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Financial Strain and Depressive Symptoms: The Moderating Role of Alcohol Use Among Indigenous Women in Middle and Late Adulthood in The United States

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Abstract

The present study assessed the relationship of financial strain, alcohol use, and depressive symptoms, focusing on the moderating roles of alcohol use, among Indigenous women in middle and late adulthood in the United States. Using the stress process model, data was drawn from a sample of 133 Indigenous women aged 40 or older living in rural Northern Plains. A high prevalence of depressive symptoms was observed, with nearly 40% of participants reporting mild to severe symptoms. In the hierarchical regression models, Indigenous women with greater financial strain, younger age, and poorer physical health were found to have more depressive symptoms. Alcohol use was not directly associated with depressive symptoms. The interaction between alcohol use and financial strain was significant, with financial strain having a stronger effect on depressive symptoms among women who consumed alcohol compared to those who did not. Findings suggest that Indigenous women with alcohol use are at particular risk of psychological ill-being in the face of financial strain and call attention to the need for more targeted interventions to reduce the negative mental health effects of economic distress and to promote culturally-based resilience coping resources and health promotion in this population.

Keywords: Indigenous Women; Middle and Late Adulthood; Depressive Symptoms; Financial Strain; Alcohol use

Introduction

The health disparities faced by Indigenous populations are significant, with lower health status, life expectancy, and quality of life compared to the general population in the United States (U.S.). These disparities arise from factors, such as inadequate education, poor diet, poverty, inadequate health services, and historical and ongoing discrimination and trauma [1-4]. Both historical trauma and persistent socioeconomic inequities significantly impact mental health issues, particularly, contributing to morbidity among North American Indigenous populations, with this group reporting the highest rates of serious mental health distress compared to other groups [5, 6], which correlates with poor health outcomes and increased health risk behaviors. Overall, the Indigenous population has higher levels of mental health distress and poor behavioral health outcomes, including depression, anxiety, alcohol-drug abuse dependence, post-traumatic stress disorder, and suicide rates [7-10].

While the rates of alcohol use disorder (AUD) vary significantly between tribal groups, as a collective, Indigenous populations have the highest rate of AUD among all ethnic groups in the U. S. [11]. Reported rates of AUD range between 20% to 70%, a significantly higher rate compared to the U.S. general population (40%) [12, 13, 14]. Research indicates a strong relationship between alcohol use and depression [15] and the former being a clear risk factor for suicide [16, 17]. Although there is a strong link between alcohol use and depression, the literature on alcohol use and depression among Indigenous populations is limited and further studies are needed to better understand and address the deleterious effects of drinking on behavioral health.

Indigenous women in middle and late adulthood, as the core of the family unit, are expected to provide support and guidance for their

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families and tribes, often feeling overwhelmed and undervalued [18]. Despite significant financial contributions, they face a notable financial imbalance and wage gap. Burnette [19] explored labor market changes, finding that Indigenous women experienced a higher increase in unemployment rates compared to white women. Hajizadeh et al. [20] linked socioeconomic inequalities to psychological distress, highlighting the need for more research on financial strain and its impact on the mental health of Indigenous women in the U.S.

Despite the pervasiveness of financial strain and its negative psychological consequences, there remains a dearth of research on addressing financial strain as a life stress and exploring the moderating (or mitigating) factors for this stressor. To fill the gap in the knowledge base, the aim of the present study was to examine the dynamics of financial strain, alcohol use, and depressive symptoms, focusing on the moderating roles of alcohol use among U.S.-based Indigenous women. Alcohol use among Indigenous populations may represent a form of adaptation under stressful life conditions and affects emotional well-being. Alcohol non-use or alcohol abstinence may buffer the negative consequences of financial strain, whereas the combination of financial strain and alcohol use may exacerbate an individual's depressive symptoms. Considering the empirical and conceptual links, we hypothesized that financial strain would be associated with depressive symptoms among middle-aged and older Indigenous women in the United States (Hypothesis 1). In addition, we predicted that alcohol use would be associated with depressive symptoms for this group (Hypothesis 2). Lastly, we hypothesized that the relationship between financial strain and depressive symptoms would be moderated by alcohol use (Hypothesis 3). In particular, Indigenous women who did not consume alcohol were expected to be less susceptible to the adverse effects of financial strain on depressive symptoms than women who consumed alcohol.

