



Association Between Informal Caregivers and Risk of Psychological Distress



Introduction

Responsibilities of informal caregiving have become more stressful with the increase of aging and chronic disease, particularly when caring for individuals with debilitating health issues (Dilworth-Anderson et al., 2002). Previous literature indicates chronic stress among caregivers can negatively affect mental health (González-Salvador et al., 1999; Marin et al., 2011). Long-term caregiving increases exposures to related stressors, increasing risk of chronic stress, and can influence development of psychological stress.

In addition, demographic characteristics impact both caregiver status and psychological distress. Studies show that black Americans are more likely to take on caregiving responsibilities and experience a higher prevalence of stress than white Americans (Dilworth-Anderson et al., 2002; White et al., 2017); however, white Americans show higher rates of depressive disorders (National Institute of Mental Health, 2019). Women are also more likely to become caregivers and have higher rates of depressive disorders than their male counterparts (National Institute of Mental Health, 2019; Neal et al., 1997). Previous studies suggest that caregivers are often low-income and older individuals (Cook & Cohen, 2018; Kim et al., 2012; National Alliance for Caregiving & AARP, 2015; Pinquart & Sörensen, 2005), and these groups are more prone to stress and cognitive impairment (Marin et al., 2011; Santiago et al., 2011). Long-term exposure to multiple stressful conditions related to income, age, and race can increase risk of developing depressive disorders and psychological distress.

This report summarizes the associations between caregiver status and psychological distress while accounting for potential confounders of race, sex, income, and age in Indiana using data collected from the 2015 annual Behavioral Risk Factor Surveillance System (BRFSS) survey.

Methods

SAS 9.4 was used to conduct these analyses. The sample included 6,067 Indiana residents. Caregiver status was the independent variable, and poor mental health and depression were the dependent variables with confounding variables of race, sex, income, and age. Time spent as a caregiver and the care recipient's main health issue were also analyzed for their associations with the dependent variables.

Unadjusted bivariate associations were assessed using chi-square analyses and were considered statistically significant at $\alpha \leq 0.05$. Significant associations were used in logistic regression models with race, sex, income, and age as potential confounders. Statistically significant confounders remained in the final model where odds ratio estimates were calculated and deemed significant if the OR ≥ 1.5 .

Module Questions

- **During the past 30 days, did you provide regular care or assistance to a friend or family member who has a health problem?**
- **For how long have you provided care for that person?**
- **What is the main health problem, long-term illness, or disability that person you care for has?**
- **During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?**
- **Ever been told you had a depressive disorder?**

Results

Chi-square values for analyzing the unadjusted bivariate associations are included in Table 1. Statistically significant associations were found between caregiver status and sex ($X^2 = 17.40$, $p < .0001$), caregiver status and poor mental health ($X^2 = 5.02$, $p = .0251$), and caregiver status and depression ($X^2 = 16.21$, $p < .0001$).

P-values for the logistic regression models predicting poor mental health are included in Table 2. Backward elimination revealed that caregiver status was not statistically significant ($p = .0696$) and income ($p < .0001$) was statistically significant in a model predicting poor mental health.

Statistical significance was found for caregiver status ($p = .0056$), sex ($p < .0001$), age ($p < .0001$), and income ($p < .0001$), but race/ethnicity was not statistically significant ($p = .0676$) (Table 3). The final model included caregiver status ($p = .0029$), sex ($p < 0.0001$), age ($p < .0001$), and income ($p < .0001$) because they remained statistically significant.

