Is mental health related to ethnicity/race and income in middle-aged females in the general U.S. population?

Sean R Jamieson, Shannon M Swickard, Abby L Cahill, Sharonica S Powell, Kenya Samuels and Jessica L Hartos*

Department of Physician Assistant Studies, University of North Texas Health Science Center, USA

Abstract

Purpose: With little research addressing mental health, ethnicity/race, and income within specific gender and age groups, the purpose of this study was to examine whether mental health differs by ethnicity/race and income in middle-aged women in the general population.

Methods: This cross-sectional analysis used 2016 Behavioral Risk Factor Surveillance System data for females ages 40-64 years from Alabama (N=1455), Mississippi (N=1082), North Carolina (N=1215), South Carolina (N=2277), and Tennessee (N=1263). Ordered logistic regression analysis by state was used to assess the relationship between mental health and ethnicity/race and income, while controlling for demographic and health factors.

Results: Over one-third of middle-aged women reported having low to moderate mental health (38-45%), half or more reported white race (54-81%), and more than half reported an income of less than $50,000 per year (52-66%). The results of this study indicated that mental health did not differ significantly by income, but did differ significantly by ethnicity in 3 of 5 states, with white, non-Hispanic middle-aged women reporting more mental health issues. In addition, mental health was related to physical health, tobacco use, and age categories across states.

Conclusion: Overall, mental health differed by ethnicity/race, but not by income, across samples of middle-aged women in the general population. Limitations of this study include an underrepresentation of various ethnicity/race groups. Because over one-third of this target population may have low to moderate mental health, practitioners in a primary care should screen all middle-aged women for mental health, with special consideration for white patients and those 40-55 years of age. In addition, because tobacco use and physical health were moderately-to highly-related to mental health in this target population, practitioners should screen for all if middle-aged females present with any. Any treatment for mental and physical health issues should be coordinated and smoking cessation should be encouraged.

Introduction

Poor mental health is a global issue that leads to more disability worldwide than any other disease (CDC, 2011a). In the United States, over 50% of adults will suffer from at least one mental illness over the course of their lifetime [1]. Research has consistently linked poor mental health with poor physical health, substance abuse, and a variety of other chronic health issues, such as obesity and cardiovascular disease [1-4]. Poor mental health is not just a concern at the individual or family level, but also provides a significant financial burden to society. It has been calculated that people with poor mental health have higher healthcare costs, with the financial burden to the United States being approximately $300 billion [1,2,4].

Research shows that mental health differs by gender, ethnicity/race, and socioeconomic status. Studies have indicated that women are more likely to suffer from mental illness than men [4-9], with the average onset of mental illness in women being between the ages 26-32 [3]. In addition, studies show that African American and Hispanic women are more likely than Caucasian women to have depressive symptoms [10-11]. Studies have also shown a significant relationship between income inequality and poor mental health in the general population [8].

While previous research has shown a relationship between mental health and both ethnicity/race and income, the majority of that research was conducted in specific populations, including veteran women, menopausal women, women with gestational diabetes mellitus, women who spent time in foster care [9-12]. Few studies have assessed this relationship in general populations or by specific age and gender groups. Therefore, the purpose of this study is to examine the relationship between mental health and both income and ethnicity in middle-aged women in the general population.

Methods

Design

This cross-sectional analysis used 2016 data from the Behavioral Risk Factor Surveillance System (BRFSS) conducted by the Center for Disease Control and Prevention (CDC) [13]. The goal of BRFSS is to collect uniform data on health risk behaviors, chronic diseases, health conditions, access to health care, and use of preventative health services linked to the leading causes of death and disability in the United States and U.S. territories. State health departments conduct standardized surveys annually using Random Digit Dialing (RDD) techniques. Participants include adults 18 years who are not monetarily compensated. The CDC compiles all BRFSS data and makes de-identified data available to researchers for secondary data analysis. This study was given exempt status by the Institutional Review Board of The University of North Texas Health Science Center.

*Correspondence to: Jessica L Hartos, Department of Physician Assistant Studies, University of North Texas Health Science Center, 3500 Camp Bowie Blvd, Fort Worth, Texas, USA, Tel: (817)735-2454, Fax: (817)735-2529, E-mail: jessica.hartos@unthsc.edu

Key words: mental health, ethnicity, income, middle-aged women

Received: May 31, 2018; Accepted: June 21, 2018; Published: June 25, 2018

Front Womens Heal, 2018 doi: 10.15761/FWH.1000148

Volume 3(3): 1-5
Sample

The samples for this analysis included females ages 40-64 years in Alabama (N=1455), Mississippi (N=1082), North Carolina (N=1215), South Carolina (N=2277), and Tennessee (N=1263). These states were chosen for their higher proportions of individuals who reported (a) depression and (b) being middle-aged females based on the BRFSS 2016 prevalence survey data maps [14].