Financial Strain and Depressive Symptoms

In the U.S., economic hardship is consistently associated with an increased risk of psychological distress and poor mental health outcomes, including depression and anxiety, limiting the ability to cope with life's challenges leading to psychological maladjustments [21-24]. Current literature indicates that financial strain may affect mental health through several pathways, including the erosion of one's sense of control and agency, limiting supportive relationships, exacerbating family tension, and depletion of resources [25]. Data from various sources indicate that a large number of Indigenous populations live in economic deprivation and financial hardship. For example, according to the American Psychiatric Association [26], approximately 27% of Indigenous groups live in poverty. Furthermore, they are twice as likely as whites to be unemployed [27] and to experience food insecurity [28]. These indicators are important proxies for financial and economic hardship, which is an important contextual risk factor associated with poor health and mental health outcomes.

Despite the growing evidence of financial strain on mental health, surprisingly, relatively few studies examine the relationship between financial strain and mental health among Indigenous populations. Even fewer studies focus on older Indigenous women, who are particularly vulnerable to depression and financial hardship [29]. Chapleski et al. [30] examined the impact of financial difficulties on depression among Indigenous older adults and found that life stress operationalized by financial difficulties and negative life events, had a short-term effect on depression, and the burden of comorbidity increased over time. In line with this finding, previous studies support that financial strain is associated with rapid declines in women's health during middle and later life [25]. Further underscoring this concern, Indigenous populations have the highest rates of suicide and studies indicate that a lack of educational and employment opportunities coupled with poverty may contribute to the increased suicidality in this group [31-33]. These socioeconomic factors impact financial strain and contribute significantly to mental health.

Alcohol Use and Depressive Symptoms

While there is a paucity of research on this topic, available literature indicates inconsistent and contradictory findings. For example, O'Connell et al. [34] investigated the patterns of alcohol use and comorbid disorders among Indigenous populations and found that the prevalence of mood disorders among females was 16.24%, which was higher (10.62%) than the male counterpart. Interestingly, despite the high prevalence of mood disorders among Indigenous female drinkers, this study found statistically significant association between alcohol consumption and mood disorder only in male drinkers. The authors of this study attributed observed gender differences to several possibilities, including gender differences in alcohol consumption, lower tolerance for ethanol by females, smaller sample size, and drinker age. Inconsistent with this former study, a more recent study found a strong association between depressive symptoms and alcohol use among Indigenous women [35]. In a sample drawn from two different substance abuse treatment programs for Indigenous individuals, alcohol was the most commonly reported substance abuse. Furthermore, almost two-thirds of the total sample reported a lifetime history of depression and/or anxiety, highlighting a significant relationship between alcohol use and depression among Indigenous people in clinical settings [36]. These findings underscore the critical need for more comprehensive and nuanced research on the intersections of economic strain, alcohol use, gender, and mental health among Indigenous groups, particularly in non-clinical populations.

Financial Strain, Alcohol Use, and Depressive Symptoms

Financial hardship and poverty-related stress are well-documented factors associated with an increased risk of substance use, including alcohol [37]. Poverty-related financial stress can exacerbate family conflict, contributing to domestic violence and posing barriers to accessing mental health services. Consequently, individuals may turn to maladaptive coping strategies, such as substance use and problematic drinking as a form of relief from emotional pain [38, 39]. A recent study found that individuals who experienced a combination of job loss and depressive symptoms were at greater risk of drinking [40]. Furthermore, gender differences emerged with women being at higher risk of drinking compared to men. Clearly, more research is needed to elucidate the interplay among financial strain, alcohol use, and depressive symptomology in Indigenous women.

Conceptual Framework

The stress process model served as a conceptual framework for our study to examine the role of alcohol use as a possible moderator of the financial strain-depression relationship [41]. It posits that stress is an interactive process of three key elements of stress: sources (e.g., acute or chronic stressors, negative life events), outcomes (e.g., mental and physical health problems), and resources (e.g., coping, social support, self-concepts). Sources are various environmental and adaptive stressors related to one's social structural location (e.g., race/ethnicity, gender, age, health, social roles) that threaten one's coping skills. Stressors may have a harmful impact on one's physical and mental health outcomes, heightening the risk of mental illness. Resources, for example, active coping, can alleviate the effects of stressors on subsequent mental health. This framework suggests that poor adaptation (e.g., avoidant coping style) may increase the likelihood of mental illness onset.

