International Journal for Multidisciplinary Research (IJFMR)

E-ISSN: 2582-2160 • Website: www.ijfmr.com • Email: editor@ijfmr.com

Depression and Caregiver Burden Among Family Caregivers of Middle and Older Adults with Diabetes Mellitus: Role of Irrational Beliefs as a Mediator

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Abstract

Diabetes Mellitus is a chronic metabolic disorder with increasing prevalence in the Indian population. The responsibility of caring for dependent and vulnerable older adults can adversely affect the psychological and physical well-being of caregivers. This study aims to investigate the mediating effect of irrational beliefs on the relationship between caregiving burden and depression in family caregivers of older adults suffering from diabetes mellitus in India. The research employed a cross-sectional, correlational design with a non-probability snowball sampling method. Data was collected from 85 family caregivers with the use of the Zarit Burden Interview – Short, the Beck Depression Inventory, and the Shortened General Attitude and Beliefs Scale. Findings revealed a significant moderate positive correlation between caregiver burden and depression ($r = .421$, $p < .001$), and between caregiver burden and irrational beliefs ($r = .395$, $p < .001$). Depression significantly predicted caregiver burden ($\beta = .493$, $p < .001$). However, irrational beliefs did not significantly mediate the relationship between depression and caregiver burden. The study highlights the need for targeted psychosocial interventions to reduce caregiver distress, particularly addressing depression and irrational beliefs.

Keywords: caregiver burden, depression, irrational beliefs, diabetes mellitus, family caregivers, informal caregivers, ZBI, ABC model, SGABS, BDI-II, middle adults, older adults

Background and Context

Diabetes in India is influenced by an interplay of genetic and environmental factors, with a particular emphasis on the rising prevalence of obesity, which is closely linked to urban migration and changes in dietary and physical activity patterns (Kaveeshwar & Cornwall, 2014). These environmental shifts, including increased sedentary behaviour, reduced physical exertion, and greater consumption of high-calorie processed foods, have significantly contributed to the escalating rates of diabetes in both urban and rural populations (Kaveeshwar & Cornwall, 2014). Diabetes Mellitus, also known as Type 2 Diabetes, is a chronic metabolic disorder marked by elevated blood glucose levels, primarily resulting from insulin resistance, inadequate insulin secretion, or the overproduction of glucagon, which collectively impair glucose regulation and metabolic homeostasis (Kaul et al., 2013; Blair, 2016).

India, often referred to as the "diabetes capital of the world," had a reported diabetes prevalence of 9.6%

in 2021, which is projected to increase to 10.9% by the year 2045 (Kumar et al., 2024). This rising trend highlights the urgent need for targeted public health interventions, improved healthcare access, and sustained efforts toward diabetes education and self-management, which necessitates comprehensive strategies that not only address clinical management but also emphasize preventive care and community-level awareness (Viswanathan & Rao, 2013). In addition to its direct health impacts, diabetes places a significant strain on the healthcare system and poses economic challenges for patients and their families (Viswanathan & Rao, 2013).

The interaction between age and the duration of diabetes has been shown to significantly influence the onset and progression of severe complications. These include end-stage renal disease (ESRD), diabetic retinopathy and other ocular complications, lower limb amputations resulting from peripheral vascular disease and neuropathy, cerebrovascular accidents such as strokes, congestive heart failure, and increased overall mortality (Huang et al., 2014). The presence of chronic illnesses and the progressive decline in physical, cognitive, psychological, and sensory functions among older adults highlight the growing need for long-term care (Yustisia et al., 2023). These complications not only deteriorate the health and quality of life of individuals with diabetes but also cause substantial emotional and financial distress to their families. The cumulative impact of these outcomes highlights the necessity for early detection, culturally sensitive care models, and long-term support systems for patients and caregivers alike (Huang et al., 2014). Limited healthcare funding, a lack of sufficient healthcare personnel, and inadequate government pension and social security programs pose major challenges to achieving universal health coverage in low- and middle-income countries (LMICs), including India (Matthews et al., 2023). Due to prevailing cultural expectations and the limited availability of formal long-term care facilities, the responsibility of providing care for older adults in such LMICs is primarily borne by family members (Ajay et al., 2017). This familial duty is deeply embedded in traditional values that emphasize filial responsibility and intergenerational support, thereby positioning informal caregiving as a normative obligation rather than a choice (Thrush & Hyder, 2014).

Informal caregiving entails providing unpaid care and support to dependent relatives or friends, which often comes at a significant cost to the well-being of caregivers (Bom et al., 2019; Brinda et al., 2014). The primary objectives of long-term care for the elderly are to support their independence, minimize reliance on others, prevent disease-related complications, and preserve self-worth, overall quality of life, and adequate nutritional intake (Yustisia et al., 2023).

The demands of caregiving, ranging from helping with daily activities to managing chronic medical conditions, can lead to significant psychological and physical strain, particularly when the caregiving role is prolonged or intense (Pinquart & Sorensen, 2003; Brinda et al., 2014). The adverse effects on caregivers include heightened levels of stress, anxiety, depression, physical exhaustion, and social isolation, all of which may worsen over time as the care recipient's needs increase (Pinquart & Sorensen, 2003; Ajay et al., 2017). The ongoing nature of chronic illness in older adults, along with their risk of health decline and the gradual onset of complications, can place a significant burden on caregivers (Isac et al., 2021).

Research consistently shows that the degree of impairment experienced by the older adult, whether due to mobility limitations, cognitive decline, or chronic illness, is closely associated with the level of burden experienced by the caregiver (Ajay et al., 2017; Brinda et al., 2014). Caregiving is often associated with a negative impact on the caregiver's own well-being, leading to diminished quality of life, reduced economic productivity, and neglect of the caregiver's personal health needs (Pinquart & Sorensen, 2003; Brinda et al., 2014). Among Asian family caregivers of older adults with chronic conditions, there is a higher occurrence of physical strain, financial and role-related stress, reliance on self-protective coping mechanisms, varied perceptions of social support, and comparatively lower levels of reported psychological distress (Isac et al., 2021).

The primary challenges in effective diabetes management in India are multifaceted and stem from systemic gaps in healthcare delivery, including inadequate medical infrastructure and a shortage of trained healthcare professionals capable of addressing the growing diabetes burden (Vishwanathan & Rao, 2013). These issues are exacerbated by the limited access to essential diabetes medications and healthcare services, particularly in rural regions, which contributes to widening health disparities among different socioeconomic groups (Ajay et al., 2017). The lack of consistent and updated knowledge about diabetes management among general practitioners exacerbates this issue, resulting in delayed diagnoses and suboptimal treatment outcomes (Vishwanathan & Rao, 2013). These challenges are intensified by substantial economic inequalities within the healthcare system and the financial burden borne by patients, many of whom struggle to afford long-term diabetes care and regular monitoring (Houle et al., 2016).

The scarcity of long-term care facilities and limited availability of accessible healthcare services place considerable pressure on families, who are often left to provide sustained care without external support (Ajay et al., 2017). The shift from joint to nuclear family structures, along with the migration of rural populations to urban areas, further limits the availability of family members to share caregiving responsibilities (Dhar, 2012). As a result, caregivers experience increased stress and role overload, particularly in low-resource settings (Ajay et al., 2017).

Individuals from low socioeconomic status (SES) backgrounds are especially vulnerable to the psychological consequences of chronic stress, which heightens their risk for depression, generalized anxiety, and the adoption of maladaptive coping strategies (Houle et al., 2016). The underlying sources of this stress include job instability, limited income, and the societal stigma associated with illness and financial hardship, all of which place an immense burden on patients and caregivers alike (Vishwanathan & Rao, 2013). In a study from a rural area of Karnataka, India, family caregivers experienced greater levels of burden with an increase in the number of impairments in the older adults they cared for (Ajay et al., 2017).

In the context of caregiving, the need to offer personal care, constant oversight, and manage challenging behaviours frequently results in psychological strain and emotional exhaustion (Dhar, 2012). Extended caregiving lasting over five years or involving more than eight hours per day has been linked to greater psychological strain and emotional exhaustion, as it disrupts caregivers' daily routines, social lives, and financial stability (Zan et al., 2024). This psychological burden is often worsened by disrupted social interactions and the development of negative feelings toward the caregiving role, thereby compromising the caregiver's quality of life (Brinda et al., 2014).

Higher family caregiving competence reflects the understanding of factors related to illness susceptibility, essential care skills, and strategies to prevent complications, which contribute to better disease management (Zan et al., 2024). Greater caregiving competence is inversely associated with caregiver burden, anxiety and depression (Chan et al., 2018).

Theoretical Framework

According to the ABC model of Rational Emotive Behaviour Therapy (REBT), emotional and behavioural consequences (C) do not stem directly from activating events (A), but rather from individuals' beliefs (B) about these events, where irrational beliefs are seen as the principal causal factors contributing to psychological disturbances (DiGiuseppe et al., 2014; Ellis & Dryden, 1997). The theory posits a clear distinction between rational and irrational beliefs, wherein rational beliefs are flexible, logical, and reality-based, promoting adaptive emotional responses and constructive behaviours (David et al., 2010). In contrast, irrational beliefs are rigid, illogical, and absolutist in nature, contributing to maladaptive emotions such as guilt, anxiety, and depression, as well as behavioural dysfunction and poor coping mechanisms (O'Donohue, 2009).

