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Article

Autonomy, Sociocultural Reform and Depression Among Saudi Women: Moderating Effects of Driving Status, Age, Marital Status and Social Support in The Post-2018 Era

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Abstract: Depression among Saudi women remains a significant public health concern influenced by cultural, demographic, and psychosocial factors. Drawing on gender theory and social determinants of mental health, this study examined the moderating roles of driving status, age, marital status, and perceived social support on the relationships between depressive spiral, attitudes toward aging, and depression among Saudi women. The study utilized a cross-sectional correlational design with a sample of 593 Saudi women aged between 27 and 39 years. Data were collected using several instruments, including the Beck Depression Inventory-II. Structural Equation Modeling (SEM) with bootstrapping was employed to analyze direct, mediating, and moderating impacts. The findings indicate a significant association between depressive spiral, negative attitudes toward aging, and depression. While driving status did not significantly moderate these relationships, the analysis indicated that age, marital status, and social support moderated the impact on depression, with increased independence, older age, stable marriage, and stronger social support reducing the risk. Factors such as mobility, social interactions, and demographic characteristics act as protective factors against depression among Saudi women. By situating these findings within the context of post-2018 sociocultural reforms in Saudi Arabia, this study offers new empirical insight into how gendered autonomy and social relations shape women's mental health. Future research should consider conducting longitudinal studies to investigate the impact of socioeconomic status and mental health history.

Keywords: Depression; mental health; culture; psychosocial; marital status; social support

Introduction

Depression is a condition that ranges from severe clinical disorders causing extreme distress to feelings of sadness or disinterest in daily activities (Almadani & Alwesmi, 2025). Depression has been associated with physical discomfort, longer hospital stays, high hospitalization rates, worse quality of life, and noncompliance with therapy (Al-Shahrani & Hammad, 2023). Additionally, major depressive disorder (MDD) can develop from depression (Marx et al., 2023; Hazli et al, 2022). In general, depression is more common in women than in men (Pettman et al. 2020). Despite being common, costly, and causing suffering and a lower quality of life, depression is often left untreated (Li et al., 2021). Depression in women is a significant public health issue (Cuijpers & Karyotaki, 2021), and remains the biggest cause of women disability globally (Tavares et al. 2021). While global prevalence studies highlight the widespread nature of depression among women (Terlizzi & Zablotsky, 2024; Rodríguez-Donate et al., 2025, BK et al., 2017; Mohammad & Ibrahim, 2018; Adnan et

al., 2024), their explanatory value remains limited unless situated within specific cultural and institutional contexts.

In the Kingdom of Saudi Arabia (KSA), a developing nation with a population of over 36 million, women make up 39.5% of the population, up from 39.27% in 2022 (World Bank Group, 2022). In 2018, the government of Saudi Arabia implemented regulations aimed at enhancing the welfare of women. Women now have the same driving rights and job opportunities as men thanks to these policy changes, which may have had an impact on mental health outcomes. Despite these efforts to safeguard women's welfare, the Saudi National Health and Stress Survey (2016) has reported a high prevalence of depression among women in Saudi Arabia. Studies have also reported an increase in the percentage of Saudi adults at risk for depression from 12.5% in 2018 to 21.4% in 2020 (Altwaijri et al., 2023; BinDhim et al., 2021). Therefore, these issues have remained a significant issue that needs urgent attention in policy. However, prior studies in Saudi Arabia reported high rates of depression in women and identified related risk factors including domestic violence, chronic illness, marital stress, and lack of social support (Raheel et al., 2015; Altwaijri et al., 2023; Al-Shahrani and Hammad, 2025). Much of these literature however, is descriptive, in the sense that it describes prevalence but not how core social positions and life-course factors mediate the experience of depression.