This model is particularly relevant in exploring depressive symptoms in Indigenous women in middle or late adulthood. Many Indigenous women have experienced considerable life stress, including historical trauma, oppression, poverty, violence, and contemporary discrimination and inequities [42]. They have demonstrated tremendous resilience and strengths [43], and yet face multiple potential stressors, including aging, economic deprivation,

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multiple role demands, and lack of institutional resources. Such life stressors potentially place Indigenous women in middle and late adulthood at increased risk, particularly drinking may be used as a means of self-medication coping. The identification of ways to mitigate the negative effects of stressors on the etiology of depression in Indigenous women should prove useful for guiding culturally relevant preventions and interventions by health professionals and social workers.

Materials and Methods

Setting and Procedure

Data was collected by a cross-sectional survey designed to promote health literacy among Indigenous women aged 40 to 70 in rural Northern Plains of the United States between October 2021 and February 2022. The Northern Plains area includes several Indigenous tribes in several states (South Dakota, North Dakota, Nebraska, Iowa, among others). This study was approved by the local university Institutional Review Board and a single tribe. Convenience as well as snowball sampling was employed to reach out to geographically and socially isolated Indigenous women. Self-identified Indigenous women, enrolled in the single tribe, aged 40 to 70, and residing in rural South Dakota were eligible for inclusion. Participants were recruited from different on- and off-reservation sites through multiple methods, such as tribal public radios, tribal social media, newspapers, flyers, referrals, and word of mouth. A total of 142 Indigenous women were recruited for participation. Nine participants were screened out of the study because of ineligibility, leading to the final sample of 133. The self-administered survey was conducted in a hotel conference room located in the single tribal land in the Northern Plains. Prior to the survey, the research team fully explained study purpose, procedure, confidentiality, and risks and benefits. All participants provided written informed consent and received $10 cash for their time. Bilingual and bicultural Indigenous female research staff were available to answer questions and provide assistance as needed. The survey took approximately 30 minutes to complete.

Measures, Outcome Variable

Depressive Symptoms: The Patient Health Questionnaire-9 (PHQ-9) was used to assess participants' depressive symptoms [44]. To measure depressive symptoms, the participants were asked to indicate the frequency of specific actions, thoughts, or feelings they experienced in the past two weeks on a 4-point scale ranging from 0 (not at all) to 3 (nearly every day). The questionnaire consisted of nine items that evaluated such symptoms as lack of interest or pleasure in activities; feelings of sadness or helplessness; difficulty with sleep; fatigue; negative self-perception; physical or verbal sluggishness; and thoughts of self-harm or suicidal ideation. We applied the PHQ-9 cut points [44] as follows: 0 = none-minimal (0 to 4), 1= mild (5 to 9), 2 = moderate (10 to 14), 3 = moderately severe (15 to 19), and 4 = severe depressive symptoms (20 to 27). For the analysis, we obtained the total score by summing the scores of each item, with total scores ranging from 0 to 27. Higher scores indicated a higher probability of depression. The scale demonstrated strong internal consistency in the current sample ($\alpha = .93$).

Independent Variables

Financial Strain: Financial strain was measured using one item asking, "What is your financial situation?" on a 5-point scale: 1 (very bad), 2 (bad), 3 (fair), 4 (good), and 5 (very good). For data analysis, the code was reversed.

Alcohol Use: Alcohol use was measured using one item asking, "Do you drink?" on a binary scale using a dummy variable: yes (1) and no (0).

Covariates: Physical health and age were covariates for the current study. Physical health was measured with one item asking, "How would you rate your overall health at the present time?" on a 4-point scale: 1 (poor), 2 (fair), 3 (good), and 4 (excellent). Age was measured in years.

