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Secondary traumatic stress and informal caregivers' life satisfaction: A moderated mediation model of positive religious coping and gender

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Abstract: Traumatic experiences are known to have impacts on well-being; however, factors that may shape or moderate these effects remain underexplored, particularly within caregiving contexts. This study investigated the association between secondary traumatic stress and life satisfaction among informal caregivers in subacute hospital care, as well as the moderating role of positive religious coping and gender in this relationship. A total of 194 informal caregivers (68 males, 126 females; aged 15–70 years, $M = 31.5$, $SD = 8.9$) of inpatients at a Nigerian orthopaedic hospital participated in the study. Data were collected using the Secondary Traumatic Stress Scale (STSS), the Satisfaction with Life Scale (SwLS), and the Brief Religious COPE. Results from the moderated mediation analysis revealed that secondary traumatic stress was associated with lower life satisfaction, and that positive religious coping mediated this relationship. Caregivers attending to male patients reported greater use of positive religious coping than those caring for female patients. In addition, positive religious coping predicted higher life satisfaction among female caregivers compared to their male counterparts. These findings extend Pargament's theory of religious coping by highlighting how individuals employ religious beliefs and practices to navigate stressful life experiences. The results substantiate the need for healthcare professionals to recognize symptoms indicative of secondary trauma among informal caregivers, given its potential impact on patient care. It is important to consider gendered patterns of positive religious coping when supporting caregivers in mitigating secondary traumatic stress.

Keywords: caregivers; coping; life events; moderated mediation; religion; well-being

Introduction

Informal caregiving refers to the provision of unpaid assistance by relatives or friends to complement formal healthcare services. Such care typically includes activities such as assessing patients' preferred meals, obtaining prescribed medications, sourcing funds, and providing personal care (e.g., bathing, toileting, feeding, and laundry), as well as running other essential errands. In subacute care settings, caregivers are often exposed to potentially traumatic events, such as patient death or severe and gruesome injuries, which may place them at risk for developing secondary traumatic stress (Lim et al., 2024; Ngamasana et al., 2023). Secondary traumatic stress comprises a cluster of symptoms that parallel posttraumatic stress disorder (PTSD), including re-experiencing, avoidance, and hyperarousal (Vagni et al., 2020), but it arises from indirect trauma exposure.

Despite their central role in patient care, informal caregivers are frequently overlooked by healthcare professionals, whose primary focus is often on patients. Contextual factors, such as cultural orientation and type of hospital care, may shape informal caregivers' mental health outcomes. For example, caregivers from collectivistic cultures may experience heightened emotional demands due to stronger identification with the patient. In addition, gendered caregiving roles may influence both exposure to secondary trauma and the expression of secondary traumatic stress symptoms. In religion-oriented societies, informal caregivers may also differ in how they cope with trauma, yet these coping processes remain underexplored. The present study examined the association between secondary traumatic stress and life satisfaction among informal caregivers in subacute hospital settings, as well as the moderating and mediating roles of positive religious coping and gender in Nigeria.

Secondary trauma and satisfaction with life

Studies indicate that informal caregivers assisting relatives in orthopaedic hospital settings are at elevated risk for secondary traumatic stress (Longo et al., 2020; Muomah et al., 2021a; Muomah et al., 2021b). Such stress may negatively affect life satisfaction, defined as the extent to which individuals positively evaluate the overall quality of their present life (Veenhoven, 1996). Indeed, high caregiving demands have been associated with lower life satisfaction (Borg & Hallberg, 2006; Blaise & Dillenseger, 2020), and family caregivers generally report lower life satisfaction than professional caregivers (Sadowska et al., 2021). In orthopaedic care settings, informal caregivers may experience reduced life satisfaction due to close

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exposure to patients' physical and emotional distress, as well as witnessing graphic injuries characteristic of these units. However, research on life satisfaction among informal or family caregivers in orthopaedic hospitals remains limited, particularly with respect to potential variations by religiously oriented coping strategies and caregiver gender.

