Death Anxiety in Psychopathology: A Systematic Review

Psikopatolojide Ölüm Kaygısı: Sistematik Derleme

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ABSTRACT

Death anxiety has been proposed to be a transdiagnostic construct underlying the development and maintenance of numerous psychopathological conditions. The relationship between death anxiety and mental disorders has been largely studied in specific disorders. On the other hand, it has been suggested that interventions to transdiagnostic components such as death anxiety have the potential to increase therapy efficacy for many psychological disorders. Accordingly, the aim of the study was to identify studies examined relationships between death anxiety and various mental disorders and outline measurement methods for evaluating death anxiety. Of the 933 references identified at Web of Science, Google Scholar, PubMed and APA databases, 17 articles met inclusion criteria. In the studies, the relationship between death anxiety and psychopathology and the measurement tools used to evaluate death anxiety were examined. Studies included in this review have examined the role of death anxiety in various psychological disorders including obsessive-compulsive disorder, health anxiety, social anxiety, depression, schizophrenia, generalized anxiety disorder and panic disorder. Overall, results suggested that there is a clear association between death anxiety and psychopathology, symptom severity, number of psychiatric medications and hospitalizations, depression and anxiety. Furthermore, Templer's Death Anxiety Scale was most widely used scale for measuring death anxiety. The findings indicate that death anxiety may be an important risk factor in the development or maintaining of many psychological disorders and it is significant to include death anxiety in the treatment of mental disorders in which death anxiety may play a role.
Keywords: Death anxiety, fear of death, psychopathology, transdiagnostic

ÖZ

Ölüm kaygısının birçok psikolojik durumun ortaya çıkması ve devam etmesini etkileyen tanılar üstü bir yapı olduğu öne sürülmektedir. Alan yazında ölüm kaygısı ve ruhsal bozukluklar arasındaki ilişki genellikle belirli bir ruhsal bozukluk kapsamında incelenmiştir. Bununla birlikte, ölüm kaygısı gibi tanılar üstü bileşenlere yönelik müdahalelerin birçok psikolojik bozukluk için terapi etkinliğini arttırma potansiyeline sahip olduğu ileri sürülmektedir. Bu derlemenin amacı, ölüm kaygısı ile farklı ruhsal bozukluklar arasındaki ilişkileri inceleyen çalışmaları değerlendirmek ve ölüm kaygısını değerlendirmeye yönelik ölçüm araçlarını tanıtmaktır. Bu amaç doğrultusunda, Web of Science, Google Scholar, PubMed ve APA veritabanları taranmıştır ve seçilen makalelerin referans listeleri ilgili makalelere ulaşmak için gözden geçirilmiştir. Tarama sonucunda belirlenen 933 çalışma içinde 17 makale mevcut derleme çalışmasına dahil edilme kriterlerini karşılamıştır. Çalışmalarda ölüm kaygısı ile psikolojik bozukluk arasındaki ilişki ve ölüm kaygısını değerlendirmeye yönelik kullanılan ölçüm araçları incelenmiştir. Bu derlemeye dahil edilen çalışmaların obsesif-kompulsif bozukluk, sağlık kaygısı, sosyal kaygı, depresyon, şizofreni, yaygın kaygı bozukluğu ve panik bozukluk gibi çeşitli psikolojik bozukluklarda ölüm kaygısının rolünü incelediği görülmüştür. Çalışmalardan elde edilen sonuçlar genel olarak değerlendirildiğinde, farklı ruhsal bozukluklarda yüksek düzeyde ölüm kaygısı ile psikopatoloji, belirti şiddeti, psikiyatrik ilaç kullanımı, hastaneye yatış sayısı, depresyon ve anksiyete arasında olumlu yönde bir ilişki olduğu görülmektedir. Ayrıca, ölüm kaygısını ölçmek için en yaygın kullanılan ölçüm aracının Templer Ölüm Kaygısı Ölçeği olduğu görülmektedir. Elde edilen bulgular, ölüm kaygısının birçok psikolojik bozukluğun gelişimi ya da devam etmesinde önemli bir risk faktörü olabileceğini ve ölüm kaygısının rol oynayabileceği ruhsal sorunların tedavisinde ele alınmasının önemini göstermektedir.
Anahtar sözcükler: Ölüm kaygısı, ölüm korkusu, psikopatoloji, tanılar üstü

Introduction

Death anxiety has been a part of the human condition throughout recorded history and frequently featured in art, philosophy, literature, and psychology (Furer and Walker 2008, Eshbaugh and Henninger 2013). Death anxiety can be defined as the conscious or unconscious psychological condition when people feel being threatened by death experience (Kesebir 2014). It is known that the awareness of one's eventual death has also been a source

of strong feelings. For example, Yalom (2008) states that "Our existence is forever shadowed by the knowledge that we will grow, blossom, and, inevitably, diminish and die.". The Terror Management Theory (TMT, Pyszczynski et al. 1999) suggests that the most fundamental difference between humans and all other living organisms is the ability to think. As a result of this cognitive ability, humans can think about future and conceive their own death and they become aware of their inevitable mortality. TMT argues that the human motivation to stay alive, coupled with the awareness of death has the power to create anxiety since the awareness of death conflicts with a basic survival instinct that humans share with all other living organisms. This conflict may produce an existential terror that other living organisms probably don't have. According to TMT, this existential terror is managed by proximal and distal defenses. While proximal defenses include trying not to think about death or denial of death, distal defense mechanisms consisting of cultural worldview, self-esteem and close interpersonal relationships provide protection against death anxiety (Solomon et al. 1991). On the other hand, the ability to apply these psychological structures against anxiety may not be applicable due to the factors such as genetic predispositions, insecure attachment, temperament, negative childhood experiences, trauma, and other life difficulties. TMT studies indicates that individuals who have difficulty in using distal defense mechanisms to cope with death anxiety are relatively more vulnerable to experience high level of death anxiety, and this makes them more vulnerable to psychological disorders, especially depression and anxiety disorders (Maxfield et al. 2014). As a result, psychopathology may reflect maladaptive efforts to cope with death awareness and existential fear, and death anxiety may be a transdiagnostic construct in psychological conditions (Strachan et al. 2007).

