

Rumination Patterns, Positive and Negative Changes among Primary Caregivers of Cancer Patients in Pakistan

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Abstract

Background: Cancer being characterized as a chronic illness not only affects the patient but also the person who provides care for them. The traumatic experience of its diagnosis poses both positive and negative changes among primary caregivers.

Objective: Aim of this study was to determine the effect of caregiving-related rumination patterns on the positive and negative changes in primary caregivers of cancer patients in Pakistan.

Study type, settings & duration: This cross-sectional study was conducted at National Institute of Psychology, Quaid-e-Azam University, Islamabad in collaboration with various hospitals of Rawalpindi and Islamabad from June to August 2023.

Methodology: A sample size comprising 131 adults was considered in this study. After taking the informed consent, data were collected using the English versions of the Event Related Rumination Inventory and the Changes in Outlook Questionnaire, both with acceptable reliability. Data were analyzed using SPSS.

Results: A total of 131 caregivers including 49 (37.40 %) males and 82 (62.60%) females with mean age of 33.4 years participated in this study. Intrusive rumination was found to positively predict negative changes ($\beta = .66, p < .001$) and negatively predict positive changes ($\beta = -.43, p < .001$). Additionally, deliberate rumination positively predicted the positive changes ($\beta = .34, p < .001$) and negatively predicted the negative changes ($\beta = -.25, p < .001$). Higher caregiver education and more time spent caring were positively associated with positive changes and deliberate rumination, while negatively associated with negative changes and intrusive rumination.

Conclusion: Caregivers with unwanted thoughts face more negative changes, while those who reflect purposefully cope better and grow.

Key words: Intrusive rumination, deliberate rumination, positive and negative changes, primary caregivers, cancer patients.

Introduction

In the survey of the National Health Interview,¹ over 60% of cancer survivors after five years reported health issues. 30% of survivors had poor health, 17% were unable to work owing to health issues, and 58% had one or more functional impairments or limitations. According to

GLOBACON, there were 20 million cancer cases globally in 2022, with 49.2% in Asia which implies that 1 in 5 will develop cancer in their lifetime. By 2050, 35 million new cases are expected.² The WHO predicts that 22% of the global population would be over 60 in 2030, rising to 2.1 billion by 2050.³ Chronic diseases like diabetes, cancer, and heart disease have increased due to an ageing population. The complexity of chronic illnesses limits patients' ability to perform daily tasks independently, hence primary carers are essential. The caregiver's socioeconomic costs have increased as care duration and needs have increased.⁴

As many as 148,000 new cancer cases are reported annually in Pakistan.⁵ Pakistan's collectivistic culture makes family members, especially primary carers, vital pillars of emotional and physical support for cancer patients. Primary caregivers (PCs) are typically comprised of the patient's spouse, partner, or immediate family members. In Pakistan caregiving is viewed as a

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duty, which may lead carers to disregard their own physical and emotional needs.⁶ Caregiving can cause stress, including schedule changes, role changes, psychological strain, financial difficulty, and health issues. Cancer patients' carers experience emotional distress equal to or greater than their patients. On contrary, certain researchers have found three main categories of beneficial changes being experienced by caregivers: increased perceptions of oneself, increased value for relationships, and developing deeper appreciation of life by finding purpose.⁷

A study⁸ reveals that caregivers in Punjab face high emotional stress due to social norms, limited support, financial issues, and restricted mobility, which hinder timely treatment and increase caregiver's burden. Young caregivers show high depression and anxiety rates (95%), highlighting the urgent need for mental health support. Understanding rumination patterns is essential for developing interventions to reduce psychological distress and improve well-being. While posttraumatic growth research⁹ largely focuses on chronically ill patients, limited studies in Pakistan address positive aspects of caregiving. Most existing research emphasizes negative impacts. However, caregiving for cancer patients involves both challenges and personal growth. Exploring positive psychological experiences^{10,11} can help enhance caregiver resilience, mental health, care quality, and ultimately improve patient outcomes.

Intrusive rumination was positively associated with negative changes and negatively associated with positive changes while deliberate rumination was being positively associated with positive changes and negatively associated with negative changes. After diagnosis, positive changes increase with the passage of time.¹² The higher the education is, the more positive changes as compared to negative changes. The younger age and lower income are associated with increased stress and diminished life quality, hence more negative changes.¹³

Under the light of diverse findings reported in literature, the aim of present study was to see the relationship of rumination patterns, the predicting role of intrusive and deliberate rumination on positive and negative changes in caregivers of cancer patients.

