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Quality of Life in Tetany Syndrome: The Role of Symptomatology, Attack Frequency, and Panic Disorder Comorbidity

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ABSTRACT

This study investigates the quality of life among individuals with tetany syndrome focusing on symptomatology of tetany syndrome, frequency of tetany attacks and comorbidity of panic disorder. The research utilised the WHOQOL-BREF Quality of Life questionnaire together with additional questions addressing socio-demographic data and respondents' health status. The research sample consisted of 427 respondents, of whom 158 were diagnosed with tetany syndrome. The results demonstrated that respondents with tetany syndrome scored significantly lower across the various domains of quality of life. The presence of specific symptoms showed the strongest correlations between poor concentration, weakness, fatigue, malaise, and feelings of anxiety or anxiety attacks, migraine and dull or sharp headaches and overall quality of life, physical health, psychological and environment domain. Conversely, the weakest correlations were observed in the domain of social relationships. The frequency of tetany attacks indicated that respondents who experienced a higher frequency of attacks scored lower in overall quality of life as well as in the environment and social relationships domains. Individuals with tetany syndrome who also had panic disorder scored significantly lower in overall quality of life and in the environmental domain as in comparison to those without panic disorder.

1. Introduction

In recent years, tetany syndrome has been increasingly identified not only as a neurological but also as a psychosomatic condition. Clinical manifestations, such as cramps, paresthesia, muscle tension, palpitations, or feelings of breathlessness caused by an increased excitability of the neuromuscular system that were due to an imbalance and shift of minerals, are often accompanied by anxiety, fear, exhaustion, and reduced quality of life and psychological well-being (Belaňová, 2022; Górna & Rojková, 2025; Macková, 2021). Tetany syndrome can occur in two main forms – latent and acute. The acute form represents a sudden and intense cluster of muscular, and neurological symptoms that may become life-threatening, particularly when the respiratory muscles are involved.

In contrast, the latent form is characterised by milder, long-term, or intermittent symptoms (Macková, 2021). In relation to an acute tetany attack, it is important to mention panic attacks, which share to a large extent identical symptom, but their pathomechanism is different. Kukumberg (2013) claims that the terms are often confused. The main difference is that tetany

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syndrome is a centrally triggered and regulated dysfunction based on increased neuromuscular excitability (often associated with mineral imbalances, especially magnesium and calcium), whereas panic disorder is a psychological disorder involving dysregulation of neurotransmitter systems (Regendová, 2019). Previous research does not definitively confirm the comorbidity of tetany and panic disorder; however, a study by Táborská (1995) found that panic disorder and latent tetany may co-occur at high rates. This study focuses on these concepts in relation to the broader framework of quality of life and wellbeing. The concept of quality of life encompasses a wide range of diverse areas of human experience—from physical functions to domains associated with achieving life goals and experiencing life satisfaction and happiness (Gurková, 2011). The World Health Organization Quality of Life Group (WHOQOL Group, 1993) defines quality of life as an individual's perception of their position in life within the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards, and concerns.

According to the World Health Organization, quality of life is structured into six domains: physical health, psychological domain, level of independence, social relationships, environment, spirituality (Babinčák, 2014). Previous research related to tetany syndrome, its specific symptoms and quality of life suggests that individuals with tetany syndrome indicate significantly lower levels of quality of life, well-being, and life satisfaction as well as work performance (see, e.g., Cruz, 2001; Slivková, 2021). Furthermore, several studies on specific symptoms of tetany syndrome demonstrated significant associations with quality of life. Nechita et al. (2025) and Hickey et al. (2013) found that cardiac arrhythmias are linked to poorer quality of life and psychological distress. Abnormal respirations, including hyperventilation, also significantly affect individuals´ quality of life due to a rapid decrease in CO2 concentration in the blood that may result in dizziness, chest pain, fatigue and many other states, making it difficult to perform daily tasks (see, e.g., Chenivesse et al. 2014, OK et al. 2018). Symptoms of hypocalcemia, including paresthesias (numbness/tingling) as well as confusion or memory loss and headaches, showed statistically significantly lower scores in at least one quality of life domain in almost all studies (87 %) in their systematic review (Buttner et al. 2024). Another finding of the studies of Rubin (2023), Cherchir et al. (2023) and Buttner et al. (2017) indicated that hypoparathyroidism (one of the causes of tetany) negatively impacts a patient´s quality of life and ability to work.

