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The Role of Rural and Urban Geography and Gender in Community Stigma around Mental Illness

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There are no conflicts of interest to report.

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ABSTRACT

Empirical evidence describes the negative outcomes people with mental health disorders experience due to societal stigma. The aim of this study was to examine the role of gender and rural/urban living in perceptions about mental illness. Participants completed the Day's Mental Illness Stigma Scale, a nationally validated instrument for measuring stigma. Directors of Chambers of Commerce in North Dakota distributed the electronic survey to their members. Additionally, distribution occurred through use of social media and other snowball sampling approaches. Analysis of data gathered from 749 participants occurred through examination of the difference in perceptions based on geography and gender. The ZIP codes of residence were sorted to distinguish between rural and urban participants. Application of weighting measures ensured closer alignment with the general population characteristics. Findings indicate that for the majority of the seven stigma measures the Day's Mental Illness Stigma Scale examines, the coefficient of rural-gender interactions was positive and highly significant with higher levels of stigma in rural areas. Females exhibited lower stigma perceptions than males. However, women living in rural areas held higher degrees of stigma compared to urban residing females. Implications of the study include the need to advance mental health literacy campaigns for males and people residing in rural communities. Additional empirical studies that examine the role of geography and gender in understanding stigma towards people with mental health disorders will result in improved treatment outcomes due to increased and focused educational efforts.

INTRODUCTION

The World Health Organization (WHO) predicted that by the end of 2020, mental illness would surpass all physical diseases globally as the major cause of disability (2004). In a more recent report, the WHO identified an 18% increase in the number pf people living with depression between 2005 and 2015 (2017). Similarly, in their 2004 report, the WHO had already begun to recognize the most significant barrier to ensuring adequate utilization of prevention and treatment for mental illness is the public stigma toward persons with mental illness (2001). Thornicroft, et al. (2016) reiterated that sentiment and concluded that "stigma and discrimination in relation to mental illnesses [may] have . . . worse consequences than the conditions themselves" (Thornicroft et al., 2016).

Prevalence of mental illness

In 2017, the National Survey on Drug Use and Health estimated that 46.6 million U.S. adults (or 18.9% of all U.S. adults) had Any Mental Illness (AMI) (Center for Behavioral Health Statistics and Quality (CBHSQ) et al., Table 8.3A, 2017). According to the National Institute of Mental Health (NIMH), AMI "is defined as a mental, behavioral, or emotional disorder. AMI can vary in impact, ranging from no impairment to mild, moderate, and even severe impairment" (NIMH, 2019). The rate has been steadily increasing since 2011 when 41.3 million adults were estimated to have AMI (CBHSQ et al., Table 10.1A, 2017). AMI was higher among young adults ages 18-25 (25.8%) than those 26-49 years (22.2%) and ages 50 or older (13.8%) (NIMH, 2019).

Among the estimated 46.6 million adults with AMI in 2017, the NIMH reported that less than half (43.3%) had received mental health services in the last year (2019). More women with AMI received mental healthcare (47.6%) than did men (34.8%) in 2017 (NIMH, 2019). A

notable barrier to care seeking is the perceived stigma around mental illness (Clement et al., 2014; Corrigan et al., 2014; Vogel et al., 2007).

Mental illness in North Dakota

Residents in North Dakota mirror national trends in prevalence of AMI. In 2017, roughly 19.3% of adults in North Dakota reported AMI (Substance Abuse and Mental Health Services Administration, U.S. Department of Health and Human Services, 2018). Nationally, the suicide rate increased 35% between 1999 and 2018 (Hedegaard, et al., 2020), and in North Dakota, suicide was the eighth leading cause of death overall in 2017 (Centers for Disease Control and Prevention (CDC), 2018a), and the second leading cause of death among youth ages 10-24 in 2016 (Arnold et al., 2017). The death by suicide rate increased by 57.6% in North Dakota from 1999 to 2016; this is the most significant increase for any state over that period (CDC, 2018b).

