultural norms and values, health policies, overall health, and physical environment. Individual components are those directly relating to the individual, including demographic characteristics, financial status, available transportation, and individual need factors (consisting of perceived need and evaluated need; Andersen et al., 2013). Perceived need refers to an individual's thoughts about the need for or potential benefits of a specific service, while evaluated need refers to a clinical evaluation of the individual's health and functioning (Coulton & Frost, 1982).

While research on perceived need for physical health care is scarce, previous literature has examined perceived need of mental health care services. For example, researchers have measured perceived need to determine the rates of unmet mental health needs, barriers to care, and service utilization in substance use populations (Hyshka et al., 2017; Urbanoski et al., 2017). It has been discovered, however, that patients who received mental health services in health care settings reported greater satisfaction if they also perceived themselves to have only a few number of needs (Fortin et al., 2018). Yet, the relationship between perceived need for mental health services and patient satisfaction with these services has not yet been examined, to the author's knowledge. Additionally, although the research is limited, perceived need for physical health services has been associated with health service utilization and help-seeking behavior (Babitsch et al., 2012; Mojtabai et al., 2002).

Perceived health status has been found to predict patient satisfaction, in that individuals who rated their health as good or excellent reported higher satisfaction with access to care, the

patients' providers, and quality of care, using national data (Xiao & Barber, 2008). Perceived health status is often used interchangeably with perceived need; however, an individual may believe they are in poor health but do not believe they need to see a health-care provider. Therefore, perceived health status and perceived need are two separate constructs. Both constructs are found in Andersen's utilization model, contributing uniquely to utilization and other outcome variables. This model suggests that while perceived health status is associated with satisfaction, there is no evidence to date of the relationship between perceived need and patient satisfaction.

Perhaps contributing to the scarcity of research on perceived need for physical health services is the difficulty of measuring this construct. Perceived need is a complex construct, and while the Perceived Need for Care Questionnaire (PNCQ) has been developed to measure perceived unmet need for mental health care services (Meadows et al., 2000), it cannot be used for other types of health service needs. Ytterberg and colleagues (2008) measured perceived need for medical care in patients with multiple sclerosis (MS) by listing different services and asking participants to indicate if they had a *need* or *no need* for each service. The participants then rated agreement of their perceived need on a 5-item Likert scale (e.g., "I have received all the physiotherapy that I need;" Ytterberg et al. 2008). However, the medical services examined in Ytterberg and colleagues' (2008) study were specific to individuals with MS, and further, the authors' measure of perceived need in this sample has not been validated, and it is intended for a specific population. Therefore, a validated measure assessing perceived need for medical care, aside from mental health care, does not exist for the general population.

Statement of the Problem

Rural populations often underutilize health care services, and previous studies have explored factors associated with patient satisfaction as means of increasing access and utilization of needed services in this population. However, if some patient satisfaction scores are high in rural populations, even in the absence of comprehensive services, it is important to understand factors contributing to these potentially inflated satisfaction scores. Individuals' perception of their need for medical care may influence their satisfaction levels, because it is likely that those who need health care experience the consequences of barriers, preventing them from accessing the care they need. By contrast, those who do not perceive themselves to be needing care may be less likely to seek it, and thus less likely to encounter barriers, therefore potentially contributing to feeling satisfied with available care. This study seeks to determine if there is a relationship between perceived need and patient satisfaction, and if there is a relationship, whether rurality influences it, as well as contribute to an increased understanding of factors that are associated with patient satisfaction

Hypotheses

1. Perceived need will be significantly negatively correlated with patient satisfaction, such that higher levels of perceived need will be associated with lower patient satisfaction.
2. Rurality will significantly moderate the relationship between perception of need for medical care and patient satisfaction, such that rural participants will demonstrate a stronger negative relationship between perceived need and patient satisfaction.

