

Impact of Anticipatory Grief on Quality of Life among Caregivers of Thalassemia Patients: Mediating Role of Physical Activity

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Caregivers of patients with chronic illness, such as thalassemia, face unique challenges in their lives. During the caretaking of the patient, caregivers face anticipatory grief due to the fear of loss. The goal of the current study was to investigate the impact of anticipatory grief on the quality of life of caregivers of thalassemia patients with the mediating role of physical activity. Differences across genders in a proposed relationship were also studied. Anticipatory grief scale (Theut et al., 1991), international physical activity questionnaire (Geneva, 1998) & quality of life scale (Flanagan, 1970), alongside the demographic sheet and written informed consent form, were employed for collecting data among 300 caregivers using cross cross-sectional survey research design that included multiple cities of Punjab. Results indicate that anticipatory grief has a significant negative relationship with quality of life and physical activity. Physical activity has a significant positive relationship with quality of life. Results also indicate that women show significantly higher levels of anticipatory grief than men. Men show a higher level of quality of life than women. The findings of the study provided strong empirical support for the predicted role of anticipatory grief on quality of life among caregivers. These findings further highlight that physical activity should be part of parents' lives to deal with grief related to the health of a child.

Keywords: Anticipatory Grief, Quality of Life, Physical Activity, Caregivers, Thalassemia, Gender Differences



Introduction:

There has been a rise in the number of serious and potentially lethal diseases in recent years. These illnesses can range from new viruses and infections to serious chronic conditions. Scientists and doctors are working hard to understand these diseases and develop effective treatments, but the process is often complex and time-consuming [1]. When someone in a family gets sick, it does not just affect the person with the illness; it impacts everyone around them. Caregiving can be emotionally, physically, and mentally exhausting, and mothers often take on the majority of this responsibility [2]. Whether the illness is a physical one, like cancer, diabetes, or heart disease, or a psychological one, like depression or anxiety, the strain on the caregiver can be immense. As they attempt to support their loved one while sorting through their own life, they could experience feelings of inadequacy, worry, and exhaustion. This situation can lead to turmoil within the family members, as the caregiver's well-being is also at risk due to the demands of looking after the sick individual [3]. A class of genetic blood illnesses known as Thalassaemia is brought on by disorders in the production of one or more chains of hemoglobin [4]. Around 1.5% of the world's population, which is about 80-90 million individuals who carry beta-thalassaemia [5]. Pakistan has one of the highest numbers of people affected, with 100,000 Thalassaemia sufferers and 10 million carriers. Each year, 5000 new cases in children are diagnosed [6]. Alpha and Beta are two major types of Thalassaemia disease. Alpha Thalassaemia is a very concerning illness that affects both mother and child. It causes anemia even before kids are born. However, Beta thalassaemia is a serious condition that appears in the form of poor appetite, pale skin, and feeling easily irritated, symptoms appearing in the first two years of life [7].

Treatment involves regular blood transfusions and medicines to remove extra iron. It's a lifelong condition that can make life hard for the person affected, with lots of hospital visits and treatments [8]. Caregiver burden is the heavy emotional, physical, and mental stress that a person feels when taking care of someone who is sick, usually a family member [9]. Caregiver burden is particularly challenging because it can make the caregiver feel isolated or unsupported, particularly if no one else is around to assist them [10]. Their significance is further highlighted in the case of chronic illnesses such as thalassaemia. Providing their children with high-quality care comes with a lot of hurdles [11]. Stressors include financial pressure, physical strain, mental health issues, relationships with the care recipient, and social support can all be experienced by someone providing long-term care for someone with a chronic illness like thalassaemia [12]. The expense of treating thalassaemia and its aftereffects places a heavy financial strain on its patients. The current study's conceptual framework is derived from anticipatory grief theory [13] and the Dual process model of coping with bereavement Theory [12]. The goal of the current study was to investigate the connection between quality of life and anticipatory grief. Examining the mediating effects of physical activity is another goal of the current investigation. According to a number of studies, having more caretakers decreased life quality and intensified anticipatory grieving [14]. Research revealed that caretakers' stress levels lead to a decrease in their degree of physical activity [15].

