

DOI: 10.21767/2572-5483.100026

Does General, Physical and Mental Health Differ by Healthcare Coverage or Healthcare Cost for Middle-Aged Females?

Gilchrist DN, Wrzesinski LD, Schultz BJ, Samuels KL and Hartos JL*

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

*Corresponding author: Hartos JL, Department of Physician Assistant Studies, University of North Texas Health Science Center, USA, Tel: 817-735-2454; Fax: 817-735-2529; E-mail: Jessica.hartos@unthsc.edu

Received date: November 13, 2017; Accepted date: January 22, 2018; Published date: January 29, 2018

Citation: Gilchrist DN, Wrzesinski LD, Schultz BJ, Samuels KL, Hartos JL (2018) Does General, Physical and Mental Health Differ by Healthcare Coverage or Healthcare Cost for Middle-Aged Females? J Prev Med Vol.3 No.1:5.

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Abstract

Purpose: Research linking health status and healthcare access does not clearly establish the relative impact of healthcare coverage versus healthcare cost for health status outcomes, especially for middle-aged women. Therefore, the purpose of this study was to determine whether general, physical, and mental health status outcomes differed by healthcare coverage or healthcare cost in multiple samples of middle-aged females.

Methods: This cross-sectional analysis used 2015 data from the Behavioral Risk Factor Surveillance System (BRFSS) for females aged 35-54 from Alabama, Arkansas, Louisiana, and Mississippi. To establish patterns in relations, multiple logistic regression analysis by state assessed the relationships separately for general health, mental health, and physical health with healthcare coverage and healthcare cost while controlling for other health and demographic factors.

Results: Most participants reported good general health status (73-79%), and about half reported good physical health status (54-59%) and good mental health status (54-58%) despite also reporting two or more health conditions (47-53%). In addition, most participants reported having healthcare coverage (82-92%) and not having cost preclude doctors' visits (74-82%). The results of adjusted analysis indicated that good general, mental, and physical health status outcomes were inversely related to healthcare cost in three of four states and to two or more health conditions in all four states. In addition, good general health status and physical health status were related positively to income level in 3 of 4 states.

Conclusion: Overall, general, physical, and mental health status outcomes in middle aged women showed consistent patterns of relations with healthcare cost across similar samples, but not to healthcare coverage. In addition, all three health status outcomes were related to multiple health conditions, and general and physical health were related to income level. Although this study lacked specific information for healthcare concerns and costs for middle-aged women, providers and policy makers should consider

the costs of health management for middle-aged female patients, especially in low income areas.

Keywords: General health; Mental health; Physical health; Middle-aged females; Healthcare access

Introduction

Maintaining health and overall well-being requires primary prevention efforts such as proper nutrition, physical activity, routine health check-ups, sleep management, and stress reduction, as well as secondary intervention efforts for the identification and management of physical and mental injury, illness, and disease. Overall, up to 70% of adults report having good or better health across the United States [1].

However, health status can differ by a variety of demographic factors including gender, race/ethnicity, income level, education level, marital status, and state of residence [2-6]. Health status can also differ by a variety of health-environment factors including use of preventative health care services such as routine checkups and immunizations and proper management of acute and chronic health conditions [7,8].

As such, healthcare access is necessary for maintaining good health status. Although some studies show that up to 95% of people have healthcare coverage across the United States [1,9], others indicate that there are 44 million individuals who are still uninsured [7]. In addition, since the implementation of the healthcare reform of 2010, studies show significant improvements in self-reported healthcare coverage and access to primary care [10-12]; however, other studies indicate inequalities still exist based on socioeconomic status for use of preventative measures and availability of healthcare facilities [6,13]. Furthermore, healthcare coverage, including plans, out-of-pocket expenses, and acceptance by medical entities, differ dramatically, especially for private insurance versus Medicaid [14] and for psychiatry versus other medical specialties [15].