The role of death anxiety in mental health conditions has been investigated in both nonclinical and clinical populations. Several research evaluating death anxiety in nonclinical populations indicate that women receive higher scores on death anxiety measure as compared to men, and there is a negative correlation between death anxiety and age (Russac et al. 2007, Saeed and Bokharey 2016). Furthermore, physical and mental health problems are associated with higher levels of death anxiety (Fortner and Neimeyer 1999, Iverach 2014). Death anxiety has been extensively investigated in some specific samples, such as nurses, healthcare professionals, individuals diagnosed with HIV/AIDS or cancer, who may have the potential to experience greater death anxiety due to direct exposure to a life-threatening illness or caring for patients facing death and consistent findings have emerged (Miller et al. 2012, Nia et al. 2016). It was found generally that nurses and other health care professionals who provide care for patients facing death commonly experience high levels of death anxiety (e.g., Nia et al. 2016). In sum, the results consistently indicated that high levels of death anxiety were found among non-clinical samples.

Death anxiety has been considered as a transdiagnostic construct underpinning the development, course, and maintenance of various psychopathological conditions (Iverach et al. 2014). Transdiagnostic constructs are defined as components that are a common symptom across different psychological disorders, can play a role as a risk factor in the development or maintenance of psychological disorders, and can be targeted for change in treatment (Harvey et al. 2011). For instance, intolerance to uncertainty, perfectionism, rumination, and experiential avoidance are seen as risk or maintenance factors for many mental disorders and are regarded as one of the transdiagnostic constructs (Dozois et al. 2009, Egan et al. 2011, McEvoy et al. 2019). Similarly, death anxiety is one of the common symptoms that can be seen in many different psychological disorders, and it is known to be a risk factor in the emergence or maintenance of various psychological disorders. High level of death anxiety resulting from the inability to effectively use functional coping strategies such as attachment to cultural worldview, enhancing self-esteem and developing close interpersonal relationships is seen as one of the underlying core fears in the development or maintenance of many psychological conditions (Pyszczynski et al. 1999). In the treatment of many mental disorders, targeting transdiagnostic constructs has the potential to increase treatment effectiveness and improvement in psychological symptoms (Barlow et al. 2004, Egan et al. 2011). Furthermore, identifying transdiagnostic constructs may contribute to the development and implementation of more effective psychological interventions that can address comorbid mental disorders and prevent the development of other diagnoses after treatment, compared to disorder-specific interventions (McManus et al. 2010, Iverach et al. 2014).

While psychopathology reflects maladaptive efforts to cope with death awareness, death anxiety may not always be seen explicitly (Maxfield et al. 2014). For instance, the feared objects or situation in specific phobias such as animals, heights, blood are associated with harm or death (Marks 1987). Likewise, Menzies et al. (2015) have suggested that death anxiety plays a central role in the most common subtypes of OCD such as cleaning and checking. Many individuals engage in checking and handwashing behaviors in order to prevent fatal illnesses or checking the iron socket to prevent fire. In similar lines, several researchers suggested that death anxiety is also common experience in panic disorder (Randall 2001, Torres and Crepaldi 2002). Since individuals with panic

disorder state that they fear sudden cardiac arrest and any other health symptoms viewed as fatal, they request repeated consultations with cardiologists and frequently visit emergency services (Fleet and Beitman 1998). Similarly, individuals with agoraphobia report that refusal to travel without security object or figures or avoidance of unfamiliar places is designed to prevent from sudden death (Foa et al. 1984), while lack of meaning and existential concerns may associate with depressive disorder (Havens and Ghaemi 2005). Significant correlations have also been found between death anxiety and health anxiety, generalized anxiety disorder (GAD), post-traumatic stress disorder (PTSD), and eating disorder (Noyes et al. 2002, Alantar and Maner 2008, Chatard et al. 2012, Dursun et al. 2022). These findings indicate that death anxiety may play a role in different psychological conditions. Since high level of death anxiety may be an underlying cause of different mental disorders, it is recommended that death anxiety should be evaluated by mental health professionals (Pandya and Kathuria 2021).

Despite the emphasis on the significance of death anxiety in the development and maintenance of many mental disorders and the importance of including interventions targeting high levels of death anxiety in clinical practice, to date, there are no conclusive findings that systematically summarize research findings regarding death anxiety and its association with various mental illnesses. The investigation of the relationship between death anxiety and psychopathology has largely been disorder specific. Therefore, one of the aims of the present study is to review and summarize research findings regarding death anxiety and its role in various psychological disorders. Considering that death anxiety is often overlooked in theory and practice, this study would provide groundwork for future research and contribute to the development of treatment protocols that targeted death anxiety for psychological problems in which death anxiety is one of the underlying causes. As the significant role of death anxiety in the emergence and development of mental problems is increasingly recognized by researchers, it is also important to identify reliable measurement tools for measuring death anxiety. In this context, the other aim of this review is to outline measurement methods used to evaluate the presence and severity of death anxiety. In sum, the current study was designed to summarize the research findings regarding death anxiety and its role in psychopathology and outline measurement methods used to evaluate the presence and severity of death anxiety. By summarizing all the available studies in this area, it is aimed to provide greater insight into the importance of death anxiety in psychopathology and to contribute to the improvement of theoretical knowledge and clinical approaches to cope with high levels of death anxiety.

Method

This present review study which was conducted according to PRISMA guideline (Preferred Reporting Items for Systematic Reviews and Meta-analyses, Moher et al. 2009), aimed to examine studies evaluating the role of death anxiety in different mental disorders. Within the scope of this study, four databases including Web of Science, Google Scholar, PubMed and APA were systematically scanned. The search was performed using the following keywords: 'death anxiety' or 'fear of death' and 'psychopathology', 'mental disorder', 'mental illness', 'depressive disorders', 'bipolar disorder', 'anxiety disorders', 'specific phobia', 'generalized anxiety disorder', 'panic disorder', 'agoraphobia', 'health anxiety', 'obsessive compulsive disorder', 'post-traumatic stress disorder', 'social phobia', 'eating disorder', 'somatic symptom disorder', 'personality disorders ', 'dissociative disorders', 'sleep disorders', 'sexual dysfunctions'. In the selection of keywords, the basic diagnosis groups in DSM 5 were used as keywords in the literature review to include the most recent diagnoses. In addition, the key terms 'death anxiety' and 'fear of death' were used, as the concepts of death anxiety and fear of death are used interchangeably (Wink and Scott 2005). In addition, reference lists of selected studies were searched for relevant articles. There was no restriction to publication year and characteristics of participants (i.e., sex, age, educational status).