Anticipatory Grief:

Anticipatory grief is the sadness or grief that happens before a loss, unlike the grief that occurs during or after the loss [16]. Anticipatory grief is a form of mourning that begins before the death of a loved one. It often starts when a serious illness or terminal diagnosis is given, leading to a prolonged period of emotional distress as the inevitable loss approaches [3]. During this period, people may perceive a variety of emotions such as guilt, anger, grief, and anxiety. The grief can be as intense as or sometimes more intense than the grief experienced after the death. This is because the anticipation of loss can create a prolonged period of uncertainty and emotional strain [17]. Grief focuses on processing the actual loss, while anticipatory grief focuses on preparing for and coping with the expected loss [18]

Caregivers are particularly vulnerable to the effects of anticipatory grief. Their focus often shifts entirely to the person they are caring for, sometimes to the detriment of their own health. They might neglect their own needs, including basic self-care like eating properly, getting enough rest, or seeking emotional support [10]. It's important for caregivers and others experiencing anticipatory grief to find ways to cope. This might include seeking support from friends, family, support groups, engaging in self-care activities, or talking to a mental health professional. These strategies can help them manage the emotional burden and maintain their own health and well-being during this challenging time [3].

Anticipatory grief affects up to 70% of caregivers of patients with advanced cancer [19]. Studies have shown that caregivers experiencing anticipatory grief report higher levels of emotional distress, including anxiety, depression, and stress [20]. According to research, anticipatory grief may be linked to alterations in brain activity, especially in areas linked to memory and emotional processing [21]. People experiencing anticipatory grief may have conflicting emotions. Alongside grief, they might feel hope, anxiety, guilt, or even relief as they navigate the situation [22]. Anticipatory grief can affect relationships within families. It can result in more intimacy and support, but as family members deal with their loss in different ways, it can also lead to stress and conflict. In essence, the theory helps make sense of the complex feelings involved in anticipating a loss [22]. The Dual Process Model of Coping with Bereavement, developed by [23], explains that when we experience a loss, like the death of a loved one, we deal with it in two main ways such as handling emotional feelings about the loss and managing practical changes. A cross-sectional descriptive research design was used to perform a study. To choose 254 family caregivers, a convenience sampling technique was used. To determine the connection between anticipatory grieving and uncertainty about sickness, a study was carried out. The anticipatory grieving was considerable (73.5 ± 16.1) among Chinese family caregivers of patients with advanced lung cancer. Anticipatory grief and disease uncertainty were positively correlated ($r = 0.580$, $P < 0.001$), according to the correlation analysis results [21].

Quality of Life:

A person's subjective assessment of his/her psychological, temperamental, and social ranking is termed their quality of life [22]. According to [17], a person's assessment of their position in life, their concerns, ideals, and expectations of goals must all be in line with cultural standards and norms of their environment. A person's quality of life is influenced by their physical, mental, and social health as well as their ability to do daily tasks (Cognitive and Perceptual Rehabilitation, 2009). Taking care of children with thalassemia is stressful for caregivers; their own quality of life, especially related to caregiving, tends to be low, depending on various factors like children's health, regular blood transfusion, and financial factors [24]. Studies suggest that mothers usually have a lower quality of life as compared to fathers because they are more involved in children's health issues [25].

Parents who care for children going through medical treatment often face challenges like financial difficulties, communication issues, worries about their child's future, and mental health problems [26]. These challenges can lower the parents' quality of life, making it important for them to receive psychosocial support [25]. Studies have shown that various factors can influence the quality of life of caregivers, including their age, gender, spiritual beliefs, marital status, education level, health, social and family support, the burden of caregiving, and how well they accept the patient's condition [27]. [28] found that caregivers experience quality of life and psychological consequences from caregiving for their loved ones. The quality of life is also influenced by a variety of elements, including age, gender, level of education, and social support, according to studies. According to a study, perception of social support can influence quality of life by lowering negative affectivity, lowering perceived stress, and boosting personal resources. According to a study carried out in Thailand, mothers

suffered from burns as a result of the disease's depressing effect on their quality of life. Ineffective health care services, psychological issues, a lack of social support, and concerns about the future of their children are among the problems faced by mothers. Several Middle Eastern studies have revealed that parents experience emotional and physical distress, including sleeplessness, exhaustion, and difficulty completing daily tasks and meeting work obligations.

Physical Activity:

The World Health Organization (WHO) emphasizes that engaging in muscle-activating movements that require energy expenditure is crucial for maintaining and improving health. Both moderate and vigorous physical activities act as catalysts for improving health. The Centers for Disease Control and Prevention define physical activity as any physiological movement brought on by skeletal muscle contraction that increases energy expenditure over a baseline level.

Numerous studies indicate that exercise and physical activity are linked to a better quality of life, while emphasizing that physical inactivity can contribute to mental health disorders.