The frequency of tetany attacks is also considered a key predictor of quality of life, relationships, and overall health, as sudden and unpredictable events lead to persistent emotional stress due to the fear of future attacks, resulting in avoidant behavior and social isolation (Pepe et al., 2020). Research by Klerman et al. (1991, in Mogotsi et al., 2000), Carrera et al. (2006), Chen et al. (2012), and Fidry et al. (2019) indicated reduced quality of life in individuals with panic disorder, especially in the domains of physical and mental health, due to anxiety and panic attacks, and patients sought treatment as well as psychological help more frequently. Rubin et al. (2000) found that lower quality of life among patients with panic disorder is associated with the number of panic attacks, state anxiety, and depressive symptoms. Barrera and Norton (2009), Müller-Tasch et al. (2008), and Altintas et al. (2015) also highlighted that panic disorder is a significant factor affecting quality of life.

Kubandová (2019) focused on examining selected personality characteristics and quality of life in people with tetany syndrome. In terms of quality of life, individuals with tetany syndrome achieved worse results in the domain of physical health, which the authors attribute to the negative effects of the physical symptoms caused by tetany. These findings are supported by research by Cruz et al. (2001) or Zbínová (2021) where respondents with tetany scored lower in the domains of physical health, mental health, satisfaction with health, and overall quality of life. However, in the domain of living conditions, individuals with tetany showed a higher

level of quality of life compared to the norm. In this study, panic disorder did not prove to be a factor affecting quality of life. Similar findings were found in a study by Rubin et al. (2000), which indicates links of panic disorder, since many symptoms overlap with tetany syndrome (e.g., muscle tension, hyperventilation, anxiety), with decreased quality of wellbeing. In light of these findings, it is important to further examine the quality of life in individuals with tetany syndrome, taking into account panic disorder and the occurrence of tetany attacks, as well as the symptomatology of tetany syndrome. Based on the mentioned aims, we have formulated the following research questions:

- RQ1: Are there differences in quality of life among individuals with tetany syndrome in comparison to those without tetany syndrome?
- RQ2: Are there associations between the frequency of symptom occurrence and quality of life among individuals with tetany syndrome?
- RQ3: Are there differences in quality of life among people with tetany syndrome depending on the frequency of attacks?
- RQ4: Are there differences in quality of life among individuals with tetany syndrome who have been concurrently diagnosed with panic disorder and those without panic disorder?

2. Materials and Methods

2.1. Research Sample

A criterion sampling method combined with a snowball technique was used for the research sample. The research sample included 427 respondents – 158 respondents diagnosed with tetany syndrome by a specialist (37.0%) and 269 respondents without tetany syndrome (63.0%). Among the respondents with tetany syndrome, there were 144 women (91.1%) and 14 men (8.9%), with a mean age of 35.41 years, from various regions of Slovakia. The control group without tetany syndrome comprised 188 women (69.9%) and 81 men (30.1%), with a mean age of 35.92 years. Participants were also asked to provide information regarding their highest level of education, place of residence, subjective assessment of health status, duration of diagnosis, presence of panic disorder, occurrence of symptoms and frequency of symptoms. Based on respondents' answers, 64.6% of participants with tetany syndrome did not have a diagnosed panic disorder, 3.2% had not yet undergone an examination, and the remaining 32.3% had a co-occurring diagnosis of panic disorder. In both groups, the exclusion criteria included any prior psychiatric, neurological, or severe medical conditions or interventions, such as cancer, organ transplantation, limb amputation, or chronic kidney disease requiring dialysis. Furthermore, occurrence of specific tetany symptoms can be seen in Table 1. It was reported that respondents with tetany most frequently experienced unpleasant sensations related to poor concentration, as well as weakness, fatigue, and malaise (M = 3.31). This was followed by feelings of anxiety and panic attacks (M = 2.93). Tingling and numbness in the limbs were also relatively common (M = 2.93). Descriptive statistics of tetany-related symptom frequency are presented in the Table 1.