The inclusion criteria for the studies were as follows: articles focusing on the relationship between death anxiety and psychopathology, studies targeting psychological disorders, and studies evaluating psychological symptoms and death anxiety with valid measurement tools. The exclusion criteria included case studies, panel presentations, systematic reviews, meta-analyses and unpublished dissertations, studies outside the scope of the relationship between death anxiety and psychopathology, and studies conducted in languages other than English. After the initial screening, studies meeting the inclusion criteria were evaluated in detail in terms of sample characteristics, target disorder, sample group, death anxiety measurement tools, and study results. The characteristics and detailed information of the 17 studies included in this systematic review are presented in Table 1.

Results

A total of 933 articles were identified from four databases, including Web of Science, Google Scholar, PubMed

and APA. After duplicates and irrelevant studies based on the title and abstract were removed, 149 studies were identified and screened for eligibility. Of these studies, 132 was excluded due to studies targeting no psychological conditions such as HIV, cancer, aging, religion (n=101), studies do not include valid measurement or research methods of psychiatric disorder symptoms (n=14), systematic/ meta-analysis/ review/ incomplete protocol studies (n=11), case studies (n=4), and studies written in languages other than English (n=2). As a result, 17 studies were identified that met the inclusion criteria for the systematic review. Figure 1 shows the study selection process based on the PRISMA flowchart.

General Characteristics of the Studies

The sample sizes in the studies ranged from 60 (Mavrogiorgou et al. 2020) to 7678 (Zhang et al. 2021). The mean age ranges from 31.6 (James and Wells 2002) to 50.7 (March 2004). In 14 studies, the sample mostly consisted of women, with rates ranging from 58.2% (Menzies et al. 2020) to 88.5% (Zhang et al. 2021). The studies were conducted in various countries with different cultural characteristics, including USA (4 studies; (Martz 2004, Noyes et al. 2002, Templer 1971 Tolstikova et al. 2005), Germany (Schütte et al. 2016, Mavrogiorgou et al. 2020), Israel (Hamama-Raz et al. 2005). 2016) and Turkey (Oker et al. 2021, Dursun et al. 2022). The studies have targeted different mental disorders: OCD (n=2), GAD (n=1), health anxiety (n=3), social anxiety (n=1), depression (n=2), PTSD (n=3), panic disorder (n=1), eating disorder (n=1), complicated grief (n=1), schizophrenia (n=2). In terms of sample inclusion criteria, it has been seen that participants who met relevant disease criteria based on either the DSM-IV or DSM-5, ICD-10, upper and lower distribution of the relevant measurement scores.
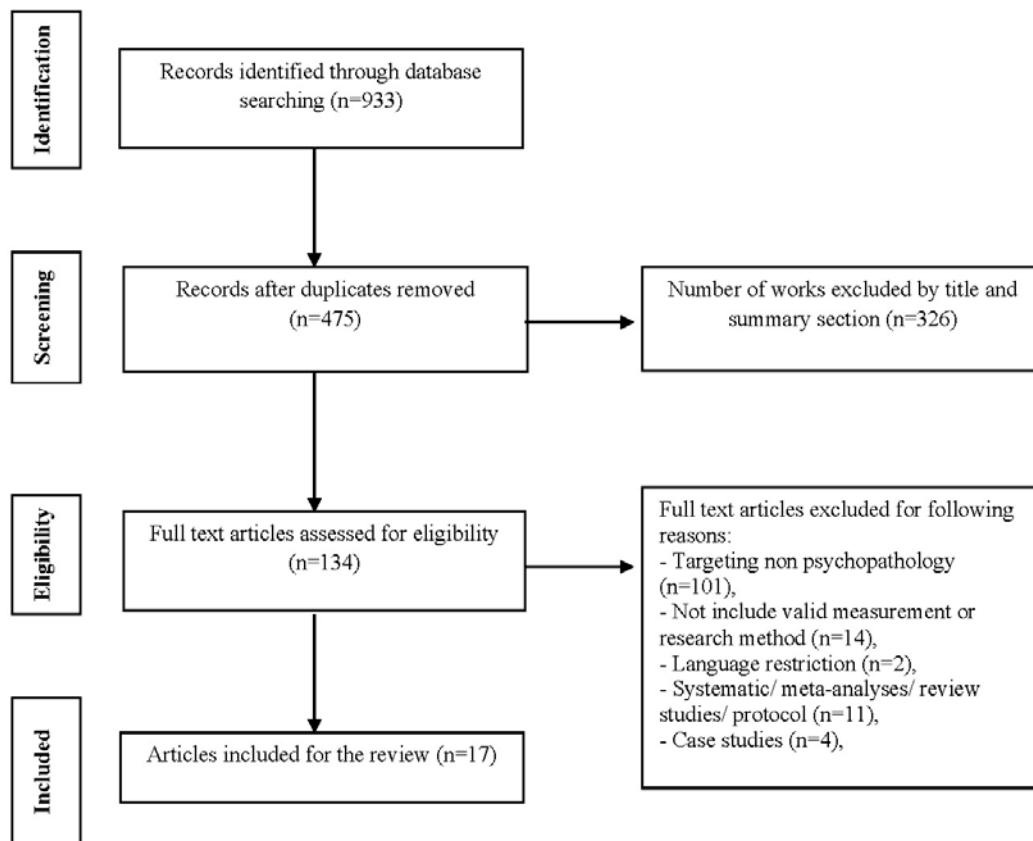

Figure 1. PRISMA flow chart

Relationship between Death Anxiety and Psychopathology

When the relationship between death anxiety and different mental disorders is evaluated, there is a positive relationship between death anxiety and targeted mental disorders in general. In 16 of the 17 studies included in

the review, a significant positive relationship was found between the level of death anxiety and the symptoms of psychological disorders. For instance, individuals diagnosed with GAD were found to have higher death anxiety scores compared to the control group (Dursun et al. 2022). Similarly, a positive correlation was observed between PTSD symptoms and death anxiety levels of individuals exposed to current terrorist incidents in Israel in the study examining the relationship between PTSD symptoms and death anxiety (Hamama-Raz et al. 2016). In addition to the relationship between death anxiety and symptoms of psychological disorders, positive association were also found between death anxiety and other variables related to mental disorders. Menzies and Dar-Nimrod (2016) found a positive correlation between death anxiety and general OCD severity, overall distress level, total number of medications used and hospitalizations. While most of the studies in the literature indicated a significant relationship between psychopathology and death anxiety, only one study did not find a significant relationship between death anxiety and psychological condition. In the study conducted by Lowe and Harris (2019), no significant relationship was found between death anxiety and symptoms of social phobia, but self-esteem and intolerance of uncertainty were identified as significant predictors of social anxiety symptoms. In conclusion, the studies conducted in clinical samples provide strong evidence for a positive relationship between death anxiety and symptoms of psychological disorders. On the other hand, further research is needed to better understand the role of death anxiety in certain mental disorders such as social phobia.