Analytic Strategy

Missing values, ranged from 0% to 7.5% depending on the variable, were imputed using maximum likelihood estimation in SPSS 28. Descriptive, bivariate, and hierarchical regression analyses were employed to investigate the association between financial strain and depressive symptoms and the moderating effects of alcohol use on the association. For the interaction term, mean-centered values of the continuous variable were employed for an interpretable and meaningful test and to reduce collinearity [45]. However, for a simple slope analysis (Figure 1), raw values (uncentering) were used using SPSS PROCESS macro [46]. Study data was anonymous and de-identified for confidentiality.

Results

Sample Characteristics

Table 1 shows the characteristics of the study variables. Of a total sample of 133 Indigenous women, the mean age of participants was 53.05 years (SD = 9.88; range = 40-70 years). About 54.1% (n = 72) completed some college/associate degree or higher education, and 26.3% (n = 35) were currently married. Slightly more than 51% of the participants reported that their health status was poor or fair. In terms of financial status, approximately one fourth (23.3%; n = 31) of the participants reported *very bad or bad*. For alcohol use, 24.1% (n = 32) of the participants reported that they drink, whereas 75.9% (n = 101) reported they do not consume alcohol. Depressive symptoms were scored as 4.71 (SD = 5.88; range = 0 to 27) on average. Based on the PHQ-9 cut points [44], approximately 30.8% (n = 41) of the participants were classified as mildly/moderately depressed (scores = 5-14), and 8.3% (n = 11) were classified as moderately severe/ severely depressed (scores = 15-27).

Mean Differences in Alcohol Use among Key Variables

Table 2 presents the results of the t-test, which compared mean differences in key variables between those who reported alcohol use and those who did not. Indigenous women with alcohol use were significantly younger (*Mean* = 49.094, SD = 8.899; $p < .01$) than their older counterpart (*Mean* = 54.297, SD = 9.889). Participants who consumed alcohol showed greater depressive symptoms, higher financial strain, and poorer physical health, but the differences were not statistically significant.

Hierarchical Regression Analyses

Table 3 displays the results of hierarchical regression models based on imputed data. In Model 1, as expected, financial strain was associated with depressive symptoms ($b = 2.349$, $p < .001$), after adjusting for age and physical health. Physical health ($b = -1.489$, $p < .05$) and age ($b = -.117$, $p < .05$) were also identified as significant predictors. Greater levels of depressive symptoms were observed among those who were younger, with higher financial strain and poorer physical health. The amount of variance explained by the direct effect model was 25.5% ($F = 14.714$, $p < .001$). Hypothesis 2 was not supported (Model 2), indicating that alcohol use was not associated with depressive symptoms, while physical health and age remained significant. Hypothesis 3 was supported (Model 3), showing a significant moderating effect of alcohol use between financial strain and depressive symptoms ($b = 2.119$, $P < .05$). The effect of financial strain on depressive symptoms was greater for women who reported drinking ($b = 3.849$) than that of women who did not ($b = 1.730$), and the difference is significant (Figure 1). The entry of interaction term significantly improves the model, accounting for an additional 3% of explained variance ($F = 10.107$, $p < .001$).

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Variable	Frequency	Percentage			
Physical Health					
Poor/Fair	68	51.1			
Good/Excellent	55	48.9			
Marital Status					
Currently married	35	26.3			
Unmarried	98	73.7			
Education					
> High school/GED	61	46.9			
College or Bachelor's degree	62	45.6			
Graduate degree or higher	10	7.5			
Financial Strain					
Very good/Good	34	25.6			
Fair	68	51.1			
Bad/Very bad	31	23.3			
Drinking					
Yes	32	24.1			
No	101	75.9			
Depression scores					
None to minimal (0 to 4)	81	60.9			
Mild (5 to 9)	26	19.5			
Moderate (10 to 14)	15	11.3			
Moderately severe (15 to 19)	7	5.3			
Severe (20 to 27)	4	3.0			
			Mean (*SD*)	Min	Max
Sum of Depression			4.71 (5.88)	0	27
Age			53.05 (9.883)	40	70

Table 1. Demographic characteristics and study variables ($N = 133$)

	Depression Mean (*SD*)	Financial Strain Mean (*SD*)	Physical Health Mean (*SD*)	Age Mean (*SD*)
Drinking	6.344 (7.443)	3.063 (1.014)	2.34 (0.745)	49.094 (8.899)**
Not Drinking	4.188 (5.234)	2.980 (0.883)	2.48 (0.715)	54.297 (9.889)**

Table 2. Mean differences of key variables in alcohol use ($N = 133$)

Note: t-Tests were employed to compare depression and financial status between people who reported drinking and those who did not drink. Higher mean scores indicated greater depression, greater financial strain, and better physical health. Significance levels were denoted as $^*p < .05$, $^{**}p < .01$.