Rational beliefs are thought to stem from healthy cognitive processes such as critical thinking, the ability to make reasoned decisions, and the capacity to accept and tolerate life's inevitable disappointments without overgeneralisation or catastrophization (David et al., 2010). On the other hand, irrational beliefs comprise interconnected cognitive distortions including neediness (the belief that one must have approval or success), catastrophizing (exaggerating the negative consequences of an event), low frustration tolerance (an inability to endure discomfort), and global evaluations of self or others (viewing oneself or others as wholly bad or worthless), which collectively exacerbate emotional dysfunction (David et al., 2010).

Research has demonstrated that certain types of irrational beliefs are correlated with subclinical symptoms of depression, suggesting a significant role for these beliefs in the etiology of mood-related difficulties even in non-clinical populations (Macavei, 2005). As proposed by ABC Theory, the irrational belief of demandingness (rigid expectations that one's desires must be met) is considered a core cognitive vulnerability for depression, while secondary irrational beliefs such as self-downing (global negative self-evaluation) and low frustration tolerance further compound the risk of depressive symptomatology (Buschmann et al., 2018).

The Stress Process Model of Caregiving conceptualizes caregiver stress as a dynamic and evolving phenomenon that results from a complex interplay of several interrelated components, including background and contextual factors, primary and secondary stressors, and resulting outcomes (Pearlin, 1989). Background and contextual characteristics, such as the caregiver's age, gender, socioeconomic status, relationship to the care recipient, and previous caregiving experience, serve as the foundational elements that influence not only the caregiver's initial vulnerability to stress but also their capacity to manage caregiving demands (Pearlin, 1989). These contextual variables shape how caregivers interpret their roles, access support, and engage with caregiving tasks, thereby influencing the overall trajectory of stress experienced over time (Pearlin, 1989).

Primary stressors refer to the direct and immediate demands of caregiving, such as the degree of physical and cognitive impairment in the care recipient, the frequency and intensity of caregiving tasks, and the presence of disruptive behaviors like aggression or resistance to care (Pruchno & Resch, 1989). These stressors are typically rooted in the clinical condition of the care recipient and often escalate as the illness progresses, leading to a heavier burden on caregivers (Pruchno & Resch, 1989). In contrast, secondary stressors emerge from the broader consequences of the caregiving role, including psychological strain, disruptions in family and social relationships, restriction of personal autonomy, and conflict between caregiving and other life roles (Zarit, Todd, & Zarit, 1986). These secondary strains add layers of complexity to the caregiving experience and contribute significantly to long-term emotional distress (Zarit, Todd, & Zarit, 1986).

The presence of supportive social networks, the ability to seek assistance when needed, and the use of adaptive coping strategies can serve as important resources that lessen the intensity of caregiving-related distress (Pearlin, 1985). These supportive conditions do not eliminate stress, but they can influence how caregivers respond to and manage ongoing demands (Pearlin, 1985). When such resources are limited or overwhelmed by the cumulative effect of stressors, caregivers may experience serious psychological consequences, with depression being one of the most commonly observed outcomes of prolonged and unrelieved caregiving stress (George & Gwyther, 1986).

A qualitative study by Yustisia et al. (2023) described the family caregivers of chronically ill older adults as being physically exhausted due to their constant involvement in caregiving duties, including assisting with basic needs such as bathing, toileting, and feeding. Respondents reported disturbances in sleep, appetite, and increased fatigue, which are symptoms often associated with caregiver strain and physical health decline (Yustisia et al., 2023).

Psychologically, family caregivers experienced anxiety, frustration, and emotional exhaustion. As noted in the study by Yustitia et al. (2023), emotional burden stemmed from uncertainty about the patient's prognosis and the perceived lack of familial support. Many caregivers reported a sense of helplessness, with some expressing suppressed resentment and unresolved guilt for being the sole caretaker. One participant remarked, *"No stress because I have to take care of my mother, but sometimes angry words appear because I'm tired… sometimes I often blame the mother's condition but don't want to treat it"* (Yustisia et al., 2023).

Significance of the Study

Family caregivers are pivotal in the care of elderly individuals suffering from chronic illnesses such as diabetes mellitus, which often leads to significant psychological and emotional distress. These caregivers, often close relatives, are responsible for providing sustained physical assistance, emotional support, and managing the medical needs of the elderly, which can result in cumulative stress over time. In the Indian context, cultural expectations surrounding familial duty and responsibility place additional pressure on individuals to take on the caregiving role, regardless of personal or professional constraints. This pressure is further exacerbated by the widespread absence of formal caregiving resources, such as institutional care services or professional support systems, thereby placing the responsibility almost entirely on family members. The resultant burden of caregiving is frequently accompanied by emotional exhaustion, feelings of helplessness, and symptoms of depression.

This study investigates the role of irrational beliefs, which are psychological constructs associated with cognitive distortions, in influencing the relationship between caregiving burden and depression. These irrational beliefs may shape how caregivers interpret and respond to the demands of caregiving, thereby affecting their psychological adjustment. Understanding this dynamic is essential for identifying cognitive patterns that contribute to emotional distress among caregivers. The findings of this study hold practical significance for the formulation of effective psychological interventions. If irrational beliefs are determined to significantly mediate the relationship between caregiving burden and depression, then structured therapeutic approaches such as Rational Emotive Behaviour Therapy (REBT) and Cognitive Behaviour Therapy (CBT) could be applied. These interventions aim to assist caregivers in identifying maladaptive thoughts, restructuring their cognitive processes, and adopting more adaptive coping strategies. Such cognitive restructuring may lead to a reduction in depressive symptoms, alleviate caregiver distress, and improve overall well-being.

These insights can inform healthcare professionals in developing culturally appropriate support programs that are tailored to the unique needs of caregivers, especially in resource-constrained environments where formal support systems are limited and family caregivers remain central to elder care. This research also contributes to the existing literature by integrating the concepts of caregiving burden, depression, and irrational beliefs within a single framework. The outcomes have the potential to enhance understanding of the complex interactions among cognitive, emotional, and social factors that contribute to caregiver distress.

Problem Statement

Family caregivers of elderly adults with diabetes mellitus in India often experience significant psychological distress due to caregiving burdens. This burden is exacerbated by irrational beliefs, which distort perceptions and lead to increased vulnerability to depression. While caregiver burden and depression have been studied extensively, limited research exists on how irrational beliefs mediate this relationship. Understanding this dynamic is critical for designing effective psychological interventions to mitigate caregiver distress and improve their mental health outcomes.

This study aims to examine the mediating role of irrational beliefs in the relationship between caregiving burden and depression among family caregivers of older adults with diabetes mellitus in India.

Review of Literature

Overview

Irrational beliefs are characterized by inflexible convictions that encompass unrealistic assumptions and erroneous generalizations, whereas rational beliefs are defined by realistic, coherent, and adaptable convictions that reflect personal preferences (Dryden & Branch, 2008). A person's perspective can be distorted by irrational thoughts irrespective of factual events, advancing the development of depression (Ellis & Dryden, 1997; Beck, 1976). Irrational cognitions can contribute to a sense of insecurity and a perceived loss of control, which may have an adverse effect on an individual's life resulting in diminished mental health and impaired social relationships (Bridges & Harnish, 2010).

An ATTICA cohort study from 2002-2012 with 853 participants showed that irrational beliefs in seemingly healthy adults can lead to the production of symptoms associated with depression and anxiety (Vassou et al., 2021). A meta-analysis that examined the relationship between irrational beliefs and distress revealed that irrational beliefs exhibit a strongly positive relationship with multiple forms of mental distress, including general stress, anxiety, depression, anger, and guilt (Vîslă et al., 2016). A cross-sectional study of 327 family caregivers of patients with diabetes mellitus without adequate knowledge and skills to manage the health condition often face significant stress and discomfort, resulting in mental, physical, social, and economic burdens (Meiliana et al., 2024). Despite advancements in clinical treatment of patients with diabetes mellitus, such as simplified regimens, improved metabolic control, caregiver burden remains significantly high (Ripoll et al., 2018).

Critical Analysis

An individual's beliefs significantly influence their emotional well-being and health status, as these beliefs shape how individuals interpret and respond to life experiences (Toner, 2005). Low emotional stability is significantly associated with maladaptive schemas and various forms of irrational beliefs, highlighting the link between personality traits and cognitive distortions (Sava, 2009). These cognitive patterns are often embedded in deeply held beliefs and can predispose individuals to externalizing psychopathological conditions such as aggression and impulsivity (Stanculete et al., 2015). As demands for comfort, fairness, and approval increase (central components of irrational thinking) the capacity to regulate anger diminishes, resulting in heightened relational conflicts and greater aggressive expression (McDermut et al., 1997). Individuals with major depressive disorder and those experiencing dysphoria have been shown to endorse significantly higher levels of irrational beliefs compared to non-depressed individuals, reflecting a consistent cognitive vulnerability among depressed populations (Aneshensel & Avison, 2015).

Chronic stressors, rather than acute life events, have been identified as primary contributors to the onset and persistence of depressive symptoms and major depressive disorder, illustrating the role of prolonged cognitive-emotional strain in mental health outcomes (Toner, 2005).