Established a relationship between physical activity and improved mental health. Particular data indicate a link between inactivity and mental illness, elevated stress levels, and depressive symptoms. Similarly, regardless of their gender, age, or other demographic characteristics, people who participate in physical activities and sports tend to have better mental health, exhibiting lower stress levels and fewer symptoms of anxiety and depression. The Transactional Model of Stress and Coping, developed by Lazarus and Folkman, is a framework that explains how individuals respond to stress. According to this model, an individual's perception of stress arises from their interaction with their surroundings, and the stress response is influenced by how they appraise the situation and the resources available to them, such as coping mechanisms. Caregivers who engage in physical activity may experience a sense of autonomy, as they are taking proactive steps to manage their own health and well-being. This can help them feel more in control of their situation, which may be especially important in the context of anticipatory grief, where feelings of helplessness can be common. To assess how a physical activity program affected caregivers of people with schizophrenia in terms of stress and healthy lifestyle choices, a randomized controlled experiment was carried out. This physical fitness regimen includes a variety of exercises. The physical activity and control groups were given the Zarit Caregiver Burden Scale and the Healthy Lifestyle Behavior Scale before the program's launch. A total of 60 caregivers were split into 30 intervention and 30 control groups at random. Sixty caregivers completed the post-intervention measurement, and every caregiver finished the intervention. According to the study's findings, people who are active have less burden.

Method:

To find out the impact of anticipatory grief on quality of life among caregivers of thalassemia patients with the mediating role of physical activity. The current study, which was quantitative in nature, employs a cross-sectional (questionnaire-based) survey research methodology. Through the purposive sampling technique, data were gathered. Self-report measures were used in the research.

Sample:

The total sample of the study consists of 300 caregivers with an equal number of men ($n=150$) and women ($n=150$). The data was collected from different cities of Punjab (Rawalpindi, Islamabad, Wahcantt, Chakwal, Talagang). Participants with the age range of 26 to 36, only having a single child with thalassemia, having 14 years of formal education, taking blood transfusion, and Beta thalassemia major are included in the study. Whereas participants

whose patients are Alpha thalassemia, are receiving iron chelation therapy, and have digestive tract disease were excluded from the study.

Study Instrument:

For the present study, a demographic sheet was designed to get information about demographic variables like gender, age of patients, age of caregivers, and education of caregivers.

Anticipatory Grief Scale:

To assess anticipatory grief among caregivers, this scale was used. There are 27 questions on the five-point Likert scale, which goes from 1 strongly disagree to 5 strongly agree. The minimum score is 27, and 135 is the maximum score of the scale. Anticipatory grief scale has been reported to have good internal consistency with Cronbach's alpha of .91 for the entire scale. The higher score on the scale indicates that the individual is experiencing a high level of anticipatory grief.

International Physical Activity Questionnaire (Geneva, 1998):

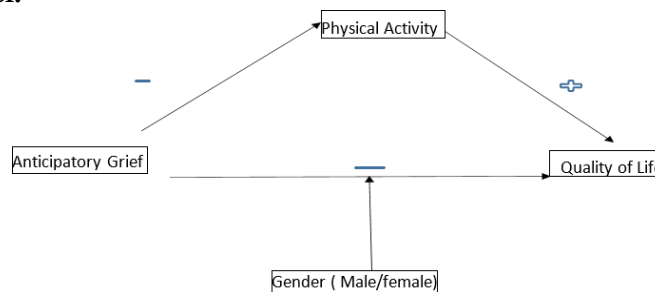
To assess the level of physical activity among caregivers, this scale was used. It comprises 7 items.

There are 2 items related to vigorous physical activity, 2 items related to moderate physical activity, 2 items related to walking, and 1 item is related to sitting. IPAQ is reported to have good internal consistency with Cronbach's alpha of .80. A higher score on the scale indicated higher intensity of physical activity.

Quality of Life Scale (Flanagan, 1970):

This scale was developed to evaluate caregivers' quality of life. With 26 items and four subdomains (physical health, psychological, social interactions, and environment). It is a five-point Likert scale that goes from 1 (not at all) to 5 (very high). The following are the potential raw scale score ranges for each domain: Environment = 32, Social Relationships = 12, Psychological = 24, and Physical Health = 28. Cronbach's alpha for the quality of life scale is .92, which indicates strong internal consistency. A higher score on the scale indicates a better quality of life.