Stigma around mental illness

There are several barriers to seeking mental health services including (but not limited to) payment, insurance coverage, time availability, provider availability, lack of integrated care, transportation, and mental health literacy among others. One significant barrier is the real and/or perceived stigma associated with mental illness (Bharadwaj et al., 2017; CDC et al., 2012; Clement et al., 2014; Corrigan et al., 2014; Lannin, 2015; Vogel et al., 2007).

The CDC defines mental illness stigma as the negative attitude toward people with mental illness that may lead to exclusion and discrimination (CDC et al., 2012, Corrigan et al., 2014). Both community stigma (stigma held by the public toward persons with mental illness) and perceived self-stigma (stigma internalized by the individual with mental illness) have harmful effects on the individual (Pattyn, et al., 2014). Three out of four people diagnosed with mental illness report experiencing stigma which impacts behavior and self-esteem (Corrigan,

2004; WHO, 2001). Studies indicate that stigma is a significant barrier to care utilization and treatment plan adherence (Clement et al., 2014; Corrigan et al., 2014; Henderson et al., 2013; Lannin, 2015; Livingston & Boyd, 2010; Vogel et al., 2007).

Addressing community stigma may decrease the anticipated and experienced stigma among those with a mental illness and can increase care seeking behavior as well as public discourse around common mental health disorders (Henderson et al., 2013). Similarly, addressing stigma can improve community allocation of resources, improve care provision for individuals with mental illness, and increase community prevention campaigns designed to minimize the onset of mental illness or the worsening of symptoms (CDC et al., 2012).

Rural stigma around mental illness

Although stigma may be experienced among all sub-populations living with mental illness, there are groups of individuals who have been found to experience increased discrimination and around diagnosis and care seeking behavior. Studies have explored increased stigma around mental illness among athletes (Bauman, 2016), transgender youth (Reed et al., 2015), military personnel (Sharp et al., 2015), men (Corrigan et al., 2015), healthcare providers (Knaak et al., 2017), and others. Missing from these conversations is the role of geography (specifically a rural or urban classification) in public stigma.

The literature on geography and stigma have largely focused on the role of living in a low-income country (Mascayano, 2015; Semrau et al., 2015; Trani et al., 2015). Within the United States, a point of interest would be the community and self-stigma experienced in rural areas. Rural communities have a culture of their own, and as a result of the community size, often lack anonymity (Cheesmond, et al., 2019; Rost, Smith & Taylor, 1993). However, research on care seeking behavior and public stigma around mental illness in rural communities is limited

and narrow in scope (Polaha, 2015; Stewart et al., 2015). Several studies have been done on the topic in other countries (Maulik et al., 2016; Mutiso et al., 2017; Tam Ta et al., 2016). These studies do corroborate increased stigma among rural populations, but the implications lack generalizability in the United States. This is an especially important consideration in North Dakota where 39 of the 53 counties in the state are classified as completely rural (U.S. Census Bureau, 2017).

Aims

Recognizing that stigma around mental illness may be more prevalent in rural than urban communities but is not well researched in the United States, and given that North Dakota is a significantly rural state with a high prevalence of mental illness, the primary aim of this study was to identify differences in public stigma around mental health disorders between rural and urban residents within the state. We administered an existing and nationally validated instrument for measuring stigma around mental illness within the general public, Day's Mental Illness Stigma Scale (Day et al., 2007). The instrument is theoretically guided by six dimensions of stigma and was developed specifically to assess the general public's attitudes toward persons with mental illness (Day et al., 2007).

Previous (though limited) research on stigma made it clear that it is imperative to measure levels of stigma in rural and urban areas in an effort to tailor education and mental health literacy, identify champions of care, and to create a safe environment for accessing mental health services and treatment. In response, we examined stigma throughout the state but were specifically interested in any identified variability between rural and urban ZIP codes. It was hypothesized that levels of mental health stigma may be greater in small rural and frontier communities than urban. We also investigated heterogeneity across gender types.

METHODS

Participants and procedure

We contacted the North Dakota Chambers of Commerce in the fall of 2018 and invited them to share an electronic survey measuring stigma around mental illness. We employed a snowball sample and identified area chambers because of convenience, the diversity of their electronic mailing lists, and their dispersion across the state (rural and urban representation). Area chambers shared the survey and cover letter on social media and through their email lists. Those receiving the survey were also encouraged to share the invitation with other adults in North Dakota. Exclusion criteria included living outside of North Dakota or being under the age of 18. If participants identified a ZIP code outside of North Dakota or age less than 18, they were directed to the end of the survey.