A mediation study by Rabalais (2015) among individuals 18-45 years old shows that higher levels of irrational health beliefs are significantly associated with poorer engagement in health-promoting behaviours, suggesting that these beliefs can undermine an individual's ability to adopt effective health strategies. However, it was found that these irrational health beliefs did not mediate the relationship between perceived stress and health behaviours, indicating that while they are influential, they are not the primary explanatory mechanism linking stress to behavioural outcomes (Szentagotai & Jones, 2010). According to Pearlin et al. (1990), intrapsychic strains are largely shaped by other stressors in the caregiving context and are particularly tied to role-related tensions and psychological conditions such as anxiety and emotional fatigue. One significant source of intrapsychic strain is the inability to meet irrational demands, whether imposed internally or externally, which often leads to cognitive distortions such as awfulizing, a diminished sense of personal coping ability (low frustration tolerance), and tendencies to assign exaggerated blame to oneself or others (Suso-Ribera et al., 2016). These patterns persist even after accounting for catastrophizing, with low frustration tolerance and self-downing remaining significantly associated with adverse mental health outcomes, further illustrating the independent role of these irrational beliefs in psychological distress (Szentagotai & Jones, 2010).

A longitudinal mediation moderation study of caregiver burden, anxiety symptoms and coping responses among 132 carers among primary family caregivers of dependent elderly individuals revealed that caregiver burden displayed significant moderation and mediation (López-Martínez, 2024). Caregivers with burden experience long-term distress with the use of denial and substance use as a form of coping (López-Martínez, 2024; del-Pino-Casado et al., 2019). An avoidant coping mechanism is associated with maladaptive behaviours that adversely affect an individual's psychological well-being (Stanculete et al., 2015). Findings of a study by Kim, Knight & Longmire (2007) indicate that increased behavioural issues in care recipients are linked to declining mental health in caregivers, mediated by greater caregiver burden and reliance on avoidant coping strategies, which apply to physical health outcomes. An increase in the use of psychotropic drugs by caregivers is observed as a negative effect of caregiving (Sleath et al., 2005). Emotional exhaustion is commonly observed in individuals who suffer from anxiety, depression, and an inability to effectively manage stressors (Michielsen, 2004).

Literature Gaps and Study Rationale

While irrational beliefs have been linked to depression and anxiety, there is limited exploration of their mediating role in the relationship between caregiving burden and depression, especially in caregivers of individuals with diabetes mellitus. Although studies demonstrate the effectiveness of psychosocial interventions in addressing dysfunctional beliefs in caregivers (Márquez-González et al., 2007), their applicability in the Indian cultural context remains underexplored. Mitigating negative thoughts that might play a significant role in stress and depression is a primary concern to improve caregiver well-being (Pinquart & Sorensen, 2003). The effects of these stressors, shaped by both personal and social resources, persist after the caregiving role is alleviated (Pearlin, 1981). Cultural values influence the experience of stress and coping mechanisms through maladaptive cognitive patterns, rather than global caregiving appraisals (Losada et al., 2010).

The Rationale of the Study

Research Gap

It is crucial to examine the interplay of sociocultural and familial factors is essential to shift the individualistic perspective on stress and well-being among family caregivers (Domínguez-Guedea & Garcia, 2015). Cultural factors related to caregiver burden included cohabitation with the care recipient, low religious involvement, diminished familism, and weak social support networks (Maximiano-Barreto et al., 2022). In a developing country like Pakistan, behavioural challenges among the elderly, including instances of verbal aggression and sleep disturbances, were identified as predictors of an elevated caregiver burden, in addition to increased levels of physical and cognitive dependency (Sabzwari et al., 2016).

There is a necessity to formulate intervention strategies that take cultural dimensions into account to alleviate the adverse effects of caregiving on unpaid caregivers of elderly individuals (Maximiano-Barreto et al., 2022). Integrated nursing interventions and community initiatives are essential to address the welfare issues faced by family caregivers of older adults with chronic illnesses within local communities, as well as to provide support for these caregivers (Choi, Lee & Su, 2024). Psychosocial interventions can assist caregivers in developing more effective problem-focused and social support coping strategies, which are advantageous for alleviating caregiver burden (Chen et al., 2015). The impact of burden on subjective well-being is mitigated by the mediating role of sociocultural and familial resources that exist between burden and well-being (Domínguez-Guedea & Garcia, 2015).

Background of the Problem

Diabetes mellitus adversely affects the quality of life (QoL) of caregivers, as subjective caregiver burden is a significant risk factor for depressive symptoms and clinical depression, especially in elderly care (Anaforoğlu et al., 2012; del-Pino-Casado et al., 2019). Caregivers often employ problem-focused coping, emotion-focused coping, avoidance strategies, seeking social support, and dyadic coping to alleviate their burdens in their interactions with patients (Zhang et al., 2024). The well-being of primary caregivers of dependent elderly relatives declined with avoidance-oriented coping strategies and enhanced with active emotion-focused coping and coping mechanisms supported by social networks (Rodríguez-Pérez et al., 2017).

Significance

Psychosocial interventions aimed at altering cognitive responses to stress have the potential to enhance both the quality of life and the physical health of individuals within populations that are vulnerable to adverse health outcomes, such as caregivers (McNaughton et al., 1995). Rational Emotive Health Therapy (REHT) is found to significantly benefit depressed parent caregivers of children with intellectual and reading disabilities in developing nations, helping them adopt a rational perspective and address irrational beliefs related to disabilities and behaviour (Ugwuanyi et al., 2022). An intervention study by Márquez-González et al. (2007) targeted family caregivers of relatives with dementia and demonstrated an effective reduction in dysfunctional thoughts on caregiving, alleviated depressive symptoms, and enhanced their appraisal of problematic behaviour by their relatives. The effect of this intervention on depressive symptoms was found to be partially mediated through a reduction in dysfunctional thoughts.

Population or Context

The research population consists of primary family caregivers for elderly patients diagnosed with Type 2 diabetes in India, a country characterised by a significant prevalence of diabetes. Due to the insufficient availability of formal long-term care services and the constraints of healthcare infrastructure, the burden of caregiving predominantly falls on family members. In this context, caregiving practices are influenced by sociocultural norms, where the obligation to provide care is deeply embedded in family structures and societal expectations. The lack of formalized support mechanisms exacerbates the emotional and psychological difficulties encountered by caregivers.

Research Objectives

RO1: To assess the levels of depression among family caregivers of middle and older adults with diabetes mellitus.

RO2: To assess the level of caregiver burden among family caregivers of middle and older adults with diabetes mellitus.

RO3: To assess the irrational beliefs among family caregivers of middle and older adults with diabetes mellitus.

RO4: To analyse the relationship between caregiver burden and depression among family caregivers of middle and older adults with diabetes mellitus.

RO5: To analyse the relationship between caregiving burden and irrational beliefs among family caregivers of middle and older adults with diabetes mellitus.

RO6: To estimate the predicting role of depression on caregiver burden among family caregivers of middle and older adults with diabetes mellitus.

RO7: To determine the mediating role of irrational beliefs in the relationship between caregiver burden and depression among family caregivers of middle and older adults with diabetes mellitus.

Research Questions

RQ1: What is the level of depression among family caregivers of middle and older adults with diabetes mellitus?

RQ2: What is the level of caregiver burden among family caregivers of middle and older adults with diabetes mellitus?

RQ3: What are the irrational beliefs among family caregivers of middle and older adults with diabetes mellitus?

RQ4: What is the relationship between caregiving burden and depression among family caregivers of middle and older adults with diabetes mellitus?

RQ5: How does caregiving burden and irrational beliefs relate to each other in family caregivers of middle and older adults with diabetes mellitus?

RQ6: How does depression predict caregiver burden among family caregivers of middle and older adults with diabetes mellitus?

RQ7: How does irrational beliefs mediate the relationship between caregiving burden and depression among family caregivers of middle and older adults with diabetes mellitus?

Research Hypotheses

H_1: There will be a significant relationship between depression and caregiver burden among family caregivers of middle and older adults with diabetes mellitus.

H_2: There will be a significant correlation between irrational beliefs and caregiver burden among family caregivers of middle and older adults with diabetes mellitus.

H_3: There will be a significant prediction of caregiver burden from depression among family caregivers of middle and older adults with diabetes mellitus.

H_4: There will be a statistically significant mediating role of irrational beliefs in the relationship between depression and caregiver burden among family caregivers of middle and older adults with diabetes mellitus.

Research Methodology

Study Design

The present study is a quantitative study adopting a cross-sectional, correlational research design. A cross-sectional design is suitable for this study as it allows to study multiple variables at a given point in time. Correlational methods help in establishing the association between variables. This design is feasible as it allows for efficient data collection and analysis within the expected timeline of the study. Data will be collected using standardised questionnaires, and detailed sociodemographic profiles to gather participant information.

Operational Definitions

Caregiver Burden

Caregiver burden is the stress experienced by an individual who provides care for someone ill, disabled or elderly (Brinda et al., 2014; del-Pino-Casado, 2019).

Primary Caregiver

A primary caregiver is an individual who is primarily responsible for the care of a dependent patient or individual unable to perform daily activities of life (Meiliana et al., 2024).

Irrational Beliefs

Irrational beliefs are a set of negative, distorted ideas, assumptions, and responses an individual responds with, regardless of contradictory evidence (Pearlin, 1985).

Depression

Depression is a mental health condition marked by persistent sadness or loss of interest, along with symptoms like sleep issues, fatigue, difficulty concentrating, guilt, or thoughts of self-harm (Steer et al., 2000).