Death anxiety includes cognitive, emotional, and motivational components (Lehto et al. 2009). The relationship between mental disorders and death anxiety has been examined in terms of different components of death anxiety in some of the studies included in the current systematic review. One of the emotional components of death anxiety associated with psychopathology might be feeling of lack meaning in life. Noyes et al. (2002) examined the relationship between fear of death and health anxiety and found a high level of correlation between health anxiety and fear of death, loss of meaning, and fear of separation. In addition, a significant relationship was found between fear of death and loss of meaning in life and fear of separation. Similarly, Dursun et al. (2022) found that individuals with GAD had lower scores on the presence of meaning and higher scores on the search for meaning compared to the healthy control group. Evaluating the lack of meaning in life and fear of separation would be important in interventions targeting high levels of death anxiety. One of the cognitive components of death anxiety associated with psychopathology might be maladaptive thoughts and beliefs related to death. James and Wells (2002) found that negative beliefs about death and superstitious beliefs about illness and causes of death were positively associated with health anxiety in a sample of Roman Catholic and Atheist participants. It is stated that identifying and restructuring superstitions and negative beliefs about death may lead to a decrease in high level of death anxiety and health anxiety symptoms. In addition, participants with health anxiety and panic disorder were found to have higher level of fear of death compared to participants with depression and a healthy control group and it is stated that this may result from negative or unrealistic thoughts about the death process. (Schütte et al. 2016 The results suggest that different components of death anxiety, more specifically loss of meaning, fear of separation or negative beliefs about the concept of death may be associated with symptoms of psychological disorders. Thus, identifying the prominent components of death anxiety associated with psychological disorders may contribute to the improvement of effective interventions for high level death anxiety.

When examining the role of confounding variables in the relationship between death anxiety and psychopathology, the relationship between death anxiety and mental disorders persists even after controlling for a third variable. One potential confounding variable that can affect the severity of psychological disorders or the relationship between death anxiety and psychological conditions is personality traits such as neuroticism (Arndt et al. 2005). In this context, neuroticism can be evaluated as a possible confounding variable in research. In a study included in the review (Menzies et al. 2020), a positive and significant relationship was found between OCD and death anxiety levels, and the relationship remained significant even after neuroticism was controlled. Furthermore, the relationship between death anxiety and OCD symptoms persists even after controlling for depression, anxiety and stress factors. Additionally, self-esteem and perfectionism can be considered as possible confounding variables in psychopathology research. Le Marne and Harris (2016) found a significant relationship between death anxiety and disordered eating attitude and perfectionism. Furthermore, even after controlling self-esteem, age and perfectionism, death anxiety was a significant predictor of disordered eating attitude. In a study investigating the effect of sociodemographic variables as a third variable that may be associated with psychopathology, the relationship between death anxiety and PTSD symptoms continued after sociodemographic factors such as age and gender and disability-related variables were controlled (Martz 2004). The results indicate that the relationship between death anxiety and psychopathology remains significant even after controlling for possible confounding variables.

Table 1. General characteristics of the studies						
Study	**Country**	**Sample**	**Target disorder**	**Setting/ Characteristics**	**Death anxiety measure**	**Outcomes**
Templer (1971)	USA	n=75 (%38.7; Age:51-92 Age mean:69.7)	Depression	Retired individuals	DAS	A positive and significant relationship was found between death anxiety and depression symptoms.
Furer et al. (1997)	Canada	n=66 (%77.3 female; Age:NI Age mean:32.7)	Panic disorder	Patients with DSM-IV panic disorder, social phobia and healthy control group	IAS	Participants with panic disorder reported higher death anxiety level than participants with social phobia and healthy controls.
Lowe and Harris (2000)	Australia	n=591 (%75 female; Age:18-80 Age mean:38.1)	Social anxiety	Individuals over the age of 18 and living in Australia	DAS	There was no significant relationship between death anxiety and social anxiety symptoms. However, self-esteem and intolerance to uncertainty were found to be important predictors of social anxiety.
Noyes et al. (2002)	USA	n=162 (%72 female; Age:NI; Age mean:51.1)	Health anxiety	Outpatients with hypochondriasis and without hypochondriasis	FDS	Death anxiety was significantly higher in patients with hypochondriasis compared to patients without hypochondriasis.
James and Wells (2002)	UK	n=303 (%47.9 female; Age:18-79 Age maen:31.6)	Health anxiety	The Atheist sample from an Atheist/agnostic organization and The Roman Catholic samples in the religious community	DPS, DBQ	Death anxiety was correlated with hypochondriasis. Also, negative beliefs about death were related to health anxiety within both groups.
Martz (2004)	USA	n=313 (%13.4 female; Age: 16-87 Age mean:50.7	PTSD	Among veterans and civilians with spinal cord injuries	DAS	Death anxiety significantly predicted the total levels of posttraumatic stress reactions among individuals with spinal cord injuries. In addition, death anxiety was found to be associated with PTSD symptoms even after controlling for socio-demographic variables and variables related to disability.
Tolstikova, Fleming and Chartier (2005)	USA	n=84 (%86 female; Age: 22-82 Age mean:49.7	Complicated grief and trauma responses	Individuals whose relative died at least 6 months before participating in the study	DAS	It has been found that finding no meaning in the death of a loved one and death anxiety play an important role in both trauma and complicated grief symptoms.
Schütte et al. (2016)	Germany	n=120 (%70 female; Age: NI	Health anxiety	Patients with diagnosis of hypochondriasis, panic disorder,	MODDI	Individuals with hypochondriasis and panic disorder reported more fear and less acceptance