U.S. Census Bureau population estimates indicate North Dakota had a population of 762,062 in July 2019 (2019). Roughly three quarters (582,977) of these individuals were ages 18 or older. There were 890 responses to the survey, 749 were marked "complete" (with no missing data) which accounted for 0.13% of the state's adult population. The survey sample was not representative of the state. Instead, 81% of respondents were female (female persons comprise only 48.8% of the overall state composition). According to the U.S. Census, 29.5% of North Dakota residents hold a bachelor's degree or higher; however, 65% of survey respondents identified the same. The American Community Survey (n.d.) indicates that 39.4% of North Dakota residents live in rural areas yet 63% of those who completed the survey lived in a rural area. Because the data disproportionately represented females, rural residents, and individuals with college degrees, the results were weighted prior to analysis.

Survey development

We reviewed existing literature on stigma and discussed the most relevant, validated tool for measuring the public's perception of mental illness. Several tools had been developed to measure stigma but varied in their application and audience (Baker & Schulberg, 1967; Boyd et al., 2014; Gilbert & Levinson, 1956; Taylor & Dear, 1981). We implemented an existing, tested, and nationally validated instrument for measuring stigma around mental illness, Day's Mental Illness Stigma Scale (Day et al., 2007). The survey was developed specifically to assess the general public's attitudes toward persons with mental illness and has been guided by six dimensions of stigma (Day et al., 2007).We made slight modifications to the tool to include additional demographic variables and submitted for and received approval from the University of North Dakota's Institutional Review Board.

Modifications to the original tool

The original tool requested participants indicate their level of agreement to 28 statements developed to measure stigma around specific mental illnesses. The 28 statements were retroactively categorized within seven topic areas: perceived treatability, relationship disruption, hygiene, recovery, anxiety, visibility, and professional efficacy (as detailed in the section below). There were no changes made to the 28 statements for this study, nor the analytical categorization. However, the original tool invited participants to identify their level of agreement to the 28 statements as they related to four specific mental illnesses (depression, bipolar disorder, schizophrenia, or other mental illness) (Day et al., 2007). A definition was provided for each. In total, the original tool had over 100 questions. Recognizing that an electronic survey of that length would impact the response rate of an already limited sample, we invited participants to report their level of agreement to the 28 statements around one comprehensive definition of mental illness.

The definition of mental illness was provided at the beginning of the Likert scale and was developed from the working definition provided by the American Psychiatric Association (2018). The definition, as it appeared in the tool, read "mental illness is defined as disorders that affect a person's mood, thinking and behavior. Examples of mental illness include depression, anxiety disorders, schizophrenia, eating disorders and addictive behaviors."

Measures

Demographic variables

The survey asked respondents to identify their gender, numerical age, ZIP code, highest grade level completed, and relation to someone with a mental health disorder. The later was not in the original tool; however, we were interested in the potential relationship between the level of familiarity with someone with mental illness and the level of stigma toward persons with mental illness. Categories for this question included a hierarchical list as follows: self, immediate family (spouse/child/sibling/parent etc.), partner (living with you), partner (not living with you), other family (uncle/aunt/cousin/grandparent, etc.), friend, acquaintance, work colleague, other, no one known, and prefer not to answer.

Measures of stigma

Stigma was measured under seven topics. Respondents noted their level of agreement on a seven-point Likert scale to statement within each of the seven topics. *Treatability* included three statements focused on an individual's perception that mental illness could be treated. The category of *relationship disruption* included six statements related to one's perception that mental illness interferes with the ability to maintain healthy relationships. *Hygiene* included four stigmatizing statements around personal appearance. Two statements measuring stigma related to *recovery* assessed perception around an individual's ability to recover from mental illness.

Anxiety was conceptualized by the feelings the respondents identified when around someone with a mental illness. The category *visibility* included four statements around the respondents' ability to identify someone with a mental illness. P*rofessional efficacy* only included two statements around the faith participants had in professionals' ability to treat and manage mental illness.