Study Population, Sample, and Procedures

The population for the study is family caregivers of middle and older adult patients (≥40 years) diagnosed with diabetes mellitus residing in India. These caregivers are typically responsible for managing their daily needs, including housekeeping, financial support, transportation, medication assistance, and ensuring adherence to dietary restrictions.

The sample of this study is a subset of this population, comprising 85 participants who were enlisted using a non-probability snowball sampling method.

Family caregivers of elderly individuals with diabetes mellitus were recruited from hospitals, clinics, and community health centres in India. Informed consent was taken from the concerned authority and the caregivers. Participants were approached based on their availability and willingness to participate. They were required to answer Zarit Burden Interview – Short, Beck Depression Inventory II, and Shortened General Attitude and Belief Scale in a hybrid mode. Ethical approval was obtained from the Institutional Ethics Committee.

Inclusion and Exclusion Criteria

The inclusion criteria for this study consist of family caregivers aged 18 and above, who are proficient in English and provide care to middle and elderly patients diagnosed with diabetes mellitus. Caregivers must have been providing care for at least six months and must be significant caregivers responsible for daily diabetes management living in India.

The exclusion criteria encompass caregivers who possess formal training in medicine or caregiving, and those responsible for patients exhibiting severe physical and cognitive impairments, where other health issues may overshadow the caregiving role.

Instruments

Zarit Burden Interview – Short (ZBI-12)

The ZBI-12 is a reliable (α=0.88) and valid (r=0.97) measure developed by Bedard et al. (2001). The scale was found to be a reliable (κ=0.96) and valid (α=0.64) measure among the Indian population (Sinha et al., 2020). It comprises 12 items that measure caregiver burden in two domains, personal strain, and role strain. Each item is evaluated on a five-point Likert scale (0 to 4) ranging from "Never" to "Nearly Always," with higher scores indicating greater perceived burden. Total scores range from 0 to 48.

Beck Depression Inventory (BDI-II)

The BDI-II developed by Beck et al. (1996) consists of 21 items that measure the severity of depressive symptoms. It has high internal consistency reliability (α=.90) and valid (r=0.73) measure that assesses each item on a four-point Likert scale (0 to 3) of frequency and severity from absent to severe with total scores ranging from 0 to 63 (Steer et al., 2000). Various studies have demonstrated that BDI-II has good psychometric properties in the Indian population with good test-retest reliability (r=.96; Sreevani et al., 2013) and high convergent validity (r = .73; Basker et al., 2007).

Shortened General Attitude and Belief Scale (SGABS)

The SGABS by Lindner et al. (1999) consists of 26 items that determine cognitive patterns of irrationality on a five-point Likert scale (1 to 5) varying from "Strongly disagree" to "Strongly agree." SGABS evaluates various dimensions of irrational beliefs (Lindner et al., 1999) with substantial test–retest reliability (α=.79) and construct validity (r=.77) with rationality, self-downing, need for achievement, need for approval, need for comfort, demand for fairness, and other downing subscales. The total scores range from 26 to 130. SGABS is a reliable (α=.86) measure in the Indian population (Modi & Thingujam, 2007).

Data Analysis

The study used descriptive and inferential statistics such as mean, standard deviation, Spearman correlational analysis, regression analysis and mediation analysis to analyse the data. Data collected was exported to Microsoft Excel and Statistical Package for Social Sciences (SPSS). Descriptive statistics such as mean, median and standard deviation were used to summarise the participants' demographics and scores. The normality of the data was checked through the Kolmogorov-Smirnov test. Among inferential statistics, Spearman correlational analysis was used to assess the strength of relationships between caregiver burden and irrational beliefs, and depression and irrational beliefs. Linear regression analysis was used to predict the role of depression on caregiver burden. The role of irrational beliefs in the relationship between caregiver burden and depression was determined with mediation analysis.

Ethical Considerations

Informed Consent

Written informed consent was obtained from the participants after providing information about the study's purpose, procedures, potential risks and benefits.

Right to Withdraw

Participants can withdraw from the study at any point in time, even after data collection, without the risk of penalty or any clarification.

Minimising Psychological Distress

Since the study focuses on subjects with high levels of stress and depression, measures were taken to avoid distress by any of the measuring items. In case of distress, access to resources or referrals to mental health services was provided.

Confidentiality

All data obtained is stored in a secure manner. It was anonymised to protect the participants' identity and access limited only to the researcher and institution.

Debriefing

After data collection, a clear explanation of the procedures and expected outcome of the study was provided. It was overseen that the participant returns with a similar psychological state they attended.

Conflict of Interest

The researcher has declared their affiliation to the institution to maintain the objectivity of the study.

Results

Figure 1
Gender of participants.

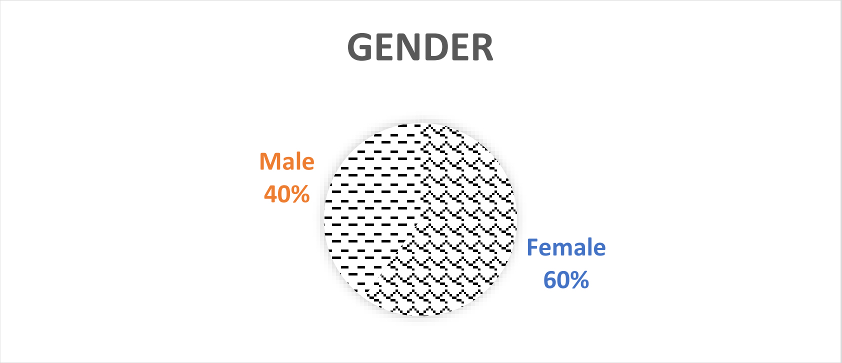

Figure 1 shows that the final sample consisted of 85 family caregivers of middle and older adults with diabetes mellitus. 51 of the participants sample were female (60%), with males comprising 34 (40%).

Figure 2
Age ranges of participants in years.

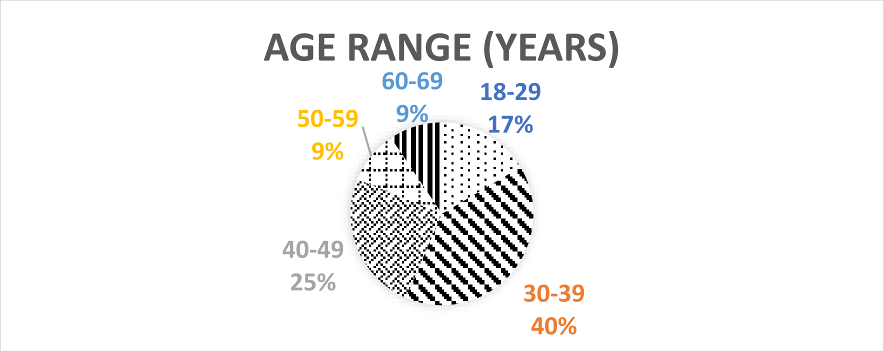

Figure 2 shows the sample in terms of age distribution, 14 (16.5%) were aged 18-29 years, 34 (40%) were between 30-39 years, 21 (24.7%) were aged 40-49 years, and 8 (9.4%) each were aged 50-59 and 60-69 years.

Figure 3

Household income of participants in rupees.

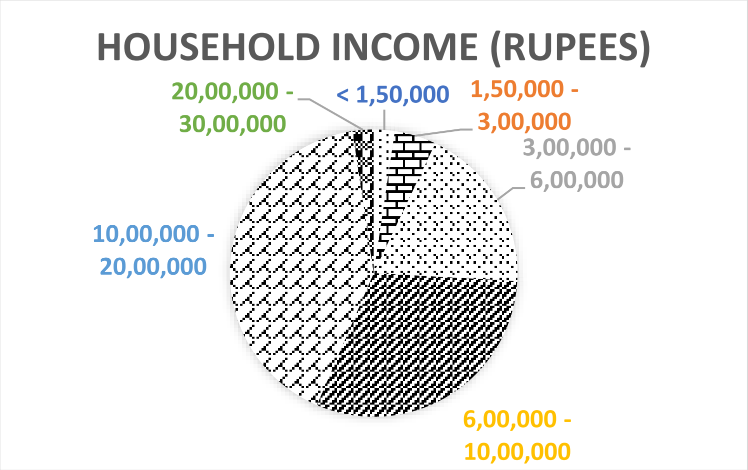

Figure 3 represents the household income, 2 (2.4%) reported an annual income below ₹1.5 lakhs, 4 (4.7%) earned between ₹1.5–3 lakhs, 16 (18.8%) earned between ₹3 to 6 lakhs, 26 (30.6%) reported incomes of ₹6 to 10 lakhs, 35 (41.2%) earned between ₹10 to 20 lakhs, and 2 (2.4%) fell in the ₹20 to 30 lakhs bracket.

Table 1

Descriptive Statistics for Depression, Caregiver Burden, and Irrational Beliefs (N = 85)

Variable	Mean (M)	SD	Median	Min	Max	Skewness	Kurtosis
Depression	36.48	10.46	40.00	10	56	−0.76	−0.22
Caregiver Burden	28.14	8.66	30.00	11	48	−0.16	−0.22
Irrational Beliefs	95.99	14.49	100.00	38	120	−1.24	2.68

Note. SD = Standard Deviation

Participants reported moderate levels of depression (M = 36.48, SD = 10.46), caregiver burden (M = 28.14, SD = 8.66), and irrational beliefs (M = 95.99, SD = 14.49). Depression and irrational beliefs showed moderate negative skew, while caregiver burden was approximately symmetric. Irrational beliefs also showed high kurtosis (2.68), indicating a peaked distribution.

