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DEPRESSION, ANXIETY, AND BURNOUT AMONG CAREGIVERS OF PATIENTS WITH ALZHEIMER'S DISEASE: A COMPARATIVE ANALYSIS

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ABSTRACT

Caregiving is an emotionally taxing and physically challenging role that can result in psychological distress and burnout. The finding suggests an important gender and age model in studying the association between psychological distress and caregiver burnout. Standardized psychological measures were used to assess a sample of 300 caregivers, whose data were analysed statistically via correlation, independent sample t-tests, and ANOVA. Conclusion: The results show a significant relationship between depression, anxiety and caregiver burnout, as well that female and middle-aged caregivers had higher levels of emotional exhaustion. The analysis of the correlation also showed a positive significant relation between psychological distress and burnout, confirming previous studies indicating the negative effects of caregiving on mental well-being. Independent sample t-tests indicated that female caregivers reported significantly more distress than male caregivers; while an ANOVA demonstrated that middle aged caregivers were at higher risk of burnout than younger or older caregivers. These results emphasize the need for gender-sensitive and age-targeted programs to help caregivers' mental health. Longitudinal designs are required in future studies to better understand causal relationships, and the efficacy of psychological approaches at alleviating caregiver burden. Moreover, the provision of digital health tools, such as telemedicine and mobile-based solutions, may contribute to mental health support. Targeted interventions and policy initiatives to prevent caregiver burnout can improve the quality of care caregivers provide, as well as their well-being.

Keywords: *Caregiver burnout, psychological distress, depression, anxiety, gender differences, age-related disparities, mental health interventions, caregiving burden, emotional exhaustion, telehealth interventions.*

INTRODUCTION

A diagnosis of this dementia, which affects the person's social behaviour and orientation, places a heavy emotional, psychological and physical burden on the caregiver, who suffers from greater depression, anxiety and burnout than caregivers of other dementia patients. In view of the progressive cognitive decline and behavioral changes inherent to Alzheimer's, the patient requires ongoing monitoring, support and emotional care, creating a significant burden for caregivers (Franza et al., 2021). As the disease progresses, caregivers must still contend with troubling symptoms, including agitation, aggression, confusion, and wandering, everything needing to be done with significant vigilance and flexibility. The demanding exigency of the caregiving role creates chronic stress that compromises mental and physical health and underlies increased susceptibility to conditions such as hypertension and cardiovascular disease as well as cognitive decline among caregivers themselves (Carbone et al., 2021). Additionally, the economic demands associated with caregiving commitments, including medical costs, home adaptations, and loss of wage earning opportunities, increase psychological anguish, leading to frustration and burnout (Ornstein et al., 2022). Since caregiving for Alzheimer's patients is both a complex and multidimensional responsibility, understanding the mental health challenges this group experiences and identifying risk factors associated with their psychological burden is imperative.

These issues have been further compounded by the COVID-19 pandemic, which has increased isolation, disrupted healthcare, and reduced access to formal and informal support networks and services, adding to the psychological burden on caregivers. The combination of social distancing measures and limitations in both in-person healthcare visits and caregiver assistance programs has resulted in diminished respite/changing support time (Carbone et al., 2021). Specifically, studies have shown that caregivers now face higher levels of anxiety and burnout as a result of their prolonged exposure to multiple stressors without enough necessary relief, emphasizing the immediate necessity for accessible and sustainable caregiver support systems (Franza et al., 2021). In particular, high levels of emotional distress among caregivers were exacerbated by fears that they would put the health of their vulnerable loved ones at risk, upon which they were entirely dependent, thereby compounding levels of stress that were already prevalent due to caring responsibilities. The limited institutional support during this time highlighted the need for innovative and flexible caregiving solutions that could be administered via digital health interventions, telemedicine and virtual support groups to reduce the psychological burden placed on caregivers (Zarit et al., 2023).