	Model 1 *b* (*SE*)	Model 2 *b* (*SE*)	Model 3 *b* (*SE*)
Financial Strain	2.349 (.517) ***	2.351 (.516) ***	1.730 (.599) **
Drinking		1.229 (1.072)	1.117 (1.062)
Financial Strain × Drinking			2.119 (1.069) *
Age	-.117 (.0454) *	-.105 (.047) *	-.111 (.0461) *
Physical Health	-1.489 (.652) *	-1.430 (.653) *	-1.437 (.646) *
F	*14.714* ***	*11.391* ***	*10.107* ***
R^2	.255	.263	.285
Adjusted R^2	.238	.239	.256

Table 3. Hierarchical regression for the effects of financial strain on depression focusing on drinking as a moderating variable ($N = 133$)

Note: Significance levels were denoted as $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

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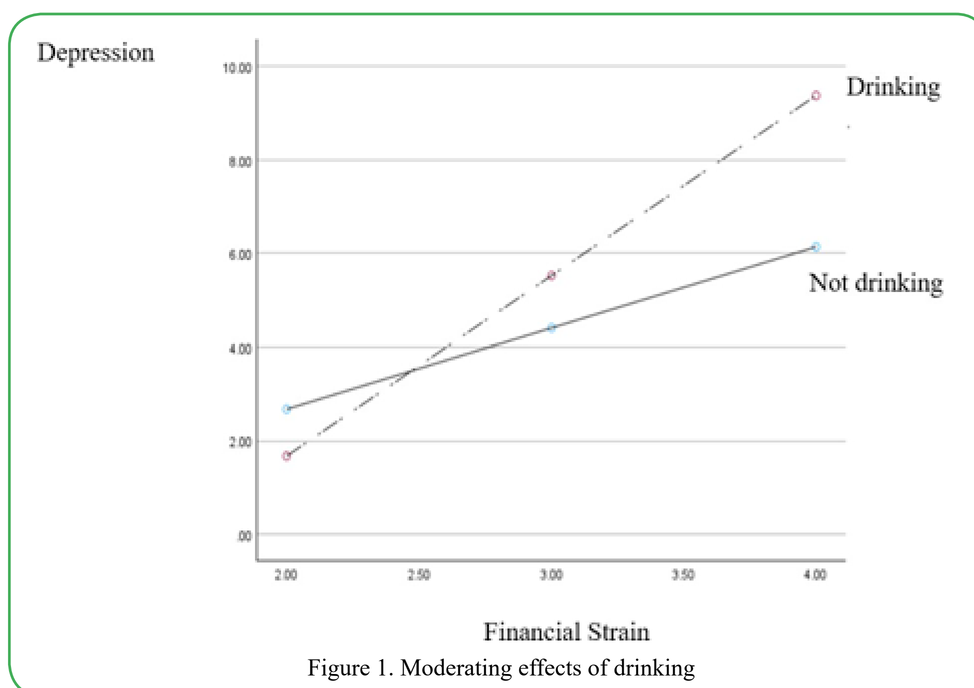

Figure 1. Moderating effects of drinking

Note. For simple slope analyses, raw values were employed.

Discussion

Considering the paucity of mental health research in the Indigenous gendered context, the goal of this study was to disentangle the relationships among financial strain, alcohol use, and depressive symptoms, focusing on the moderating roles of alcohol use, to explore protective mechanisms underlying in the association between depressive symptomology and financial strain, a stressor that is pervasive and persistent. The results with the use of a sample of 133 Indigenous women in middle and late adulthood from the rural Northern Plains of the U.S. provided empirical support for two hypothesized models (the direct effect of financial strain and the moderating effect of alcohol use).