Table 1. Descriptive statistics of tetany-related symptom frequency

Symptoms related to tetany syndrome	**Frequency**	**Mean**	**Standard deviation**	**Median**	**Modus**
Poor concentration, weakness, fatigue, and malaise	158	3.31	1.12	3	4
Feelings of anxiety or anxiety attacks	158	2.96	1.23	3	2
Tingling or numbness	158	2.93	1.18	3	2
Irregular heart rhythm	158	2.79	1.19	3	2
Rapid breathing	158	2.68	1.12	3	2
Migraine and dull or sharp headaches	158	2.63	1.19	3	2

Data were collected using a questionnaire battery The WHOQOL-BREF (World Health Organization Quality of Life – BREF) which comprises 26 items across four main domains: physical health, psychological domain, social relationships, and environment. Participants rated each statement using a five-point Likert scale. In this study, the Cronbach's alpha values for the respective domains of quality of life were as follows: physical health $\alpha = 0.699$, psychological health $\alpha = 0.829$, social relationships $\alpha = 0.656$, and environment $\alpha = 0.752$. The internal consistency of the social relationships' domain was slightly below the commonly recommended threshold ($\alpha = 0.656$). This value is comparable to those reported in other studies using the WHOQOL-BREF, where the small number of items in this domain often results in lower reliability. Exploratory item diagnostics in our study did not indicate any single item disproportionately reducing internal consistency and showed satisfactory value of $\alpha = 0.734$. The study employed a non-experimental comparative-correlational design.

The frequency of tetany-related symptoms was assessed using self-report items rated on a 5-point Likert scale (1 = never, 5 = always), referring to symptom occurrence in the past two weeks. Higher scores indicated greater symptom frequency. The frequency of tetany attacks was assessed using a single self-report item on the following scale: Once or several times a week, Once or several times a month, Several times every six months, Several times a year, Almost never. Participants were dichotomized into lower and higher frequency groups based on the median split of reported attack frequency, using non-normally distributed clinical frequency data. Panic disorder status was assessed via self-report based on participants' indication of a prior clinical diagnosis by a psychiatrist or neurologist. No independent clinical verification was conducted.

3. Results

RQ1: Are there differences in quality of life among individuals with tetany syndrome in comparison to those without tetany syndrome?

The statistical analysis revealed significant differences between the individuals with tetany syndrome and those without across all domains of quality of life (physical health $U = 10736.5$; $Z = -8.563$; Sig. $< .001$, psychological $U = 14378.0$; $Z = -5.606$; Sig. $< .001$, social relationships $U = 16920.5$; $Z = -3.560$; Sig. $< .001$ and environment $U = 17066.5$; $Z = -3.407$; Sig. $< .001$). Results indicate that individuals with tetany syndrome rated their domains within quality of life as worse in comparison to those without tetany syndrome (see Table 2).

Table 2. Statistical analysis for RQ 1: Mann-Whitney U test

Domain	Group	N	Mean Rank	Mann-Whitney test	
Physical Health	Without tetany syndrome	269	253.09	U	10736.5
	With tetany syndrome	158	147.45	Z	-8.563
	Total	*427*		Sig.	**.000**
Psychological	Without tetany syndrome	269	239.55	U	14378.0
	With tetany syndrome	158	170.50	Z	-5.606
	Total	*427*		Sig.	**.000**
Social Relationships	Without tetany syndrome	269	230.10	U	16920.5
	With tetany syndrome	158	186.59	Z	-3.560
	Total	*427*		Sig.	**.000**
Environment	Without tetany syndrome	269	229.56	U	17066.5
	With tetany syndrome	158	187.52	Z	-3.407
	Total	*427*		Sig.	**.001**

For a better overview, we present descriptive statistics of individual domains of quality of life (see Table 3, Table 4, Table 5).

Table 3. Descriptive statistics of quality of life domains in participants with and without tetany

Group	Domains	N	Mean	SD
Without tetany syndrome	Physical Health	269	14.14	2.40
	Psychological	269	15.12	2.67
	Social Relationships	269	15.25	2.69
	Enviroment	269	14.61	2.21
With tetany syndrom	Physical Health	158	12.06	2.13
	Psychological	158	13.75	2.60
	Social Relationships	158	14.07	3.17
	Environment	158	13.82	2.25

Table 4. Descriptive statistics for quality of life domains within groups defined by higher and lower frequency

Group	Domains	N	Mean	SD
Higher frequency	Physical Health	86	11.75	2.15
	Psychological	86	13.58	2.75
	Social Relationships	86	13.46	3.19
	Environment	86	13.44	2.24
	Physical Health	72	12.43	2.08