Data

Our outcome of interest was mental health status. Originally, mental health status was measured in BRFSS as participants rating the number of “not good” days during the last 30 days including “stress, depression, and problems with emotions” with the number categorized as “low” (0 days), “moderate” (1-13 days), or “high” (14 or more days). For convenience and clarity, we reversed this variable to be a measure of days of “good mental health status” with categories of “low” (less than 16 days), “moderate” (17-29 days), or “high” (30 days). We had two factors of interest, ethnicity/race and income. Ethnicity/race in the BRFSS data was initially categorized as “white, non-Hispanic,” “black, non-Hispanic,” “Hispanic,” “other race, non-Hispanic,” or “multiracial, non-Hispanic.” However, due to small percentages in some categories, we used 3 categories: “white, non-Hispanic”, “black, non-Hispanic”, or “other.” Income was measured as having an income level of “0 to less than $25,000,” “$25,000 to less than $50,000,” or “$50,000 or more.”

The control variables were age, marital status, education level, employment status, physical health status, tobacco use, and alcohol use. Age was categorized as “40-44,” “45-49,” “50-54,” “55-59,” or “60-64.” Marital status was categorized as “yes” or “no” to being currently married. Education level was categorized as “graduated from college/technical school” or “did not graduate college/technical school.” Employment status was categorized as “employed” or “not employed.” Physical health status was reversed from “not good” to “good” days of physical health in the past 30 days and categorized as “low” (less than 16 days), “moderate” (17-29 days) or “high” (30 days). Tobacco use was measured as “current smoker” or “non-smoker.” Alcohol use was measured as “none” (no use), “light” (less than 1), “moderate” (1-3), or “excessive” (4 or more) for average number of drinks per day [15]. The categories and responses for each variable are listed in Table 1.

Analysis

Frequency distributions were used to assess sample characteristics and to identify any issues with the distribution of variables. Data analysis was conducted separately by state to determine patterns among variable relations across similar samples. Similar results in 3 or more of 5 states were considered consistent evidence for relations. Ordered logistic regression by state was used to assess the relationship between an ordinal dependent variable and a set of independent variables. The proportional odds model is used to estimate a relationship between an ordinal dependent variable and a set of independent variables. The proportional odds produced for each IV relates “proportionally” or equally applies to comparisons of DV groups greater than k versus those who are in groups less than or equal to k, where k is any level of the response variable. Therefore, the interpretation of an associated OR is that for a one unit change in the predictor variable, the odds for a group that is greater than k versus less than or equal to k are the proportional odds times larger. The adjusted results for mental health outcomes are shown in Table 2. Any observations with missing data for any variables were excluded from the adjusted analysis. All analyses were conducted in STATA 15 (©1985-2017 Statcorp LLC).

Results

Descriptive

Table 1 lists participant characteristics for females ages 40-64 in Alabama, Mississippi, North Carolina, South Carolina, and Tennessee. Across states, over one-third of participants reported low (17-21%) or moderate (22-27%) mental health in the last 30 days. For ethnicity, the majority reported their race as white (54-81%). For income, more than half reported having an income of less than $50,000 per year (52-66%). For demographic factors, about half of women reported their age as 55-64 (44-51%) and about half reported being unmarried (43-52%). For socioeconomic status, about one third reported graduating college or technical school (21-31%) and the majority reported being employed (53-61%). For health-related factors, the majority reported high physical health in last 30 days (51-61%), most reported not smoking (75-81%), and more than half reported no alcohol use (54-68%).

Adjusted

As shown in Table 2, the results of ordered logistic regression analysis for middle aged females in Alabama, North Carolina, South Carolina, and Tennessee indicated that after controlling for all other variables in the model, mental health was significantly and consistently related to ethnicity/race. In 3 out of 5 states, black women were about 1.5 times more likely to report each successive level of mental health compared to white, non-Hispanic women. In addition, compared to their referent groups, the following participants in at least 3 out of 5 states were more likely to report each successive level of mental health: those who were 55-59 years old, those who were 60-64 years old, those who reported moderate physical health in the last 30 days, and those who reported high physical health in the last 30 days. In contrast, current smokers in 4 out of 5 states were less likely to report each successive level of mental health compared to non-smokers.