Table 2

The results of normality are shown.

	Kolmogorov-Smirnov		**Shapiro-Wilk**	
	Statistics	Sig	Statistics	Sig
Caregiver Burden	.104	.023	.968	.034
Depression	.167	.001	.920	.000

Irrational Beliefs	.140	.000	.922	.000

Normality of the variables was assessed using the Kolmogorov-Smirnov test. Results showed that depression ($W = .167$, $p < .001$), caregiver burden ($W = .104$, $p = .023$), and irrational beliefs ($W = .140$, $p < .001$) all significantly deviated from normality.

Table 3

Spearman's Correlation Between Depression and Caregiver Burden (N = 85)

Variable	**1**	**2**
Depression		.421**
Caregiver Burden	.421**	

**p < .01

A Spearman's rank-order correlation was conducted to assess the relationship between depression and caregiver burden among family caregivers of middle and older adults with diabetes mellitus. Analysis indicated a significant, moderate positive correlation between depression and caregiver burden, $r(83) = .421$, $p < .001$.

Table 4

Spearman's Correlation Between Irrational Beliefs and Caregiver Burden (N = 85)

Variable	**1**	**2**
Irrational Beliefs		.395**
Caregiver Burden	.395**	

**p < .01

A Spearman's rank-order correlation was conducted to examine the relationship between irrational beliefs and caregiver burden among family caregivers of middle and older adults with diabetes mellitus. Analysis revealed a significant, moderate positive correlation between irrational beliefs and caregiver burden, $r(83) = .395$, $p < .001$.

Table 5

Regression Analysis: Influence of Depression on Caregiver Burden (N = 85)

Predictor Variable	**Std. beta value**	**t' value**	**Model Summary**
Depression	0.493	5.16*	$R = .493$ $R^2 = .24$ $F(1, 83) = 26.65$

*p < .001

A simple linear regression was conducted to determine if depression predicted caregiver burden. The overall model was significant, $F(1, 83) = 26.65$, $p < .001$, with depression explaining 24.3% of the variance in caregiver burden ($R^2 = .24$). Depression was found to be a significant predictor of caregiver burden, $\beta = .493$, $t(83) = 5.16$, $p < .001$.

Table 6

Summary of Mediation Analyses for 5000 Bootstrap Samples (Irrational Beliefs as Mediator Between Depression and Caregiver Burden)

Source	Path a	Path b	Path c (Total effect)	Path c′ (Direct effect)	Path c″ (Indirect effect)	Mediator effect	95% CI (LL, UL)
Depression	0.85***	0.09 (n.s.)	0.40***	0.33**	0.07 (n.s.)		(-.06, .20)

*** p <.01*

Note. CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit; n.s. = not significant.

The path a was found to be significant, with depression predicting the proposed mediator, irrational beliefs, $a = 0.85$, $t(83) = 7.06$, $p < .001$. However, caregiver burden was not significantly predicted by irrational beliefs when controlling for depression, represented by path b ($b = 0.09$, $t(82) = 1.21$, $p = .229$). Path c (total effect) and path c′ (direct effect) were both significant, with caregiver burden being predicted by depression both with and without controlling for irrational beliefs ($c = 0.408$, $t(83) = 5.16$, $p < .001$; $c' = 0.33$, $t(82) = 3.35$, $p = .001$). Finally, the 95% confidence interval based on 5000 bootstrap samples indicated that the indirect effect ($a \times b = 0.074$) was not statistically significant, as the CI included zero (-.06, .20). These results indicate that irrational beliefs did not function as a significant mediator in the relationship between depression and caregiver burden.

Discussion

The present study examined four hypotheses concerning the psychological experiences of family caregivers of individuals with diabetes mellitus. The first hypothesis, which proposed a significant association between depression and caregiver burden, was supported. This finding is consistent with earlier research indicating that caregivers experiencing depressive symptoms tend to report elevated levels of burden, potentially due to diminished psychological resources and a heightened perception of stress (D'Souza et al., 2022; Ganguly et al., 2021). The third hypothesis, which posited that depression would significantly predict caregiver burden, was also confirmed. This reinforces previous findings demonstrating that depressive symptoms serve as a critical psychological determinant of burden in caregiving contexts, particularly in the face of ongoing medical and emotional demands (Kumar et al., 2021; Ramamoorthy & Kar, 2023).

The second hypothesis, suggesting a positive association between irrational beliefs and caregiver burden, was supported as well. This finding is aligned with Stebbins and Pakenham (2001), who found that irrational beliefs significantly influence how individuals adapt to caregiving roles, especially in the context of traumatic brain injury. Additionally, Stebbins et al. (2000) emphasized the potential role of specific irrational schemas in caregiver adjustment, although their mediating influence remains underexamined. The fourth hypothesis, which proposed that irrational beliefs would mediate the relationship between depression and caregiver burden, was not supported in the present study. This suggests that while irrational beliefs are independently associated with both depression and burden, they may not account for the psychological mechanism linking the two.

The demographic profile of the participants, predominantly middle-aged women from middle-income households, aligns with existing literature highlighting the gendered nature of caregiving in collectivist societies such as India (Jacob et al., 2022; Jadhav et al., 2024). These findings underscore the sociocultural expectations placed on women to fulfill caregiving roles, often at the expense of their own mental health and socioeconomic stability.

This study employed simple linear regression to explore the predictive role of depression on caregiver burden. Linear regression has been previously demonstrated to be robust to violations of normality, particularly in samples exceeding 30 participants (Ghasemi & Zahediasl, 2012). These considerations provide statistical justification for the analytic approach adopted in the present study.

The lack of a mediating effect of irrational beliefs, despite their significant bivariate association with both depression and burden, may indicate that their role is more contextually constrained by unexamined variables such as coping style, social support, or cultural values. Additionally, it is possible that the construct of irrational beliefs, rooted in Western cognitive frameworks, may not adequately capture the culturally embedded beliefs and duties experienced by caregivers in Indian contexts (Mishra et al., 2023). This finding raises important questions regarding the cross-cultural applicability of standardised psychological models and the need for culturally nuanced conceptualisations of cognition and stress.

Summary and Conclusion

This study examined the mediating role of irrational beliefs in the relationship between depression and caregiver burden among family caregivers of older adults with diabetes mellitus in India. It aimed to address a gap in the literature by focusing on the irrational beliefs that may influence the psychological burden of caregiving, a topic that remains underexplored in Eastern cultural contexts. The use of validated tools, including the Zarit Burden Interview (ZBI), Beck Depression Inventory-II (BDI-II), and Shortened General Attitude and Belief Scale (SGABS), allowed for a structured assessment of the emotional and cognitive aspects of caregiving.

The results revealed significant positive correlations between caregiver burden and both depression and irrational beliefs. This suggests that caregivers experiencing higher levels of psychological distress may also exhibit stronger maladaptive thought patterns. However, the mediation analysis indicated that irrational beliefs did not significantly mediate the relationship between depression and caregiver burden. While irrational beliefs were independently associated with burden, they did not statistically explain the pathway through which depressive symptoms contributed to burden. This suggests the need to consider other potential explanatory variables.

Despite the absence of a significant mediation effect, the findings remain valuable in highlighting the complexity of caregiving experiences. Depression and irrational beliefs appear to function as distinct yet significant contributors to perceived caregiver burden, implying that both affective and cognitive interventions may be necessary to support caregivers. By focusing on diabetes, a chronic illness that requires sustained care but is less often the focus of caregiving research, the study broadens the existing literature, which has previously concentrated on conditions like dementia, traumatic brain injury (TBI) and cancer. This condition-specific focus offers a more nuanced understanding of the interaction between caregiving demands and psychological health.

The study makes a meaningful contribution to the field of caregiver research, particularly within the context of LMICs like India. The sociocultural dimensions of caregiving, such as familial duty, stigma, and lack of formal support, shape the emotional and cognitive experiences of caregivers. But these influences are not always adequately addressed in Western psychological models. This research highlights the need for more culturally grounded investigations that consider not only psychological constructs like irrational beliefs but also structural and interpersonal dynamics that contribute to caregiver well-being.

Implications

Practice

The results of this study hold considerable relevance for clinical practice, particularly in the realm of chronic illness care within the Indian context, where informal caregiving frequently constitutes the principal mode of patient support. The observed association between depressive symptoms and caregiver burden highlights the necessity of incorporating routine psychological assessments and mental health screenings into the management of chronic illnesses. It is imperative that healthcare professionals receive training to identify symptoms of caregiver distress and burnout, which are frequently neglected in clinical settings that centre primarily on patient care.

Evidence-based interventions such as REBT, REHT, and cognitive-behavioural approaches may prove effective in aiding caregivers to recognize and reframe maladaptive cognitions, including irrational beliefs that intensify psychological strain. The implementation of these interventions must be culturally attuned. In India, where caregiving is closely associated with traditional values of duty, sacrifice, and familism, therapeutic practices must be adapted to respect cultural expectations while simultaneously addressing emotional distress.