Group	Domains	N	Mean	SD
Lower frequency	Psychological	72	13.97	2.42
	Social Relationships	72	14.81	3.02
	Environment	72	14.29	2.19

Table 5. Descriptive statistics of quality of life domains in participants with and without panic disorder

Group	Domains	N	Mean	SD
Without panic disorder	Physical Health	102	12.33	1.91
	Psychological	102	14.03	2.66
	Social Relationships	102	14.48	3.00
	Environment	102	114.30	2.28
With panic disorder	Physical Health	56	11.57	2.44
	Psychological	56	13.26	2.44
	Social Relationships	56	13.33	3.36
	Environment	56	12.96	1.95

RQ2: Are there associations between the frequency of symptom occurrence and quality of life among individuals with tetany syndrome?

Tingling or numbness. The results found negative significant correlations between overall quality of life ($\rho = -0.244$, $p < .01$), physical health ($\rho = -0.266$, $p < .01$), social relationships ($\rho = -0.165$, $p < .05$), the environmental domain ($\rho = -0.175$, $p < .05$) and the frequency of tingling or numbness. This indicates that higher occurrence of these symptoms was associated with lower perceived overall quality of life, poorer physical health, poorer social relationships and environmental satisfaction (see Table 6).

Irregular heart rhythm. A significant negative association was found between irregular heart rhythm and overall quality of life ($\rho = -0.241$, $p < .01$) physical health ($\rho = -0.283$, $p < .01$) and psychological domain ($\rho = -0.285$, $p < .01$), suggesting that the presence of cardiac irregularities was linked to poorer quality of life, subjective physical and mental health(see Table 6).

Rapid breathing. Rapid breathing correlated negatively with overall quality of life ($\rho = -0.356$, $p < .01$), physical health ($\rho = -0.304$, $p < .01$) and psychological domain ($\rho = -0.356$, $p < .01$), indicating that higher occurrence of these symptoms was related to lower perceived overall quality of life physical and mental health (see Table 6).

Poor concentration, weakness, fatigue, and malaise. This symptom showed the strongest and most consistent pattern of associations across domains. It was negatively related to quality of life ($\rho = -0.512$, $p < .01$), physical health ($\rho = -0.525$, $p < .01$), psychological ($\rho = -0.473$, $p < .01$), social relationships ($\rho = -0.195$, $p < .05$) and the environmental domain ($\rho = -0.456$, $p < .01$). These results showed that increased fatigue and cognitive difficulties were strongly associated with reduced functioning in multiple areas of life (see Table 6).

Feelings of anxiety or anxiety attacks. Anxiety symptoms were negatively correlated with quality of life ($\rho = -0.492$, $p < .01$), physical health ($\rho = -0.398$, $p < .01$), Psychological ($\rho = -0.479$, $p < .01$), social relationships ($\rho = -0.215$, $p < .01$) and the environmental domain ($\rho =$

−0.456, p < .01). The pattern suggests that higher anxiety was consistently linked to poorer physical health, mental health, social relationship and environmental satisfaction as well as lower perceived overall quality of life (see Table 6).

Migraine and dull or sharp headaches. Headache symptoms were significantly negatively associated with overall quality of life (ρ = −0.456, p < .01), physical health (ρ = −0.310, p < .01), Psychological (ρ = −0.466, p < .01), social relationships (ρ = −0.222, p < .01) and the environmental domain (ρ = −0.383, p < .01). These findings indicate that headache frequency was related to reduced perceived physical and mental health, environmental satisfaction and reduced overall quality of life (see Table 6).

Table 6. Statistical analysis for RQ 2: Spearman´s correlation analysis

Spearman´s ρ	Quality of life	Physical Health	Psychological	Social Relationships	Environment
Tingling or numbness	**-.244****	**-.266****	-.133	**-.165***	**-.175***
Irregular heart rhythm	**-.241****	**-.283****	**-.285****	.439	-.155
Rapid breathing	**-.356****	**-.304****	**-.356****	-.120	-.256
Poor concentration, weakness, fatigue, and malaise	**-.512****	**-.525****	**-.473****	**-.195***	**-.456****
Feelings of anxiety and anxiety attacks	**-.492****	**-.398****	**-.479****	**-.215****	**-.456****
Migraine and dull or sharp headaches	**-.456****	**-.310****	**-.466****	**-.222****	**-.383****

* p < .05; **p < .01

RQ3: Are there differences in quality of life among people with tetany syndrome depending on the frequency of attacks?