Religious coping mediation

Religious coping is among the strategies informal caregivers use to manage adversity, traumatic events, and stressors (Farinha et al., 2021). It refers to the ways in which individuals draw on religious beliefs, practices, and behaviors to manage stress, facilitate problem-solving, and reduce the negative emotional impact of stressful life circumstances (Koenig et al., 1998). Religious coping serves five central functions: the search for meaning or purpose, the pursuit of control over situations, the seeking of comfort, intimacy, and social integration, and the facilitation of life transformation (Pargament et al., 2000).

Two specific patterns of religious coping have been identified: positive religious coping and negative religious coping (Pargament et al., 2011). Positive religious coping involves perceptions of a positive connection with God, collaboration with God, finding constructive meaning in a stressor or traumatic situation, and releasing negative emotions. Negative religious coping, in contrast, reflects perceptions of an insecure relationship with God and one's faith community, loss of faith in God's power, or belief that the stressor is caused by the devil (Cummings & Pargament, 2010). Positive religious coping has been found to be more commonly reported among informal caregivers of hospitalized patients (Machado et al., 2018; Vitória & Assis, 2015), and caregivers who engage in positive religious coping appear better able to adjust after experiencing secondary traumatic stress. Chardon et al. (2021) suggested that religious coping, in general, may be conceptualized as a universally adaptive coping strategy.

Informal caregivers who use positive religious coping may experience higher life satisfaction, perceiving themselves to be empowered by a benevolent higher power and gaining a sense of meaning, comfort, control, and personal growth while managing their patient's orthopaedic problems (Schneider & Mannell, 2006; Shaw et al., 2005; Tarakeshwar et al., 2006). Similarly, caregivers in Nigeria who reported higher levels of religiosity demonstrated greater well-being, highlighting the potential role of positive religious coping in supporting adjustment in this cultural context (Ifeagwazi et al., 2021). Despite evidence that informal caregivers experience secondary traumatic stress and rely on religious coping, there is limited understanding of how these processes affect life satisfaction in orthopaedic hospital settings. These associations may also differ by caregiver gender, reflecting gendered patterns of coping and stress response.

Gender moderation

Previous studies have documented gender differences in caregiving (Navaie-Waliser et al., 2002; The National Alliance for Caregiving, AARP, 2020). For example, Riva et al. (2014) reported that 52% of mothers and 22% of fathers adjusted positively to their patient's orthopaedic challenges, potentially experiencing posttraumatic growth through positive religious coping. Although both male and female caregivers are susceptible to secondary traumatic stress, women tend to assume caregiving roles more frequently, provide more intensive informal care, and experience a greater caregiving burden than men (The National Alliance for Caregiving, AARP, 2020). Similarly, women generally report higher levels of religiosity than men (Moon et al., 2022), which may explain why female caregivers are more likely to engage in positive religious coping to manage challenges and the negative experiences encountered during caregiving. While it might be expected that this pattern is stronger when caring for female patients, positive religious coping may exert the greatest impact when the caregiver is female and the patient is male.

The Nigerian orthopaedic care context

Informal caregivers of patients with musculoskeletal conditions often face substantial physical demands, including providing mobility assistance and managing pain (Alemu et al., 2025). In Nigerian orthopaedic hospital settings, informal caregivers frequently perform specific nursing tasks such as bathing and feeding patients, manually lifting and repositioning immobile patients, monitoring patients to prevent discomfort or hygiene issues, administering medications, paying medical bills, and transporting patients in wheelchairs (Diameta et al., 2018; Muomah et al., 2021a). In these settings, in-patient care often relies on informal caregivers who are typically family members or friends to supplement formal care, exposing them to secondary traumatic stress, which is often overlooked by healthcare professionals focused primarily on patients. Positive religious coping is particularly prevalent in Nigeria, especially among caregivers of individuals with chronic illnesses and high dependency levels (Faronbi, 2018). This positive religious coping may involve meaning-making of caregiving as a spiritual duty, reliance on prayer and faith-based practices, trust in divine support, and engagement with religious communities that provide emotional and practical assistance.

Cultural expectations regarding gender roles further influence caregiving patterns in Nigeria. Men are generally regarded as breadwinners, while women are expected to assume caregiving responsibilities. Female caregivers frequently engage in positive religious practices, such as singing praises, praying, and offering spiritual encouragement to themselves, whereas men tend to engage in these practices less often (Moon et al., 2022; Lopez-Anuarbe & Kohli, 2019). Additionally, it is uncommon to see male caregivers attending to female patients in hospital settings unless no alternative is available. These cultural and gendered dynamics highlight the importance of considering caregiver and patient gender in studies of informal caregiving, secondary traumatic stress, and coping (Penning & Wu, 2016). Gender dynamics and cultural context remain underexplored in studies on life satisfaction, particularly regarding the interplay of caregiver and patient gender, secondary traumatic stress, and positive religious coping.