Healthcare access tends to be lowest in middle age brackets, especially for females and low income [13]. The vast majority of young adult women may report being in good or better health

[5]; however, during middle age, females begin to experience health issues related to aging, including decreases in metabolism, increases in weight, increased risk of infertility, onset of menopause between age 48 and 55, increased risk of osteoporosis, and onset of other chronic diseases [16]. Any lack of healthcare access for middle-aged women during this transition time may lead to having delayed care, unmet needs, or worsening long-term outcomes [7,8,17]. Even with health insurance, evidence indicates that middle-age women report lack of affordability as a barrier to unmet healthcare needs [17].

Although research links health status with healthcare access, the relative impact of healthcare coverage versus healthcare cost for various health status outcomes is not clearly established, especially for middle-aged females [7]. Thus, the purpose of this study is to determine whether general, physical, and mental health differ by healthcare coverage or healthcare cost in multiple samples of middle-aged females.

Methods

Design

This cross-sectional analysis used 2015 data from the Behavioral Risk Factor Surveillance System (BRFSS) conducted by the Center for Disease Control [18]. BRFSS collects data in the United States and U.S territories by conducting telephone surveys with Random Digit Dialing (RDD) techniques for landline and mobile phones concerning chronic health conditions, health-related risk behaviors, and use of preventive services for participants 18 years and older. State health departments directly interview or contract with call centers and universities to administer the BRFSS surveys throughout the year. BRFSS survey participants are not compensated monetarily. This study was deemed exempt by the Institutional Review Board of The University of North Texas Health Science Center.

Sample

The samples for this analysis included females 35-54 years of age in Alabama (N= 1329), Arkansas (N=735), Louisiana (N=771), and Mississippi (N=915). These states were chosen for their higher proportions of individuals who reported (a) fair or poor general health, (b) having no healthcare coverage, (c) difficulty with cost and paying for healthcare, and (d) being middle-aged females based on the BRFSS 2015 prevalence survey data maps [18].

Data

We used three health status outcomes: general health, physical health, and mental health. For general health, responses were measured as "good or better" versus "fair or poor" and are referred to as yes/no good general health status. For physical health, participants were asked to rate their "physical health which includes physical illness and injury" during the past 30 days. Because the numerical version was severely skewed (Alabama: M=24.47, SD=9.61; Arkansas: M=24.34, SD=9.86; Louisiana: M=25.22, SD=8.76; Mississippi:

M=24.91, SD=9.55; mode in all states=30), we dichotomized physical health at the mode as "30 days of good physical health" versus "less than 30 days of good physical health" in the past 30 days and refer to these as yes/no good physical health status. For mental health, participants were asked to rate their "mental health which includes stress, depression, and problems with emotions" during the past 30 days. Because the numerical version of this variable was also severely skewed (Alabama: M=24.05, SD=9.80; Arkansas: M=24.56, SD=9.56; Louisiana: M=24.35, SD=9.63; Mississippi: M=24.54, SD=9.59; mode in all states=30), we dichotomized mental health at the mode as "30 days of good mental health" versus "less than 30 days of good mental health" in the past 30 days and refer to these as yes/no good mental health status.

The factors of interest were healthcare coverage and healthcare cost. For healthcare coverage, participants reported yes/no that they "have private or public healthcare coverage," and for healthcare cost, participants reported yes/no whether "cost precluded seeing a doctor in the past 12 months." The control variables included routine checkup, number of health conditions, age, ethnicity/race, education level, and income level. Routine checkup was categorized as "within the past year" versus "none within the past year."

The number of health conditions was determined by adding the number of "yes" answers to having the following diagnoses: high blood pressure, high cholesterol, heart attack, coronary heart disease, stroke, skin cancer, cancer, COPD, arthritis, depression, kidney disease, and asthma.

This number was then categorized as "0," "1," or "2 or more." Due to low sample sizes in several categories, ethnicity/race was grouped as "White only, non-Hispanic," "Black only, non-Hispanic," and "Hispanic/Other." Education level was measured as "graduated college/technical school" versus "did not graduate college/technical school." Annual income level was categorized as "\$0 to less than \$25,000," "\$25,000 to less than \$50,000," and "\$50,000 or more." The categories and responses for each variable are listed in Table 1.