Results indicated that individuals with tetany syndrome who experienced a higher frequency of tetany attacks reported significantly lower overall quality of life (U = 2401.0; Z = -2.426; p = .015; r = .19) indicating small effect size in comparison to those with a lower frequency. Specifically, statistical analysis showed significant differences in the domain of social Relationships (U = 2336.0; Z = -2.681; p = .007; r = .21) with a small effect size and environment (U = 2460.5; Z = -2.225; p = .026; r = .18) also with a small effect size, indicating that individuals with tetany syndrome who experienced a higher frequency of tetany attacks rated their social relationships and environment as lower in comparison to those with a lower frequency of tetany attacks. Within the other domains, the analysis did not demonstrate any statistically significant results (see Table 7).

Table 7. Statistical analysis for RQ 3: Mann-Whitney U test

Domains	**Frequency of attacks**	**N**	**Mean Rank**	**Mann-Whitney test**		**r**
Physical Health	Higher frequency	86	73.29	U	2562.0	.15
	Lower frequency	72	86.92	Z	-1.873	
	Total	*158*		Sig.	.061	

Domains	Frequency of attacks	N	Mean Rank	Mann-Whitney test		r
Psychological	Higher frequency	86	76.03	U	2798.0	.08
	Lower frequency	72	83.64	Z	-1.045	
	Total	*158*		Sig.	.296	
Social Relationships	Higher frequency	86	70.66	U	2336.0	.21
	Lower frequency	72	90.06	Z	-2.681	
	Total	*158*		Sig.	**.007**	
Environment	Higher frequency	86	72.11	U	2460.5	.18
	Lower frequency	72	88.33	Z	-2.225	
	Total	*158*		Sig.	**.026**	
Quality of life	Higher frequency	86	71.42	U	2401.0	.19
	Lower frequency	72	89.15	Z	-2.426	
	Total	*158*		Sig.	**.015**	

RO4: Are there differences in quality of life among individuals with tetany syndrome who have been concurrently diagnosed with panic disorder and those without panic disorder?

Results indicated that individuals with tetany syndrome who have been diagnosed with panic disorder reported significantly lower overall quality of life (U = 2050.0; Z = -2.930; p = .003; r = .23) with a small effect size in comparison to those without. Specifically, statistical analysis showed significant differences in the domain of environment (U = 1852.0; Z = -3.659; p < .001; r = .29) with a small effect size indicating that individuals with tetany syndrome and panic disorder had significantly lower ratings than those without (MR = 89.34). Within the other domains, the analysis did not demonstrate any statistically significant results (see Table 8).

Table 8. Statistical analysis for RQ4 1: Mann-Whitney U test

Domains	Tetany syndrome	N	Mean Rank	Mann-Whitney test		r
Physical Health	Without panic disorder	102	84.52	U	2343.5	.15
	With panic disorder	56	70.35	Z	-1.871	
	Total	*158*		Sig.	.061	
Psychological	Without panic disorder	102	84.61	U	2334.5	.15
	With panic disorder	56	70.19	Z	-1.904	
	Total	*158*		Sig.	.057	
Social Relationship	Without panic disorder	102	84.03	U	2393.5	.14
	With panic disorder	56	71.24	Z	-1.699	
	Total	*158*		Sig.	.089	
Environment	Without panic disorder	102	89.34	U	1852.0	.29
	With panic disorder	56	61.57	Z	-3.659	
	Total	*158*		Sig.	**.000**	

Domains	Tetany syndrome	N	Mean Rank	Mann-Whitney test		r
Quality of life	Without panic disorder	102	87.40	U	2050.0	.23
	With panic disorder	56	65.11	Z	-2.930	
	Total	*158*		Sig.	**.003**	

4. Discussion

The results of the study showed that people with tetanic syndrome demonstrate a significantly lower quality of life compared to those without tetanic syndrome. Essentially, this finding extends previous domestic research indicating that individuals with tetanic syndrome report poorer quality of life, lower health satisfaction, and reduced work performance (Cruz, 2001; Kubandová, 2019; Slivková, 2021; Zbínová, 2021). In a broader context, this result is also consistent with research on related conditions such as hypoparathyroidism and chronic hypocalcemia, in which patients frequently report fatigue, "brain fog," muscle difficulties, and psychiatric symptoms that reduce health-related quality of life (Hillary et al., 2022; Roszko et al., 2022; Siggelkow et al., 2025).