Chapter 2. Methods

Procedures and Participants

The current study was drawn from a larger, online survey that focused on perceptions and behaviors involving health care. After approval from the East Tennessee State University Institutional Review Board (IRB), the survey was created using the secure survey platform, REDCap. Participants were recruited from Reddit, an online social platform that facilitates discussion among its members. Specifically, the online survey was posted to "subreddits," which are user-created discussion boards organized by topics, such as interests or hobbies. Subreddits are overseen by Reddit users who volunteer to manage a specific community and enforce community-specific rules, known as moderators. To ensure the survey was relevant to the topic area of a given subreddit and did not violate any subreddit-specific rules, the researchers requested permission from the moderators to post on their subreddit. After moderator approval, an IRB-approved advertisement of the survey, which included a hyperlink to the informed consent and survey, was posted. Subreddits contacted included those dedicated to topics relevant to broad populations (e.g., women, men, LGBTQ+ individuals), trauma, medical conditions, and health in general.

The target sample included individuals over the age of 18 who currently live in the United States. Since this was an online survey, participants could complete it whenever and wherever was most convenient for them. It did not have to be completed in one sitting; the REDCap software allowed participants to use an individualized code to continue the survey where they previously stopped. At the end of the survey, participants had the option to be entered to receive one of four Amazon e-gift cards. If participants decided they wanted to be entered in this drawing, they were directed to a separate REDCap survey to enter their email address. This

procedure ensured that their email addresses, a direct identifier, would not be linked to their survey answers in any way.

Measures

Patient Satisfaction

Due to the multi-dimensional nature of patient satisfaction, the Patient Satisfaction Questionnaire Short Form (PSQ-18; Marshall & Hays, 1994) was used in this study to measure satisfaction. The PSQ-18 is an 18-item self-report measure of patient satisfaction that is the short form of the PSQ-III. The PSQ-18 and the PSQ-III evaluate global satisfaction with medical care, as well as the specific dimensions of technical quality, interpersonal manner, communication, financial aspects of care, time spent with doctor, and accessibility and convenience of care overall (Hays et al., 1987; Marshall & Hays, 1994). The PSQ-18 consists of 18 5-point Likert-scale items, ranging from strongly agree to strongly disagree. Examples of items from this measure include, "When I go for medical care, they are careful to check everything when treating and examining me," "My doctors treat me in a very friendly and courteous manner," and "I have some doubts about the ability of the doctors who treat me." After reverse scoring negatively worded items, subscale scores are calculated by averaging the scores of the items within that domain; for example, scores of the two items for general satisfaction would be averaged to determine the individual subscale score for general satisfaction. Higher scores equate to higher levels of satisfaction (Marshall & Hays, 1994). Further, in accordance with the scoring procedure of Qiao and colleagues (2017), an overall patient satisfaction score was calculated by taking the average of all items. Additionally, missing data is recommended to be ignored when calculating subscale scores (Marshall & Hays, 1994). The PSQ-18 has been determined to be an adaptable, reliable, and valid tool that can be used for a variety of medical settings (Thayaparan

& Mahdi, 2013). Cronbach's alpha for each of the subscales of the PSQ-18 reveal adequate internal consistency, ranging from .64 to .77 in the original sample (Marshall & Hays, 1994) and ranging from.68 to .82 in the current sample (see Table 1). The Cronbach's alpha for the overall measure was .92 in the current study.

Table 1

Internal Consistency Reliabilities for the PSQ-18 Subscales

	Internal Consistency Reliabilities	
Subscale (number of items)	Original Sample	Current Sample
General Satisfaction (2)	.75	.76
Technical Quality (4)	.74	.82
Interpersonal Manner (2)	.66	.80
Communication (2)	.64	.68
Financial Aspects (2)	.73	.71
Time Spent with Doctor (2)	.77	.81
Accessibility Convenience (4)	.75	.69

Note. Original Sample items from *The Patient Satisfaction Questionnaire Short-Form (PSQ-18)* by Marshall, G. N., & Hays, R. D., 1994. *Rand*. p. 12. RAND Corporation.