Conceptual Model:



Procedure:

Approval was taken from the ethical review board of the Foundation University School of Science and Technology before conducting the study. In order to connect with the caretakers of children with thalassemia, the official approval system was established to secure permission from the appropriate authorities, including various non-governmental organizations that offer services such as blood transfusions. After getting permission from the respective authorities, I visited the centers. 300 caregivers with equal numbers of men (150) and women (150) were approached in person and online from different cities of Punjab (Rawalpindi, Islamabad, WahCantt, Chakwal, Talagang). Informed consent was taken to ensure participants' willingness. Before distributing the questionnaire, the participants received pertinent information about the goal of the study. Every participant received assurances that the data collected for the study would be kept confidential and used exclusively for that purpose. The instruments of the study were assembled in the form of a booklet, which

includes Anticipatory Grief Scale, International Physical Activity Questionnaire, Quality of Life Scale, and Family Support Scale alongside with demographic sheet and a consent form. Through the purposive sampling technique, data were collected. The participants were asked to read the statement carefully and mark the statement honestly. Most participants took 25 to 30 minutes to complete the question booklet. After the completion, the booklets were examined for missing data, and in case of missing data, participants were requested to fill them. In the end, all the participants were thanked and appreciated for their participation.

Results:

Statistical package for social sciences (IBM-SPSS version 23) and Process Macro were used to analyze data for the main study by using reliability analysis, correlation, regression, mean differences, and mediation analysis. Alpha reliability coefficient was used to find out reliability of measuring instruments. To find out the correlation between anticipatory grief, quality of life, and physical activity, Pearson correlation was used. Regression analysis was used to identify the impact of anticipatory grief on quality of life. To find out the mean difference in the population variables, the t-test and the independent sample t-test were applied. For mediation analysis, Hayes Process Macro was used.

Table 1. Descriptive Statistics and Alpha Reliability estimate of the study variable (N=300)

Variables	Range							
	K	α	M	SD	Potential	Actual	Skew	Kurtosis
AG	27	.81	81.94	12.89	27-135	56-125	.64	1.00
IPA	7	.82	23.10	6.12	6-42	7-37	-.22	-.14
QOL	26	.87	79.98	16.01	26-130	28-111	-.50	.61
PSY QOL	6	.79	19.41	4.68	6-30	6-25	-1.05	.25
PHY QOL	7	.74	21.06	6.15	7-35	8-32	.02	-.90
SOC QOL	3	.57	9.81	2.41	3-15	3-13	-1.13	.91
ENV QOL	8	.63	23.68	5.62	8-40	8-36	-.06	-.10

Note: AG=Anticipatory grief; IPA=International Physical Activity Questionnaire; QOL=Quality of Life; PSY QL= Psychological quality of life, PHY QL =Physical quality of life; SOC QL=Social quality of life; ENV QL= Environmental quality of life

Table 1 demonstrates the mean, range, standard deviation, skewness, kurtosis, and Cronbach's alpha reliability of the study variables among caregivers. Skewness and kurtosis show that the data is normally distributed and it is meeting the assumption of parametric testing. Values between -2 and +2 are the statistically accepted values of skewness and kurtosis. Cronbach's alpha reliability estimates of the study variables ranged from .81 to .87, which fall in the acceptable range.

Table 2. Pearson correlation among Study Variables (300)

Variables	1	2	3	4	5	6	7	8
2. AG-			-.41**	-.38**	-.25**	-.34**	-.32**	-.33**
3. PA			-	.40**	.19**	.52**	.49**	.28**
4. QOL				-	.84**	.70**	.65**	.91**
5. PHYQOL					-	.34**	.22**	.79**
6. PSY QOL						-	.79**	.44**
7. SOCQOL							-	.53**
8. ENVQOL								-

Note. ** $p < .01$ AG=anticipatory grief; PA=physical activity; QOL=quality of life; PHY QOL=physical quality of life; PSY QOL=psychological quality of life; SOC QOL=social quality of life; ENV QOL=environmental quality of life.

Table 2 demonstrates relationships among study variables. Results indicate that anticipatory grief has a significant negative relationship with quality of life. Results also indicated that anticipatory grief has a significant negative relationship with physical activity.

Physical activity has a significant positive relationship with quality of life. Quality of life has significant positive relationships with physical activity and negative relationships with anticipatory grief. Physical quality of life, psychological quality of life, and social and environmental quality of life have a significant positive relationship with physical activity and a significant negative relationship with anticipatory grief. In this table, the Pearson correlation coefficients (r) themselves represent the effect sizes, indicating the strength and direction of relationships among the study variables.