Overall, findings confirmed the results of prior studies that documented the high prevalence of depressive symptoms among U.S.-based Indigenous population [47]. Our data indicated that nearly 40% of the Indigenous women participants reported depressive symptoms. The rate is almost more than twice the national average (18.5%) [48]. This study also underscored a heightened public health concern in the middle and later lives of Indigenous women. Substantial rates for poor/fair health status (vs. good/excellent), alongside one fourth experiencing financial strain and alcohol use, are striking. The far-reaching individual, tribal, and societal consequences of financial insecurity, alcohol use, and mental health in this population should be further examined to develop interventions and services that can address the unique concerns of this group.

Our first hypothesis, stating that financial strain would increase the risk of depressive symptoms, was supported in the expected direction. In testing the main effect of financial strain, Indigenous women who experienced greater financial strain reported significantly higher scores on depressive symptoms in the past two weeks than Indigenous women with lower financial strain, after controlling for demographic (age) and health (physical health) stressors. This result aligns with existing literature highlighting the adverse impact of financial stress on psychological well-being [30] and symptoms of depression and anxiety [35]. It is possible that financial hardship deters Indigenous women's access to mental health services and aggravates the impact of distressful experiences on the well-being. As a result, Indigenous women may suffer from depression without proper care. This finding supports the assertion that financial hardship itself poses an extremely stressful life condition. Efforts to alleviate financial strain and provide appropriate support for coping with economic challenges may help attenuate depressive symptoms in this population. A number of U.S. social policies—such as job creation and workforce development, improved access to education and healthcare, expanded federal programs and funding, and the development of traditional resources and sustainable tribal economies through tribal government and businesses—can significantly enhance socioeconomic conditions and contribute to progress toward economic and mental health equity in tribal nations, particularly those among the Northern plains tribes. Addressing the history of structural inequality, contemporary discrimination and oppression, and trauma, which have contributed to mental health like depression, requires a comprehensive, multifaceted approach [5, 6, 20, 42]. This approach should focus on cultural healing, restorative justice, and dismantling the systems of inequality, recognizing that these mental health disparities are not merely a result of individual choices, but the outcome of past policy decisions that can and should be redressed.

Contrary to our second hypothesis, no association between alcohol use and depressive symptoms was found in our sample. The absence of a significant association between drinking behavior and depressive symptoms is an intriguing finding. This suggests that, within this specific population, drinking habits may not directly contribute to depressive symptoms. This is stark contrast to prior studies that documented comorbidity between alcohol problems and psychological disorders both in general [15] and Indigenous populations [34]. These dissimilar findings may be attributed to differences in study samples, research settings, and measures. A possible explanation for the current study's lack of findings is that certain aspects inherent in drinking behavior might be related to depressive symptoms. For example, the frequency and severity of drinking (e.g., binge drinking) are common predictors of depressive symptoms. A strong assumption can be made that frequent and/or binge drinking, and unhealthy habits can influence depression. Another possibility may be pertaining to our measure of alcohol consumption solely with the use of a binary scale (yes/no) that may not fully capture the influence of alcohol use on depressive symptoms. Considering that alcohol use/substance use disorders are

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prevalent for Native communities, further research is needed to more precisely determine the associations between alcohol use and depression, possibly with multiple indicators of alcohol use. Furthermore, it is essential to interpret this result cautiously, considering potential cultural and contextual factors that may influence drinking behaviors among diverse Native American tribes.

The key focus of the present study was to better understand the interactive roles of financial strain and alcohol use. Confirming our third hypothesis, there was a significant moderating effect of alcohol use on the relationship between financial strain and depressive symptoms. Notably, the effect of financial strain on depressive symptoms was found to be stronger among women who reported drinking compared to those who did not. While this analysis cannot establish causality, it suggests that financial strain may contribute to unhealthy coping mechanisms, such as alcohol use, which could, in turn, increase the risk of depressive symptoms. Alternatively, Indigenous women experiencing greater financial hardship may be less inclined to engage in social activities and support systems, instead turning to alcohol use as a coping device. This reliance on alcohol could hinder their ability to mobilize effective psychosocial coping resources, potentially intensifying depressive symptoms and psychological distress.