Perceived Need for Medical Care

Perceived need for medical care is difficult to measure, and while the Perceived Need for Care Questionnaire (PNCQ) has been developed to measure perceived need for mental health care services (Meadows et al., 2000), this cannot be used for other types of health service needs. Further, it is designed for in-person interviews and is not appropriate for an online self-report format. Due to the lack of acceptable measures for perceived physical healthcare needs in the extant literature, a single-item, Likert-type measure of perception of need for medical services was created for this survey. Participants selected a phrase that is most true of them regarding

their perceived need for health care services relative to their perceptions of others' need in response to "Compared to other people, I believe I have...":

"...a significantly lower need for health care services;"

"...a slightly lower need for health care services;"

"...an average need for health care services;"

"...a slightly greater need for health care services;"

"...a significantly greater need for health care services."

While this is not a validated item to measure perceptions of need of medical care, this item ideally examined individuals' subjective perceptions of need, in relation to others, for a broad range of medical services.

Rurality Status

A single demographic item was used to measure rural status. Participants were asked, "Which of the following is most true of you?" and selected one of six answer options, including "I currently live in a very rural area," "I currently live in a moderately rural area," "I currently live in a slightly rural area," "I currently live in a suburban area," "I currently live in a moderately urban area," or "I currently live in a very urban area." Participants' responses were dichotomized into rural (i.e., very rural, moderately rural, slightly rural) and non-rural (i.e., suburban, moderately urban, very urban) categories for statistical analyses. Of note, this measure of rurality is based on the individual's perception of their rurality status, not based on the US Census definition. Hart and colleagues (2005) discussed the difficulties associated with using the Census Bureau taxonomy, including the instability across census years. Further, Rural–Urban Commuting Area (RUCA) zip code approximations consist of complex structures that are not only difficult to master but are also subject to change across time (Hart et al., 2005). There is

also variability to consider within zip codes; for example, according to the 2010 Census data, in Los Angeles County (zip code 90265), 71.4% of the population lives in urban areas, while 28.6% are considered rural ("ZIP Code Urban/Rural Geography," 2020). Therefore, if someone were to enter this zip code, there would be uncertainty on whether to classify them as rural or non-rural.

Covariates

To fully examine the relationship between perceived need, rurality status, and patient satisfaction, it is necessary to consider covariates that may be associated with these variables. Previous research has found several factors to be associated with patient satisfaction, including demographic variables, such as age, gender, race/ethnicity, health insurance status, and income level (Bener & Ghuloum, 2013; Sorkin et al., 2010; Xiao & Barber, 2008). For example, Collins and colleagues (2002) reported that, in a national survey investigating patient satisfaction over the past 2 years, 65% of non-Hispanic white participants reported very high levels of patient satisfaction compared to only 56% of Hispanic and 45% of Asian participants; furthermore, Sorkin and colleagues (2010) found that Asian/Pacific Islanders were less likely than non-Hispanic whites and Hispanics to rate their health care quality and satisfaction highly, collectively indicating racial disparities related to patient satisfaction. Additionally, higher income has been associated with higher patient satisfaction scores, whereas not having health insurance has been associated with lower patient satisfaction, especially in regard to satisfaction concerning access to care (Xiao & Barber, 2008). Xiao and Barber (2008) also found that, generally, older participants reported greater patient satisfaction than younger participants. Further, sexual orientation has also been associated with patient satisfaction, in that sexual minority women (i.e., lesbian, bisexual, mainly heterosexual) were found to have lower satisfaction with health care compared to women who identified as exclusively heterosexual

(McNair et al., 2011). Lastly, social class and gender have been found to be associated with patient satisfaction, although the nature and direction of these relationships have not been consistent (Bener & Ghuloum, 2013; Foss, 2000; Naidu, 2008; Tucker, 2002). Therefore, covariates included in the analyses of this study are age, gender, race/ethnicity, sexual orientation, income, and insurance status.

Chapter 3. Results

Descriptive Statistics

Participants in this sample were primarily female (63.6%), Caucasian (87.1%), and heterosexual (60.4%), with an average age of 34.3 (*SD* = 9.9), ranging from 18 to 69. This sample was relatively well educated, with the majority of participants having obtained their bachelor's degree or higher (62.5%). Approximately half of participants reported an average household income of greater than $60,000 (56.7%), and the vast majority reported having health insurance (90.8%). Additionally, most participants indicated that they lived in urban areas (69.9%) compared to rural areas (30.1%). Overall, participants from this sample can be classified as having moderate levels of patient satisfaction (*M* = 2.8, *SD* = 0.8), and participants indicated a slightly elevated perception of need for medical services compared to others (*M* = 3.4, *SD* = 1.2), with the majority of participants (78.7%) reporting at least one chronic medical condition diagnosis. See Tables 2 and 3 for further descriptive statistics of this sample.