Table 3. Gender-wise comparison of anticipatory grief and quality-of-life domains with t-test results and effect sizes

	Men (n = 150)		Women (n = 150)				95% CI		
Variables	M	SD	M	SD	t(df)	P	LL	UL	Cohen's d
AG	74.29	8.90	89.60	11.67	12.77(298)	.00	-17.67	-12.95	-1.47
QOL	84.88	14.53	75.09	15.96	5.55(298)	.00	6.34	13.62	0.64
PHY QOL	22.40	6.07	19.72	5.96	3.85(298)	.00	1.31	4.04	0.44
PSY QOL	20.57	3.89	18.26	5.12	4.39(298)	.00	1.27	3.34	0.50
SOC QOL	10.39	2.00	9.23	2.64	4.26(298)	.00	.62	1.68	0.49
ENV QOL	25.23	5.53	22.13	5.28	4.94(298)	.00	1.86	4.32	0.57

Note: AG=Anticipatory Grief; QOL=Quality of Life; PHY QOL=Physical Quality of Life; PSY QOL=Psychological Quality of Life; SOC QOL; Social Quality of Life, ENV QOL=Environmental quality of life

Table 3 shows a significant difference between anticipatory grief and quality of life among caregivers based on gender. Women show significantly higher levels of anticipatory grief ($M=89.60$, $SD=11.67$, $t=-12.77$, $p<0.05$) than men. Men show a higher quality of life ($M=84.88$, $SD=14.53$, $t=5.55$, $p<0.05$) than women. Physical quality of life ($M=22.40$; $SD=6.07$), Psychological quality of life ($M=20.57$; $SD=3.89$), environmental quality of life ($M=25.23$; $SD=5.53$), and social quality of life ($M=10.39$, $SD=2.00$) are higher in men than women. Cohen's d value of quality of life and its sub-domains (physical quality of life (0.44), social quality of life (0.49), psychological quality of life (0.50), and environmental quality of life (0.57) shows a medium effect size. Whereas Cohen's d value of anticipatory grief shows a larger effect size, which is -1.47 (Cohen, 1988).

Table 4. Linear regression showing quality of life predicted by anticipatory grief among caregivers (N=300)

				95% CI				
Variables	B	SE	β	LL	UL	R ²	ΔR^2	F
AG	-.48	.066	-.387	-.61	-.35	.15	.14	52.42
QOL	119.34	5.50		108.51	130.17			

Note: AG Anticipatory Grief; QOL=Quality of life; $p<0.05$; Unstandardized coefficient; β =Standardized Coefficient; Standard Error. Table 5 shows the impact of anticipatory grief on quality of life among caregivers. Linear regression was conducted. Results indicate that anticipatory grief predicts quality of life ($F= 52.42$; $p<0.05$; $B=-.48$). β is -.38, which shows a moderate to strong negative effect; it means that higher anticipatory grief is associated with lower quality of life. Proportion of variance is 15% which shows that anticipatory grief is an important factor and has an impact on quality of life, but other factors also cause the change in quality of life.

Table 5. Mediating role of physical activity between anticipatory grief and quality of life among caregivers (N=300).

Variable				Quality of Life				
Total Effect		Direct Effect		Indirect Effect		95% CI		
	B	SE	t PB	SE	tPB	SE	LL	UL
AG	-.48 .06	-7.24 .00	-.32	.06	-4.69	.00	-.12	.03
							-.23	-.08

Note: AG=Anticipatory Grief

Table 6 shows that the relationship between anticipatory grief and quality of life is mediated by physical activity. Total effect indicates that as one unit increases in anticipatory grief, quality of life decreases by 0.48 units ($B=-.48$; $SE=.06$; $p<0.05$). Direct effect of anticipatory grief on quality of life shows that higher levels of anticipatory grief led to lower quality of life ($B=-.32$; $SE=.06$; $p<0.05$). Indirect effect is significant but weaker than total effect ($B=-.12$; $SE=.03$).

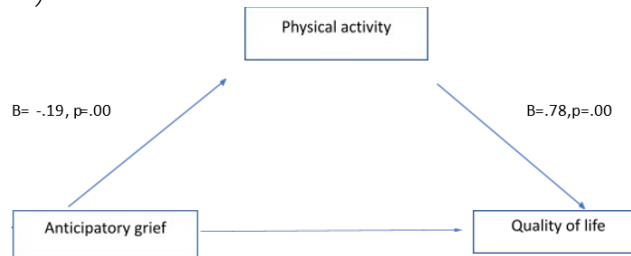


Figure 1. Indirect effect of anticipatory grief on quality of life through physical activity (N=300).