Methodology

This cross-sectional study was conducted from June 2023 to August 2023 at National Institute of Psychology, Quaid-e-Azam University, Islamabad in collaboration with various hospitals of Rawalpindi

and Islamabad. A minimum sample size of 94 caregivers was statistically calculated however a total 131 primary care givers were included on convenience of availability. Healthy caregivers of both genders were considered while any care giver receiving psychotherapy or suffering from chronic diseases was excluded from the study.

Informed consent was taken from all participants. For the data collection, the respondents were approached individually and explained the purpose of the study; they were assured that the information collected would remain confidential and would be used only for research purposes. Data was collected using English versions of Event Related Rumination Inventory (ERRI)¹⁴ and Changes in Outlook Questionnaire (CiOQ)¹⁵ to assess the rumination patterns and outlook changes, respectively. The Event Related Rumination Inventory has two sub-scales: intrusive rumination and deliberate rumination. Their alpha reliabilities were 0.86 and 0.74, respectively. Similarly, Changes in Outlook Questionnaire has two sub-scales. Negative changes in outlook and positive changes in outlook: their alpha reliabilities were 0.76 and 0.81, respectively. The survey was piloted with 30 caregivers, resulting in adjustments to the scale to ensure simple and understandable wording and that participants comprehend the items and see the direction and trend of the relationship. The data were analyzed using SPSS 26. Descriptive statistics, scale reliability, bivariate correlation, and multiple regression analysis were used for analysis.

The ethical approval was obtained from the Ethics Committee of National Institute of Psychology, Quaid-e-Azam University, Islamabad vide letter no. IRB-NIP-23/004.

Results

The study involved total of 131 caregivers of cancer patients. The sample included 49 (37.40%) males and 82 (62.60%) females, with a mean age of 33.40 years. Age was categorized into early adulthood (18-33 years) and middle adulthood (34-57 years). The caregivers' relationships to the patients included spouses, children, siblings, parents, and others. The mean years of education, duration of caregiving, and caregiving hours per week were approximately 14 years, 9 months, and 43 hours, respectively. Detailed demographic characteristics are shown in Table-1.

Table-2 shows the Cronbach's α values for deliberate rumination and negative changes in outlook subscale (>0.70), which indicates satisfactory internal consistency. The Cronbach's α values for intrusive rumination and positive changes

in outlook subscale are (>0.80), which indicates high internal consistency.

Table 1: Demographic characteristics of participants.

Variables		n (%)
Gender	Male	49 (37.4)
	Female	82 (62.6)
Age	18–33 years	72 (55)
	34–57 years	59 (45)
Family Monthly Income	>1 lac PKR	117 (89.3)
	50,000 - 1 lac PKR	8 (6.1)
	<50,000 PKR	6 (4.6)
Years of Education	5-12 years	51 (38.9)
	13-16 years	51 (38.9)
	17-20 years	29 (22.1)
Employment Status	Employed	64 (48.9)
	Unemployed	67 (51.1)
Relationship to Patient	Spouse	34 (26.0)
	Children	33 (25.2)
	Parent	19 (14.5)
	Sibling	31 (23.7)
	Others	14 (10.7)
Marital Status	Married	80 (61.1)
	Unmarried	51 (38.9)
Providing Care (Months)	1-12 months	112 (85.5)
	13-24 months	19 (14.5)
Hours Caregiving / Week	3-30 hours	42 (32.1)
	31-60 hours	64 (48.9)
	>60 hours	25 (19.1)
Cancer Type	Carcinomas	89 (67.9)
	Leukemias/Lymphomas/Sarcomas	42 (32.1)
Cancer Stage of Patient	Stage I	16 (12.2)
	Stage II	39 (29.8)
	Stage III	27 (20.6)
	Stage IV	49 (37.4)
Therapy/ Surgery Type	Chemotherapy	89 (67.9)
	Radiotherapy	42 (32.1)

In Table-3, intrusive rumination is not significantly related to deliberate rumination. However, there is a significant positive correlation with negative changes and a significant negative correlation with positive changes. The deliberate rumination has a significant negative correlation with negative changes and a significant positive correlation with positive changes. The negative changes have a significant negative correlation with positive changes. Also, years of education are significantly positively associated with deliberate rumination and positive changes while significant negatively associated with negative changes.