Meeting the mental health needs of caregivers is critical for the well-being of both caregivers themselves and the quality of care they provide to patients with Alzheimer's. Cognitive-behavioral therapy, mindfulness-based stress reduction, and integrated psychological methods are proofed to effectively to reduce depression, anxiety, and emotional exhaustion among primary caregivers (Liu et al., 2022). Such initiatives equip caregivers with coping strategies, stress management techniques, as well as emotional support, thereby bolstering their resilience and mental well-being. Besides, informal interventions such as social support from families, friends and community organisations are important for reducing caregiver burden and enhancing well—being (Revenson et al., 2021). Services such as respite care, caregiver training programs, and formalized peer support groups offer additional avenues to assist caregivers in managing their responsibilities while protecting their mental and physical wellbeing. These resource issues have highlighted the role that culturally sensitive outreach strategies can play in encouraging caregivers to access available support systems (Ornstein et al., 2022) as the availability to do so falls short; many caregivers do not seek help outside their homes, often grappling with cultural attitudes, feelings of guilt (Ornstein et al., 2022); not knowing who to turn to, and/or a sense of becoming a burden.

The knowledge of the magnitude and impact of depression, anxiety and burnout among caregivers of individuals with Alzheimer's is critical to the construction of evidence-based interventions and policy frameworks. Mental health screening, psychological support services, and stress management training should be integrated into all caregiving models as part of routine practice and not just for individuals who request it as standard practice. Therefore, targeted strategies to improve the resilience and wellbeing of caregivers can be effectively formulated based on this factorization process, which will result in identifying high-risk caregivers and acting on individual stressors (Zarit et al., 2023). Moreover, promoting crossdisciplinary collaborations among healthcare providers, mental health specialists, and social support groups could establish a more integrated model of caregiver assistance. Policy work, such as paid leave and caregiver financial support programs, and more funding for respite services, can help lessen the psychological strain of caregiving. Offering practical sustainability measures for caregivers ensures that the needs of both caregivers and Alzheimer's patients are adequately addressed, ultimately enhancing their quality of life.

Problem Statement

The rising number of people with Alzheimer's disease has resulted in a tremendous task for caregivers who percent their depression, anxiety, and burnout. Although high levels of psychological distress among caregivers have been reported, there is a paucity of comparative analyses examining differences in mental health outcomes by demographic, social and contextual variables. Existing studies tend to under-examine the variation in caregiving stressors among diverse caregiver populations, making it challenging to create targeted interventions. We see this study as an opportunity to fill that gap, so we aim to analyze the psychological burden on caregivers of Alzheimer's patients and define critical elements of risk factors so that we can better advise methods to improve the well-being of caregivers.

Significance of the Study

A better understanding of the psychological impact of caregivers for Alzheimer's patients is important to creating interventions that produce better outcomes for both the caregiver and the patient. Understanding the stressors associated with depression, anxiety, and burnout is crucial to producing evidence-based policies and mental health support programs for caregivers. These findings will help improve psychosocial support systems and healthcare strategies that address the particular needs of caregivers, by identifying factors contributing to caregiver distress. In conclusion, this study may help improve caregiver well-being that ultimately ensures sustainable and high-quality care for elderly with AD.

Aim of the Study

The main goal of this study was to assess depression, anxiety, and burnout in caregivers of patients with Alzheimer's disease, and to examine the important psychological and contextual factors that affect their mental condition. The current study aims to investigate differences in caregiver distress by demographic characteristics, duration of caregiving, social support, and coping strategies. This approach will help in designing targeted mental health interventions to reduce caregiver burden. The results will help form evidence-based policy recommendations to improve caregiver support services and further advancements in quality of care for persons living with Alzheimer's disease.

Methodology

Methods: This is a quantitative cross-sectional study to measure depression, anxiety, and burnout among caregivers of patients with Alzheimer disease. The cross-sectional approach was appropriate to obtain data at a distinct time point, in order to investigate the associations of caregiver characteristics with psychological distress. Valid and reliable psychometric tools were used for measurement of mental health variables, and because of quantitative design, statistical analysis was performed for important patterns and relationships. The respondents were based in three major cities of Pakistan, namely Lahore, Islamabad and Karachi, which were selected based on their exhibiting a variety of different types of population, the availability of healthcare facilities for Alzheimer's patients, and the presence of caregiver support networks. Having participants from detached urban settings guaranteed a variety of caregivers from different socio-economic strata and cultural settings. 300 participants were recruited of caregivers who care for Alzheimer's patients, using a purposive non-probability sampling technique, as determined via the G*Power sample size calculator. Inclusion criteria were caregivers who had over 6 months of caregiving experience, were aged ≥ 18 years, and were the main caregivers for patients with Alzheimer's; while professional caregivers, those with severe psychiatric disorders, and occasional caregivers were excluded.