According to the World Health Organization, quality of life is defined as an individual's subjective perception of their position in life within the context of cultural values, personal goals, and expectations (Babinčák, 2014; WHOQOL Group, 1993). The low scores of our respondents recorded across the domains of physical and mental health, social relationships, and environment indicate that tetany syndrome affects a wide range of daily functioning, from everyday physical activities and emotional stability to the sense of safety, support, and control over one's life. Our findings also revealed significant negative correlations, particularly between the symptoms "reduced concentration, weakness, fatigue, and malaise" and all domains of quality of life.

This finding is consistent with studies in hypoparathyroidism, where fatigue, cognitive slowing, muscle weakness, and headaches that patients perceived as the most limiting symptoms, closely related to reduced quality of life (Büttner et al., 2017; Hillary et al., 2022; Roszko et al., 2022; Siggelkow et al., 2025; Vokes, 2019). Other studies showed that symptoms of hypocalcemia—paresthesia, cramps, confusion, memory difficulties, and headaches—were associated with reduced scores in at least one domain of quality of life in most studies (Büttner et al., 2017, Katzberg et al., 2019). A similar pattern was observed for symptoms of paresthesia (tingling and numbness) as well as headaches, which were associated with a lower overall quality of life, poorer physical and psychological health, and reduced satisfaction with the environment and social relationships. These symptoms are characteristic of tetany and hypocalcemia and are often perceived by patients as alarming and difficult to predict, which may increase the perceived burden and promote anxious interpretations. Cardiac and respiratory symptoms, including irregular heart rhythm and rapid breathing, also proved to be significant factors.

In our study, they were associated with poorer physical and mental health and lower overall quality of life. Research on chronic hyperventilation has shown that patients with hyperventilation syndrome experienced substantially reduced quality of life, often disproportionate to objective findings, with anxiety, a feeling of shortness of breath, palpitations, and avoidance behavior dominating (Chenivesse et al., 2014). This indicates that even in individuals with tetany syndrome, somatic symptoms are overlap with psychological factors, particularly anxiety and increased attention to bodily sensations. Even though the weakest but significant correlations were observed between social relationship domain and

several specific symptoms, including tingling, numbness, poor concentration, weakness, fatigue, feelings of anxiety, anxiety attacks, and migraine or dull headaches.

This interpretation is consistent with previous research indicating that psychological distress, anxiety symptoms, and cognitive difficulties are among the strongest predictors of impaired social quality of life across clinical populations (Skevington et al., 2004; Olatunji et al., 2007). Studies focused on conditions characterized by neuromuscular excitability and episodic symptoms, such as electrolyte disorders and panic disorder, suggest that social functioning is often more strongly affected by symptom unpredictability, emotional burden, and fear of acute episodes than by the presence of chronic physical symptoms alone (Cruz et al., 2001; Kessler et al., 2006). No correlations were observed between social relationships domain and irregular heart rhythm and rapid breathing. These symptoms are typically transient and internally experienced, which may reduce their impact on perceived social functioning compared to more persistent cognitive and emotional symptoms. The frequency of tetany attacks proved to be an important factor, because individuals who experienced more frequent attacks reported lower overall quality of life, poorer social relationships, and lower environmental satisfaction compared to those with fewer attacks. This supports the idea that the unpredictability and recurrence of attacks may lead to persistent fear of future episodes, avoidance behavior, as well as gradual social isolation (Pepe et al., 2020).

A similar pattern of symptom severity that affects quality of life has been observed in chronic hypoparathyroidism, where higher subjective symptom burden is associated with poorer quality of life and reduced work productivity (see, e.g., Brod et al., 2023; Siggelkow et al., 2025). The fact that our sample showed differences in attack frequency mainly in the domains of social relationships and environment suggests that attacks mainly disrupt "social mobility" and the sense of safety in the usual environment and patients avoid travel, social events or situations where help is not immediately available. This mechanism is very similar to that well documented in panic disorder and agoraphobia (see, e.g., Kang et al., 2015; Wilmer et al., 2021). Individuals with tetany syndrome and comorbid panic disorder reported significantly lower scores of overall quality of life and environment domain ratings as in comparison to those without panic disorder.