As shown in Table 4, logistic regression showed caregiver status was not a biologically significant predictor of poor mental health (OR = 1.4). Some income levels were biologically significant for those with poor mental health when compared to incomes of \$75,000 or more: <\$10,000 (OR = 2.9), \$10,000-14,999

Table 1. Unadjusted Bivariate Associations

Bivariate Association	X^2	Pr > X^2
Caregiver Status & Race/Ethnicity	5.1340	.1622
Caregiver Status & Income	10.3738	.1684
Caregiver Status & Age	10.0840	.0729
Caregiver Status & Sex	17.4037	< .0001*
Caregiver Status & Poor Mental Health	5.0151	.0251*
Caregiver Status & Depressive Disorder Diagnosis	16.2089	< .0001*
Length of Time & Poor Mental Health	3.9649	.4108
Length of Time & Depressive Disorder Diagnosis	2.0570	.7253
Recipient Health Issue & Poor Mental Health	7.5712	.2712
Recipient Health Issue & Depressive Disorder Diagnosis	4.4158	.6206

*Statistically significant at $\alpha \leq .05$
 Table displays unadjusted bivariate associations between caregiver status and the demographic and dependent variables. It also includes unadjusted bivariate associations between length of time and dependent variables as well as recipient health issue and dependent variables. All values were weighted using the BRFSS weighting variable _LLCPWT and stratified by the stratification variable _STSTR.

Table 2. Logistic Regression Models for Poor Mental Health

Effect	Base Model	W/o Sex	W/o Age	W/o Race/Ethnicity†
	Pr > F	Pr > F	Pr > F	Pr > F
Caregiver Status	.0639	.0681	.0593	.0696
Income	< .0001*	< .0001*	< .0001*	< .0001*
Race/Ethnicity	.1011	.0963	.1108	
Age	.3364	.3331		
Sex	.7167			

*Statistically significant at $\alpha \leq .05$
 †Final Model
 Table displays p-values for various logistic regression models for predicting poor mental health. All p-values were weighted using the BRFSS weighting variable _LLCPWT and stratified by the stratification variable _STSTR.

Table 3. Logistic Regression Models for Depressive Disorder

Effect	Base Model	W/o Race/Ethnicity†
	Pr > F	Pr > F
Caregiver Status	.0056*	.0029*
Sex	< .0001*	< .0001*
Age	< .0001*	< .0001*
Income	< .0001*	< .0001*
Race/Ethnicity	.0676	

*Statistically significant at $\alpha \leq .05$
 †Final Model
 Table displays p-values for various logistic regression models for predicting poor mental health. All p-values were weighted using the BRFSS weighting variable _LLCPWT and stratified by the stratification variable _STSTR.

(OR = 1.8), \$15,000-19,999 (OR = 2.0), \$20,000-24,999 (OR = 2.3), and \$50,000-74,999 (OR = 6.0). Income levels that were not biologically significant were those with annual incomes of \$25,000-34,999 (OR = 1.1) and \$35,000-49,999 (OR = 1.1).

As shown in Table 5, logistic regression for predicting depression showed biologically significant OR values for caregivers (OR = 1.5), females (OR = 2.0), incomes <\$10,000 (OR = 2.5), and incomes \$10,000-14,999 (OR = 2.8), \$15,000-19,999 (OR = 1.8), \$20,000-24,999 (OR = 2.0), \$25,000-34,999 (OR = 1.6), \$35,000-49,999 (OR = 1.9), and \$50,000-74,999 (OR = 2.6). Age was not biologically significant for those with a diagnosis of a depressive disorder when compared to respondents age 18-24 years old: 25-34 years (OR = 0.45), 35-44 years (OR = 0.41), 45-54 years (OR = 0.58), 55-64 years (OR = 0.60), and 65 and older (OR = 0.36).

Discussion

Caregivers were at greater odds of depression than caregivers

but were not at greater odds of poor mental health, which may be due to confounding effects of income. These findings suggest there are characteristics of informal caregiving that increase their odds of depression. Results also showed females and lower-income individuals are at higher risk of psychological distress, following patterns seen in literature. Length of time spent as a caregiver and the care recipient's health issue have no significant associations with either of the dependent variables, meaning they are not associated with psychological distress.

These findings suggest that informal caregivers in Indiana are at greater odds of depression.