Discussion

The purpose of this study was to examine whether mental health differs by ethnicity/race and income in middle-aged women in the general population. To the best of our knowledge, this is the first study to focus solely on this target population. The results of adjusted statistics showed that mental health in middle-aged women differed significantly by ethnicity/race. In our study, black women were more likely to report each successive level of mental health compared to white women. However, our findings differ from previous research that indicate that black women are more likely to show depressive symptoms compared to other ethnicities/races [10,11]. The differences may be attributable to the special populations assessed in prior studies, including veteran women, menopausal women, and women with gestational diabetes mellitus. Furthermore, our research found no consistent relationship between mental health and income, which is similar to the results of a previous review study [8] that showed that only 1 of 9 studies showed consistent associations between income inequality and poor mental health, while the others showed mixed results or no associations.

In addition, our study showed consistent findings for older participants (ages 55-59 and 60-64) to be were more likely to report each successive level of mental health when compared to the younger...
Table 1. Participant characteristics by state

| Variables                  | Alabama N=1,455 | Mississippi N=1,082 | North Carolina N=1,215 | South Carolina N=2,277 | Tennessee N=1,263 |
|----------------------------|-----------------|---------------------|-------------------------|------------------------|-------------------|
| Mental Health Status       | N               | %                   | N                       | %                      | N                 | %       |
| High                       | 804             | 55                  | 642                     | 59                     | 749               | 62      |
| Moderate                   | 392             | 27                  | 251                     | 23                     | 263               | 22      |
| Low                        | 259             | 18                  | 189                     | 17                     | 203               | 17      |
| Ethnicity/Race             | 1442            | 99                  | 1073                    | 99                     | 1205              | 99      |
| White, non-Hispanic        | 939             | 65                  | 576                     | 54                     | 815               | 68      |
| Black, non-Hispanic        | 436             | 30                  | 475                     | 44                     | 266               | 22      |
| Other                      | 67              | 5                   | 22                      | 2                      | 124               | 10      |
| Income Level               |                 |                     |                         |                        |                   |         |
| 0 to <$25,000              | 523             | 36                  | 449                     | 42                     | 352               | 29      |
| $25,000 to <$50,000        | 306             | 21                  | 269                     | 25                     | 281               | 23      |
| $50,000+                   | 626             | 43                  | 364                     | 34                     | 582               | 48      |
| Age                        | 1455            | 100                 | 1082                    | 100                    | 1215              | 100     |
| 40-44 years old            | 236             | 16                  | 165                     | 15                     | 188               | 15      |
| 45-49 years old            | 220             | 15                  | 196                     | 18                     | 222               | 18      |
| 50-54 years old            | 329             | 23                  | 199                     | 18                     | 269               | 22      |
| 55-59 years old            | 331             | 23                  | 245                     | 23                     | 269               | 22      |
| 60-64 years old            | 339             | 23                  | 278                     | 26                     | 268               | 22      |
| Marital Status             | 1455            | 100                 | 1082                    | 100                    | 1215              | 100     |
| Married                    | 793             | 55                  | 524                     | 48                     | 675               | 56      |
| Unmarried                  | 662             | 45                  | 558                     | 52                     | 540               | 44      |
| Educational Level          | 1454            | 100                 | 1082                    | 100                    | 1215              | 100     |
| Graduated college/technical school | 444           | 31                  | 334                     | 31                     | 505               | 21      |
| Did not graduate college/technical school | 992          | 68                  | 748                     | 69                     | 710               | 58      |
| Employment Status          | 1451            | 100                 | 1081                    | 100                    | 1214              | 100     |
| Employed                   | 765             | 53                  | 584                     | 54                     | 735               | 61      |
| Unemployed                 | 686             | 47                  | 497                     | 46                     | 479               | 39      |
| Physical Health Status     | 1438            | 99                  | 1059                    | 98                     | 1207              | 99      |
| High                       | 745             | 52                  | 617                     | 58                     | 735               | 61      |
| Moderate                   | 397             | 28                  | 253                     | 24                     | 263               | 22      |
| Low                        | 296             | 21                  | 189                     | 18                     | 209               | 17      |
| Tobacco Use                | 1425            | 98                  | 1059                    | 98                     | 1204              | 99      |
| Current Smoker             | 281             | 20                  | 211                     | 20                     | 233               | 19      |
| Non-smoker                 | 1144            | 80                  | 848                     | 80                     | 971               | 81      |
| Alcohol Use                | 1417            | 97                  | 1057                    | 98                     | 1178              | 97      |
| None                       | 886             | 63                  | 718                     | 68                     | 640               | 54      |
| Light                      | 210             | 15                  | 150                     | 14                     | 161               | 14      |
| Moderate                   | 175             | 12                  | 81                      | 8                      | 155               | 13      |
| Excessive                  | 146             | 10                  | 108                     | 10                     | 222               | 19      |

Limitations

The use of BRFSS data provided large representative samples in which to assess variable relations. However, particular ethnicities/races were not well-represented among our sample. Future studies should assess relations between mental health and income within various ethnicity/race groups to determine whether patterns or relations are similar. In addition, mental health we had no information on symptom severity or management strategies, including medication use, and it would have been beneficial to have information on participants’ social support and current stressors, which may also affect mental health [10]. Future research should include health management, stress, and social support as related to mental health in various age and ethnicity/race groups among middle-aged women.