Analysis

Frequency distributions by state were used to describe the samples and determine any issues with the distributions of variables. Multiple logistic regression analysis by state was used to assess the relationship separately for general health, physical health, and mental health with healthcare coverage and healthcare cost after controlling for health and demographic factors. We chose to use data separately by state to determine patterns in variable relations across similar samples.

As such, similar results in three or four states out of four states was considered reliable evidence for a relationship. Any observations with missing data for any variable in the models were removed from the adjusted analysis. All analyses were conducted using the statistical analysis program R, version 3.3.2 (R Foundation for Statistical Computing).

Table 1: Sample characteristics by state.

Variables	Alabama N=1329		Arkansas N=735		Louisiana N=771		Mississippi N=915	
	N	%	N	%	N	%	N	%
Good General Health Status (Total)	1327	100	733	100	771	100	912	100
Yes	981	74	536	73	612	79	705	77
No	346	26	197	27	159	21	207	23
Good Physical Health Status (Total)	1312	99	722	98	761	99	903	99
Yes	735	56	393	54	441	58	536	59
No	577	44	329	46	320	42	367	41
Good Mental Health Status (Total)	1311	99	724	99	758	98	903	99
Yes	713	54	412	57	419	55	525	58
No	598	46	312	43	339	45	378	42
Healthcare Coverage (Total)	1326	100	730	99	770	100	914	100
Yes	1164	88	670	92	635	82	752	82
No	162	12	60	8	135	18	162	18
Healthcare Cost (Total)	1327	100	732	100	770	100	915	100
Cost precluded doctors' visits in the past year	298	22	135	18	163	21	237	26
Cost did not preclude doctors' visits	1029	78	597	82	607	79	678	74
Health Conditions (Total)	1118	84	626	85	639	83	771	84
0	254	23	135	22	158	25	191	25
1	266	24	176	28	176	28	174	23
2 or more	598	53	315	51	305	47	406	53
Routine Checkup (Total)	1315	99	712	100	759	98	907	99
Within the past year	998	76	535	75	581	77	711	78
None within past year	317	24	177	25	178	23	196	22
Age (Total)	1329	100	735	100	771	100	915	100
35-44	541	40	283	38	320	42	366	40
45-54	788	60	452	62	451	59	549	60
Ethnicity/Race (Total)	1312	99	726	99	759	98	912	100
White, non-Hispanic	831	63	515	71	456	60	476	52
Black, non-Hispanic	417	32	136	19	252	33	417	46
Hispanic/Other race	64	5	75	10	50	7	19	2
Education Level (Total)	1326	100	734	100	770	100	915	100
Graduated college/technical school	462	35	251	34	258	34	320	35
Did not graduate college/technical school	864	65	483	66	512	66	595	65
Income Level (Total)	1140	86	627	85	650	84	809	88
\$0 to less than \$25,000	397	35	206	33	213	33	343	42
\$25,000 to less than \$50,000	231	20	139	22	136	21	179	22
\$50,000 or more	512	45	282	45	301	46	287	36

Results

Descriptive

Table 1 shows sample characteristics for women ages 35 to 54 years old in Alabama, Arkansas, Louisiana, and Mississippi. Across states, most participants reported good general health (73-79%), and about half good physical health (54-59%) and good mental health (54-58%) despite also reporting having two or more health conditions (47-53%). In addition, across states, most reported having private or public healthcare coverage (82-92%) and that cost did not preclude doctor visits in the past year (74-82%). Ethnicity/race and income varied by 10% or greater between states. For ethnicity/race, the highest percentage of White, non-Hispanic was in Arkansas (71%) and the highest percentage of Black, non-Hispanic was in Mississippi (46%). For income, the highest percentage of \$50,000 or more was in Louisiana (46%) and the lowest percentage of \$50,000 or more in Mississippi (36%). To control for any differences in

sample characteristics, all variables were included in the multivariable analysis by state.