Education

From an educational standpoint, this study highlights the critical need to enhance the training of healthcare professionals by integrating caregiver mental health as a fundamental component of medical and nursing curricula. Academic programs should include content that fosters awareness of the psychological toll of caregiving, equips professionals to involve caregivers in care planning, and promotes culturally sensitive communication and referral practices. Accessible psychoeducational resources should be developed for caregivers through primary healthcare infrastructure, outreach initiatives, and digital platforms. These resources can provide caregivers with knowledge regarding the psychological demands of their role, strengthen adaptive coping mechanisms, and reduce reliance on maladaptive belief systems. Such efforts are vital in rural and marginalized communities, where formal mental health services are limited and cultural stigma surrounding psychological distress remains pervasive.

Research

From a research standpoint, the study underscores the need to broaden the theoretical models used in caregiving research. The non-significant mediating effect of irrational beliefs suggests that other factors, such as coping strategies, caregiver role identity, resilience, or social support, may more accurately explain the relationship between depression and burden. Future research should adopt longitudinal designs to explore causal pathways and consider mixed-methods approaches to capture the subjective realities of caregivers that quantitative measures may overlook.

Policy

The findings affirm the importance of formally recognizing informal caregivers as vital contributors to the healthcare system. There is a need for structured government support mechanisms that provide financial assistance, respite care, and mental health resources to caregivers, particularly in low-income and rural settings. Given the gendered nature of caregiving in India, policies must also incorporate a gender-sensitive approach to prevent the reinforcement of inequitable caregiving burdens. Integrating caregiver support into existing public health programs could help institutionalize caregiver well-being as part of chronic illness care. Evidence-informed policies must prioritize caregiver inclusion in healthcare planning, not only to improve caregiver outcomes but also to enhance the sustainability of patient care.

Delimitations

Delimitations are the intentional parameters set by the researcher to define the scope, boundaries, and focus of a study. These decisions are guided by the research objectives, theoretical framework, methodological choices, and practical considerations such as time, resources, and accessibility. Delimitations help contextualize the findings by specifying what the study includes, the targeted population, and its research design.

Several methodological and conceptual boundaries were intentionally established to ensure the feasibility and focus of the present study. The study population was delimited to family caregivers of individuals with diabetes mellitus, thereby excluding caregivers of individuals with other chronic or terminal illnesses. The research design was cross-sectional and correlational, selected to explore associations rather than causal or temporal dynamics. The study focused exclusively on irrational beliefs as a cognitive variable of interest, and excluded other relevant psychological constructs such as coping mechanisms, resilience, or spiritual beliefs. Data collection was restricted to a specific sociocultural region in India, reflecting a deliberate focus on localized caregiving experiences. Additionally, non-probability snowball sampling was employed as a strategy for recruiting participants from difficult-to-access populations. The study relied exclusively on quantitative self-report instruments, and qualitative methods were not incorporated.

The study was restricted to family caregivers of middle-aged and older adults diagnosed with diabetes mellitus. This was made to ensure homogeneity in caregiving demands, as diabetes typically involves chronic and progressive care needs. Including middle-aged adults, who may have fewer comorbidities or functional impairments compared to older adults, allowed the study to focus on the burden arising from diabetes care specifically, rather than confounding factors such as age-related disability or cognitive decline.

The research design was cross-sectional and correlational, selected to explore associations rather than causal or temporal dynamics. The data was collected from India, allowing for culturally sensitive interpretation of caregiver experiences, beliefs, and burdens. By focusing on a defined setting, the study offers insights grounded in local caregiving norms and healthcare realities, which are essential for informing regionally relevant interventions. The snowball sampling approach was particularly effective in engaging caregivers embedded within community or familial networks and helped ensure data collection pertinent to the research.

Limitations

The use of snowball sampling as the primary method of participant recruitment presents a significant limitation to the external validity of the study’s findings. This non-probabilistic sampling technique, while useful for accessing hard-to-reach populations, often results in a sample that may not adequately represent the broader population of caregivers. In particular, it may exclude individuals from marginalized or underrepresented socioeconomic backgrounds whose experiences of caregiving may differ substantially due to variations in access to resources, cultural norms, or systemic barriers. Consequently, the findings should be interpreted with caution when generalizing to the larger population of family caregivers in diverse socioeconomic or regional contexts.

The cross-sectional nature of the research design imposes further limitations, specifically in terms of establishing causal inferences. Since all data were collected at a single point in time, the study is unable to determine the directionality or temporal sequencing of the observed associations among caregiving burden, irrational beliefs, and depressive symptoms. Without longitudinal or experimental data, it remains unclear whether irrational beliefs lead to increased psychological distress, whether distress exacerbates cognitive distortions, or whether the relationship is bidirectional in nature. This restricts the ability to make definitive conclusions about underlying mechanisms or the progression of mental health challenges among caregivers over time.

Another important limitation stems from the exclusive reliance on self-report instruments for data collection. While these tools are efficient and widely used in psychological research, they are inherently susceptible to certain biases. Recall inaccuracies may have affected the precision of responses regarding psychological symptoms or caregiving burden, particularly when participants were asked to reflect on subjective experiences over time. Social desirability bias also poses a concern, especially in a sociocultural context where expressing psychological vulnerability may be stigmatized. As a result, caregivers may have underreported symptoms of depression or the extent of irrational beliefs, potentially leading to an underestimation of the strength or prevalence of the observed relationships.

The study did not incorporate clinical interviews, structured diagnostic assessments, or any form of objective mental health evaluation. This omission limits the interpretative value of the psychological distress reported by participants. While the findings suggest the presence of depressive symptoms and cognitive distortions, they cannot be equated with clinical diagnoses. Thus, the study’s conclusions regarding mental health outcomes must be viewed as indicative rather than definitive, particularly when distinguishing between subclinical psychological strain and diagnosable psychiatric conditions.

The use of regression analysis in the presence of non-normally distributed data has been statistically justified, but careful interpretation of the findings is essential. The robustness of regression coefficients and significance levels can be influenced by violations of normality, particularly in smaller samples or in the presence of outliers. Therefore, while the analysis was conducted in line with accepted statistical practices, the interpretation of results should acknowledge the potential influence of distributional issues on the accuracy and generalizability of the findings.

Suggestions for Future Research

Future investigations should aim to include larger, more demographically diverse samples drawn from various regions within India. This helps enhance the external validity of findings and offers a more comprehensive understanding of the psychological dimensions of caregiving across different sociocultural contexts. Stratified sampling methods may be employed to ensure adequate representation of caregivers from different settings, as well as across differing caregiving arrangements.

Longitudinal research designs are suggested to examine the temporal and potentially causal relationships between caregiver burden, depression, and irrational beliefs. The present study’s cross-sectional framework restricts conclusions about directionality and changes over time. Prospective studies following caregivers across key caregiving transitions, such as diagnosis, disease progression, or institutionalisation, may offer deeper insights into the evolving psychological burden and the role of cognitive factors across the caregiving trajectory.

In addition to quantitative methods, future research would benefit from incorporating qualitative approaches to explore the subjective experiences, belief systems, and cultural narratives that shape caregiver stress and coping. Semi-structured interviews or focus group discussions could illuminate the influence of cultural scripts, religious values, and gender norms on how caregiving is perceived and internalized, thereby complementing and contextualizing quantitative findings.

The potential moderating and mediating roles of psychological and contextual variables such as resilience, caregiving self-efficacy, perceived control, and the availability of social and familial support need to be examined. Investigating these constructs could clarify the mechanisms through which psychological distress is mitigated or exacerbated and contribute to the development of a more nuanced theoretical model of caregiver well-being. Evidence-based programs grounded in REBT, REHT or other cognitive-behavioural frameworks should be tested in community or primary care settings to assess their feasibility, acceptability, and efficacy in alleviating caregiver burden, particularly in low-resource contexts.

References

1. Ajay, S., Kasthuri, A., Kiran, P., & Malhotra, R. (2017). Association of impairments of older persons with caregiver burden among family caregivers: Findings from rural South India. *Archives of Gerontology and Geriatrics, 68*, 143-148. https://doi.org/10.1016/j.archger.2016.10.003
2. Anaforoğlu, İ., Ramazanoğulları, İ., Algün, E., & Kutanis, R. (2012). Depression, anxiety and quality of life of family caregivers of patients with type 2 diabetes. *Medical Principles and Practice, 21*(4), 360-365. https://doi.org/10.1159/000334622
3. Aneshensel, C. S., & Avison, W. R. (2015). The Stress Process: An Appreciation of Leonard I. Pearlin. Society and Mental Health, 5(2), 67-85. https://doi.org/10.1177/2156869315585388
4. Basker, M., Moses, P. D., Russell, S., & Russell, P. S. S. (2007). The psychometric properties of Beck Depression Inventory for adolescent depression in a primary-care paediatric setting in India. *Child and Adolescent Psychiatry and Mental Health*, *1*, 1-7. https://doi.org/10.1186/1753-2000-1-8
5. Beck, A. T. (1979). Cognitive therapy and the emotional disorders. Penguin.
6. Beck, A.T., Butler, A.C., Brown, G.K., Dahlsgaard, K.K., Newman, C.F. and Beck, J.S. (2001) Dysfunctional beliefs discriminate personality disorders. *Behaviour Research and Therapy, 39*(10), 1213-1225. https://doi.org/10.1016/S0005-7967(00)00099-1
7. Bédard, M., Molloy, D. W., Squire, L., Dubois, S., Lever, J. A., & O'Donnell, M. (2001). The Zarit Burden Interview: a new short version and screening version. *The gerontologist*, *41*(5), 652-657. https://doi.org/10.1093/geront/41.5.652
8. Blair M. (2016). Diabetes Mellitus Review. *Urologic nursing*, *36*(1), 27–36. DOI: 10.7257/1053-816X.2016.36.1.27
9. Bom, J., Bakx, P., Schut, F., & Van Doorslaer, E. (2019). The impact of informal caregiving for older adults on the health of various types of caregivers: a systematic review. *The Gerontologist, 59*(5), e629-e642. https://doi.org/10.1093/geront/gny137
10. Bridges, K. R., & Harnish, R. J. (2010). Role of irrational beliefs in depression and anxiety: a review. Health, 2(08), 862. doi:10.4236/health.2010.28130
11. Brinda, E. M., Rajkumar, A. P., Enemark, U., Attermann, J., & Jacob, K. S. (2014). Cost and burden of informal caregiving of dependent older people in a rural Indian community. *BMC Health Services Research, 14*, 1-9. https://doi.org/10.1186/1472-6963-14-207
12. Buschmann, T., Horn, R. A., Blankenship, V. R., Garcia, Y. E., & Bohan, K. B. (2018). The relationship between automatic thoughts and irrational beliefs predicting anxiety and depression. *Journal of*