This study is guided by perspectives from gender theory and the social determinants of mental health, which posit that women's psychological well-being is shaped by access to autonomy, social roles, and structural opportunities within specific sociocultural contexts. Within this framework, depression is not viewed solely as an individual pathology but as an outcome influenced by gendered expectations, life-course transitions, and access to social and material resources. Using gender and life-course approaches, the study defines driving status as an indicator of mobility and autonomy, age as a differing social expectation throughout the female life course, marital status as a key relational institution influencing emotional and economic security, and perceived social support as a fundamental protective social resource. These variables are thus hypothesised to moderate the relationship between depressive spiral, aging attitudes, and depression among Saudi women. Based on this, the research aims to investigate the moderating role of driving status, age, marital status, and perceived social support in depression among Saudi women during the post-2018 reform era. The study has transcended prevalence-based explanations by adopting a moderation framework to provide a contextually informed understanding of female mental health in Saudi Arabia.

Depression among Women: Global and Regional Evidence

Depression in women has been extensively reported as a significant issue of national health in various parts of the world. International literature reveals a consistent pattern of greater prevalence of depression in women versus men due to gender-based social role, caregiving, and variance in exposure to the stressor (Pettman et al., 2020; Cuijpers and Karyotaki, 2021). National health data show higher depressive symptoms in women compared to men in the United States, with severity by age, socioeconomic status, and geographical region (Terlizzi & Zablotsky, 2024). Likewise, in European literature, the risk of depression in women is higher with advanced age, unemployment, and low incomes, whereas higher educational levels are protective (Rodríguez-Donate et al., 2025). Observations in Asian settings also echo similar trends. Women aged over 35 who had experienced pregnancy loss in Malaysia were found to be more associated with anxiety and depressive symptoms, although varying relationships were found with other sociodemographic factors (BK et al., 2017). These studies highlight the notion that even though depression among women is an international phenomenon, its manifestation and intensities are determined by local social and economic circumstances.

In the Kingdom of Saudi Arabia, female depression has been a subject of growing academic interest. According to national survey data, women are much more likely to experience lifetime depression than men, and prevalence remains elevated in recent years (Altwaijri et al., 2023; BinDhim et al., 2021). Studies have attributed depression in Saudi women to various social and health determinants, such as domestic violence, chronic illness, marital stress, and limited autonomy (Raheel et al., 2015; Al-Shahrani and Hammad, 2025). Research on younger cohorts has documented high levels of depressive symptoms in female adolescents, and perceived social support and self-esteem have been found as noteworthy protective mechanisms (Binsaif et al., 2023). In women of reproductive age, it has been demonstrated that stress at work, postpartum

complications, and psychosocial stress factors contribute to a higher susceptibility to depression and anxiety (Alateeq et al., 2025). Together, these results underscore the existence of mental health issues among Saudi women amidst changes in policy.

Sociocultural Change, Autonomy, and Mental Health

The introduction of fresh sociocultural reforms in Saudi Arabia since 2018, including most recently women being allowed to drive and increased engagement in the workforce, has changed the social environment in which women participate in day-to-day life. Driving has also been interpreted widely as a sign of higher autonomy, mobility, and social engagement. According to international literature, mobility restrictions correlate with diminished social activity and more depressive symptoms, especially in women (Musselwhite and Shergold, 2012; Pristavec, 2018). Nevertheless, there is a paucity of empirical studies investigating the mental health consequences of these reforms on Saudi women. Although the well-being may be enhanced by policies aimed at autonomy, structural limitations tied to gender expectations, marital demands, and care-giving duties might still influence the psychological experiences of women. This highlights the importance of empirical research that transcends symbolic explanations of reform to investigate the relationship between autonomy and other social roles.