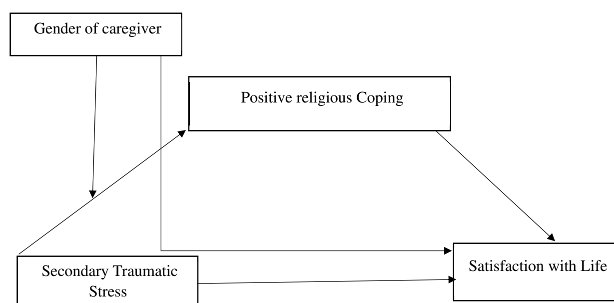

Figure 1. Conceptual model of the association between secondary traumatic stress, religious coping, gender (of caregiver) and satisfaction with life

Addressing these gaps is essential to inform interventions that enhance caregiver well-being in Nigeria and similar contexts.

Goals of the study

This study examined the association between secondary traumatic stress and informal caregivers' life satisfaction in subacute hospital care and the role of positive religious coping and gender in that relationship. We tested the following hypotheses regarding informal caregivers (See Figure 1):

1. Secondary traumatic stress is associated with lower satisfaction with life.
2. Positive religious coping mediates the association of secondary traumatic stress and satisfaction with life for higher satisfaction with life.
3. Gender of caregiver moderates the association of secondary traumatic stress and positive religious coping and satisfaction with life.

Method

Participants, setting and procedure

The sample consisted of 194 informal caregivers of inpatients at an orthopaedic hospital in South-East Nigeria (68 males, 126 females). Participants ranged in age from 15 to 70 years ($M = 31.5$, $SD = 8.9$). Half of the caregivers were married (50.0%), while 44.8% were single, 4.2% divorced, and 1.0% separated. Most caregivers (61.6%) had a secondary level of education or below, whereas 38.4% had education beyond secondary school. The patients under their care were predominantly male (54.3%), with females accounting for 45.7%. With respect to duration of caregiving, 50.5% had stayed with the patient for 1–6 months, 40.0% for 1–4 weeks, 5.8% for less than one week, and 3.7% for more than six months.

The study protocol was approved by the Health Research Ethics Committee of the University of Nigeria Teaching Hospital Enugu (NHREC/05/01/2008B-FWA00002458-IRB00002323) and the Institutional Review Board of National Orthopaedic Hospital Enugu (S. 313/IV). Informal caregivers willingly consented to the study. Data were gathered during normal hospital hours by two trained graduate psychology students.

Measures

Secondary traumatic stress scale (STSS)

The Secondary Traumatic Stress Scale (STSS; Bride et al., 2004) is a 17-item self-report measure assessing the frequency of intrusion, avoidance, and arousal symptoms experienced during the past 7 days in relation to indirect exposure to traumatic events or material. Items are rated on a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*). Total scores range from 17 to 85, with higher scores indicating greater severity of secondary traumatic stress symptoms. Previous studies have reported good to excellent internal consistency for the total scale (Cronbach's $\alpha = 0.86$–0.94) and acceptable to excellent reliability for the intrusion ($\alpha = 0.74$–0.80), avoidance ($\alpha = 0.87$), and arousal ($\alpha = 0.79$–0.87) subscales (Beck & Gable, 2012; Bride et al., 2004; Choi, 2011; Vukčević Marković & Živanović, 2022). In the present study, the STSS demonstrated good internal consistency ($\alpha = 0.84$).

Satisfaction with life scale (SWLS)

The Satisfaction with Life Scale (SWLS; Diener et al., 1985) is a 5-item questionnaire developed to measure the individual's evaluation of satisfaction with life in general. Respondents indicate how much they agree or disagree with each of the five items using a 7-point scale that ranges from 1 "strongly disagree" to 7 "strongly agree". The overall scores range from 5 to 35, with higher scores indicating satisfaction with life. Studies in other populations reported Cronbach's α of 0.87 to 0.89, respectively (Diener, et al., 1985; Yun, et al., 2019). The present study, we found an α coefficient of 0.84.