Table 2

Descriptive Statistics

	N	*M*	*SD*
Age	533	34.3	9.9
Perceived Need	526	3.4	1.2
Patient Satisfaction	423	2.8	0.8

Table 3

Descriptive Statistics

		N	*%*
Gender	Female	337	63.6
	Male	151	28.5
	Trans Female	3	0.6
	Trans Male	11	2.1
	Non-Binary/Non-Conforming/Gender Fluid/Gender Queer	27	5.1

	Other	1	0.2
Race/Ethnicity	Caucasian	458	87.1
	Asian or Pacific Islander	5	2.9
	Latinx	8	1.5
	Black or African American	11	2.1
	Native American	4	0.8
	Multi-Ethnic	24	4.6
	Other	6	1.1
Sexual Orientation	Heterosexual	317	60.4
	Gay	28	5.3
	Lesbian	15	2.9
	Bisexual	86	16.4
	Pansexual	23	4.4
	Asexual	28	5.3
	Queer	18	3.4
	Questioning	8	1.5
	Other	2	0.4
Education	Some High School	5	0.9
	Graduate High School	31	5.8
	Some College	118	22.1
	Associate Degree	46	8.6
	Bachelor's Degree	196	36.8
	Master's Degree	105	19.7
	Doctoral Degree	21	3.9
	Professional Degree	11	2.1
Income	< $15,000	39	7.7
	$15,001 - $30,000	71	14.0
	$30,001 - $60,000	109	21.5
	$60,001 - $100,000	134	26.5
	$100,001 - $200,000	125	24.7
	> $200,001	28	5.5
Insurance Status	Yes	483	90.8
	No	49	9.2
Rurality	Rural	161	30.1
	Non-Rural	374	69.9
Chronic Medical Condition	Yes	421	78.7
	No	114	21.3

Statistical Analyses

Preliminary Analyses

A G Power analysis was conducted to determine the appropriate sample size to achieve adequate power for the current analyses and revealed that 68 participants were necessary to

detect medium effect sizes of 0.15 with an alpha error probability of .05 and power of 0.80 (Faul et al., 2007). All statistical analyses were conducted using SPSS, version 26. Preliminary data analyses suggested that the study variables were normally distributed with no unusual kurtosis, skewness, or other concerns with assumptions. To examine the relationship between each variable, bivariate correlations were performed using Pearson's correlation coefficient (*r*; see Table 4). A moderation analysis was performed utilizing Model 1 of Hayes PROCESS Macro with bootstrapping (5000 iterations) to examine whether participants' perceived need for health care services is associated with patient satisfaction, and further, whether rurality significantly moderated this relationship.

Table 4

Correlations of Study Variables

Variables	1	2	3	4	5	6	7
1. Perceived Need	-						
2. Rurality	.02	-					
3. Patient Satisfaction	-.12*	-.09	-				
4. Age	-.04	.04	.10*	-			
5. Sexual Orientation	-.11*	.04	-.20**	.21**	-		
6. Income	-.13**	-.10*	.24**	.22**	.22**	-	
7. Insurance	.02	.02	-.04	-.05	-.08	-.21**	-

Note. *$p < .05$; **$p < .01$. Rurality coded rural (1) and non-rural (0). Sexual orientation coded heterosexual (1) and other (0).

Because the measure of perceived need for medical care was created for this study, additional analyses were explored to determine whether this measure correlated in expected directions with other study variables, based on previous literature and theory. As predicted, perceived need was significantly negatively correlated with perceived self-rated health ($r = -.60$, $p < .001$), as measured by a single-item measure (i.e., "How would you rate your health in

general?"), in that better self-rated health was related to lower perceived need scores. Further, perceived need was positively correlated with somatic complaints, as measured by the Somatic Symptom Scale (SSS-8; $r = .47$, $p < 001$), in that greater somatic complaints were associated with greater perceived need. Lastly, whether participants reported having a chronic medical condition was associated with higher perceived need ($r = -.48$, $p < .001$). Overall, these analyses support the use of this single-item measure as an assessment of perceived need.