Data Analysis

Weighting procedures

Weighting was used to bring survey results into closer alignment with the general population characteristics. Weights were generated through a process known as "raking" (Pasek, 2011) Four dimensions were incorporated into the generation of weights (Rural/Urban, Gender, Age, and Education). Data for demographic factors was taken from the November 2018 Current Population Survey produced by the U.S. Census Bureau. Information was collected for North Dakota Adults (age 18 and older). Variables had to be matched from the survey instrument to the categories available in the file weighting the data, for example, categorical age. While weighted data helps to correct for potential sources of bias that may result from a sampling process, it is not without its drawbacks. While it is impossible to know if any given weighting method actually reduces bias, two things are certain. First the original sample was clearly not representative of the population on multiple known demographic measures. Second, the weighted data is aligned with demographic patterns for gender, age, education, and geography (urban/rural).

Weighted data also often have a larger variance than un-weighted data, the ratios of these two variances is referred to as the design effect (δ). For this reason, Stata's svyset option was used for all analysis to adjust standard errors to reflect the effect of applying weights to the analysis.

Statistical Analysis

We employed regression analysis to explore the association between each of the seven measures of stigma and a set of demographic characteristics. These demographic characteristics included gender (Gender = 1 if female; 0 otherwise), age category variables (AGE1 = 1 if respondent is age 35 years and below; 0 otherwise, AGE2 = 1 if respondent was between 36 and 50 years old; 0 otherwise, and AGE3 = 1 if respondent was 51 years or older; 0 otherwise)[1], educational attainment, EDU (EDU = 1 if attained at least some college; 0 if attained high school or below), rural residency (RURAL = 1 if respondent permanently resides in a rural code as defined by the Rural-Urban Commuting Area (RUCA); 0 otherwise), and, if a family member (i.e., spouse, child, sibling, parent, etc.) or a partner (living with respondent or not living with respondent) has or has had some kind of mental health disorder (FamPart = 1 in this case; 0 otherwise). The definitions of our covariates imply that the baseline comparison group is a male, urban (non-rural) resident, below the age of 36, with high school education or below, and who has no direct family members or partners who have experienced some kind of mental health disorder. Definitions of all outcome variables and covariates are reported in Table 1.

We conducted a regression of each stigma measure on Gender, AGE2, AGE3, EDU, RURAL, and FamPart (see, Table 2). We will refer to this as our benchmark specification. We then explored differences in stigma perceptions across rural and urban areas using a full set of rural-urban interaction terms (see, Table 3). We also investigated differences in stigma perceptions across gender types by including a full set of gender interaction terms to the benchmark regression model (see, Table 4). Finally, for robustness, we also conducted an exercise with both rural and gender interaction terms added to the benchmark model. We also

[1] We chose these 3 age categories based on the demographic breakdown of our sample. The proportion of our sample corresponding to AGE1, AGE2, and AGE3 were 0.35, 0.34, and 0.31, respectively.

explored any heterogeneous responses due to age differences by adding a set of three way rural-gender-age interaction terms to this robustness model (see, Table 5).

RESULTS

Prior to weighting the data, 81% of respondents were female (18% male); 35% had no four-year degree, 40% had a Bachelor's degree, and 25% had a Master's, professional or doctoral degree; 63% lived in a rural area; and, 52% were between the ages of 18 and 41. Tables 2 to 5 present our findings for the regression exercises described above for each of the seven stigma measures. Significantly positive (negative) coefficients imply greater (lower) stigma perception, all else equal, relative to our comparison group. We also ran retrospective power analyses for our benchmark multiple linear regression models where the alternative hypothesis was that the slope coefficients were non-zero. The estimated power ranged from 0.751 to 1.000 with the overwhelming majority with power above 0.95. However, we stress that such power estimates should be viewed with caution as they suffer from the demonstrated conclusion that higher observed power does not necessarily imply stronger evidence for a null hypothesis that is not rejected (Hoenig and Heisey (2001).

