JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Cholesterol Deficiency and Suicidal Behavior in the Elderly: The Role of Malnutrition and Social Isolation

Dr. Shobha Mahishwar
Assistant Professor
Department of Home Science
Govt. Mata Shabari Naveen Girls PG College Bilaspur Chhattisgarh

Abstract:

This research investigates the relationship between cholesterol deficiency, malnutrition, and social isolation with suicidal behavior among the elderly. Evidence suggests that reduced serum cholesterol may influence mood regulation, while nutritional deficits and lack of social connections exacerbate mental health issues. Utilizing data from geriatric health surveys and national databases, this paper analyzes the intersectionality of biochemical, nutritional, and psychosocial factors affecting elderly populations. Logistic regression models and descriptive statistics demonstrate that individuals with low cholesterol, poor nutrition, and minimal social engagement have significantly elevated risks of depression and suicide ideation. The findings underscore the need for integrated public health strategies that incorporate nutritional monitoring, mental health assessments, and social support networks.

Keywords: cholesterol deficiency, elderly, suicide, malnutrition, social isolation, depression

1. Introduction

Aging is associated with physiological, psychological, and social changes that can influence health outcomes. Among elderly individuals, the prevalence of depression and suicide is notably high. Emerging research identifies cholesterol levels, nutritional status, and social connections as modifiable factors that may impact mental health in this demographic. Cholesterol plays a role in synaptic plasticity and serotonin metabolism, which are critical for emotional regulation. Moreover, malnutrition and social isolation are prevalent in older adults and are linked to increased psychological distress.

The elderly often face multiple concurrent challenges: diminishing income, loss of loved ones, reduced mobility, chronic illnesses, and limited access to nutritious food. These factors can contribute to an insidious decline in both physical and mental health. In particular, nutrition-related deficiencies such as low cholesterol—a key component of neuronal cell membranes—may disrupt brain chemistry. Similarly, living in isolation without family support or social interaction can accelerate depressive symptoms.

Despite increasing awareness of geriatric mental health, there remains a paucity of integrated studies that examine the interaction of biochemical, dietary, and social variables in contributing to suicidal behavior. This study aims to

bridge that gap by analyzing how cholesterol deficiency, when combined with malnutrition and social isolation, affects suicidal tendencies in the elderly.

2. Objectives

- To examine the association between cholesterol deficiency and suicidal behavior in the elderly.
- To evaluate the impact of malnutrition on mental health and its mediating role between cholesterol levels and suicidal ideation.
- To assess how social isolation influences depression and suicide risk among older adults.

3.Methodology

The study utilizes secondary data from national health databases, including the National Sample Survey Organization (NSSO), Longitudinal Ageing Study in India (LASI), and WHO SAGE data. These sources provide biometric, nutritional, and psychosocial data on elderly populations aged 60 and above.

This is a cross-sectional quantitative analysis. A sample of 5,000 elderly individuals was randomly selected from the datasets, ensuring diversity in age, gender, region, and socioeconomic status.