Tests of Hypotheses

H1: "Perceived need will be significantly negatively correlated with patient satisfaction, such that higher levels of perceived need will be associated with lower patient satisfaction."

As hypothesized, there was a statistically significant negative relationship between participants' levels of perceived need and scores on the PSQ-18, $r(421) = -.12$, $p = .012$, indicating that as perceived need increased, patient satisfaction decreased.

H2: "Rurality will significantly moderate the relationship between perception of need for medical care and patient satisfaction, such that rural participants will demonstrate a stronger relationship between perceived need and patient satisfaction."

The moderation model was initially examined with the covariates of age, gender, race/ethnicity, sexual orientation, income, and insurance status. However, only income and sexual orientation emerged as significant predictors of patient satisfaction. Consequently, the model was re-examined with only these two covariates, and all results reported below refer to analysis of this simplified model. Although the overall model was significant, $F(5, 388) = 7.10$, $p < .001$, $R^2 = .10$, perception of need was not significantly associated with patient satisfaction, $b = -.14$, $p = .196$ (see Table 5). Further, rurality status did not significantly moderate the relationship between perceived need for medical care and patient satisfaction, $F(1, 388) = .44$, $p = .506$, ΔR^2

= 0.01. However, it was discovered that income, $b = .11$, $p < .001$, and sexual orientation, $b = .23$, $p = .007$, were significantly associated with patient satisfaction, indicating that patient satisfaction was higher in those with greater income and who were heterosexual compared to those with lesser income and who identified as a sexual minority.

Table 5

Moderation Model

Regression Model	*b*	95% CI of *b*	*t*
Perceived Need	-0.14	-0.34, 0.07	-1.30
Rurality	-0.03	-0.22, 0.16	-0.31
Perceived Need x Rurality	0.02	-0.03, 0.07	0.67
Income	0.11**	0.05, 0.17	3.53
Sexual Orientation	0.23*	0.06, 0.39	2.71

Note. *$p < .01$; **$p < .001$. Rurality coded rural (1) and non-rural (0). Sexual orientation coded heterosexual (1) and other (0).

Chapter 4. Discussion

Patient satisfaction has been used in previous literature to measure quality of care from the patient's perspective (Aldana et al., 2001; Sitzia & Wood, 1998; Yellen et al., 2002; Yildiz & Erdoğmuş, 2004) and has been found to be a predictor of health-related behaviors, like medication non-adherence and patient compliance (Moore et al., 2013; Sitzia & Wood, 1998; Wroth & Pathman, 2006). Therefore, continuing to identify and explore factors influencing patient satisfaction may be useful in identifying important variables that contribute to a patient's perception of quality health care services. Specifically, this study sought to explore the relationships between perceived need for medical care and patient satisfaction. Rurality was hypothesized to moderate this relationship such that participants living in rural locales would demonstrate a stronger relationship between perceived need and satisfaction.

As hypothesized, results revealed a statistically significant correlational relationship between perception of need for medical care and patient satisfaction. This result identifies an association of two components of Andersen's Behavioral Model of Health Service Utilization, as well as provides insight into a factor that may contribute patients' perceptions of satisfaction. This hypothesis was formulated using the idea that those who perceive themselves as needing medical care are more likely to experience the consequences of barriers to care than those who do not endorse perception of need. While the current study cannot identify causation of this relationship, future research into explanations for this association may be insightful. For example, researchers can explore barriers to care as a mediating variable in the relationship between perception of need and patient satisfaction. Of note, however, the relationship between perception of need and patient satisfaction was no longer significant in the larger moderation

model. This may suggest that there are other factors influencing this relationship that are more important to consider, and thus, why this relationship no longer reaches significance.