Months of caregiving are significantly positively associated with deliberate rumination and positive changes, while they are significantly negatively associated with intrusive rumination and negative changes. These results are in the expected direction of previous literature. There are non-significant correlations between some variables. A possible reason could be the small sample size. However, the trend of the relationship is in the expected direction.

Table-4 shows the impact of rumination patterns (intrusive and deliberate rumination) on negative changes in primary caregivers of cancer patients. The 46.1% of the variance in negative changes is explained by intrusive and deliberate rumination, revealing that intrusive rumination positively predicts negative changes while deliberate rumination negatively predicts negative changes.

Furthermore, it also shows the impact of rumination patterns (intrusive and deliberate rumination) on positive changes in primary caregivers of cancer patients. The 28.4% of the variance in positive changes is explained by intrusive and deliberate rumination, revealing that intrusive rumination negatively predicts positive changes while deliberate rumination positively predicts positive changes.

Specifically, a 1 SD increase in intrusive rumination is associated with a 0.66 SD increase in negative changes and a 0.43 SD decrease in positive changes. Conversely, a 1 SD increase in deliberate rumination corresponds to a 0.34 SD increase in positive changes and a 0.25 SD decrease in negative changes.

Discussion

Main findings of the study indicated that intrusive rumination correlates positively with negative changes and negatively with positive changes among primary caregivers of cancer patients. In contrast, deliberate rumination positively predicted positive changes and negatively predicted negative changes. Higher levels of carer education and greater time spent caregiving were associated with more positive changes and higher levels of deliberate rumination, while being linked to fewer negative changes and lower levels of intrusive rumination.

The unproductive cognitive process of association of intrusive rumination with negative changes is linked to adverse outlooks post-trauma.¹⁶ Such rumination leads individuals to fixate on traumatic experiences and negative emotions,

Table 2: Psychometric properties and alpha reliability of scales used in the study. (N=131)

Scales	Items	α	Mean	SD	Range		Skew	Kurt
					Actual	Potential		
ERIR	10	0.86	16.53	5.99	1-29	0-30	.02	-.35
ERDR	10	0.74	20.84	4.30	11-28	0-30	-.11	-1.19
CiON	15	0.76	43.05	10.63	22-64	11-66	.12	-.80
CiOP	11	0.81	48.52	7.93	33-66	15-90	.55	-.10

Note. IR= Event Related Intrusive Rumination Scale, DR= Event Related Deliberate Rumination Scale, CiON= Negative Changes in Outlook, CiOP= Positive Changes in Outlook, Skew= Skewness, Kurt= Kurtosis.

Table 3: Pearson correlation of rumination patterns, outlook changes among caregivers of the cancer patients. (N=131)

Variables	1	2	3	4	5	6	7	8	9
Intrusive rumination	--	.10	.63**	-.40**	-.19*	.08	-.12	-.25	-.05
Deliberate rumination		--	-.19*	.32**	.30**	-.04	.18*	.32	-.07
Negative changes			--	-.43**	-.42**	.09	-.25**	-.42	.02
Positive changes				--	.50**	-.03	.28**	.42	.09
Providing care					--	-.17	-.12	.44	.09
Hours of caregiving						--	.18*	.09	.16
Education							--	.45*	.03
Income								--	-.05
Age									--

* $p < .05$. ** $p < .01$.

Table 4: Impact of intrusive and deliberate rumination on positive and negative changes in caregivers of cancer patients. (N=131)

Variables	B	SE	t	p	95%CI	
					LL	UL
Negative Changes						
Constant	35.03	3.41	10.26	0.000	28.28	41.79
Intrusive Rumination	1.17	.12	10.07	0.000	0.94	1.39
Deliberate Rumination	-0.54	.14	-3.83	0.000	-0.82	-0.26
Positive Changes						
Constant	45.94	3.94	15.64	0.000	40.13	51.75
Intrusive Rumination	-0.57	.10	-5.75	0.000	-0.77	-0.38
Deliberate Rumination	0.58	.12	4.76	0.000	0.34	0.82

Note. SE= Standard Error, LL= Lower Limit, UL= Upper Limit, CI= Confidence Interval

hindering posttraumatic growth (PTG).^{17,18} Conversely, deliberate rumination is positively correlated with positive changes and negatively with negative changes. It suggests a direct relationship between the intensity of deliberate rumination after trauma and the likelihood of beneficial changes.¹¹ Previous studies^{17,19} support that intentional rumination fosters positive psychological transformations, enhancing understanding and meaning from distressing experiences, ultimately promoting PTG.