Brief religious COPE (Brief RCOPE)

The Brief RCOPE (Pargament et al., 2011) is a 14-item scale designed to measure positive and negative religious coping with major life stressors. It has two subscales, each consisting of 7 items of positive religious coping and 7 items of negative religious coping. While positive religious coping subscales tap into a sense of connectedness with a transcendent force, a sense of spiritual connectedness with others and a benevolent worldview, negative religious coping subscales reflect underlying spiritual tensions and struggles within oneself, with others and with the divine. The items are scored as follows: 1 = A great deal, 2 = Quite a bit, 3 = Somewhat and 4 = Not at all. Pearce et al. (2006) in a study among caregivers, reported a reliability coefficient alpha of 0.91 on the positive religious coping, while this present study obtained Cronbach α of 0.77.

Statistical analyses

Analyses were conducted using the PROCESS macro for IBM SPSS (Version 3.0; Hayes, 2022). The analyses examined: (a) the direct and indirect effects of secondary traumatic stress on satisfaction with life, with positive religious coping specified as the mediator; (b) whether the association between secondary traumatic stress and positive religious coping was moderated by patients' gender; and (c) whether the association between positive religious coping and satisfaction with life was moderated by caregivers' gender. Indirect effects were tested using bias-corrected bootstrapping with 10,000 resamples and

Table 1. Descriptive statistics of sociodemographic characteristics and study's variables (N = 194)

Gender of caregiver, *n* (%)	Male	68	35.1
	Female	126	61.3
Marital status, *n* (%)	Never married	87	44.8
	Married	97	50.0
	Divorced	5	2.6
	Separated	5	2.6
Education, *n* (%)	Secondary and below	120	61.6
	Post-secondary	74	38.4
Employment status, *n* (%)	Unemployed	58	29.9
	Self-employed	106	54.6
	Public servant	30	15.5
Religion, *n* (%)	Christian	188	96.9
	Muslim	5	2.6
	African Traditional Religion	1	0.5
Informal caregiver during hospital admission, *n* (%)	No	18	9.3
	Yes	168	86.6
Relationship with patient, *n* (%)	Father	21	10.8
	Mother	48	24.7
	Sibling	61	31.4
	Not immediate family	14	7.2
	Daughter	8	4.1
	Son	6	3.1
	Husband	15	7.7
	Wife	12	6.2
	Others	9	4.6
Gender of patient, *n* (%)	Male	105	54.3
	Female	89	45.7
Duration of caregiving, *n* (%)	Lest than one week	11	5.8
	1–4 weeks	78	40
	1–6 months	98	50.5
	Over 6 months	7	3.7
Residence, *n* (%)	Urban	126	64.9
	Rural	50	25.8
Secondary traumatic stress, *M* (*SD*)	Range = 6–42	31.36	10.11
Religious coping, *M* (*SD*)	Range = 7–35	24.42	8.67
Satisfaction with life, *M* (*SD*)	Range = 14–51	34.59	11.31

95% confidence intervals (CIs). An indirect effect was considered statistically significant when the 95% bootstrapped CI did not include zero.

Results

Descriptive statistics

Results in Table 1 showed that majority of the caregivers were self-employed, and many of these self-employed persons indicated that they were in business/trading (37.63%). Most of them have also been the caregivers to the patient since hospital admission, and only very few of them were not immediate family members to the patient. They were caring for more male patients than females. Half of them have been caregivers to the patient for 1–6 months. They were also mostly urban residents.

Secondary trauma and satisfaction with life

The hypotheses were tested, controlling for the effects of age (See Table 2). The total effects of secondary traumatic stress effects on satisfaction with life were statistically significant ($\beta = -0.21$, SE = 0.06, $p = 0.001$), indicating that respondents with higher secondary traumatic stress symptoms were less satisfied with life, which supported Hypothesis 1. The association of secondary traumatic stress with positive religious coping was negative and statistically significant ($\beta = -0.11$, SE = 0.08, $p = 0.001$), confirming hypothesis 2.