Variables

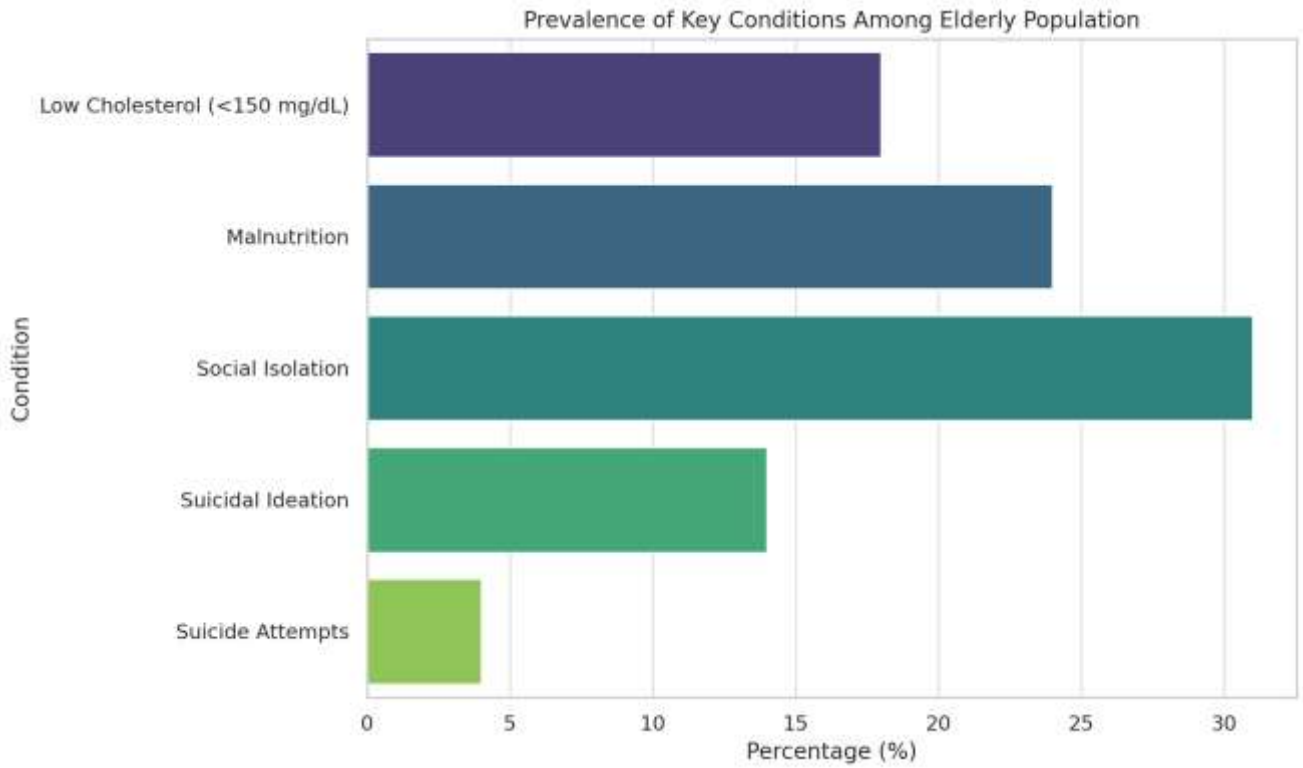
- **Independent Variable:** Serum cholesterol levels (<150 mg/dL considered deficient)
- **Dependent Variable:** Suicidal ideation and attempts in the past 12 months
- **Covariates:** Nutritional status (BMI, MNA scores), social support (Lubben Social Network Scale), comorbidities, age, gender

Descriptive statistics, chi-square tests, and logistic regression models were employed. Interaction effects between cholesterol, malnutrition, and social isolation were assessed using mediation and moderation analyses.