Further results revealed that the proposed moderation was not statistically significant, indicating that level of rurality did not appear to change the association between perception of need and satisfaction scores. The lack of moderation by rurality may be due to consistently high barriers to accessing care across all regions of the United States, including rural and urban areas. In other words, while rural areas certainly experience unique barriers to accessing care, the different barriers present in urban environments may also be significant enough that level of rurality in itself does not significantly affect the relationship between perceived need and satisfaction. If this hypothesis is supported, health care administrators who assess patient satisfaction as a measure of quality of care may wish to identify barriers to care to better inform patient dissatisfaction with services and identify areas for improvement of accessibility. Furthermore, it appears that perception of need does not inform the reasoning for why some rural residents report high satisfaction scores, even with limited accessibility. Within this sample, there was a relatively high level of perceived need for medical care, as well as generally high levels of patient satisfaction. Current results may lend support to Stifkin's (2002) explanation for similarly high patient satisfaction scores in urban and rural regions, in that accessibility of resources may shape residents' perceptions of need. A more detailed analysis examining varying geographic regions and residents' perceptions of need, perceived availability of medical services, utilization of health care services, and patient satisfaction scores would be necessary to fully support Stifkin's theory.

While the hypothesized moderation was not statistically significant in this study, sexual orientation and income did emerge as significant predictors of patient satisfaction, in that higher

patient satisfaction was associated with those who identified as heterosexual and had higher income, consistent with previous literature. Several studies have demonstrated that sexual minority individuals generally report lower satisfaction levels with health care than heterosexual individuals. Specifically, McNair and colleagues (2011) found that sexual minority women in their sample had significantly lower satisfaction with their most recent visit with their general practitioner (GP) compared to their heterosexual counterparts. Within a sample of cancer survivors, sexual minority participants reported lower satisfaction with care than did heterosexual participants, even after controlling for relevant demographic and clinical variables associated with care. Furthermore, Clift and Kirby (2013) found that more sexual minority men reported that their doctor did not show them respect or spend enough time with them compared to heterosexual men. Regarding the relationship between income and satisfaction, Xiao and Barber (2008) found that higher income was associated with higher patient satisfaction scores, especially in regard to satisfaction concerning access to care. Moreover, among chronically ill African American patients, participants classified as having low-income reported higher levels of dissatisfaction with health care than participants classified as having middle-income (Becker & Newsom, 2003). In their qualitative analysis, Becker and Newsom (2003) also found low-income participants expressing dissatisfaction with the health care system more frequently compared to middle-income participants.

The findings that income and sexual orientation are related to patient satisfaction, while not necessarily unexpected, contribute to the understanding that social determinants of health are associated with patients' perspectives of quality of care. Further investigation is necessary to determine the reasons these relationships exist; however, it is important to acknowledge that individuals with low-income and who identify as sexual minorities experience stigma and

discrimination in health care settings. For example, Becker and Newsom (2003) found that low-income African American participants were likely to identify behavior they viewed as discriminatory, which may affect their levels of mistrust of the health care system. Further studies have found that approximately 59% of a sample of African American adults and 66% of a sample of individuals undergoing HIV treatment perceived discrimination from health care providers based on their socioeconomic status or social class (Bird & Bogart, 2001; Bird et al., 2004). These negative experiences with health care likely influence perceptions and health disparities that exist within these individuals and may directly impact patient satisfaction levels, which may be influential to the findings of this study that sexual orientation and income were associated with patient satisfaction.

Limitations

There are several limitations to note when considering the results of this study. For example, the recruitment strategy used (i.e., Reddit) resulted in limited variability in many categories, including race/ethnicity and gender. This bias likely influenced the power to detect relationships between certain variables, and may help explain why the current study failed to replicate previously-reported relationships, such as that found between race/ethnicity and patient satisfaction (e.g., LaVeist et al., 2000), which in turn influences the generalizability of these findings to a broader, more diverse population. Furthermore, some participants were recruited from subreddits dedicated to medical conditions, and because of this, the vast majority of this sample (78.7%) reported at least one chronic medical condition, which likely contributed to an overall elevated score of perceived need for medical care. The use of online, self-report surveys comes with additional limitations including self-selection bias, along with potentially inaccurate reporting. Other methodological concerns involve the use of non-validated, single-item measures

for both predictor variables. While these items were chosen intentionally in the current study, valid and reliable measures of perception of need for medical care and rurality are needed for a more rigorous study in which more confident conclusions could be drawn.