		Age mean: 44.2		moderate or severe depression according to DSM-IV and healthy control group		of death than patients with depression and healthy controls.
Hamama-Raz ve ark. (2016)	Israil	n=429 (%70.9 female; Age: 18-75 Age mean: 35.5	PTSD	Sample exposed to the consequences of the current wave of terror in Israil	DAQ	Death anxiety was found a significant predictor of posttraumatic symptom severity
Le Marne and Harris (2016)	Australia	n=164 (%80.5 female; Age: 18-71 Age mean: 33.6	Eating disorder symptoms	Participants were recruited from an advertisement promoted on the social media and on the Centre for Eating and Dieting Disorders website and asked to fulfill Eating Attitude Test.	DAS	It was found that greater death anxiety was associated with greater eating disorder severity. In addition, after controlled age, self-esteem and perfectionism, death anxiety remained a significant predictor of eating disorder symptomology.
Menzies and Dar-Nimrod (2017)	Australia	n=171 (%44.4 female; Age: NI Age mean: NI	OCD	Individuals satisfy criteria for a current diagnosis of OCD on the ADIS-5L.	CLFD	Moderate to large correlations were found between death anxiety scores and OCD severity, total number of hospitalizations, psychiatric medications used, and diagnoses of comorbid anxiety-related disorders
Menzies et al. (2020)	Australia	n=79 (%58.2 female; Age:18-65 Age mean:33.5	OCD	Treatment-seeking individuals who met criteria for a current diagnosis of OCD on the ADIS-5L	MFODS	Higher level of death anxiety predicted increased OCD symptom severity. Also, the result showed that individuals with higher death anxiety level experienced more disorders prior to the onset of OCD.
Mavrogi-orgou et al. (2020)	Germany	n=60 (%48.3 female; Age:18-72 Age mean:39.5	Depression and schizophrenia	Patients with diagnosis of depression and schizophrenia according to ICD-10 and healthy control group	BOFRETTA	Participants with schizophrenia and those with depression were found to have higher death anxiety level compared with healthy controls in the same age range.
Oker et al. (2021)	Turkey and Norvey	n=304 (%87.9 female; Age:18-35 Age mean: NI	Depressive and anxiety symptoms	Undergraduate psychology students from Norway and Turkey.	DAS	Death anxiety was significantly related to depressive and anxiety symptoms in both groups. In addition, Turkish participants scored higher on death anxiety level than Norwegian participants.
Zhang et al. (2021)	China	n= 7678 (%88.5 female; Age: NI Age mean:34.9)	PTSD	The survey was conducted one month after the outbreak and repeated at the time of resuming activity	DAS	Death anxiety had a significant predictive effect on PTSD.
Dursun et al. (2022)	Turkey	n=69	GAD	Individuals with GAD who applied	DAS	It was found that the death anxiety and

		(%65.2 fe-male; Age:NI Age mean:33.3		to the psychiatry clinic and a healthy control group		meaning-seeking scores of individuals with GAD were significantly higher than those without GAD diagnosis, and they had lower scores on the presence of meaning and hardiness.
Laçiner et al. (2022)	Turkey	n=104 (%37.5 fe-male; Age:NI Age mean:NI	Schizo-phrenia	Individuals who applied to the psychiatry clinic and were followed up with a diagnosis of schizophrenia according to DSM-5 criteria and a healthy control group	ASDA	It was found that the death anxiety level of individuals diagnosed with schizophrenia was higher than the control group, and the death anxiety level of individuals with a high level of functionality was found to be lower.

ADIS-5L: Anxiety and Related Disorders Interview Schedule for DSM-5, ASDA: The Arabic Scale of Death Anxiety, BOFRETTA: Bochum Survey for Assessment of Attitude to Death and Death Anxiety Scale, CLFD: Collett-Lester Fear of Death Scale, DAS: Death Anxiety Scale, DBQ: Death Beliefs Questionnaire, DPS: Death Perception Scale, DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, fourth edition, DSM 5: Diagnostic and Statistical Manual of Mental Disorders - Fifth Edition, FDS: Fear of Death Scale, GAD: Generalized Anxiety Disorder, IAS: Illness Attitude Scale, ICD-10: International Classification of Diseases, Tenth Revision, MFODS: Multidimensional Fear of Death Scale, MODDI: Multidimensional Orientation toward Death and Dying Inventory, NI: Not included, OCD: Obsessive-Compulsive Disorder, PTSD: Post Traumatic Stress Disorder, SIAS: Social Interaction Anxiety Scale

Comparison of Death Anxiety Severity in Different Mental Disorders

The control groups consisting of samples with different mental disorder symptoms were used in some of the studies and the levels of death anxiety can vary across psychological disorders. For instance, in a study by Schütte et al. (2016), individuals diagnosed with panic disorder and health anxiety were found to experience higher levels of fear of death and less acceptance of death compared to individuals diagnosed with depression and the healthy control group. Similarly, individuals with panic disorder reported higher levels of death anxiety compared to individuals diagnosed with social phobia and healthy control group (Furer et al. 1997). In panic disorder which is known to have death anxiety as significant cognitive symptoms, the level of death anxiety may be higher than other disorders. Additionally, individuals diagnosed with schizophrenia may use denial as defense mechanism to cope with reality, which can lead to denial of the reality of death (Keser 2018). Therefore, using denial as a form of defense may result in high levels of death anxiety for individuals diagnosed with schizophrenia. One of the limited number of studies focusing on the relationship between schizophrenia and death anxiety indicated that individuals diagnosed with depression and schizophrenia experience higher levels of death anxiety compared to healthy control group, and individuals with schizophrenia have the highest level of negative attitude towards death (Mavrogiorgou et al. 2020). In these studies, the effect of death anxiety on targeted mental disorder symptoms could be compared with non-clinical control groups and individuals with different mental disorder symptoms. The findings indicate a relationship between death anxiety and mental disorders, while also demonstrating that the level of death anxiety can vary in different mental disorders.