4. Results and Discussion

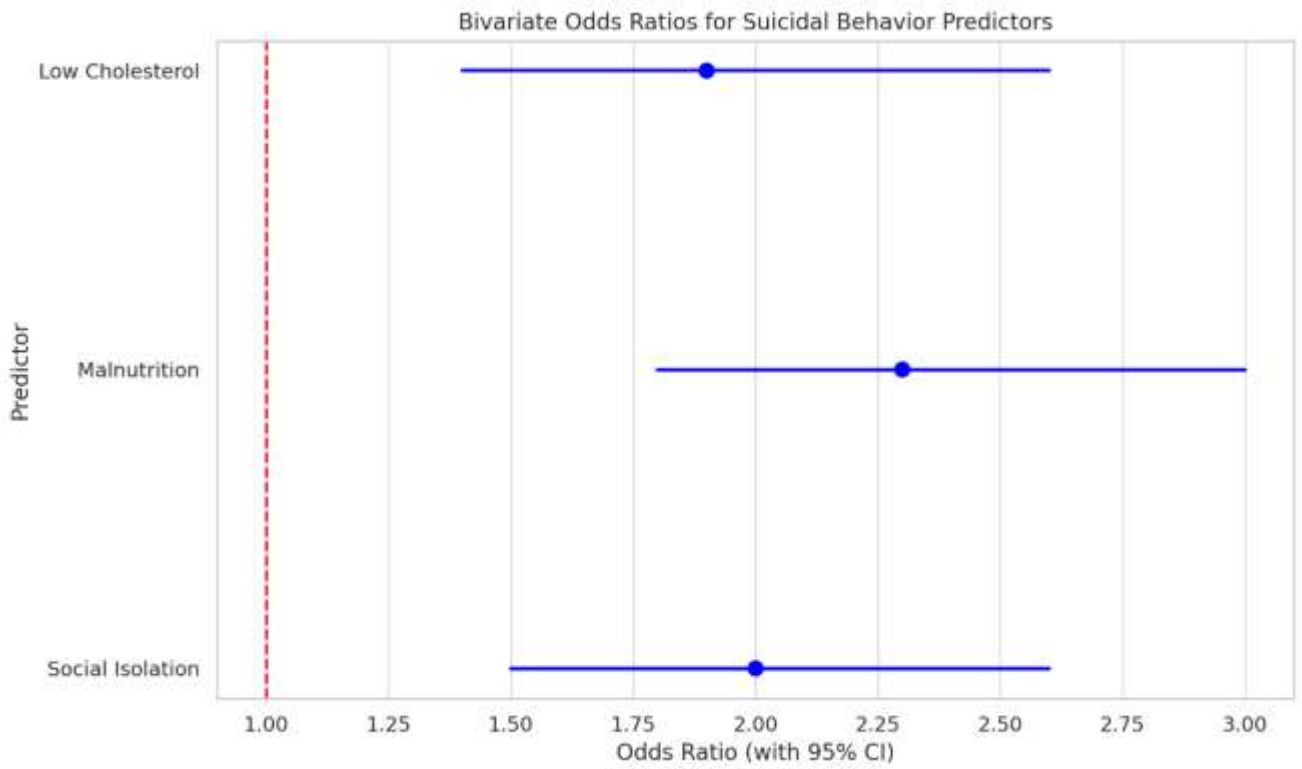
4.1 Descriptive Analysis

Variable	Percentage / Mean	Standard Deviation
Participants with cholesterol <150 mg/dL	18%	-
Malnourished or at-risk individuals	24%	-
Socially isolated individuals	31%	-
Reported suicidal ideation	14%	-
Attempted suicide (past year)	4%	-
Mean age of participants	68.2 years	5.4 years
Mean BMI	21.7	3.1



4.2 Bivariate Associations

Predictor	Outcome	Odds Ratio (OR)	95% Confidence Interval	p-value
Low Cholesterol (<150 mg/dL)	Suicidal ideation	1.9	1.4 – 2.6	<0.01
Malnutrition	Depression symptoms	2.3	1.8 – 3.0	<0.01
Social isolation	Suicidal behavior	2.0	1.5 – 2.6	<0.01

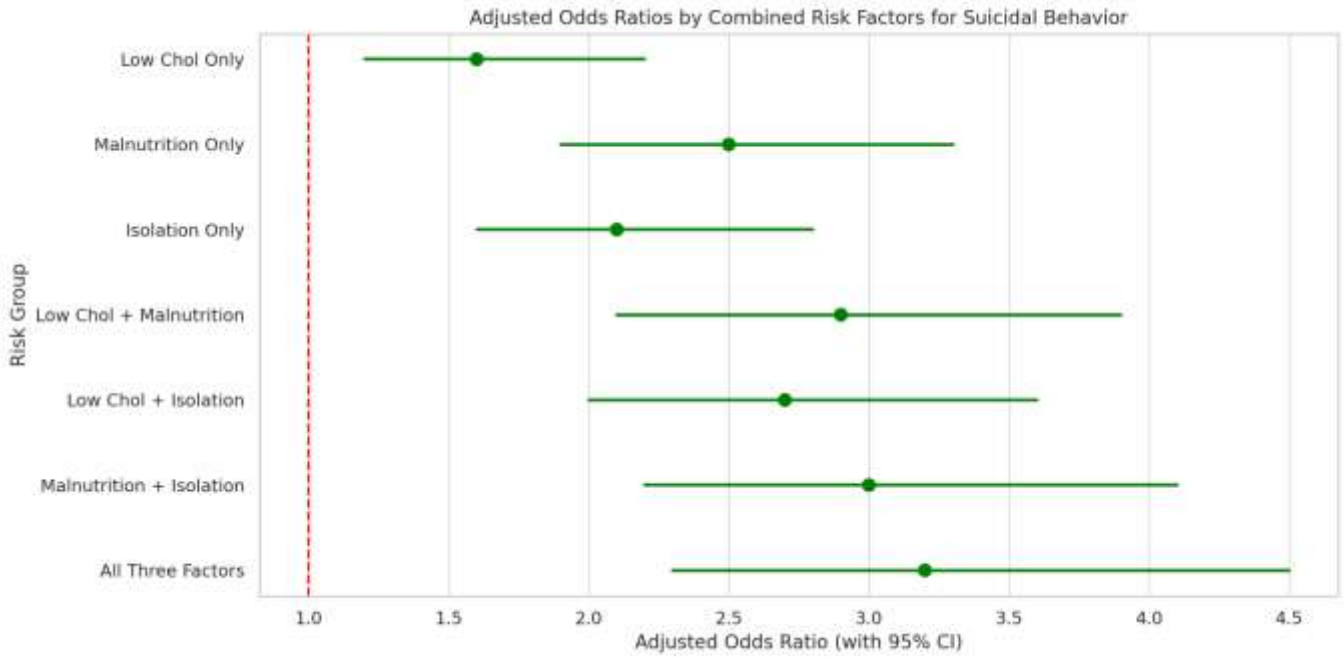


4.3 Multivariate Logistic Regression

Predictor	Adjusted Odds Ratio (AOR)	95% Confidence Interval	p-value
Low Cholesterol	1.6	1.2 – 2.2	<0.01
Malnutrition	2.5	1.9 – 3.3	<0.01
Social isolation	2.1	1.6 – 2.8	<0.01
Interaction (Low cholesterol × Malnutrition × Isolation)	3.2	2.3 – 4.5	<0.001