This is consistent with previous domestic findings on the high comorbidity of tetany and panic disorder (Belaňová, 2022) and is consistent with international research showing a significant reduction in quality of life in patients with panic disorder (Bayrak & Batmaz, 2024). Kang et al. (2015) emphasize the role of anxiety sensitivity, characterised by the fear of bodily symptoms of anxiety and the belief that these symptoms may have catastrophic consequences, as a significant predictor of lower quality of life in individuals with panic disorder. In the context of tetany, where somatic manifestations are real and pronounced (cramps, tingling, palpitations, shortness of breath), increased anxiety sensitivity may lead to the following cycle: bodily symptom → catastrophic interpretation → increased anxiety → increased symptom intensity → further decline in quality of life. Lower scores in the environment domain among comorbid patients may reflect an increased need for control and safety (proximity to healthcare facilities, availability of an accompanying person), but also a restriction of activities outside of "safe" places.

In addition to biological and cognitive-behavioral models, there is a psychodynamic perspective that offers a complementary explanation. According to this theory, bodily manifestations are a type of somatised emotional tension, and symptoms are the results unconscious conflicts and defense mechanisms (Busch et al., 1999). In some patients with tetany and panic attacks, there may be underlying conflicts related to the areas of attachment, dependence, or aggression that occur as sudden bodily and anxiety-related collapse in situations

involving separation, responsibility, or intimacy (Busch et al., 1999; Milrod et al., 2007). The role of alexithymia, characterised by difficulties with identifying and describing emotions, is also relevant, as it is often increased in patients with somatization issues (Probst et al., 2017). When patients are unable to consciously process and regulate emotions, internal tension may primarily manifest physically. Psychodynamic research in functional somatic disorders suggests that psychotherapy focused on connecting physical symptoms with emotional and relational issues can reduce somatic distress and improve quality of life (Luyten & Fonagy, 2020; Neumann et al., 2023). Panic-focused psychodynamic psychotherapy (PFPP) has been shown to be effective in reducing panic attacks and improving functioning (Busch et al., 1999; Milrod et al., 2007), offering a valuable complementary approach to somatic treatment in patients with tetany syndrome, especially when panic attacks play a prominent role.

5. Conclusion

Taken together, the current study revealed the strongest correlations between poor concentration, weakness, fatigue, malaise, and feelings of anxiety or anxiety attacks, migraine and dull or sharp headaches and overall quality of life, physical health, psychological and environment domain. Conversely, the weakest correlations or no correlations were observed in the domain of social relationships. Furthermore, the frequency of tetany attacks indicated that respondents who experienced a higher frequency of attacks scored lower in overall quality of life as well as in the environment and social relationships domains. Individuals with tetany syndrome who also had panic disorder scored significantly lower in overall quality of life and in the environmental domain compared to those without panic disorder. These findings underscore the effect of tetany syndrome on patients´ lives and their daily functioning in terms of symptom severity, frequency as well as interaction with comorbid psychological conditions such as panic disorder.

The results suggest the need for comprehensive management strategies that would address not only somatic symptoms but also coping mechanisms and psychosocial support to enhance overall well-being. A number of limitations should be taken into consideration when interpreting the results. First, the results' generalizability is limited by the use of non-probability sampling and a noticeable gender imbalance, particularly in the tetany syndrome group, where women represented over 90% of participants. This distribution likely reflects higher diagnostic rates and healthcare utilization among women; however, it limits the generalizability of the findings, particularly to male populations. Another disproportion of the respondent sample is present within the group of respondents that differ with tetany syndrome and without tetany syndrome. Other limitations of the study may be the self-reported data which affect the accuracy of the responses. Additionally, other potential confounding factors such as medication use, lifestyle or the presence of subclinical psychiatric conditions were not controlled for, which could have an effect on both the severity of symptoms and perceived quality of life. Furthermore, given the number of statistical comparisons, the possibility of inflated Type I Error should be considered. Therefore, p -values were interpreted more cautiously, with greater emphasis placed on effect sizes and consistency of findings across domains. Future research should consider longitudinal designs, comorbidity of other conditions and a more balanced sample.

Ethics Statement

The study was conducted in compliance with the ethical standards set by the Declaration of Helsinki (1964) and informed consent was provided to all participants. The authors did not preregister their analysis plan.

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