Direct Effect=-.32, $p=.00$

Indirect Effect=-.12, 95%CI [-.23, -.08]

Note: CI=Confidence Interval

Table 6. Subscales mediation

Variable				Physical Quality of Life			
Total Effect		Direct Effect		Total Effect		Direct Effect	
	B SE	tPB	SE	tPB	SE	LL	UL
AG	-1.2. 02	-4.6 .00	-10.02	-3.49. 00	-.02.01	-.04	.004

Note: Anticipatory grief

Table 7 shows that the relationship between anticipatory grief and physical quality of life is mediated by physical activity. Total effect indicates that as one unit increase in anticipatory grief, physical quality of life decreases by -1.2 units ($B=-1.2$; $SE=.02$; $p<0.05$). Direct effect of anticipatory grief on quality of life shows that higher levels of anticipatory grief lead to lower physical quality of life ($B=-.10$; $SE=.02$; $p<0.05$). Indirect effect is not statistically significant because zero is included in the confidence interval ($LL=-.04$; $UL=.004$).

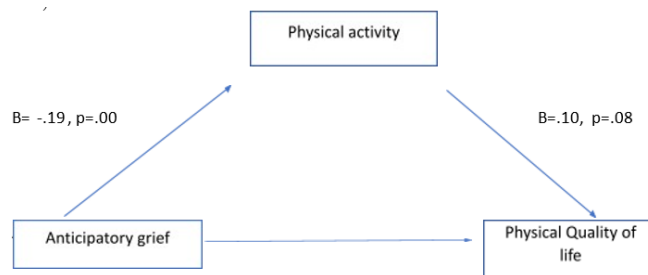


Figure 2. Indirect effect of anticipatory grief on physical quality of life through physical activity (N=300).

Direct Effect=-.10, $p=.00$

Indirect Effect=-.02, 95%CI [-.04, .004]

Note: CI=Confidence Interval

Table 7. Mediating role of physical activity between anticipatory grief and psychological quality of life among caregivers (N=300).

Variable				Physical Quality of Life			
Total Effect		Direct Effect		Total Effect		Direct Effect	
	B SE	tPB	SE	tPB	SE	LL	UL
AG	-1.2. 01	-6.2 .00	-.05 .01	-2.8. 005	-.06.01	-.28	-.11

Note: AG=Anticipatory Grief

Table 8 shows that the relationship between anticipatory grief and psychological quality of life is mediated by physical activity. Total effect indicates that as one unit increase in anticipatory grief, psychological quality of life decreases by -.12 units ($B = -.12$; $SE = .01$; $p < 0.05$). Direct effect of anticipatory grief on psychological quality of life shows that a higher level of anticipatory grief leads to lower psychological quality of life ($B = -.05$; $SE = .01$; $p < 0.05$). Indirect effect is significant but weaker than total effect ($B = -.06$; $SE = .01$)

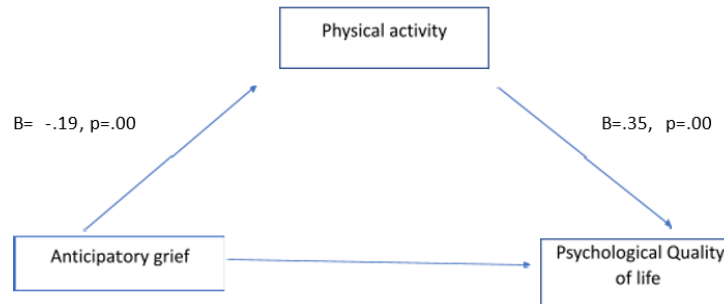


Figure 3. Indirect effect of anticipatory grief on psychological quality of life through physical activity (N=300).

Direct Effect = $-.05$, $p = .005$

Indirect Effect = $-.06$, 95%CI $[-.28, -.11]$

Note: CI=Confidence Interval

Table 8. Mediating role of physical activity between anticipatory grief and social quality of life among caregivers (N=300).

Variable			Social Quality of Life			Variable
Total Effect		Direct Effect	Indirect	95% CI Effect		Total Effect
	B	SE t P	B SE t	P B SE	LL	
AG	-.06	.01 -6.02 .00	-.02 .01 -2.74	.00 -.03 .007	-.26	AG

Note: AG= Anticipatory Grief

Table 9 shows that the relationship between anticipatory grief and social quality of life is mediated by physical activity. Total effect indicates that as one unit increase in anticipatory grief, social quality of life decreases by -.06 units ($B = -.06$; $SE = .01$; $p < 0.05$). Direct effect of anticipatory grief on social quality of life shows that a higher level of anticipatory grief leads to lower quality of life ($B = -.02$; $SE = .01$; $p < 0.05$). Indirect effect is significant but weaker than total effect ($B = -.03$; $SE = .007$)