A key and robust finding from our analysis was that females exhibited lower stigma perceptions than males. For example, in our benchmark regressions (Table 1), the coefficient to Gender was negative and significant for all stigma measures except visibility, recovery, and treatability. In those latter three cases, the coefficient was insignificant but the point estimate was still negative.[2]

In subsequent exercises, we explored if other factors explained these differences between females and males in stigma perceptions. The results from Table 3, where rural interaction terms

[2] The overall design effect is 3.37.

were included into the benchmark specification, suggest that, generally, rural females hold higher degrees of stigma perceptions compared to urban females. For most of the stigma measures, we found the coefficient to the rural-gender interaction term was positive and significant. The exceptions were for anxiety, visibility, and professional efficacy. In these cases, the point estimate was positive for all except visibility; the point estimates were not significantly different from zero in all cases.

Older females (ages 36-50 and 51 and older) generally exhibited lower degrees of stigma perceptions compared to females in the 35 and younger age group (Table 4). The sole exception was visibility where the point estimates to the gender-age groups interaction terms were positive. In all other cases, the point estimates were negative and, in most cases, highly significant.

We explored further by putting all the interaction terms – both rural and gender interaction terms – into the benchmark model, and, importantly, including a set of three-way interaction terms between rural-gender-age groups (Table 5). The results generally confirmed the robustness of the above findings, but shed new light on the complex heterogeneity in stigma perceptions within the female population. In almost all cases (with the exception of anxiety and professional efficacy), we found that urban females who are aged 35 and younger actually held views that were not significantly different from their male counterparts in the comparison group, all else equal. In the case of anxiety and professional efficacy, they actually held stronger (higher level) views regarding stigma than corresponding males. Except in two cases (anxiety and visibility), rural females aged 35 and younger held views that were not significantly different from their urban female counterparts, and in those two cases, their views were actually more moderate.

Although older urban males tended to exhibit higher levels of stigma perception relative to the comparison group, rural males actually had significantly more moderate views. Higher levels of education did not generally appear to moderate the views of males either (although they tend to do so for females) regardless of whether they lived in urban or rural areas. For example, we found that more highly educated males actually exhibited higher degrees of stigma perception for anxiety, while, for the other stigma measures, the effect of higher education appeared to be largely insignificant.

The effect of having a family member or partner who had experienced mental health issues on a person's stigma perceptions was mixed. For example, such direct experience with mental illness appeared to have a moderating (negative) effect for anxiety, professional efficacy, hygiene, and recovery depending on the specification. However, for visibility (see, Table 3), respondents in urban areas with such direct experiences were more likely to say that they could visibly identify someone with mental health issues while similar respondents in rural areas reported the opposite. The results were, for example, reversed for recovery with urban residents with such direct experiences being generally more optimistic about the prospects for recovery compared to rural residents.

In sum, our findings suggest that different social groups characterized by gender, rural/urban classification, and direct experiences with mental illness hold complex and, in some cases, drastically different views in terms of stigma.

DISCUSSION

We sought to determine the level of public stigma around behavioral health disorders between rural and urban residents within the state, subsequently adding to the literature a discussion around rural and urban mental health stigma. Generally, rural/urban classification was

not the sole and decisive predictor of level of stigma around mental illness. Instead, there was variability between gender and age. More complicated is that when one group of individuals presented with stronger feelings of stigma, they did not necessarily do so across all seven measures of stigma. The complexity of these findings indicate that mental health literacy should target messaging and focus based on population demographics.

This finding is substantiated by a 2016 study that explored anti-stigma programming from different countries in an attempt to develop evidenced-based best practices (Stuart). The 2016 analysis stated that it is imperative that dollars are allocated toward targeted, contact-based stigma interventions and not large public educational approaches (Stuart). Large educational campaigns developed to address stigma assume all communities and demographic groups approach mental illness in the same way and hold similar levels of stigma which we found not to be the case, and which this study found largely ineffective (Stuart, 2016). A 2015 study focused specifically on interventions on self-stigma indicated the same by highlighting common elements and important distinctions between interventions and which of those work best for particular populations (Yanos et al.).