Present study's findings revealed a positive link between intentional contemplation and posttraumatic growth (PTG), which is consistent with literature.²⁰ The purposeful rumination was found to be the only significant factor that predicted PTG in a model that included carer coping, perception of competence, and intrusive rumination.²¹ Current data clearly indicated that

deliberate rumination has the strongest link with positive changes. The findings are consistent with the outcomes derived from prior research.¹¹ Existing research literature consistently indicates a strong association between deliberate rumination and PTG.

Results indicated $r = 0.10$ between intrusive and deliberate rumination, showing weak correlation. A recent systematic study revealed intrusive rumination associated with higher distress, though deliberate rumination showed no significant association with distress levels.²² This leads to the view that both rumination patterns are different processes, yet they explain the weak correlation observed in this study. This suggests that interventions aiming to reduce caregiver distress may need to address intrusive and deliberate rumination separately, considering their independent effects on mental health outcomes.²²

An investigation examined the correlation between demographics and study variables using the Pearson correlation coefficient showed a positive correlation between higher education and positive changes, aligning with previous research¹³ indicating that higher education is linked to increased adversarial growth, while lower education correlates with negative outcomes. Additionally, this study found that positive changes increase over time post-diagnosis, consistent with earlier findings¹² that caregivers of cancer patients diagnosed over five years ago exhibit greater personal resiliency than those diagnosed within the past year. This trend is attributed to improved adjustment to their role and emotional management over time.

The regression analysis demonstrates a significant influence of rumination patterns on negative changes among primary caregivers. These findings are consistent with prior study²³ suggesting that intrusive and repetitive rumination over painful experiences might lead to heightened negative psychological consequences. Conversely, deliberate rumination shows a strong negative correlation with negative changes. This suggests that engaging in intentional introspection of caregiving experiences can serve as a safeguard against adverse psychological consequences in caregiving context.²⁴ The 46.1% of the variation in negative changes may be attributed to the combined influence of intrusive and deliberate rumination.

Furthermore, rumination patterns significantly affect positive changes in carers. Intrusive rumination negatively correlates with positive changes, showing that more intrusive thoughts result in fewer improvements. This aligns with a study²⁵ indicating intrusive rumination adverse effects on carers' psychological outcomes. Conversely, deliberate rumination is linked to positive changes, suggesting that intentional reflection on caring experiences benefits carers' psychological well-being. These findings supported by study¹⁶ highlighting the importance of intentional cognitive processing for improving outcomes for carers. Furthermore, 28.4% of the variation in positive changes can be accounted for by both intrusive and deliberate rumination, demonstrating a strong predictive ability of these rumination patterns.

Limitations of the study utilized self-report measures, which may introduce response bias, and focused on educated caregivers from Islamabad and Rawalpindi hospitals using non-probability purposive sampling. Future research could benefit from random sampling and larger sample sizes for better generalizability. Data collection involved

interviews with clarification for comprehension issues, and future studies might use Urdu-translated scales. The cross-sectional design limits causal inferences, suggesting a need for longitudinal research to explore the complex relationship between rumination and caregiving changes.

Caregivers who often have unwanted, stressful thoughts (intrusive rumination) tend to feel more negative changes, such as stress and emotional strain. In contrast, those who reflect in a more thoughtful and purposeful way (deliberate rumination) experience more personal growth and better coping. This study also found that caregivers with higher education and those who have been caregiving for a longer time tend to have more positive changes. These findings underscore the need for focused interventions that promote deliberate rumination and equip caregivers with tools and resources to manage their roles with resilience, ultimately enhancing their overall well-being at outset and amid caregiving challenges.

Conflict of interest: None declared.

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