The available evidence suggests that there are a number of factors that can precondition the association between psychosocial stressors and depression in women. Life-course transitions and altered social expectations have been found to impact depression risk based on age (Lara-Cinisomo et al., 2020). Marital status is another defining factor of mental health among women, as marital strain and social isolation are associated with psychological distress (Umberson et al., 2010). Social support is perceived as one of the most robust protective factors against depression, especially in collectivist cultures where family and community bonds are dominant (Cacioppo et al., 2006; Sun et al., 2020). Although this is a burgeoning body of research, limited number of studies have empirically explored the working mechanisms of these factors as moderators in a single analytical framework, especially in the realm of accelerating sociocultural transformation. This disconnect is particularly pronounced in Saudi Arabia, where reforms have transformed women social roles but empirical evaluation of their mental health outcomes is limited.

Methodology

The study employed a quantitative design based on a cross-sectional correlational approach. A cross-sectional correlational quantitative study is a type of nonexperimental research that investigates the relationships between one or more quantitative independent variables and one or more quantitative dependent variables (Johnson & Christensen, 2019). The primary goal of a cross-sectional correlational quantitative study is to identify and measure the relationships between two or more variables (Mertler, 2016). Furthermore, cross-sectional correlational analysis facilitates the application of advanced statistical techniques to examine interaction effects, such as moderation. In this context, the cross-sectional correlational study was conducted to explore the moderating roles of variables, which include driving status, age, marital status, and perceived social support.

Participants

This cross-sectional correlational design included 593 Saudi women aged 27–39 years recruited from Riyadh, Jeddah, Mecca, and Dammam. To ensure representativeness of urban women across major regions, a stratified random sampling procedure was applied initially. However, due to practical constraints in accessing certain strata, the sampling can also be described as purposive within strata, targeting participants who met eligibility criteria: female, Saudi national, aged 25–40, and willing to participate. With a power of 80%, the number of observable and latent variables in the model, an effect size of 0.1, and a desired probability level of 0.05, the A priori Sample Size Calculator for Structural Equation Models was used to determine the study's sample size. Therefore, it was decided that the predicted sample size of 593 women was sufficient to ensure statistical validity.

Measurements

Data were collected through a face-to-face questionnaire distribution, with each participant requiring approximately 20–25 minutes to complete the survey. The questionnaire comprised standardised instruments, including the Beck Depression Inventory-II (BDI-II), the Aging Perceptions Questionnaire (APQ), the Multidimensional Scale of Perceived Social Support (MSPSS), and the Hong Psychological Reactance Scale (HPRS). Driving status was operationalised as a measure of independence and mobility, drawing on gender theory and existing literature that links mobility limitations to increased risk of depression (Musselwhite & Shergold, 2012; Pristavec, 2018). Age was included to reflect life-course transitions and changing social role demands that may influence susceptibility to depressive spirals (Lara-Cinisomo et al., 2020). Marital status was incorporated to capture relational and social resource dimensions, which are theoretically associated with emotional support and stress buffering (Umberson et al., 2010). Perceived social support was measured to reflect the availability of protective interpersonal networks, a factor consistently identified within social determinants of health models as reducing vulnerability to depression (Cacioppo et al., 2006; Sun et al., 2020).

Data Collection Procedure

Data were collected in person. The researcher began by explaining the study's objective to participants and informed them that by completing the survey, they were agreeing to participate voluntarily. It was emphasized that the collected information would be strictly confidential and used solely for research purposes. Before collecting data, the researcher received ethical approval from the UKM Research Ethics Committee (The Institutional Review Board) under the registration number JEP-2024-144. Initially, there were 626 respondents in the sample. Nine respondents were excluded for providing multiple responses to a single question, and twenty-four were excluded due to insufficient data. Therefore, a total of 593 participants, representing women from the three regions of Saudi Arabia who experienced depression due to factors such as age, marital status, and driving status, were included in the study. Consequently, each participant was given 20 to 25 minutes to complete the survey. The data collection process, however, lasted approximately three months and two weeks.