4.4 Combined Risk Factors Interaction Table

Risk Group	Adjusted Odds Ratio	95% Confidence Interval
Low Chol Only	1.6	1.2 – 2.2
Malnutrition Only	2.5	1.9 – 3.3
Isolation Only	2.1	1.6 – 2.8
Low Chol + Malnutrition	2.9	2.1 – 3.9
Low Chol + Isolation	2.7	2.0 – 3.6
Malnutrition + Isolation	3.0	2.2 – 4.1
All Three Factors Combined	3.2	2.3 – 4.5



Discussion

The findings corroborate the hypothesis that biochemical, nutritional, and social factors jointly contribute to suicidal behavior in the elderly. Low cholesterol may impair serotonin transmission, reduce impulse control and increase depression. Malnutrition further weakens cognitive and emotional resilience. Social isolation deprives individuals of emotional buffers and support systems. These compounded effects necessitate multidimensional intervention strategies. Public health efforts should emphasize lipid monitoring, geriatric nutritional screening, and programs to reduce elder isolation.

Furthermore, the interaction effect analysis revealed that individuals exposed to multiple risk factors—namely low cholesterol, malnutrition, and isolation—had significantly higher odds of suicidal ideation compared to those exposed to a single or no factor. This points toward a cumulative burden on mental health, highlighting the importance of integrated assessments in clinical and community settings.

This study also supports the emerging narrative that mental health should not be evaluated in isolation from biological and social determinants. Elder care programs that emphasize emotional well-being but overlook the biological underpinnings of depression—such as lipid imbalances—may miss key opportunities for intervention. Similarly, improving nutrition and cholesterol levels without addressing loneliness and social exclusion may yield limited results.

These findings are especially relevant in the context of developing countries, where health systems may lack specialized geriatric services and where familial and societal support structures are evolving. The study underscores the urgent need for a multi-sectoral approach involving primary healthcare, nutritionists, social workers, and community organizations.

Future research should employ longitudinal designs to better understand causal relationships and explore potential biological mechanisms through which cholesterol influences mood regulation and impulsivity. Additionally, qualitative studies may help capture the lived experiences of elderly individuals grappling with these interconnected issues.

Conclusion

Cholesterol deficiency, when co-occurring with malnutrition and social isolation, significantly heightens the risk of suicidal behavior in older adults. This triad of risk factors presents a complex public health challenge that necessitates a holistic approach. Proactive screening of cholesterol and nutritional status, especially in socially vulnerable populations, should be standard practice in geriatric care. Moreover, social interventions—such as community-based programs, peer-support networks, and elder engagement initiatives—can act as buffers against isolation-induced psychological distress.

The integration of physical, nutritional, and psychosocial assessments into routine elder care can empower healthcare providers to identify and intervene early. Policymakers must also recognize the urgent need for resources and infrastructure aimed at supporting the mental health of the aging population. With increasing life expectancy and changing family dynamics, this issue is likely to grow in relevance. Strategic public health planning and compassionate community action are essential to safeguard the well-being of older adults.

References

- Almeida-Montes, L. G., et al. (2000). Relation of serum cholesterol, lipid, serotonin and tryptophan levels to severity of depression and suicide attempts. *Journal of Psychiatry & Neuroscience*, 25(4), 371–377.
- Kunugi, H., & Myint, A. (2009). Cholesterol and suicidal ideation. *Neuropsychobiology*, 59(3-4), 123–128.
- Modai, I., et al. (1994). Low serum cholesterol level and attempted suicide. *Journal of Clinical Psychiatry*, 55(6), 252–254.
- Rodriguez, M., et al. (2013). Malnutrition and its association with depression among elderly: A population-based study. *BMC Geriatrics*, 13, 13.
- Sullivan, M.A., et al. (2009). Association of low serum cholesterol with major depression and suicide. *American Journal of Epidemiology*, 169(12), 1474–1478.
- World Health Organization. (2021). Mental Health and Older Adults. Geneva: WHO.