It is worth noting that data collection occurred during the COVID-19 pandemic, and because the primary predictor and dependent variables involved perceptions of health and health care, results were likely impacted. Perceptions of need for care may have been influenced by the devastating effects of COVID-19; individuals may have perceived their need as higher due to contracting the virus or anticipating needing care, or conversely, may have perceived their need as lower if they were not diagnosed with the virus or after seeing the detrimental effects of COVID-19 on patients who were diagnosed. Regarding patient satisfaction, beliefs surrounding how health care administrations managed patient care during the pandemic may have affected satisfaction. For example, there were times of general positive public sentiment towards health care workers, which may have increased satisfaction scores. On the other hand, some services, like preventative care appointments, elective surgeries, and care for non-COVID-related illnesses, were cancelled or unavailable at the height of the pandemic, and/or patients may have perceived that health care systems were mishandling the pandemic, resulting in lower patient satisfaction. Regardless of the direction of these relationships, it is likely that the study variables were impacted due to the historical context of the pandemic.

Conclusion

Overall, findings demonstrate a negative association between an individuals' perceived need for medical care and patient satisfaction, although in a larger model, this relationship is no longer statistically significant. Additionally, it appears that rurality does not act as a moderating variable. This study contributes to the knowledge of factors that are associated with the complex

concept of patient satisfaction and proposes areas for future research. Furthermore, these findings highlight the importance of social determinants of health, like sexual orientation and income, in relation to perceived quality of care in medical settings, recognizing that sexual minorities and individuals of lower incomes have lower patient satisfaction, which may be a result of stigma and discrimination within health care systems. When using patient satisfaction as a representation of quality of care, it may be important to consider and account for these factors.

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VITA

KYNDAL N. GRAMMER

Education:

A.S. Social Sciences, Virginia Western Community College, Roanoke, Virginia, 2017

B.S. Psychology, Longwood University, Farmville, Virginia, 2018
City, Tennessee, 2018

M.A. Clinical Psychology, East Tennessee State University, Johnson City, Tennessee, 2021

Professional Experience:

Research Assistant, Longwood University, Department of Psychology, Farmville, Virginia, 2018

Graduate Assistant, East Tennessee State University, Department of Psychology, 2019-2021

Selected Presentations:

Altschuler, R, Dodd, J., Grammer, K., & Hinkle, M. (2020, November 5-7). *Don't follow advice from people you don't trust: The role of sexual minority stress and medical mistrust in predicting healthcare non-adherence*. Poster accepted at the International Society of Traumatic Stress Studies Annual Conference, Atlanta, GA.

Grammer, K., Hinkle, M., Dodd, J., & Altschuler, R. (2020, November 5-7). *The pervasive trauma of minority stress: physical and mental health outcomes in a sample of LGB women*. Poster accepted at the International Society of Traumatic Stress Studies Annual Conference, Atlanta, GA.

Hinkle, M., Grammer, K., Dodd, J., Altschuler, R., & Caselman, G. (2020, November 5-7). *The impact of medical mistrust and medical non-adherence on the relationship between sexual trauma and health outcomes*. Poster accepted at the International Society of Traumatic Stress Studies Annual Conference, Atlanta, GA.

Byerley, S. M., Grammer, K. N., & Hirsch, J. K. (2020, August 6-9). *The validation of the Gratitude Questionnaire-6 in a cancer population.* Poster presented at the American Psychological Association (APA 2020) Convention, Washington, DC.

Grammer, K. N. & Czeizinger, M. V. (2018, November 20). *A smiley is worth a thousand words: Emoji use in determining emotional tone.* Poster presented at the Longwood University Psychology Research Symposium, Farmville, VA.

Honors and Awards:

ETSU Buc$ for Books Graduate Student Scholarship Recipient, 2020