Positive religious coping mediation

Our hypothesis of a moderated mediation was supported as evidenced by a significant indirect effect of secondary traumatic stress on satisfaction with life through positive religious coping among female caregivers [$B = -0.01$, 95%CI = (−0.00, −0.12)], but not males [$B = 0.00$, 95%CI = (−0.01, 0.01)]. Note that the moderated mediation is significant when the 95% CI does not encompass zero, as shown in the case of males. The index of moderated mediation observed was also significant [$B = -0.01$, 95% CI = (−0.03, −0.00)]. The predictors accounted for

Table 2. Moderated mediation analysis results

Predictor variables	Positive religious coping					Satisfaction with life				
	B	SE	*t*	*p*-value	95% *CI*	*B*	SE	*t*	*p*-value	95% *CI*
Age	0.16	0.08	2.21	0.03	[0.03, 0.11]	0.15	0.09	3.06	0.03	[0.00, 0.14]
Gender (Cg)	0.61	0.10	3.91	0.00	[0.00, 0.82]	0.55	0.10	3.91	0.00	[0.18, 0.76]
STS	−0.11	0.08	−1.52	0.04	[−0.02, −0.28]	−0.21	0.06	−3.49	0.00	[−0.12, −0.28]
STS*Gender (Px)	0.08	0.01	2.26	0.00	[0.01, 0.10]	–	–	–	–	–
PRC						0.51	0.06	4.12	0.00	[0.27, 0.75]
PRC*Gender (Cg)						0.13	0.03	0.26	0.00	[0.10, 0.13]
R^2	0.23			0.00		0.36			0.00	
F	9.38					13.64				

Note. Px = Patient; Cg = Caregiver; STS = secondary traumatic stress; PRC = positive religious coping.

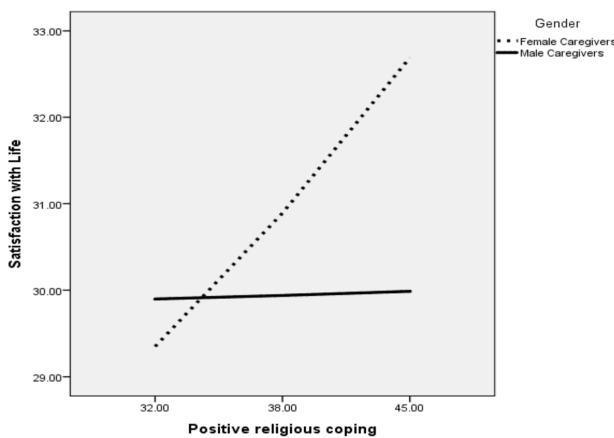

Figure 2. Slope of the interaction effect of positive religious coping and gender of caregivers on satisfaction with life

36% of the variance in satisfaction with life [$R^2 = 0.36$, $F(2,192) = 3.64$, $p = 0.00$].

Gender moderation

Gender of caregivers moderated the association of positive religious coping and satisfaction with life. The slope of the conditional effect of positive religious coping on satisfaction with life (see Figure 2) indicated that positive religious coping in female caregivers predicted more satisfaction with life {$B = 0.14$, $t = 4.21$, 95% $CI = [0.05, 0.41]$, $p < 0.001$}, than for male caregivers {$B = 0.01$, $t = 1.41$, 95% $CI = [-0.00, 0.11]$, $p = 0.90$}.

Discussion

We found that informal caregivers who reported higher symptoms of secondary traumatic stress were less satisfied with life. Previous research has documented anxious feelings, worry, flashbacks, and nightmares among informal caregivers (Ferrell et al., 2019), and these symptoms that can negatively affect overall life satisfaction (Muomah et al., 2021a). This relationship may be explained by the way secondary traumatic stress threatens caregivers' subjective well-being, thereby reducing their satisfaction with life (Perstling & Rothmann, 2012). Our findings also showed that positive religious coping reduces the likelihood of diminished life satisfaction among informal caregivers. This aligns with earlier studies by Pargament et al. (1998) and Skalski-Bednarz et al. (2022), which found that positive religious coping enhances satisfaction with life and mitigates secondary traumatic stress. This effect may stem from the nature of positive religious coping, which often involves a secure and comforting relationship with God and a strong sense of community among fellow believers.