Data Analysis

Descriptive statistics were computed for all variables included in the analysis. Internal consistency was assessed using Cronbach's alpha, with values ranging from 0.77 to 0.90 across all scales, indicating acceptable reliability. Composite reliability values ranged between 0.82 and 0.91, further confirming the consistency of the measurement model. Discriminant validity was evaluated using the heterotrait–monotrait (HTMT) ratio, and all constructs met the recommended threshold, with values below 0.85. Model explanatory power was assessed using the coefficient of determination, and the R^2 values indicated that depressive spiral and negative attitudes toward aging jointly explained 32% of the variance in depression. Effect size estimates showed that the moderating variables had f^2 values ranging from 0.02 to 0.15, suggesting small to moderate effects. Structural Equation Modeling was conducted using SmartPLS to examine both direct and moderating relationships among the study variables. The significance of path coefficients was assessed through a bootstrapping procedure with 5,000 resamples. Interaction terms were generated for each moderating variable, including driving status, age, marital status, and perceived social support, in order to test their moderating effects on the relationships between the predictor variables and depression.

The Findings

Table 1 shows the frequency and percentage for respondents' demographic characteristics of women in Saudi Arabia. In terms of age groups, the category comprising respondents aged 27-29 years had the highest percentage, with 256 respondents, which was 43.2% of the total number of respondents, followed by the 36-40 and 30-35-year categories, represented by 38.1% and 17.2%, respectively, or 226 and 102 participants among women in Saudi Arabia.

However, the findings also indicate that those who are 22-26 years old had the lowest percentage, with 9 respondents making up 1.5%. With regards to marital status, most participants were married (283) and single

(268), which made up 47.7% and 45.2%, respectively. Only (30) 5.1% were divorced. In terms of having children, the majority of respondents (318, 53.6%) don't have children, while 275 participants out of 593 made up 45.2% of the total number of participants. Furthermore, the results showed that the majority of respondents drive cars, with 389 out of 593 participants making up 65.6%. The results indicate that 204 (34.4%) don't drive a car. Finally, the majority of respondents, 249 (42%), reside in Riyadh city, 144 (24.3%), and 115 (19.4%) reside in Jeddah and Makkah, respectively. Only 85 (14.3%) lived in Dammam, Saudi Arabia.

Table 1. Demographic Characteristics of the Respondents (n = 593)

Variables	Frequency	Percentage
Age		
22-26 years	9	1.5%
27-29 years	256	43.2%
30-35 years	102	17.2%
36-40 years	226	38.1%
Marital Status		
Married	283	47.7%
Widowed	12	2%
Divorced	30	5.1%
Single	268	45.2%
Children		
No	318	53.6%
Yes	275	46.4%
Driving Status		
Yes	389	65.6%
No	204	34.4%
City		
Riyadh	249	42.0
Dammam	85	14.3
Jeddah	144	24.3
Makkah	115	19.4
Total	**593**	**100%**

Moderation analysis

Descriptive analyses showed mean depression scores varied by driving status, age, marital status, and social support levels. Table 1 presents standardized path coefficients (β) and p-values for all main and moderating effects. The structural model explained 32% of the variance in depression, as indicated by an R^2 value of 0.32. Effect size estimates further showed that age ($f^2 = 0.02$), marital status ($f^2 = 0.03$), perceived social support ($f^2 = 0.05$), and driving status ($f^2 = 0.01$) each exerted small to moderate moderating effects on depression.

Table 2. Moderation Analysis Results

Path	B	p-value	Interpretation
Depressive Spiral → Depression	0.45	< 0.01	Significant
Negative Attitudes → Depression	0.32	< 0.05	Significant
Driving × Depressive Spiral	-0.05	0.34	Not Significant
Age × Depressive Spiral	-0.12	0.04	Significant
Marital Status × Negative Attitude	-0.08	0.03	Significant
Social Support × Negative Attitude	-0.15	0.01	Significant

