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Monika Paleczna[1], Jan Gruszka[2], Caroline Bulsara[3]

[1)] *University of the National Education Commission, Krakow*
[2)] *Wielkopolskie Centrum Onkologii, Poznań, Poland*
[3)] *The University of Notre Dame, Australia*

Corresponding author – Monika Paleczna – monika.paleczna@uken.krakow.pl

Empowerment in Cancer Care- Adaptation of the Patient Empowerment Scale and Its Associations with Mental Health, Quality of Life, and Coping Strategies

Abstract: Patient empowerment has been linked to physical health outcomes and recovery; however, its relationship with mental health remains insufficiently explored, particularly in oncology populations, as most prior research has focused on non-oncology patients. Given the growing number of individuals diagnosed with cancer, this gap warrants investigation. This study examined the associations between overall patient empowerment and key indicators of mental functioning in oncology patients undergoing treatment, and aimed to develop a Polish adaptation of the Patient Empowerment Scale (PES). The analyzed indicators- coping strategies, health locus of control, quality of life, anxiety, depression, and post-traumatic growth- correspond to the intrapersonal, interactional, and behavioral components of psychological empowerment as conceptualized by Zimmerman. The sample comprised 120 patients (65 women, 55 men; aged 30-83). Measures included the PES, MINI-MAC, MHLC, EORTC QLQ-C30, HADS-M, and PTGI. Empowerment was significantly associated with all examined psychological indicators. The findings enhance understanding of psychosocial functioning in cancer patients and support the development of empowerment-based psychological interventions. The study also resulted in the development of PES-PL, a Polish adaptation of the Patient Empowerment Scale.

Keywords: *patient empowerment, cancer, health locus of control, mental health, post-traumatic growth, quality of life, disease coping strategies*

INTRODUCTION

Globally, approximately 19.3-20 million new cancer cases and about 10 million cancer-related deaths are reported each year (Chhikara & Parang, 2022). Upon receiving a diagnosis of a life-threatening illness such as cancer, patients are confronted with a range of highly distressing experiences (Giese- Davis et al., 2012) and psychosocial burden (Essue et al., 2020). In light of these challenges, clinicians emphasize the importance of integrating psychological and medical support as part of a more patient-centered approach that prioritizes the individual's needs, perspective, and lived experience (Hickmann et al., 2025). Patient empowerment has thus become an increasingly central focus in oncology care (Kim et al., 2024), as it offers a conceptual framework for understanding how patients actively adapt to illness-related stressors rather than merely respond to medical treatment.

Patient Empowerment- Definition

Patient empowerment is increasingly recognized as a crucial aspect of oncological treatment (Casirati et al., 2023; Eskildsen et al., 2017). However, there is no consensus in the scientific community on its definition.

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Mora et al. (2022), in their review of studies on patients with chronic conditions, identified more than 30 different definitions of this construct. The World Health Organization (WHO) defines empowerment as the ability to make informed health decisions, take responsibility for them, and exert control over one's life (Nutbeam & Kickbusch, 1998). Empowerment can be understood both as a process referring to the acquisition of resources, competencies, and decision-making capacities- and as an outcome, such as a subjective sense of control or agency (Zimmerman, 1995). From this perspective, empowerment is not a static trait but a dynamic psychological construct. Bulsara et al. (2006) further emphasize its intrapersonal dimension, conceptualizing empowerment as an internal sense of self-efficacy that facilitates coping and enables individuals to actively engage with illness-related challenges. Rogala (2020) highlights its alignment with a proactive patient role, where individuals actively participate in therapy planning and healthcare design, leading to improved outcomes and reduced healthcare costs (Eskildsen et al., 2017). Taken together, these definitions indicate that patient empowerment is a multidimensional construct encompassing cognitive, social, and behavioral aspects of agency in the context of illness. Despite definitional heterogeneity, a common underlying assumption is that empowerment involves patients' active participation in shaping their health-related experiences, rather than passive compliance with medical recommendations. Importantly, the empowerment approach does not involve influencing, persuading, or imposing changes on patients. It does not entail doing something *to* patients (Pekonen et al., 2020). This distinction is particularly important in oncology, where genuine empowerment must coexist with medical dependency and clinical uncertainty, rather than negate them.

Fumagalli et al. (2015) conducted a review of the scientific literature to differentiate the construct of empowerment from other, conceptually related terms. They concluded that empowerment refers to a broader, multidimensional concept encompassing both a state- understood as the patient's current sense of control, knowledge, and skills- and a process-conceived as the acquisition of motivation, knowledge, skills, and the capacity to make decisions, enabling patients to exercise meaningful influence within the healthcare system. In contrast, concepts such as activation, enablement, engagement, or participation usually describe more specific components of this process: respectively, illness-related behaviors, the acquisition of competencies, motivation to act, or the actual involvement in decision-making. Thus, while these constructs capture specific components, empowerment integrates them into a holistic framework, reflecting both the patient's capacity and the process by which it is developed, thereby functioning as a higher-order construct of patient agency. Similar conclusions were reached by Pekonen et al. (2020), who demonstrated that empowerment is conceptually broader and more multidimensional than related concepts such as activation, engagement, enablement, or participation, which address only partial aspects of patient agency. Some researchers, however, emphasize the difficulty of clearly distinguishing between these closely related constructs. They note that these variables may confound or modify the practical understanding of patient empowerment, while at the same time helping to identify potential strategies for effectively empowering patients, highlighting the need for theoretically grounded and integrative measurement approaches (Varela et al., 2025).