These findings have important implications for public health interventions and psychological treatments targeting middle-aged and older Indigenous women in rural settings. Considering Indigenous women's coping style is closely tied to their current mental health, mental health services and interventions aimed at these women may be enhanced by the expansion of skills training in adaptive coping skills. Modifying unhealthy coping strategies may alleviate some of the deleterious effects of life stress, such as economic hardship. Strengthening and promoting proactive coping could potentially enhance mental health for this vulnerable group. For example, Lee et al. [43] emphasized the importance of the identification and utilization of resilience resources and culturally based nature of stress resistance intrinsic to Native communities. Findings from their study suggested that psychosocial resources, such as spirituality, social support, and sense of mastery may be protective against poor mental health and provide promising pathways to ameliorate pathogenic influences of stressful events among Indigenous women. Health interventions which identify ways in which such resilience factors are integrated into the design of programs (e.g., spirituality-based interventions, facilitating relational ties and support systems, traditional healing options) warrant further investigation to promote culturally congruent services and sustainable health-promoting behaviors. Our results also have rendered classic obstacles, such as financial deprivation, critical in impacting mental health. Policy initiatives that reduce economic hardship and related structural barriers may ultimately have a larger impact in terms of improving psychopathology than treating maladaptive coping styles that contribute to depressive symptomology. Economic security may increase psychological well-being and should be managed in a more comprehensive policy programs.

Some limitations to the current study should be noted. The cross-sectional design hampers the ability to establish causality or infer temporal relationships between variables. Future research utilizing longitudinal designs could provide a robust understanding of the dynamics between financial strain, alcohol use, and depression over time. To be sensitive to the women in this study on the topic of alcohol use and financial strain, re-examination of how to measure these needs to be considered. For instance, a significant difference may exist between individuals who consume alcohol daily and those who drink only on rare occasions. Including a more detailed measure of alcohol use, such as frequency or quantity of consumption and the underlying reasons for drinking, could offer deeper insights into the severity and patterns of alcohol use within the studied population. Additionally, the generalizability of the findings may be limited to similar demographic groups and settings, warranting caution in extrapolating the results to other tribes or dissimilar populations. Subsequent studies with more representative and larger samples of Indigenous women will provide a fuller picture of mental health effects that could inform behavioral health advances. Future studies could enhance the current research by using a broader range of culturally specific variables and support mechanisms (e.g., cultural beliefs, traditions, and community-based support systems) within Indigenous communities. Integrating multidimensional, culturally grounded measures of psychosocial resources and coping strategies would provide a more comprehensive examination of mental health outcomes [49]. Furthermore, incorporating mixed methods approaches, such as focus groups, would be an effective way to gather richer qualitative data and capture the lived experiences of participants. Future research that incorporates qualitative insights could provide a deeper understanding of the cultural, social, and emotional factors that influence alcohol consumption and mental health in Indigenous communities, particularly women who are the core of their families.

Conclusion

Despite the aforementioned limitations, this study contributes to the growing body of literature on mental health disparities among middle-aged and older Indigenous women in rural areas of the U.S. By elucidating the complex interplay among financial strain, alcohol use, and depressive symptoms and the moderating effect of alcohol use, this study investigates issues that have so far received only scarce attention in this understudied population. Thus, it remains important to address this topic in a sensitive manner. The findings of this study underscore the urgency of preventing and treating mental health. The importance of targeted interventions aimed at addressing socioeconomic factors and promoting active psychosocial coping approaches related to mental well-being is pronounced in this underserved community. Another finding indicated that the vulnerability to depression relies on some demographic and health factors (e.g., being younger and having poorer health being at increased risk), suggesting a potential target for intervention strategies. Considering the key role of tribal leaders and elders, tribal community organizations, and health/mental health professionals in providing emotional and instrumental support and community resources for middle-aged and older Indigenous women, health programs may be more effective when they are partnered in the access and delivery of services to these women. There is a pressing need for holistic and comprehensive approaches involving public health, social policy, and community engagement to address the interconnected issues of financial strain, drinking and mental health among Indigenous women.

Competing Interests: The authors declare that they have no competing interests.

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