According to the results in Table 2, there is a significant positive correlation between depression and the depressive spiral, with scores for depression and the spiral being $\beta = 0.45$, $p < 0.01$. The severity of depression increases along with negative thoughts and emotions. Regarding negative attitudes and depression scores, $\beta = 0.32$, $p < 0.05$, indicates a meaningful link between negative attitudes and higher depression. Depression is more likely in individuals with more negative attitudes. The findings also show that there is no significant relationship between driving status and the depressive spiral, with $\beta = -0.05$, $p = 0.34$, indicating that driving status does not affect the relationship between depression and the spiral. Regarding age and the depressive spiral, $\beta = -0.12$, $p = 0.04$, suggests that age has a moderating effect. This means there are age-related differences in how depression and the spiral are connected; older adults may perceive this relationship differently than younger individuals. The results also show that negative attitudes and married status had a $\beta = -0.08$, $p = 0.03$, suggesting that married status significantly moderates the link between depression and negative views**.** Depending on marital status, the impact of negative views on depression may differ, with married individuals experiencing this effect differently than unmarried ones. Finally, the connection between depression and negative attitudes is significantly moderated by social support, with social support and negative attitude scores being $\beta = -0.15$, $p < 0.01$. Greater social support may help lessen the negative effects of negative views on depression.

Figure 1 show the simple slope analyses which indicated that older participants experienced weaker associations between depressive spiral and depression, suggesting a buffering effect of age. In addition, married women exhibited a reduced impact of negative attitudes toward aging on depression when compared to single participants, highlighting the moderating role of marital status. Participants who reported higher levels of perceived social support also demonstrated lower depression scores at comparable levels of negative attitudes, further confirming the protective function of social support. In contrast, driving status did not significantly moderate depression, and therefore no supportive interpretation is advanced. Its symbolic relevance is instead addressed in the Discussion section.

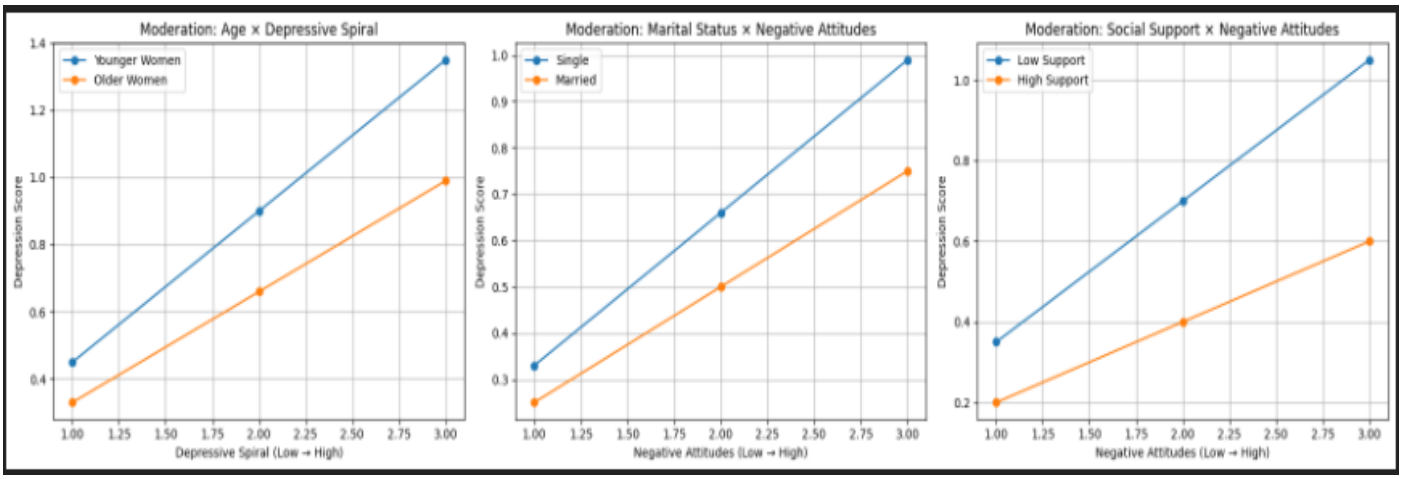

Figure 1. Simple slope analysis

Discussion

The aim of this research was to investigate the interplay between driving status, age, marital status, and perceived social support in predicting depression among Saudi women in the post-2018 era of reforms. The findings revealed that depressive spiral and negative aging attitudes were important predictors of depression. These relationships were significantly mediated by age, marital status, and perceived social support but not by driving status. Any interpretation is aligned strictly with the results of the statistical analysis and does not assign effects to non-significant paths.