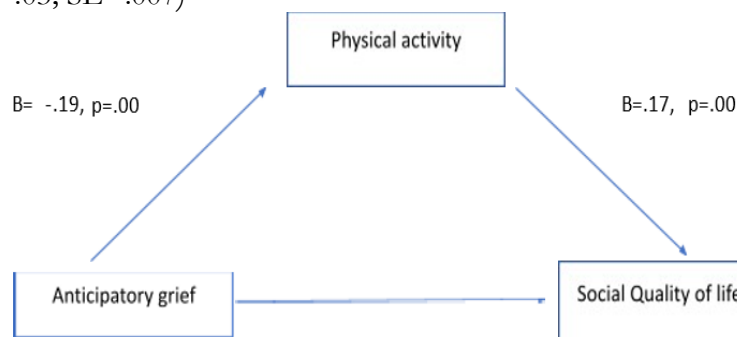


Figure 4. Indirect effect of anticipatory grief on social quality of life through physical activity (N=300).

Direct Effect = $-.02$, $p = .00$

Indirect Effect = $-.03$, 95%CI $[-.26, -.10]$

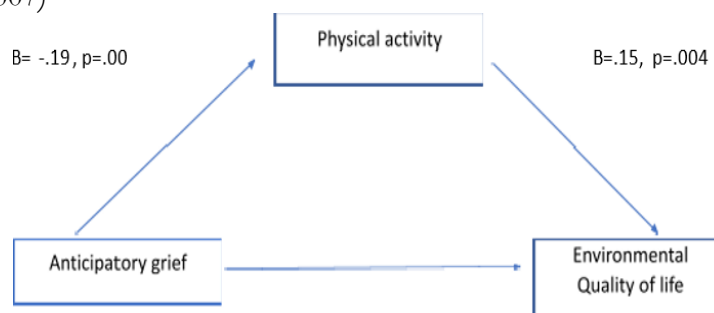
Note: CI=Confidence Interval

Table9. Mediating role of physical activity between anticipatory grief and environmental quality of life among caregivers (N=300).

	Variable			Environmental Quality of Life				
	Total Effect	Direct Effect		Indirect Effect		95% CI Effect		
	B	SE	t PB	SE	tPB	SE	LL	UL
AG	-14.02	-6.18.00	-.11.02	-4.50.00	-.03	.01	-.05	.007

Note: AG =Anticipatory Grief

Table 10 shows that the relationship between anticipatory grief and environmental quality of life is mediated by physical activity. Total effect indicates that as one unit increases in anticipatory grief, environmental quality of life decreases by -.14 units (B= -.14; SE=.02; $p = .00$). Direct effect of anticipatory grief on environmental quality of life shows that higher level of anticipatory grief led to lower environmental quality of life (B=-.11; SE=.02; $p=.00$). Indirect effect is not statistically significant because zero is included in confidence interval (LL= -.05, UL= -.007)

**Figure 5.** Indirect effect of anticipatory grief on environmental quality of life through physical activity (N=300).

Direct Effect=-.11, $p=.00$

Indirect Effect=-.03, 95%CI [-.05, -.007]

Note: CI=Confidence Interval

Discussion:

The current study was designed to investigate the impact of anticipatory grief on quality of life among caregivers of thalassemia patients with the mediating role of physical activity. The sample consisted of equal sections for both parents ($n=300$). The study employed a cross-sectional survey research design. Result of the study supported Hypothesis 1 that anticipatory grief will be negatively related to quality of life. According to research, Caregivers of patients with chronic diseases experience lower quality of life due to the burden they have. Previous research gives strong evidence of the negative relationship between anticipatory grief and quality of life. For instance, a study was done in 2013 that showed that a higher level of anticipatory grief is associated with lower quality of life. Research was done with 204 Jordan parents. Both mother and father were recruited. Most of the parents stated that caring for their child with thalassemia is more emotionally taxing and demanding than they ever imagined. The overall quality of life score, all subscales, and the total anticipatory grieving score showed substantial negative connections. Findings of the present study support Hypothesis 2 that anticipatory grief will be negatively related to physical activity.

Findings through correlation revealed that anticipatory grief is negatively related to physical activity ($p<0.01$). It is evident from the literature that anticipatory grief was negatively associated with physical activity. The research was done on caregivers who showed that a high level of anticipatory grief was related to lower physical activity. Systematic review of 1299 studies revealed that physical activity could be lower when a person is experiencing grief, loss, their sense of emotion, sense of freedom would be disturbed. The Result of the current study also suggest that physical activity will be positively related to quality of life; hence, Hypothesis

3 is also supported. It shows that more engagement in physical activity leads to a better quality of life. Regular physical activity can help caregivers feel more capable and effective in managing their stress and emotional burden. It is evident from the literature that physical activity was positively related to quality of life. Research was done in 2013, which showed that higher levels of physical activity were associated with a better quality of life. Research was conducted on 142 university students and 142 community participants completed the QoL survey and 2 open-ended questions.