Understanding this association can be used to inform public health programs that provide mental health support for informal caregivers targeting stress relief and management. It also creates an opportunity for informing the general public of the predictors for psychological distress and raising awareness of their struggles which could lead to community-driven support for informal caregivers in addition to public health programs.

Table 4. Odds Ratio Estimates for Poor Mental Health

Parameter		OR (95% CI)
Caregiver Status	Yes vs. No	1.4 (1.0 – 2.1)
Income	<\$10,000 vs. >\$75,000	2.9 (1.5 – 5.7)*
	<\$15,000 vs. >\$75,000	1.8 (0.9 – 3.4)*
	<\$20,000 vs. >\$75,000	2.0 (1.1 – 3.6)*
	<\$25,000 vs. >\$75,000	2.3 (1.4 – 4.0)*
	<\$35,000 vs. >\$75,000	1.1 (0.6 – 2.1)
	<\$50,000 vs. >\$75,000	1.1 (0.6 – 2.0)
	<\$75,000 vs. >\$75,000	6.0 (2.8 – 12.7)*

Abbreviations. CI: Confidence Interval.
 *Biologically significant at OR=1.5
 Table displays odds ratio estimates from the final logistic regression model for predicting poor mental health. All estimates were weighted using the BRFSS weighting variable _LLCPWT and stratified by the stratification variable _STSTR.

Table 5. Odds Ratio Estimates for a Depressive Disorder

Parameter		OR (95% CI)
Caregiver Status	Yes vs. No	1.5 (1.1 – 1.9)*
Sex	Female vs. Male	2.0 (1.6 – 2.6)*
Age	25-34 years vs. 18-24 years	0.454 (0.3 – 0.7)
	35-44 years vs. 18-24 years	0.4 (0.2 – 0.7)
	45-54 years vs. 18-24 years	0.6 (0.4 – 0.9)
	55-64 years vs. 18-24 years	0.6 (0.4 – 0.9)
	65 and older vs. 18-24 years	0.4 (0.2 – 0.6)
Income	<\$10,000 vs. >\$75,000	2.5 (1.6 – 4.1)*
	<\$15,000 vs. >\$75,000	2.8 (1.8 – 4.3)*
	<\$20,000 vs. >\$75,000	1.8 (1.2 – 2.7)*
	<\$25,000 vs. >\$75,000	2.0 (1.4 – 3.0)*
	<\$35,000 vs. >\$75,000	1.6 (1.1 – 2.4)*
	<\$50,000 vs. >\$75,000	1.9 (1.3 – 2.7)*
	<\$75,000 vs. >\$75,000	2.6 (1.6 – 4.3)*

Abbreviations. CI: Confidence Intervals.
 *Biologically significant at OR ≥ 1.5
 Table displays odds ratio estimates from the final logistic regression model for predicting a depressive disorder. All estimates were weighted using the BRFSS weighting variable _LLCPWT and stratified by the stratification variable _STSTR.

Future research should focus on analyzing the association between caregiver status and psychological distress using the 2021 BRFSS survey while accounting for limitations of this analysis. Comparing the current report to future analyses can provide insight into changes that have occurred in Indiana as well as identifying other associations that may be involved in predicting psychological distress. Those comparisons can be used to inform future research outside of BRFSS that examines caregiver status as a cause of psychological distress, which could lead to developing programs that target specific areas of informal caregiving that cause psychological distress.

Limitations

- **Cross sectional research cannot determine causation.**
- **Self-report data collection increases the risk of recall and response bias.**
- **All missing data was excluded, and missing data may not be missing at random.**
- **Data from 2015 may not be representative of current Indiana population.**
- **Small sample sizes when stratified led to consolidating categories.**
- **Interaction effects between demographic variables were not assessed.**

Conclusion

This report identified caregivers as showing increased odds of depression compared to non-caregivers, which may indicate increased risk of psychological distress for those providing informal care. This analysis provides an opportunity to compare the 2015 BRFSS data to what will be collected during 2021 and identify changes over time, inform future research, and guide public health programs.

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