These results may be interpreted in terms of gender theory and social determinants of health, which stress that the mental health of women can be influenced not just by personal factors but also by social roles, relationship network, and structure opportunities (Umberson et al., 2010; Mobaraki and Sodelft, 2010). The

protective mechanisms include age, marital status and social support since they affect access to emotional and social resources that can buffer depression. The connection between depressive spiral and depression was less pronounced in older women, which indicates that life experience and social roles could mitigate the vulnerability to negative cognitive and emotional patterns (Lara-Cinisomo et al., 2020). The effect of negative attitudes on depression was lower among married women than among single women, a fact that underscores the role of relational stability and supportive partnerships in alleviating mental health risks. In collectivist cultures, the impact of negative attitudes on depression was consistently mitigated by higher perceived social support, which supports the protective nature of social networks (Cacioppo et al., 2006; Sun et al., 2020).

Despite driving status being a symbolic indicator of female autonomy in post-2018 Saudi Arabia, it failed to have a significant moderating effect on depression in this sample. This result implies that structural and relational variables, including family support and marital stability, can be more determinant in shaping mental health outcomes than symbolic markers of autonomy. The small impact of driving status could also be an indicator that mobility is not automatically converted into daily psychosocial advantages to women, especially when it is accompanied by ongoing cultural and family-related limitations (Musselwhite and Shergold, 2012; Pristavec, 2018). Structural constraints are still at play, despite the reforms.

Women still operate within gendered expectations, guardianism conventions, and marital requirements that restrict complete agency in practice. Such limitations can blunt the effect of mobility-related influences and highlight the ongoing importance of relational and social supports in influencing mental health outcomes. These findings indicate that mental health interventions targeting Saudi women must not only enhance autonomy and mobility but also fortify social support networks and overcome long-standing structural and relational constraints. Altogether, these results suggest that sociocultural, relational, and demographic variables interact to affect depression among Saudi women. The discussion places the study within the framework of post-2018 reforms and bases interpretations on gender theory and the social determinants of health, thus showing how structural, relational, and psychosocial factors all contribute to defining the mental health outcomes of women in Saudi Arabia.

Conclusion

The paper reveals that individual, relational, and sociocultural variables should be considered in the context of depression outcomes in Saudi women. The results show that depressive spirals and negative age attitudes are important predictors of depression, with age, marital status, and perceived social support moderating these relationships. Driving status, despite its symbolic influence on women autonomy, failed to become a strong moderator in this sample.

The study will add to the body of knowledge by positioning these findings in the context of post-2018 sociocultural reforms in Saudi Arabia, thereby offering empirical evidence of the interaction between gendered autonomy, social support, and structural constraints on mental health. The research highlights that policies and interventions to enhance the mental health of women should focus on more than just autonomy-enhancing strategies but also upon relational and structural sources of support, such as social networks and marital stability. The insights are especially applicable in assessing the mental health implications of reforms that increase the participation of women in social and economic life despite structural and cultural constraints. Comprehensively, the article contributes to the body of knowledge on the multifaceted cause and effect relationship between demographic, psychosocial, and structural determinants of mental health among women in Saudi Arabia to provide evidence-based guidance on policy formulation, mental health program, and future research in a setting undergoing sociocultural change.

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Conflicts of Interest: *The authors declare no conflict of interest.*

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