Measurement/Instruments to Evaluate Death Anxiety

The Templer Death Anxiety Scale (DAS; Templer 1970) is the most frequently used measurement tool in the studies. The DAS was used in eight of the studies (Templer 1971, Lowe and Harris 2000, Martz 2004, Tolstikova et al. 2005, Le Marne and Harris 2016, Oker et al. 2021, Zhang et al. 2021, Dursun et al. 2022). The Collett-Lester Fear of Death Scale (CLFDS; Collett and Lester 1969) was used to measure death anxiety in one study, the Multidimensional Fear of Death Scale (MFODS; Hoelter 1979) in another study, Fear of Death Scale (FDS; Noyes et al. 2002) in one study, The Multidimensional Orientation toward Dying and Death Inventory in another study (MODDI; Wittkowski 1996), The Bochum Survey for Assessment of Attitude to Death and Death Anxiety Scale (BOFRETTA; Grabler et al. 2018) in one study, the Illness Attitudes Scale (IAS; Kellner 1986) in one study, the Death Anxiety Scale (DAQ; Conte et al. 1982) in one study, the Abdel-Khalek Death Anxiety Scale (ADAS; Khalek 2004) in another study, the Death Perception Scale (Spilka et al. 1977) and The Death Beliefs Questionnaire (DBQ; Wells and Hackman 1993) in one study. Overall, various scales were used in studies to assess the effect of death anxiety.

In Turkey, the death anxiety scales that have reliability and validity studies include Death Anxiety Scale (DAS, Sarıkaya 2013), Collett-Lester Death Fear Scale (CLFDS, Zeyrek and Lester 2008), The Multidimensional Orientation toward Dying and Death Inventory (MODDI, Zorlu and Ünübol 2018), Death Perception Scale (DPS, Topuz 2013) and Abdel-Khalek Death Anxiety Scale (ADAS, Aydoğan et al. 2015). The DAS is one of the most widely used unidimensional self-report scales. The scale consists of 15 items (e.g., 'I dread to think about having to have an operation') and is one of the shortest scales among those assessing death anxiety. CLFDS, which is a multidimensional scale, consists of 32 items (e.g., 'How much does death and dying bother you in terms of the shortness of life?' and consists of 4 subscales: own death, own dying, death of others and dying of others. The DPS, which is a scale that can be used to assess knowledge, emotions and thoughts about death consists of 24 items (e.g., 'Death as defeat in the struggle to succeed and achieve.') and includes six dimensions related to the components of death anxiety: pain, unknown, failure, afterlife of reward, courage, and forsaking dependents. AK-DAS, developed in Arabic and English, consists of 20 items (e.g., 'Walking in a cemetery terrifies me.') and 5 sub-dimensions: fear stimulated by visual stimulations related to death, death's physical and mental aspects, other situations reminiscent of death, afterlife, and death process. Finally, the MODDI consists of 41 items (e.g., 'I don't want to think about my own death.') and 4 sub-dimensions: acceptance, fear, rejection, rebellion. In sum, there are various measurement tools that can be used in death anxiety research in Turkey and that the scales are generally multidimensional scales that evaluate different components of death anxiety.

Discussion

The aim of this review is to systematically examine the association between death anxiety and psychopathology and to outline the measurement methods for assessing presence and severity of death anxiety. In this direction, studies focused on the relationship between death anxiety and various mental disorders have been evaluated. Summarizing the results of the included 17 studies, there is a clear relationship between death anxiety and numerous mental disorders. Furthermore, death anxiety is associated with the severity of mental disorders, the total number of hospitalizations and medication use, and overall stress. The findings are consistent with the arguments of Iverach et al. (2014) that death anxiety is a basic fear underlying mental disorders and greater death anxiety is associated with more severe and complex mental health problems such as depression, OCD, and social phobia. Similarly, Menzies et al. (2019) examined the relationship between death anxiety and psychopathology with 200 participants diagnosed with different mental disorders. They found a strong relationship between symptom severity of 12 different psychological disorders and the level of death anxiety and death anxiety is a strong predictor of the psychiatric medication usage, age of illness onset, the number of lifetime diagnoses, prior hospitalization, depression, and anxiety. On the other hand, it is important to control possible confounding variables that may influence psychological disorders in order to reach accurate results. In the studies included in the systematic review which possible confounding variables were controlled, the relationship between death anxiety and psychological disorder symptoms remained significant even after controlling for variables such as age, gender, self-esteem, perfectionism, neuroticism, and attachment style. In conclusion, death anxiety is closely associated with mental health problems and evaluation of the presence and severity of death anxiety in clinical practice would be significant for treatment effectiveness. The findings support the transdiagnostic nature of death anxiety, as it is a common symptom present in many different psychological conditions, rather than specific to a particular disorder.

In addition to studies indicating a positive relationship between death anxiety and psychological conditions, only one study did not find a significant relationship between death anxiety and psychological condition. Lowe and Harris (2019) examined the role of death anxiety, self-esteem, and intolerance of uncertainty in social phobia symptoms. As a result of the analysis, no significant relationship was found between death anxiety and social phobia symptoms after controlling for self-esteem and intolerance to uncertainty. On the other hand, while self-esteem and intolerance to uncertainty were found to be significant predictors of social anxiety symptoms. On the other hand, it is known that reminding of death increases attentional bias towards social threat and avoidance from social environments in individuals with social anxiety (Finch et al 2016). Since situations reminding mortality have the potential to increase death anxiety, it was concluded that there is a relationship between death anxiety and social phobia symptoms. It has been suggested that this might be due to the fact that the social anxiety levels of the participants selected for the study were not high enough to detect a relationship between death anxiety and social anxiety disorder symptoms. The findings indicate that death anxiety is only significant in individuals with high levels of social anxiety symptoms and future research may replicate the current study with a clinical sample to better understand the role of death anxiety in social anxiety disorder.

It is noteworthy that while there is a positive relationship between high level of death anxiety and psychological disorders, the level of death anxiety can vary across different mental disorders. Individuals with panic disorder experience higher levels of death anxiety compared to individuals with depression and social phobia. Previous studies evaluating the role of death anxiety in panic disorder have indicated that death anxiety is a significant symptom in severe panic attacks, and the presence of death anxiety during panic attacks indicated greater number of reported panic attacks, avoidance behaviors and more frequent diagnosis of agoraphobia (Craske et al. 2010, Gazarian et al. 2016). In conclusion, individuals with various psychological disorder symptoms have higher levels of death anxiety compared to non-clinical control groups and the death anxiety may play a role at different levels in different psychological disorders. The findings support Terror Management Theory stating that there is a positive relationship between psychological disorders and death anxiety and emphasize the importance of examining the level of death anxiety across different psychological disorders. Thus, it can be aimed to further investigate the concept of death anxiety in more detail and include interventions targeting death anxiety in treatment programs, particularly in psychological disorders such as panic disorder characterized by higher levels of death anxiety.