Role of Gender and Rural/Urban Classification

Females exhibited lower stigma perceptions than males. However, rural females held higher degrees of stigma perceptions compared to urban females. This is consistent with a 2015 study in Western Kentucky that concluded that psychiatric nurses needed to develop community-based interventions to reduce both personal and public stigma among rural females specifically (Simmons et al., 2015).

We also found that older females (those ages 36-50 or 51 and older) generally exhibited lower degrees of stigma perceptions compared to females ages 35 and younger. Driving the

differences in female views on stigma relative to our comparison group were the views of older urban females (those ages 36-50 and also those 51 and older). Given that females, especially those who were older and living in urban communities held less stigma than their counterparts, this subgroup can be utilized as champions of care. Education campaigns can utilize these champions within the community and beyond to create a safe environment for accessing mental health services and treatment.

Similarly, these findings indicate a need to address mental health literacy among males in rural and urban communities alike. However, campaigns and mental health promotion must recognize that rural males and urban males will likely have various perceptions of mental illness and variable stigma. These findings not only call for a need to address stigma and misperceptions around mental illness, but also illustrate the need to conduct similar research in each state/community prior to implementing educational programing or health campaigns. This will allow dollars to be appropriately allocated and will encourage more effective education.

Relationship to Someone with Mental Illness

Direct experience with mental illness had a moderating (negative) effect for anxiety and hygiene. Having a close familial relation to someone with a mental illness mitigated the level of stigma around mental illness, more generally. These findings indicate that those who have a close relationship with someone who has a mental illness can serve as community champions. Mental health literacy and stigma mitigation must focus on those who have less experience interacting with someone with mental illness. Urban residents with such direct experiences were more optimistic about recovery compared to rural residents with direct experience which would indicate that there is still a need to address recovery in rural communities.

Conclusion

Stigma about mental illness can prevent treatment and recovery among those with mental illness, poses a barrier for public health prevention efforts, and can lead to poorer quality of care delivered for those with mental illness (CDC, et al., 2012). This study identified subpopulations who hold greater stigma, subpopulations who can serve as community champions in rural areas, identified groups in need of mental health education, and also identified specific measures of stigma requiring focused educational campaigns.

Limitations and Future Research

Limitations included the snowball sampling frame which resulted in a sample that was largely influenced by female respondents and those with a college degree. However, the results were weighted to overcome this limitation. It is important to note that the large degree of bias in the sample likely could not be entirely controlled for through weighting. Even recognizing that there is a potential bias and an inability to generalize the results of this survey to all adults in North Dakota, the data do establish a strong baseline and support for addressing stigma among males in rural and urban communities throughout the state. Results also highlight, regardless of generalizability of these specific data, the need to survey and assess stigma around mental health prior to implementing educational campaigns developed to address/decrease public stigma.

Another limitation of this study is that it did not explore perceived self-stigma by individuals with mental illness which can have a greater influence on care utilization than public stigma. The study also explored stigma in only one state and did not explore potentially exacerbating variables because of small sample sizes. However, this study is one of the first to explore variable public stigma between rural and urban areas.

The original survey assessed stigma around several mental health diagnoses. A limitation of that study was its length and non-completion rate. To accommodate that limitation, this study

measured stigma related to mental illness more broadly. This is also a limitation because there was no distinction between any mental illness and serious mental illness. It is recommended that future research assess stigma around any mental illness (not including serious mental illness but including diagnoses like depression and anxiety) and then assess stigma related more specifically to serious mental illness. Serious mental illness would include diagnoses like bio-polar disorder and schizophrenia.

The results draw attention to the need for future research to break perceived stigma (self or public) into categories like those studied (professional efficacy, anxiety, hygiene, etc.) and the need to identify both community champions (subgroups with low stigma) and priority health education topics (for example, the topic of recovery among rural males). Future research may also explore additional demographic variables that could influence community stigma (for example, income). Within the state of study, there is an opportunity to now develop focused educational and mental health promotion campaigns and to subsequently study their impact on public stigma.

CONFLICTS OF INTEREST

All four authors provided a significant contribution to the research, and manuscript, each approving this final submission. There are no conflicts of interest. The study procedures were approved by the Institution Review Board at the University of study.

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