Rational-Emotive & Cognitive-Behavior Therapy, *36*, 137-162. https://doi.org/10.1007/s10942-017-0278-y

13. Chan, E. Y., Glass, G., Chua, K. C., Ali, N., & Lim, W. S. (2018). Relationship between mastery and caregiving competence in protecting against burden, anxiety and depression among caregivers of frail older adults. *The Journal of nutrition, health and aging*, *22*(10), 1238-1245. https://doi.org/10.1007/s12603-018-1098-1
14. Chen, H. M., Huang, M. F., Yeh, Y. C., Huang, W. H., & Chen, C. S. (2015). Effectiveness of coping strategies intervention on caregiver burden among caregivers of elderly patients with dementia. *Psychogeriatrics*, *15*(1), 20-25. https://doi.org/10.1111/psyg.12071
15. Choi, J. Y., Lee, S. H., & Yu, S. (2024). Exploring Factors Influencing Caregiver Burden: A Systematic Review of Family Caregivers of Older Adults with Chronic Illness in Local Communities. *Healthcare, 12*(10), 1002. https://doi.org/10.3390/healthcare12101002
16. David, D., & Cramer, D. (2010). Rational and irrational beliefs in human feelings and psychophysiology. *Rational and irrational beliefs, 99*.
17. del-Pino-Casado, R., Rodriguez Cardosa, M., López-Martínez, C., & Orgeta, V. (2019). The association between subjective caregiver burden and depressive symptoms in carers of older relatives: A systematic review and meta-analysis. *PloS one, 14*(5), e0217648. https://doi.org/10.1371/journal.pone.0217648
18. del-Pino-Casado, R., Serrano-Ortega, N., López-Martínez, C., & Orgeta, V. (2019). Coping strategies and psychological distress in family carers of frail older people: A longitudinal study. *Journal of affective disorders, 256*, 517-523. https://doi.org/10.1016/j.jad.2019.06.038
19. Dhar, R. L. (2012). Caregiving for elderly parents: A study from the Indian perspective. *Home Health Care Management & Practice, 24*(5), 242-254. https://doi.org/10.1177/1084822312439466
20. DiGiuseppe, R. A., DiGiuseppe, R., Doyle, K. A., Dryden, W., & Backx, W. (2013). A practitioner's guide to rational-emotive behavior therapy. *Oxford University Press, USA*.
21. Domínguez-Guedea, M. T., & Garcia, A. O. (2015). Sociocultural and familial influences on the well-being of mexican older adults' family caregivers. *Research in Gerontological Nursing*, *8*(4), 188-196. https://doi.org/10.3928/19404921-20150219-02
22. Dryden, W. (2023). Fundamentals of rational emotive behaviour therapy: A training handbook. *John Wiley & Sons.*
23. Ellis, A., & Dryden, W. (2007). The practice of rational emotive behavior therapy. *Springer publishing company*.
24. George, L. K., & Gwyther, L. P. (1986). Caregiver well-being: A multidimensional examination of family caregivers of demented adults. *The Gerontologist, 26*(3), 253–259. https://doi.org/10.1093/geront/26.3.253
25. Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: a guide for non-statisticians. *International journal of endocrinology and metabolism*, *10*(2), 486. https://doi.org/10.5812/ijem.3505
26. Houle, J., Lauzier-Jobin, F., Beaulieu, M. D., Meunier, S., Coulombe, S., Côté, J., Lespérance, F., Chiasson, J. L., Bherer, L., & Lambert, J. (2016). Socioeconomic status and glycemic control in adult patients with type 2 diabetes: a mediation analysis. *BMJ open diabetes research & care, 4*(1), e000184. https://doi.org/10.1136/bmjdrc-2015-000184

27. Huang, E. S., Laiteerapong, N., Liu, J. Y., John, P. M., Moffet, H. H., & Karter, A. J. (2014). Rates of complications and mortality in older patients with diabetes mellitus: the diabetes and aging study. *JAMA internal medicine*, *174*(2), 251-258. https://doi.org/10.1001/jamainternmed.2013.12956
28. Isac, C., Lee, P., & Arulappan, J. (2021). Older adults with chronic illness–caregiver burden in the Asian context: a systematic review. *Patient Education and Counseling*, *104*(12), 2912-2921. https://doi.org/10.1016/j.pec.2021.04.021
29. Kaul, K., Tarr, J.M., Ahmad, S.I., Kohner, E.M., Chibber, R. (2013). Introduction to Diabetes Mellitus. In: Ahmad, S.I. (eds) Diabetes. *Advances in Experimental Medicine and Biology,* 771. Springer, New York, NY. https://doi.org/10.1007/978-1-4614-5441-0_1
30. Kaveeshwar, S. A., & Cornwall, J. (2014). The current state of diabetes mellitus in India. *The*
31. *Australasian medical journal*, *7*(1), 45–48. https://doi.org/10.4066/AMJ.2013.1979
32. Kim, J.-H., Knight, B. G., & Longmire, C. V. F. (2007). The role of familism in stress and coping processes among African American and White dementia caregivers: Effects on mental and physical health. *Health Psychology, 26*(5), 564–576. https://doi.org/10.1037/0278-6133.26.5.564
33. Kroenke, K., & Spitzer, R. L. (2002). The PHQ-9: A new depression diagnostic and severity measure. *Psychiatric Annals, 32*(9), 509–515. https://doi.org/10.3928/0048-5713-20020901-06
34. Kumar, A., Gangwar, R., Ahmad Zargar, A., Kumar, R., & Sharma, A. (2024). Prevalence of diabetes in India: A review of IDF diabetes atlas 10th edition. *Current diabetes reviews*, *20*(1), 105-114.
35. Lindner, H., Kirkby, R., Wertheim, E., & Birch, P. (1999). A brief assessment of irrational thinking: The shortened general attitude and belief scale. *Cognitive Therapy and Research*, *23*(6), 651-663. https://doi.org/10.1023/A:1018741009293
36. López-Martínez, C., Orgeta, V., Frías-Osuna, A., & del-Pino-Casado, R. (2024). Coping and anxiety symptoms in family carers of dependent older people: Mediation and moderation effects of subjective caregiver burden. *Journal of Nursing Scholarship, 56*(3), 371-381. https://doi.org/10.1111/jnu.12957
37. Losada, A., Marquez-Gonzalez, M., Knight, B. G., Yanguas, J., Sayegh, P., & Romero-Moreno, R. (2010). Psychosocial factors and caregivers' distress: effects of familism and dysfunctional thoughts. *Aging & mental health, 14*(2), 193–202. https://doi.org/10.1080/13607860903167838
38. Macavei, B. (2005). The Role of Irrational Beliefs in the Rational Emotive Behavior Theory of Depression. *Journal of Cognitive and Behavioral Psychotherapies, 5*(1), 73–81.
39. Márquez-González, M., Losada, A., Izal, M., Pérez-Rojo, G., & Montorio, I. (2007). Modification of dysfunctional thoughts about caregiving in dementia family caregivers: Description and outcomes of an intervention programme. *Aging & Mental Health, 11*(6), 616–625. https://doi.org/10.1080/13607860701368455
40. Matthews, N. R., Porter, G. J., Varghese, M., Sapkota, N., Khan, M. M., Lukose, A., ... & Walker, R. (2023). Health and socioeconomic resource provision for older people in South Asian countries: Bangladesh, India, Nepal, Pakistan and Sri Lanka evidence from NEESAMA. *Global health action*, *16*(1), 2110198. https://doi.org/10.1080/16549716.2022.2110198
41. Maximiano-Barreto, M. A., Alves, L. C. D. S., Monteiro, D. Q., Gratão, A. C. M., Pavarini, S. C. I., Luchesi, B. M., & Chagas, M. H. N. (2022). Cultural factors associated with burden in unpaid caregivers of older adults: A systematic review. *Health & Social Care in the Community*, *30*(6), e3629-e3642. https://doi.org/10.1111/hsc.14003