Adjusted

Table 2 shows the results of separate multiple logistic regression analysis by state for relating good general, physical, and mental health with healthcare coverage and healthcare cost after controlling for all other variables in the model. The results indicated that good general health, mental health, and physical health were inversely related to healthcare cost in three out of four states, whereas healthcare coverage showed no consistent patterns across states. For healthcare cost, participants who reported that cost precluded doctor visits in the past 12 months were about 1.5 to 3.5 times less likely to report good general health; about 2 to 2.5 times less likely to report good physical health; and about 2 times less likely to report good mental health.

Table 2: Results of multiple logistic regression by state.

Models	General Health Status a		Physical Health Status a		Mental Health Status a	
	AOR	95% CI	AOR	95% CI	AOR	95% CI
ALABAMA						
Healthcare Coverage	0.93	0.53, 1.63	0.77	0.45, 1.34	1.33	0.76, 2.33
Healthcare Cost	0.65	0.42, 0.99	0.49	0.33, 0.73	0.53	0.36, 0.78
Health Conditions						
0	ref	-	ref	-	ref	-
1	0.42	0.17, 1.00	0.49	0.31, 0.78	0.49	0.31, 0.76
2 or more	0.09	0.04, 0.20	0.19	0.13, 0.29	0.17	0.12, 0.26
Income Level						
\$0 to less than \$25,000	ref	-	ref	-	ref	-
\$25,000 to less than \$50,000	2.72	1.75, 4.22	1.92	1.28, 2.88	1.18	0.78, 1.77
\$50,000 or more	6.27	3.84, 10.20	2.43	1.62, 3.64	1.47	0.98, 2.20
ARKANSAS						
Healthcare Coverage	0.69	0.27, 1.79	0.38	0.16, 0.90	1.14	0.51, 2.57
Healthcare Cost	0.27	0.15, 0.51	0.42	0.23, 0.76	0.46	0.27, 0.80
Health Conditions						
0	Ref	-	ref	-	ref	-
1	0.83	0.32, 2.17	0.38	0.21, 0.70	0.56	0.31, 1.02
2 or more	0.19	0.08, 0.44	0.19	0.10, 0.34	0.24	0.14, 0.43
Income Level						
\$0 to less than \$25,000	ref	-	ref	-	ref	-
\$25,000 to less than \$50,000	2.1	1.18, 3.74	2.2	1.27, 3.84	1.65	0.97, 2.82
\$50,000 or more	10.8	5.32, 21.90	3.36	1.97, 5.71	1.64	0.99, 2.73
LOUISIANA						

Healthcare Coverage	2.87	1.40, 5.89	0.92	0.50, 1.70	1.2	0.67, 2.14
Healthcare Cost	0.71	0.37, 1.33	0.37	0.21, 0.63	0.65	0.39, 1.10
Health Conditions						
0	ref	-	ref	-	ref	-
1	0.31	0.08, 1.25	0.48	0.27, 0.88	0.71	0.42, 1.21
2 or more	0.05	0.01, 0.17	0.19	0.11, 0.64	0.32	0.21, 0.55
Income Level						
\$0 to less than \$25,000	ref	-	ref	-	ref	-
\$25,000 to less than \$50,000	3.01	1.45, 6.25	1.1	0.63, 1.92	1.94	1.13, 3.34
\$50,000 or more	3	1.48, 6.09	1.44	0.82, 2.53	2.4	1.38, 4.16
MISSISSIPPI						
Healthcare Coverage	0.89	0.49, 1.59	0.72	0.42, 1.23	0.55	0.33, 0.91
Healthcare Cost	0.48	0.29, 0.79	0.37	0.23, 0.58	0.51	0.32, 0.78
Health Conditions						
0	ref	-	ref	-	ref	-
1	0.24	0.07, 0.76	0.47	0.27, 0.82	0.93	0.57, 1.54
2 or more	0.06	0.02, 0.16	0.21	0.13, 0.33	0.4	0.26, 0.61
Income Level						
\$0 to less than \$25,000	ref	-	ref	-	ref	-
\$25,000 to less than \$50,000	3.66	2.04, 6.56	2.36	1.47, 3.78	1.26	0.81, 1.97
\$50,000 or more	6.33	3.23, 12.40	2.1	1.30, 3.40	1.95	1.22, 3.12
a Models also included routine check-up, age, ethnicity/race and education						