The demographic sheet collected information about participants such as age, gender, education level, relationship with the patient, caregiving duration, employment status and socio-economic background. Caregiver depression was measured using the Patient Health Questionnaire-9 (PHQ-9) by Kroenke, Spitzer, and Williams (2001), a nine-item measure that assessed severity of depressive symptoms (Cronbach's α = 0.89). For anxiety, participants completed the Generalized Anxiety Disorder-7 (GAD-7 Spitzer, Kroenke, Williams, and Löwe, 2006), a seven-item questionnaire measuring the severity of anxiety symptoms (Cronbach's α = 0.92). Burnout was measured using the Maslach Burnout Inventory-Human Services Survey (MBI-HSS) developed by Maslach and Jackson (1981). This 22-item scale is made up of three subscales: emotional exhaustion, depersonalization, and reduced personal accomplishment, which have demonstrated Cronbach's alpha values between 0.80 to 0.90 (Maslach et al., 2016). All data were analyzed with the SPSS Version 28 data analysis system and descriptive statistics (mean, standard deviation, and ranges of values) were calculated, and normality was evaluated by skewness and kurtosis. Cronbach's alpha was used for reliability; Pearson Product Moment Correlation was used to examine relationships between variables and linear regression analysis to determine predictors of depression, anxiety and burnout with inferential statistics. Independent sample t-test and one-way ANOVA were used to analyze group differences across demographic and caregiving-related factors.

Data were collected after approval by the Institutional Review Board (IRB) of the relevant research institution. All participants provided informed consent to participate in the study, including the understanding of the study's purpose. Permission was also obtained from healthcare centres and Alzheimer's support organisations to recruit participants. Caregivers were informed of the study details, and completed structured self-report questionnaires in-person or online to increase accessibility. Ethical considerations involved ensuring confidentiality and anonymity through the use of unique identification codes assigned to participants instead of personal identifiers, as well as allowing participants to withdraw from the study at any time without penalty. This added an extra layer of interest in collecting appropriate information from under extreme beta errors, while ensuring that such errors were documented in a way that did not cause undue strain on a caregiver, and allowing for referrals to a psycho for psychological support as necessary. The study was conducted following the ethical principles of the American Psychological Association (APA) and the guidelines established by the institutional ethical boards.

Result

Table 1: *Demographic Characteristics of Participants (N = 300)*

Variable	Frequency (n)	Percentage (%)
Gender		
Male	90	30
Female	210	70
Age Group		
18-39 years	90	30
40-60 years	165	55
Above 60 years	45	15
Education Level		
No Formal Education	45	15
Secondary Education	120	40
University Degree	105	35
Postgraduate	30	10
Employment Status		
Employed	120	40
Unemployed	180	60
Caregiving Duration		
Less than 1 year	60	20

1-2 years	45	15
More than 2 years	195	65

Three hundred caregivers took part in the study with demographic characteristics in Table 1. Most of the participants were women (70%) and majority of the caregivers were in the 40–60 years of age (55%). Educational levels differed, with 40% achieving secondary education and 35% completing university level education, About 60 percent of caregivers were unemployed and 65 percent were primary caregivers for over two years.