Understanding the components of death anxiety associated with psychopathology would provide significant advantages in developing appropriate interventions for death anxiety. One of the components of death anxiety that has been evaluated in some studies included in the present systematic review is the sense of meaninglessness in life. The findings indicate a relationship between lack of meaning in life and GAD and health anxiety. Furthermore, a significant relationship was found between death anxiety and a lack of meaning in life (Noyes et al. 2002, Dursun et al. 2022). These findings are consistent with previous research findings indicating a negative relationship between death anxiety and meaning in life (Sedei 1995, Zhang et al. 2019). According to Terror Management Theory, individuals can cope with death anxiety by living a meaningful and purposeful life. Engaging in behaviors that enhance a sense of meaning, such as developing close relationships, helps to cope with death anxiety in a functional way. Consequently, a protective resource against death anxiety would be a sense of meaning in life, and interventions aimed at increasing a sense of meaning in life would be useful in interventions targeting death anxiety. Another component of death anxiety associated with psychopathology may be negative thoughts and beliefs about death. Studies have shown that maladaptive thoughts and irrational beliefs related to one's own or loved one's death may be associated with health anxiety and panic disorder (James and Wells 2002, Schütte et al. 2016). These findings support the cognitive model of death anxiety which suggest that certain thoughts and beliefs about death can lead to negative emotions such as fear and anxiety. For instance, negative thoughts such as death will inherently involve pain and suffering may cause a feeling of fear. These emotions can also have a negative impact on a person's psychological well-being and contribute to the development of various psychopathological conditions. In interventions targeting high levels of death anxiety, restructuring common maladaptive thoughts and beliefs about death can help individuals cope with death anxiety more effectively.

The studies included in the review were conducted in different countries and cultures such as the USA, Australia, Israel, and Turkey. Although studies were conducted in different countries, similar results regarding the relationship between death anxiety and psychopathology were obtained. However, it is known that cultural differences can influence the level of death anxiety and its relationship with psychopathology. Kübler-Ross (2002) stated that cultures differ in how they express and make sense of death, and that some cultures can cope more effectively with the negative emotions triggered by death awareness. Oker et al. (2019) evaluated death anxiety levels of female psychology students living in Norway and Turkey and the relationship between death anxiety and depressive and anxiety symptoms. In both countries, death anxiety was significantly associated with depressive and anxiety symptoms and Turkish participants, who were assumed to be closer to Eastern culture, had higher levels of death anxiety and depressive and anxiety symptoms compared to Norwegian participants. On the other hand, a limited number of studies in the literature investigating cultural differences in death anxiety often stated that Eastern culture cope better with death anxiety compared to Western culture (Ma-Kellams and Blascovich 2012, Gire 2014). These findings may be explained by the fact that the meaning attributed to death and death rituals by Turkish female psychology students may be different from the general Turkish population, that other aspects of culture such as the socioeconomic status of the country may be more related to death anxiety, or that Turkish participants are more open to share their feelings and less defensive than Norwegian participants.

Death anxiety can be influenced by other factors apart from East-West cultural differences. Walter (2012) examined the concept of death across countries and cultures and suggested that sociological and cultural factors such as urbanism, migration, information technology, religion, inequality, wars, or individualism/collectivism can influence the perception of death in different ways in different societies. For instance, it is more common in

in individualistic societies for individuals who are dying to have the right to decide how they want to spend their remaining time or choose when and how they die. On the other hand, while cremation is not approved in religions such as Islam or Eastern Orthodox Christianity, societies with more vaguer afterlife beliefs do not resist this. Consequently, the perception of death and coping with it can vary depending on countries and cultures. These findings support the Terror Management Theory, which explains the relationship between death anxiety and culture. According to the theory, cultural worldviews provide standards for what is valuable and help individuals cope with death anxiety by providing a symbolic sense of immortality to those who live up to these standards. Therefore, cultural differences may result in coping with death anxiety differently and experiencing death anxiety at different levels. Understanding cultural differences would be important for the development of appropriate interventions for high levels of death anxiety.

When the studies conducted in our country are examined, there are studies that investigate death anxiety in elderly individuals, palliative care patients and healthcare professionals and examine the relationship between death anxiety and factors such as religiosity, personality traits, and self-esteem (Öztürk et al. 2010, İnci and Öz 2012, Yıldız and Bulut 2017). On the other hand, Öngider and Eyüboğlu (2013) investigated death anxiety in individuals diagnosed with depression and included 135 individuals who applied to psychiatry outpatient clinic due to depressive symptoms and received diagnosis of depression. The findings indicated that as the depression scores of patients increase, death anxiety scores also increase, demonstrating a significant relationship between the level of depression and the level of death anxiety. Participants with moderate and severe depression level had significantly higher levels of death anxiety compared to those with mild depression level. Considering that death anxiety can be seen at different levels in different countries and cultures, more studies are needed to examine the relationship between death anxiety and different psychological conditions in our country. Therefore, to gain knowledge about the approach to death and how it is coped with in our country is crucial in terms of developing appropriate interventions for high levels of death anxiety.

The most frequently used measurement scale to evaluate death anxiety in the studies is DAS that was developed by Templer in 1970 and consisting of 15 items. DAS is one of the most widely used unidimesional self-reported scale. It is used in approximately 60% of death anxiety studies (Abdel-Khalek 2004). On the other hand, multidimensional death anxiety scales are useful in understanding different aspects of death anxiety and observing changes in death anxiety after the intervention. Furthermore, in most studies, death anxiety was measured with self-report measurement tools. However, death anxiety can be experienced at the conscious level as well as at the unconscious level. Self-report measurements may not be able to capture death anxiety that is not consciously experienced or that is avoided or denied (Nia et al., 2016). Therefore, measuring death anxiety at unconscious level may provide more comprehensive knowledge. For instance, Stroop Test related to death themes which participants name the colors of words that may or may not be related to death is one of the measurement tools based on processing speed (Alvarez and Rodriguez-Gonzalez 2016). Another measurement tool that evaluates death anxiety at the unconscious level is computational linguistic analysis of what participants write about death (Krippendorff and Bock 2009). In this context, it is crucial to use or design multidimensional death anxiety scales and measurement tools that evaluate death anxiety at the unconscious level for more detailed evaluations on death anxiety issues.