Results of this study revealed that physical activity contributes to multiple aspects of quality of life, such as social and emotional benefits are primary motivators. The result of the present study supported hypothesis 4 that anticipatory grief will negatively predict the quality of life. It shows that a higher level of anticipatory grief leads to a lower quality of life. The result explained 15% of the variance in the quality of life with $F(.150) = 52.42, p < .00$. The significant predictors that emerged were anticipatory grief ($B = -.48; \beta = -.38$). A descriptive, cross-sectional study including 204 Jordanian parents was carried out. The father and mother were hired from medical facilities. The study's findings demonstrated a statistically significant inverse link between quality of life and anticipatory grieving. This suggests that the quality of life was reduced for parents who had significant levels of anticipatory mourning. Findings of the study support hypothesis 5, which states that physical activity will mediate the relationship between anticipatory grief and quality of life.

The research was done with a sample of 24,281 from the 13,880 respondents who were contacted through a telephone call. The results suggest that physical activity partially mediates the impact of chronic conditions on several health outcomes that are important to quality of life. It was also evident from a study that was conducted with 7,518 respondents. Results of the study showed that physical activity, such as leisure time, household & work-related physical activity were positively affected health-related quality of life. The Result of the study support Hypothesis 6 that anticipatory grief will be higher in female caregivers as compared to male caregivers. The results indicate that females showed higher anticipatory grief ($M=89.60, SD=11.67, p < 0.05$) than men. Research has shown that females perceive a higher level of anticipatory grief than men. A study was done in 2013, which concluded that mothers perceive a higher intensity of anticipatory grief than fathers. The results of the study yielded that females showed a lower quality of life ($M=75.09, SD=15.96$) than men. These findings provide support to hypothesis 7 that is quality of life will be lower in female as compared to male caregivers of thalassemia patients. A cross-sectional study was conducted with a sample of 254 caregivers. Results of the study showed that taking care of children with thalassemia is stressful for caregivers; their own quality of life, especially related to caregiving, tends to be low, depending on various factors like children's health, frequent hospitalization, regular blood transfusion, and financial factors. Another research was done to investigate the quality of life in males and females. Results of the study showed that various factors can influence the quality of life of caregivers, such as their gender, the burden of caregiving, spiritual beliefs etc. The study also showed that mothers take on more burden, more concern about their child's future, quitting jobs for their child, and their quality of life is more affected than males.

Limitations and Suggestions:

The current study was cross-sectional in nature with a sample size of 300 caregivers. So, in the future, longitudinal studies should be conducted to explore the phenomenon of the current study.

The current study was conducted on only caregivers (parents), so future studies will be conducted on different samples, for instance, siblings, caregivers other than parents.

The study sample included participants who had attained 14 years of formal education, and the questionnaire was administered in English. So, in the future, the current study should be conducted on uneducated people who can understand languages other than English.

The current study was conducted on young caregivers with only one child, so future studies should be conducted on different age groups with the numbers of children.

Conclusion and Implications:

The present study provides a link between anticipatory grief, quality of life, and the role of physical activity. Findings of the present study showed that caregivers experiencing higher levels of anticipatory grief reported significantly lower levels of quality of life. Moreover, physical activity was found to mediate this relationship positively, indicating that engaging in regular physical activity helps mitigate the negative impact of anticipatory grief on caregivers' well-being. It appears that physical activity provides emotional and psychological resources that enhance caregivers' resilience and coping abilities. Hence, understanding the interplay of anticipatory grief and physical activity offers valuable insights into promoting a better quality of life for caregivers and serves as empirical evidence for researchers and mental health professionals working with chronic illness populations. The present study has provided an empirical basis for understanding the significant role of anticipatory grief in shaping the quality of life among caregivers of thalassemia patients, while also highlighting the importance of physical activity. Moreover, this research lays a strong foundation for future studies by exploring how physical activity serves as a mediating factor. The findings of the current study are also relevant to healthcare professionals, psychologists, and caregivers who are directly involved in supporting individuals caring for chronically ill patients. Caregivers experiencing anticipatory grief are at risk for lower quality of life, and without proper support, this burden may lead to negative emotional and physical outcomes. Therefore, targeted interventions that promote physical activity can be instrumental in improving caregivers' well-being. Mental health professionals and healthcare providers should work collaboratively with families to foster a more supportive environment, ultimately enhancing caregivers' ability to cope with stress and maintain a better quality of life.

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