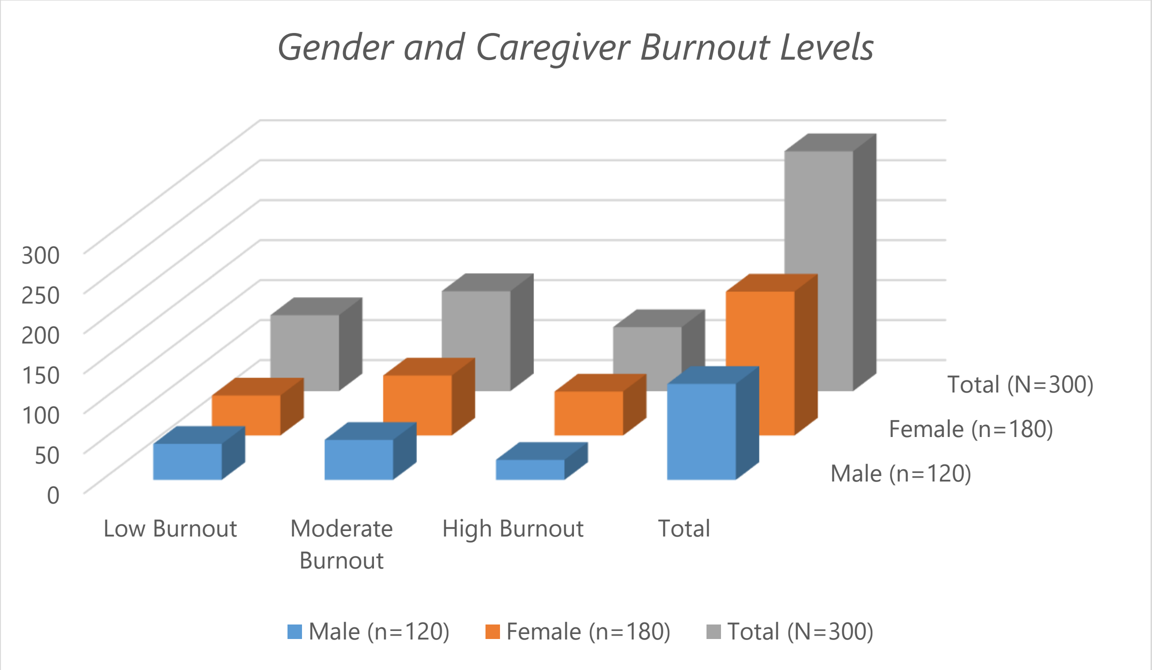

Table 5 shows the gender and caregiver burnout level cross-tabulation results, suggesting a greater percentage of female (n=55/180) than male (n=25/120) caregivers regarded their burnout level as high. Most caregivers — regardless of gender — reported being moderately burned out, suggesting caregiving takes a toll on mental health across the board.

Table 2: *Correlation between Study Variables*

Variable	Mean	SD	1	2	3
1. Depression	14.8	5.2	-	-	-
2. Anxiety	12.3	4.8	0.68**	-	-
3. Burnout	22.1	6.5	0.72**	0.64**	-

Note: $^{**}p < 0.01$

Table 2 shows the correlation of Depression, Anxiety, and Burnout of caregivers. Overall, depression and anxiety positively correlated with depression and burnout ($r = 0.72$, $p < 0.01$) as well as anxiety and burnout ($r = 0.64$, $p < 0.01$); thus, more psychological distress means higher caregiver burnout.

Table 3: *Independent Sample t-test Comparing Male and Female Caregivers*

Variable	Male (n = 90)	Female (n = 210)	t(298)	p-value
Depression	13.9 (5.0)	15.2 (5.3)	2.24	0.026*
Anxiety	11.6 (5.0)	12.7 (4.6)	2.08	0.039*
Burnout	20.5 (6.8)	23.4 (6.3)	3.12	0.002**

Note: $^{*}p < 0.05$, $^{**}p < 0.01$

We conducted an independent sample t-test (Table 3) between male and female caregivers on depression, anxiety, and burnout. Results show that female caregivers reported significantly higher depression (M = 15.2, SD = 5.3) than male caregivers (M = 13.9, SD = 5.0), t(298) = 2.24, p < 0.05. Females also reported more anxiety (M = 12.7, SD = 4.6) than males (M = 11.6, SD = 5.0), [t(298) = 2.08, p < 0.05]. Female caregivers (M = 23.4, SD = 6.3) also experienced higher levels of burnout than male caregivers (M = 20.5, SD = 6.8), t(298) = 3.12, p < 0.01.

Table 4: *One-Way ANOVA for Caregiver Burnout across Age Groups*

Source	SS	df	MS	F	p-value
Between Groups	470.3	2	235.2	5.82	0.003**
Within Groups	12022.5	297	40.5		
Total	12492.8	299			

Note: **p < 0.01

A one-way ANOVA (Table 4) was performed to compare caregiver burnout by age group. Results indicated a significant effect of age on burnout scores, F(2, 297) = 5.82, p < 0.01. Post hoc analyses with Tukey's test showed that 40–60-year-old caregivers reported considerably higher burnout scores (M = 23.8, SD = 6.1) than younger caregivers (M = 20.2, SD = 6.5) [p < 0.01].