Unlike self-report scales, the mortality salience method, based on TMT, defined as the awareness of the inevitability of one's own death can be used in studies evaluating the relationship between death anxiety and psychopathology. In mortality salience, participants are typically asked open-ended questions about their own death, while participants in the control groups are asked about death unrelated topics (Klackl and Jonas 2019). The mortality salience paradigm is designed to activate death cognitions such as writing about death or imagining a funeral home. TMT suggest that reminders of mortality have the potential to increase death anxiety (Solomon et al. 1991). Therefore, the mortality salience paradigm has often been used to evoke death related thoughts and feelings in death anxiety research. For instance, Strachan et al. (2007) assessed whether reminders of death would increase fear responses in individuals with spider phobia. The findings indicated that death awareness increased anxious responding to spider-related stimulus and avoidance behaviors from looking at spider pictures compared to the control group. In another study, Finch et al. (2016) examined the effect of mortality salience on attentional bias in social anxiety and found that reminders of death increased anxious responding and attentional bias towards social threat in individuals with social anxiety. Similarly, reminding participants with panic disorder or somatic symptoms-related disorders about the concept of death was found to increase the time spent controlling bodily symptoms, perceiving symptoms as threating and the intention to visit a doctor soon (Menzies et al. 2020). These findings support the causal role of death anxiety in different psychological conditions. While limited conclusions regarding causality can be drawn from the studies included

in this systematic review assessing the relationship between death anxiety and psychopathology, the design of mortality salience is crucial in terms of examining the causal role of death anxiety in mental disorders.

The relationship between death anxiety and psychological conditions has been a central issue in existential therapy. Heidegger (1962), known for contributions to existential philosophy, focused on the nature of death and believed that knowledge about death leads to understanding existence, and awareness of one's mortality will result in knowing the universe. Heidegger suggested that death anxiety can provide a driving force for individuals to live a meaningful life. However, denying or avoiding from death due to fear or insecurity may lead people to live inauthentically and facing death will allow them to manage death anxiety. Yalom (2018), an existentialist therapist with numerous studies on death anxiety, states that life and death are interdependent, and even though the physicality of death destroys us, the idea of death saves us. On the other hand, inefficient coping of death anxiety can result in a wide variety of symptoms which are referred to as psychopathology. Furthermore, Loeser and Bry (1960) stated that fear of death is not only a reflection of 'deeper' problems, but also a fundamental source of anxiety and is at the root of many psychopathologies. The findings of the studies analyzed in this study also consistently indicated a relationship between death anxiety and psychological conditions. These findings suggest that death anxiety may be the primary source of anxiety and may manifest itself with different psychological conditions.

Despite the significant role of death anxiety in various mental illness conditions, there is a lack of research regarding treatment of death anxiety in psychotherapy. Rycroft (2005) states that even though death is a universal human concern, the theme of death remains a taboo topic in therapy. According to Menzies et al. (2018) mental disorders may persist or relapse if death anxiety is not addressed during therapy sessions. It is recommended that death anxiety needs to be included in psychotherapy to reduce client's overall symptoms and enhance root causes of mental illnesses (Menzies and Menzies, 2020). In this context, the findings from the current systematic review suggest that interventions for death anxiety would be an important component of psychotherapy. In conclusion, therapy handbooks that include interventions for high levels of death anxiety are significant to enhance improvements in general symptoms and prevent the development of comorbidities (Furer and Walker 2008, Iverach et al. 2014). Various therapeutic approaches have been proposed and evaluated for the treatment of death anxiety, including Existential Psychotherapy (Yalom 1980), Exposure Therapy (Furer et al. 2007), Cognitive Behavioral Therapy (Furer and Walker 2008), Acceptance and Commitment Therapy (Hayes and Smith 2005) and Meaning-Centered Therapy (Breitbart et al.). A meta-analysis study conducted by Menzies et al. (2018) demonstrated that psychosocial treatments resulted in significant reductions in death anxiety with a small to medium effect sizes. Even though treatments which ameliorate death anxiety are needed, research examining the effect of interventions on death anxiety is lacking. For future research it is recommended to investigate the effect of interventions targeted death anxiety in the treatment of psychological problems in which death anxiety might play a prominent role.

Evaluating the role of death anxiety in psychopathology would be a valuable resource for developing interventions aimed at high levels of death anxiety which at the core of mental disorders. On the other hand, there is a lack of studies that systematically examine the role of death anxiety in various mental disorders. Despite the increasing interest in transdiagnostic processes in clinical psychology, the investigation of the relationship between death anxiety and psychopathology has been largely disorder-specific (Menzies et al. 2018). To our knowledge, this is the first systematic review on the relationship between death anxiety and different mental disorders. Only one review has examined the relationship between death anxiety and hypochondriasis and medically unexplained symptoms and found a positive relationship (Aan de Stegge 2018). In addition, there are studies that systematically investigated the role of death anxiety in non-clinical samples. For instance, Soleimani et al. (2020) examined the factors affecting death anxiety and its occurrence in cancer patients with a systematic review and meta-analysis study. They found that death anxiety in cancer patients was moderate and was affected by gender, religion, marital status, and cancer type. Within the scope of the current study, the systematic examination of the effect of death anxiety on different mental disorders may contribute understanding the role of death anxiety on psychopathology.

Conclusion

High levels of death anxiety can play a role in many psychological conditions. In this review, the role of death anxiety in different psychological disorders was systematically examined and the measurement tools used to evaluate death anxiety were outlined. It was found that there was a positive relationship between death anxiety and psychological disorder symptom severity, total number of medications used and hospitalizations, and overall stress levels. The findings support the Terror Management Theory suggesting that death anxiety may be

a significant risk factor in the development or maintenance of many psychological disorders. However, more research is needed to gain further knowledge about the causal relationship between death anxiety and psychopathology and the role of variables such as age, gender, personality traits, and cultural differences in the relationship between death anxiety and psychological conditions. Additionally, since death anxiety can be experienced at an unconscious level, more studies using measurement tools that evaluate unconscious death anxiety, such as the Stroop Test or linguistic analysis are needed. On the other hand, considering the positive relationship between death anxiety and the severity of mental disorder symptoms, it can be suggested that a high level of death anxiety would be an appropriate target in mental health interventions. However, there is a limited number of studies focused on reducing high levels of death anxiety. In line with these findings, interventions targeting high levels of death anxiety are needed to improve the recurrent symptoms of psychological symptoms, prevent the development of comorbidities, and achieve permanent improvements in mental health.

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