Positive religious coping can help individuals maintain life satisfaction by promoting a sense of meaning, finding purpose in adversity, fostering hope, and encouraging more constructive interpretations of negative experiences (Matthews et al., 1998). In contrast, negative religious coping in times of hardship often involves feelings of divine punishment, perceptions of abandonment by God or the religious community, attributing misfortunes to malevolent spiritual forces, or questioning God's power and love. Such forms of negative religious coping may signal harmful spiritual struggles and a conflicted worldview (Roggenbaum et al., 2023; Abu-Raiya et al., 2018). These struggles—such as doubting God's nature or interpreting suffering as divine punishment—reflect deep religious conflict that can undermine psychological well-being. However, findings in the literature are not entirely consistent. For example, Park et al. (2017) reported that both positive and negative religious coping were associated with higher levels of traumatic stress, including perceived traumatic stress. This suggests that the relationship between religious coping and psychological outcomes may be more complex than a simple positive–negative distinction, and that the context and intensity of stressors may influence how religious coping functions.

We found that caregiver gender predicted life satisfaction, with female caregivers reporting higher satisfaction with life than their male counterparts. This pattern may reflect women's tendency to have stronger social support networks and higher engagement in positive religious coping. The combined influence of biological, psychological, and sociocultural factors may serve as protective mechanisms that buffer against stress and psychological distress. Social norms often encourage women to express emotions openly and seek social support, whereas men are more likely to be socialized toward stoicism and self-reliance (Taylor et al., 2000). Additionally, religious practice and

spiritual engagement are often more deeply integrated into women's daily lives, contributing to greater use of positive religious coping strategies that support life satisfaction (Levin et al., 1995). This interpretation aligns with findings from Penning and Wu (2016), who reported that female caregivers tend to have stronger support networks and higher levels of positive religious coping compared to male caregivers.

Implications for practice and research

Targeted interventions should incorporate tailored education and training on caregiving practices and navigation of the healthcare system, alongside accessible emotional and social support services, to enhance informal caregivers' overall life satisfaction and well-being. Further research is needed, particularly longitudinal studies and studies focused on the Southeast region of Nigeria, to better understand how secondary traumatic stress and coping processes unfold over time and across cultural contexts. Exploring the benefits of positive religious coping may support the development of more effective, contextually grounded caregiver support programs. Additionally, a deeper understanding of gender differences in caregiving experiences is essential, especially regarding the unique challenges faced by informal male caregivers.

Limitations of the study and future directions

This cross-sectional study does not establish temporal ordering among the variables in our model; therefore, causal inferences cannot be made. For example, caregivers (both female and male) who reported lower life satisfaction may already be experiencing higher levels of secondary traumatic stress, rather than the reverse. Second, the study was limited to orthopaedic inpatients and their informal caregivers in a single orthopaedic hospital in Nigeria, which may constrain the generalizability of the findings. Third, the study did not include caregivers of patients receiving care in local treatment settings prevalent in the eastern region of the country, making it unclear whether these caregivers experience similar levels of secondary traumatic stress or utilize positive religious coping in comparable ways. Future longitudinal studies, incorporating samples from multiple orthopaedic units and diverse treatment contexts, are needed to clarify these relationships and strengthen the external validity of the findings.

Conclusion

The present study aimed to examine the relationship between secondary traumatic stress and satisfaction with life among informal caregivers. It also explored whether positive religious coping serves as a mediator and whether caregiver gender moderates these associations. The results showed that informal caregivers experiencing higher levels of secondary traumatic stress reported lower life satisfaction. Furthermore, positive religious coping reduced the likelihood of diminished life satisfaction and predicted greater life satisfaction among female caregivers compared to male caregivers. These findings suggest that integrating positive religious coping strategies into support programmes for informal caregivers may be beneficial, particularly during periods of inpatient care.

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Availability of Data and Materials: The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Ethics Approval: The study protocol was approved by the Health Research Ethics Committee of the University of Nigeria Teaching Hospital Enugu (NHREC/05/01/2008B-FWA00002458-IRB00002323) and the Institutional Review Board of National Orthopaedic Hospital Enugu (S. 313/IV). Informal caregivers willingly consented to the study.

Conflicts of Interest: The authors declare no conflicts of interest.

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