Discussion

The results of this study showed a significant association between psychological distress and caregiver burnout, female caregivers, and middle-age which had high levels of emotional exhaustion. These results are consistent with research that reported that female caregivers are more affected psychologically as a result of traditional gender roles and greater caregiving responsibilities (García-Campayo et al., 2021). Middle-aged caregivers are often experiencing high levels of burnout due to the challenges of juggling both a career and providing long-term care (Pinquart & Sörensen, 2022). These findings underscore the need for gender-sensitive, age-appropriate mental health interventions that are sensitive to the distinct challenges of caregivers.

The study also found significant correlations between depression, anxiety, and burnout among caregivers, with increased psychological distress leading to increased emotional exhaustion, indicating a vicious write up cycle. These findings support the existing literature that has found a link between higher depressive symptoms in caregivers and increased risk of burnout, with subsequent worse psychological reactions (Bauer et al., 2023). According to the job demands-resources (JD-R) model, caregivers who have limited psychological resources will feel more intense emotional fatigue when confronting excessive caregiving demands (Schneider et al., 2021). Interventions in the future should provide psychological support to caregivers to minimize the negative impact of emotional distress on their well-being.

The results of the independent sample t-test confirm the difference in caregiver burden for females, who had a significantly higher rate of depression, anxiety, and burnout than their male counterparts. The results align with research highlighting that women generally have a stronger emotional involvement in caregiving and, thereby, are more vulnerable to emotional exhaustion (Lindauer & Harvath, 2021). Higher levels of burnout among female caregivers indicate the necessity of gender-sensitive mental health interventions, such as established support networks and stress-reduction techniques, to alleviate burden of care.

ANOVA results also show significantly higher levels of burnout among caregivers aged 40–60 years compared to caregivers younger than 40 years. This identifies is consistent with literature in the field finding that middle-aged caregivers often face increased stress from juggling work, family, and caregiving (Garrido-Hernansaiz et al., 2023). In contrast, older caregivers may have gained more effective coping strategies with age, which might account for their relatively reduced burnout rates. Conclusions: These findings emphasize the importance of age-specific interventions to support caregivers at different points in life and to mitigate the long-term psychological consequences of caregiving burdens.

In summary, the results show they need to offer comprehensive psychological support programs to help caregivers cope with burn-out and related mental health issues. Considering the strong correlation between depression, anxiety, and burnout, mental health professionals should include targeted interventions such as cognitive-behavioral therapy (CBT) and stress-reduction programs within caregiver support initiatives (Del-Pino-Casado et al., 2023). In addition, policymakers should consider offering financial and emotional support to caregivers, many of whom are women and middle-aged adults, so as to improve their well-being and their ability to care.

Future Directions

Future studies need to be longitudinal to explore the temporal dynamics of caregiver burnout and determine factors that protect from psychological distress. Moreover, qualitative studies may shed light on the nuances of caregivers' lived experiences that could be translated into targeted interventions to address their most salient struggles. Cross-cultural studies are also useful for evaluating how sociocultural variables impact caregiver burden and mental health outcomes, ultimately informing the development of sensitivity-appropriate support systems. Technological modalities, including telehealth and mobile-based mental health apps, may also be low-cost measures worth exploring to deliver accessible psychological support to caregivers.

Limitations

Although the current study provides valuable insights, there are some limitations. First, the use of cross-sectional data prohibits causation inference between psychological disorders and caregiver burnout. Second, self-reported measures are dependent on response bias, participants were able to under-report or over-exaggerate their symptoms. Third, the study sample consisted of just one geographical area, and may have limited generalizability to wider caregiver populations. Future research should include objective measures, larger sample sizes, and more diverse populations to strengthen the study results.

Conclusion

Overall, to our knowledge this is the first study to investigate the relationship between psychological distress and caregiver burnout, with a subsequent comparison between gender and age groups. The results highlight the critical necessity for targeted psychological interventions and policy-level measures to assist caregivers, especially women and those in middle age, cope with stress and emotional burnout. This is a Public Health issue that requires evidence-based intervention that target the multilevel influences that care givers encounter. Better mental health of caregivers will be reflected in better health outcomes for the people we serve.

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