The results also indicated that good general, physical, and mental health was consistently and inversely related to number of health conditions in all four states. Those who reported two or more health conditions were about 9 to 20 times less likely to report good general health; about 5 times less likely to report good physical health; and about 2.5 to 6 times less likely to report good mental health. In addition, good general and physical health were consistently and positively related to income level in 3 of 4 states. Those who reported higher incomes were about 6 to 10 times more likely to report good general health and about 2 to 3.5 times more likely to report good physical health.

Discussion

The purpose of this study was to determine patterns in the relative impact of healthcare coverage versus healthcare cost on general, mental, and physical health status outcomes in multiple samples of middle-aged females. Across states, most participants reported good general health status (73-79%), and about half reported good physical health status (54-59%) and good mental health status (54-58%) despite also reporting having two or more health conditions (47-53%). In addition, most participants reported having healthcare coverage (82-92%), and not having cost preclude doctors' visits in the past

year (74-82%). The results of adjusted analysis indicated that after controlling for health and demographic factors, healthcare cost was consistently related to general, physical, and mental health status outcomes in multiple samples in this target population, whereas healthcare coverage was not.

Healthcare costs may be more relevant than healthcare coverage in relation to good general, physical, and mental health despite participants having healthcare coverage because many middle-aged females may still have difficulty affording healthcare treatment, medications, and health maintenance. Indeed, the results of this study indicate that income was related consistently to general and physical health status outcomes in this target population, which is similar to findings from previous research in other populations [2,4,6,7]. Issues related to finances and health can be further exacerbated when patients have multiple health conditions and when primary care and mental health practitioners have restrictions on new patients and insurances accepted [14,15]. Further barriers for healthcare for middle age low income persons include lack of discounted services, transportation, and childcare [19].

Although the BRFSS data provided multiple samples to assess patterns of relations among variables of interest, this was a cross-sectional analysis that did not address any changes in health status, healthcare coverage, or healthcare cost over time.

In addition, no detailed information was available for healthcare coverage and healthcare cost, including type of insurance or out of pocket expenses; or for multiple health conditions, including type, severity, duration, management, and costs related to each. Future research studies should determine patterns for healthcare needs and costs for middle-age females. Specific patterns for routine, chronic, or emergency situations could help educate and encourage patient groups to plan and manage their healthcare costs accordingly. Likewise, such information could inform practitioners and policy makers about the services and resources needed for middle-age women.

Conclusion

The results of this population-based study may generalize to middle-aged females in primary care settings. In primary practice, about three-fourths of middle-aged females ages 35 to 54 may report good general health status, and about half may report having good physical and mental health status. The results of this study indicate that healthcare cost, not healthcare coverage, is related to good general, physical, and mental health status outcomes in middle-age women. In addition, about half of middle age females may have two or more health conditions and multiple health conditions are related to health status. As such, practitioners should screen all middle-age female patients for current general, physical, and mental health status each time they present, as well as for multiple health conditions and their management of them. Practitioners should take under consideration whether costs for care, medications, and management within treatment plans are affordable for middle-age female patients, and clinics should provide information on available resources for medical care and management, especially in low-income areas. Furthermore, future studies should determine specific health issues and associated costs prevalent in middle-aged females to help individuals better plan and manage their healthcare costs accordingly, and to inform practitioners and policy makers about the services and resources needed for this target population.

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