42. McDermut, J. F., Haaga, D. A., & Bilek, L. A. (1997). Cognitive bias and irrational beliefs in major depression and dysphoria. *Cognitive Therapy and Research, 21*, 459-476. https://doi.org/10.1023/A:1021936427625
43. McNAUGHTON, M. E., Patterson, T. L., Smith, T. L., & Grant, I. (1995). The relationship among stress, depression, locus of control, irrational beliefs, social support, and health in Alzheimer's disease caregivers. *The Journal of Nervous and Mental Disease, 183*(2), 78-85. https://doi.org/10.1097/00005053-199502000-00003
44. Meiliana, S. W., Hakim, F. O., Hayati, Y. S., Kristianingrum, N. D., Kartika, A. W., & Sandi, P. S. (2024). The Burden of Family Caregivers in the Care of Type 2 Diabetes Mellitus Patients: A Literature Review. *Journal of Rural Community Nursing Practice*, *2*(1), 40-47. https://doi.org/10.58545/jrcnp.v2i1.207
45. Michielsen, H. J., Willemsen, T. M., Croon, M. A., de Vries, J., & Van Heck, G. L. (2004). Determinants of general fatigue and emotional exhaustion: a prospective study. *Psychology & Health, 19*(2), 223–235. https://doi.org/10.1080/08870440310001627135
46. Modi, D., & Thingujam, N. S. (2007). Role of anger and irrational thinking on minor physical health problems among married couples. *Journal of the Indian Academy of Applied Psychology*, *13*(1), 119-128.
47. O'Donohue, W., Fisher, J. & Hayes, S. (2009). Cognitive Behavior Therapy: Applying Empirically Supported Techniques in Your Practise. New Jersey: John Wiley&Sons.
48. Pearlin, L. I. (1985). Social process and social supports. In S. Cohen and S. L. Syme (Eds.), *Social support and health*. New York: Academic Press. https://psycnet.apa.org/doi/10.1037/0033-2909.98.2.310
49. Pearlin, L. I. (1989). The sociological study of stress. *Journal of health and social behavior*, 241-256. https://doi.org/10.2307/2136956
50. Pearlin, L. I., Menaghan, E. G., Lieberman, M. A., & Mullan, J. T. (1981). The stress process. *Journal of Health and Social behavior*, 337-356. https://psycnet.apa.org/doi/10.2307/2136676
51. Pearlin, L. I., Mullan, J. T., Semple, S. J., & Skaff, M. M. (1990). Caregiving and the stress process: An overview of concepts and their measures. *The gerontologist, 30*(5), 583-594. https://doi.org/10.1093/geront/30.5.583
52. Pinquart, M., & Sörensen, S. (2003). Differences between caregivers and noncaregivers in psychological health and physical health: a meta-analysis. *Psychology and aging, 18*(2), 250. https://doi.org/10.1037/0882-7974.18.2.250
53. Pruchno, R. A., & Resch, N. L. (1989). Aberrant behaviors and Alzheimer's disease: Mental health effects on spouse caregivers. *Journal of Gerontology*, *44*(5), S177-S182. https://doi.org/10.1093/geronj/44.5.S177
54. Rabalais, T. L. (2015). Understanding the Relationship of Stress, Irrational Health Beliefs, and Health Behaviours Among Adults 18-45 Years of Age (Doctoral dissertation, Walden University).
55. Ripoll, J. M. S., Llinares, V. J. S., Pérez, M. J. R., Cervera, C. G., Cruz, J. M. N., Atiénzar, P. E., ... & Rico, P. R. (2018). Caregiver burden in the management of frail elderly patients with diabetes in internal medicine. *Health*, *10*(10), 1383. https://doi.org/10.4236/health.2018.1010107
56. Rodríguez-Pérez, M., Abreu-Sánchez, A., Rojas-Ocaña, M. J., & del-Pino-Casado, R. (2017). Coping strategies and quality of life in caregivers of dependent elderly relatives. *Health and Quality of life Outcomes, 15*, 18. https://doi.org/10.1186/s12955-017-0634-8

57. Sabzwari, S., Badini, Munir A., Fatmi, Z., Jamali, T. & Shah, S. (2016). Burden and associated factors for caregivers of the elderly in a developing country. *EMHJ-Eastern Mediterranean Health Journal, 22* (6), 394 - 403. World Health Organization, Regional Office for the Eastern Meditteranean. https://iris.who.int/handle/10665/259976
58. Sava, F. A. (2009). Maladaptive schemas, irrational beliefs, and their relationship with the Five-Factor Personality model. *Journal of Cognitive & Behavioral Psychotherapies, 9*(2).
59. Sinha, A., Sanyal, D., Roy, S., & Bhattacharya, S. (2020). Validation of Zarit Care Giver Burden Scale among Primary Care Givers of persons with Dementia in Bengali: Study from a Tertiary Care Hospital of Eastern India. *IOSR Journal of Dental and Medical Sciences. 19*. 16-19. DOI: 10.9790/0853-1901191619.
60. Sleath, B., Thorpe, J., Landerman, L. R., Doyle, M., & Clipp, E. (2005). African-American and White caregivers of older adults with dementia: differences in depressive symptomatology and psychotropic drug use. *Journal of the American Geriatrics Society, 53*(3), 397-404. https://doi.org/10.1111/j.1532-5415.2005.53155.x
61. Sreevani, R., Reddemma, K., & NIMHANS, B. (2013). Quality of life and functional impairment among depressive patients in a psychiatric outpatient setting in India. *Dysphrenia*, *4*(2).
62. Stanculete, M. F., Matu, S., Pojoga, C., & Dumitrascu, D. L. (2015). Coping strategies and irrational beliefs as mediators of the health-related quality of life impairments in irritable bowel syndrome. *Journal of Gastrointestinal & Liver Diseases*, *24*(2). http://dx.doi.org/10.15403/jgld.2014.1121.242.strt
63. Steer, R. A., Rissmiller, D. J., & Beck, A. T. (2000). Use of the Beck Depression Inventory-II with depressed geriatric inpatients. *Behaviour research and therapy*, *38*(3), 311–318. https://doi.org/10.1016/s0005-7967(99)00068-6
64. Suso-Ribera, C., Jornet-Gibert, M., Ribera Canudas, M. V., McCracken, L. M., Maydeu-Olivares, A., & Gallardo-Pujol, D. (2016). There’s more than catastrophizing in chronic pain: low frustration tolerance and self-downing also predict mental health in chronic pain patients. *Journal of Clinical Psychology in Medical Settings*, *23*, 192-206. https://doi.org/10.1007/s10880-016-9454-y
65. Szentagotai, A., & Jones, J. (2010). The behavioral consequences of irrational beliefs. *Rational and irrational beliefs: Research, theory, and clinical practice*, 75-97.
66. Thrush, A., & Hyder, A. (2014). The neglected burden of caregiving in low-and middle-income countries. *Disability and health journal, 7*(3), 262-272. https://doi.org/10.1016/j.dhjo.2014.01.003
67. Toner, B. B. (2005). Cognitive-Behavioral Treatment of Irritable Bowel Syndrome. *CNS Spectrums, 10*(11), 883–890. doi:10.1017/S1092852900019854
68. Ugwuanyi, L. T., Egbe, C. I., Nnamani, A. P., Ubah, J. C., Adaka, T. A., Adama, G. N., ... & Otu, M. S. (2022). Rational emotive health therapy for the management of depressive symptoms among parents of children with intellectual and reading disabilities in English language. *Medicine, 101*(32), e30039. DOI: 10.1097/MD.0000000000030039
69. Vassou, C., Georgousopoulou, E. N., Chrysohoou, C., Yannakoulia, M., Pitsavos, C., Cropley, M., & Panagiotakos, D. B. (2021). Irrational beliefs trigger depression and anxiety symptoms, and associated with increased inflammation and oxidative stress markers in the 10-year diabetes mellitus risk: the ATTICA epidemiological study. *Journal of diabetes and metabolic disorders, 20*(1), 727–739. https://doi.org/10.1007/s40200-021-00805-3

70. Vîslă, A., Flückiger, C., Grosse Holtforth, M., & David, D. (2016). Irrational beliefs and psychological distress: A meta-analysis. *Psychotherapy and psychosomatics*, *85*(1), 8-15. https://doi.org/10.1159/000441231
71. Viswanathan, V., & Rao, V. N. (2013). Problems associated with diabetes care in India. *Diabetes Management, 3*(1), 31. DOI: 10.2217/dmt.12.62.
72. Yustisia, N., Aprilatutini, T., Utama, T. A., & Masdar, M. (2023). The Burden experience of Family Caregiver of older adults with chronic Illness. *Research in Community and Public Health Nursing*, *34*(2), 85-95. https://doi.org/10.12799/rcphn.2022.00304
73. Zan, H., Meng, Z., Li, J., Zhang, X., & Liu, T. (2024). Factors associated with quality of life among elderly patients with type 2 diabetes mellitus: the role of family caregivers. *BMC Public Health*, *24*(1), 539. https://doi.org/10.1186/s12889-024-17917-z
74. Zarit, S. H., Todd, P. A., & Zarit, J. M. (1986). Subjective burden of husbands and wives as caregivers: a longitudinal study. *The Gerontologist*, *26*(3), 260-266. https://doi.org/10.1093/geront/26.3.260
75. Zhang, N., Tian, Z., Liu, X., Yu, X., & Wang, L. (2024). Burden, coping and resilience among caregivers for patients with chronic obstructive pulmonary disease: An integrative review. *Journal of Clinical Nursing, 33*(4), 1346-1361. https://doi.org/10.1111/jocn.16954