Recommendations

The results of this population-based study may be generalizable to middle-aged women ages 40-64 in a primary care setting. Within this target population, practitioners may expect a moderate proportion of women with low to moderate mental health. Thus, practitioners should screen mental health in all women ages 40-64, especially white women and the younger ages of this target population. Practitioners may also expect a moderate proportion of women with low to moderate physical health in this target population. Because physical health was highly related to mental health, providers should screen for any comorbid health conditions to determine symptom severity and management participants (ages 40-44). Such results may be related to the variation in lifestyles, socioeconomic factors, and/or stressors that each age group may experience. Our study also showed that women who reported moderate or high physical health were more likely to report each successive level of mental health, which is similar to findings of prior research [1,4]. Furthermore, our study showed that smokers were less likely to report each successive level of mental health, which is consistent with previous research in other populations [1-4].

Front Womens Health, 2018  doi: 10.15761/FWH.1000148  Volume 3(3): 3-5
strategies, and provide education and coordinated treatment as needed. In addition, providers might expect a low proportion of middle-aged women to smoke, but given its moderate relations with mental health, providers should screen for both in patients who present with either. Patient education and smoking cessation resources should be provided.

References

1. Center for Disease Control and Prevention (CDC) (2011) Mental Illness Surveillance among Adults in the United States. [http://www.cdc.gov/mentalhealthsurveillance/fact_sheet.html]

2. Centers for Disease Control and Prevention (CDC) (2011a) Mental Illness Surveillance among Adults in the United States. [https://www.cdc.gov/mmwr/preview/mmwrhtml/su6003a1.htm?u=su6003a1_w]

3. Blane GE, Hummelvoll JK, Severinsson E (2010) Mothers with mental health problems: A systematic review. *Nursing Health Sciences* 12: 519-528.

4. Cole MG, Dendukuri N (2003) Risk factors for depression among elderly community subjects: A systematic review and meta-analysis. *Am J Psychiatry* 160: 1147-1156. [Crossref]

5. Abebe DS, Lien L, Hjelle KH (2014) What we know and don’t know about mental health problems among immigrants in Norway. *J Immigr Minor Health* 16: 60-67. [Crossref]

6. Lund C, Breen A, Fisher AJ, Kakkara R, Corrigan J, et al. (2010) Poverty and common mental disorders in low and middle income countries: A systematic review. *Soc Sci Med* 71: 517-528. [Crossref]

7. Paradies Y (2006) A systematic review of empirical research on self-reported racism and health. *Int J Epidemiol* 35: 888-901. [Crossref]

8. Ribeiro WS, Bauer A, Andrade MCR, York-Smith M, Pan PM, et al. (2017) Income inequality and mental illness-related morbidity and resilience: A systematic review and meta-analysis. *Lancet Psychiatry* 4: 554-562. [Crossref]

9. Villegas S, Pecora PJ (2012) Mental health outcomes for adults in foster care as children: An analysis by ethnicity. *Children Youth Serv Rev* 34: 1448-1458.

10. Bromberger JT, Harlow S, Avis N, Kravitz HM, Cordal A (2004) Racial/ethnic differences in the prevalence of depressive symptoms among middle-aged women: The study of women’s health across the nation (SWAN). *Am J Public Health* 94: 1378-1385. [Crossref]

11. Walmer R, Huynh J, Wenger J, Ankers E, Mantha AB, et al. (2015) Mental health disorders subsequent to gestational diabetes mellitus differ by ethnicity/race. *Depress Anxiety* 32: 774-782. [Crossref]

12. Carter A, Borrero S, Wessel C, Washington DL, Bean-Mayberry B, et al. (2016) Racial and ethnic health care disparities among women in the veterans affairs healthcare system: A systematic review. *Women’s Health Issues* 26: 401-409. [Crossref]

13. Centers for Disease Control & Prevention (CDC) (2014) About BFRSS. [https://www.cdc.gov/bfrss/about/bfrss_faq.htm]