Empowerment in Oncology

Empowerment plays a crucial role in oncology practice. An empowered patient can shift from being a passive recipient of care to engaging in a collaborative patient-physician partnership (Bailo et al., 2019). This not only facilitates patient involvement in treatment decisions but also supports a broader range of activities that enable self-management of the disease in daily life. As a result, it can enhance treatment effectiveness while fostering trust and patient satisfaction, which is particularly important in oncology care, where treatment processes are often lengthy and psychologically demanding. Furthermore, psycho-oncological research has shown that empowerment promotes adherence to medical recommendations (Jeong & Kim, 2025), as well as interventions aimed at increasing empowerment improve patients' psychosocial functioning (Cardoso Barbosa et al., 2021; Ilie et al., 2023). Importantly, empowered patients' proactive behaviors- such as asking questions and expressing preferences- can elicit greater engagement, attentiveness, and support from physicians. Over time, this mutual influence forms a reciprocal dynamic, reinforcing the therapeutic relationship (Su et al., 2024). Such reciprocity is particularly important in oncology, where long-term, emotionally demanding treatments rely on sustained trust, collaboration, and open communication, underscoring the relational dimension of empowerment in clinical practice.

In recent years, many researchers in psycho-oncology (e.g., Johnsen et al., 2017; Ziegler et al., 2022) have referred to Zimmerman's (1995) concept of empowerment, which comprises three components: intrapersonal, interactional, and behavioral. The *intrapersonal* component refers to how individuals perceive themselves, including domain-specific perceived control, self-efficacy, motivation, and mastery; The *interactional* component involves understanding one's environment and sociopolitical context, including knowledge of available resources and the ability to interact effectively; The *behavioral* component reflects actions taken to influence outcomes directly, such as coping strategies for managing illness. Together, these three components provide a comprehensive view of empowerment, highlighting the interplay between self-perception, understanding of the environment, and action, and offering a theoretically integrative framework for examining patient functioning beyond isolated outcomes.

Despite its importance, research on the psychological correlates and consequences of patient empowerment (PE) remains limited, particularly with regard to its broader mental health implications. Mora et al. (2022) note its

potential link to patient outcomes, though key variables require further exploration. Studies to date have primarily examined somatic populations. For instance, Duarte-Díaz et al. (2022) found that while baseline PE did not predict future anxiety and depression in diabetes patients, increased empowerment correlated with reduced distress over time. Similarly, Wang et al. (2022) demonstrated that self-efficacy mediated the relationship between PE and self-management in patients with chronic illnesses, though oncology patients were excluded. Given its apparent connection to mental health, further research is needed, especially in populations facing high emotional burden and limited objective control, such as cancer patients. For the theoretical foundation of this study, we adopted Zimmerman's model of psychological empowerment. Although we used a unidimensional instrument to assess overall empowerment, we examined its associations with mental health-related variables that can be categorized according to Zimmerman's three components: intrapersonal (health locus of control, anxiety, and depression), interactional (post-traumatic growth and quality of life), and behavioral (coping strategies), thereby testing whether a global empowerment construct exhibits theoretically coherent relationships across distinct domains of psychological functioning.

Health Locus of Control

The construct of Health Locus of Control (HLOC) is grounded in Rotter's (1966) concept of locus of control. According to this framework, individuals differ in their beliefs regarding the degree of influence they exert over life events. This assumption was extended into the health domain by Wallston et al. (1994), who distinguished three components of HLOC. Individuals with an internal HLOC perceive their own actions as influential, whereas those with an external HLOC attribute health outcomes either to powerful others (e.g., physicians) or to chance (Wallston et al., 1978, 1994).

Cancer is closely associated with health locus of control, as the trajectory of the disease and the course of treatment cannot be fully controlled by the patient. Research indicates that oncology patients may exhibit lower levels of internal control compared with individuals suffering from other chronic conditions, such as AIDS (Chen et al., 2001) or chronic pain (Arraras et al., 2002). A longer duration of therapy has been linked to decreased internal HLOC, a pattern observed, among others, in a sample of Polish ambulatory oncology patients (Gibek & Sacha, 2019). Qualitative data further elucidate and deepen this understanding. Analyses of oncology patients' narratives suggest that their perspectives often align with an external health locus of control; some respondents emphasized their trust in the oncologist and reported not seeking additional information about their treatment (Dopelt et al., 2022), indicating reliance on medical authority rather than personal control.

Empowerment is expected to foster an internal HLOC, particularly in areas where patients can actively influence their care. An empowered patient influences their own recovery by participating in the development of the treatment plan (Eskildsen et al., 2017) and by assuming responsibility for health-related decisions (Nutbeam & Kickbusch, 1998). Evidence from a study conducted in a healthy population showed that individuals with lower tendencies to attribute health control to physicians played a more active and cooperative role in medical encounters (Marton et al., 2021). Furthermore, Náfrádi et al. (2017), in their review of literature including patients with various conditions (e.g., cardiovascular and respiratory diseases), suggested that empowerment enhances treatment adherence when patients feel in control. Similarly, Dopelt et al. (2022) found that among oncology patients, internal HLOC was associated with information seeking, obtaining second opinions, negotiation, and self-advocacy- behaviors characteristic of empowered individuals, supporting its role as an intrapersonal component of empowerment.

Anxiety

Anxiety is an emotional state oriented toward the future, arising from anticipating and preparing for potential adverse events that may occur (Barlow, 1988) and when excessive, persistent, or maladaptive, it can develop into clinically significant anxiety disorders (Craske et al.,. 2021). Among oncology patients, it may emerge at any stage of the disease trajectory: prior to diagnosis, during treatment, after its completion, or when receiving palliative care (Pitman et al., 2018). Cancer patients often experience anxiety (Getie et al., 2025; Stark et al., 2002). Its origins may be psychological, social, or strictly biological. Anxiety levels are also associated with the type of cancer, with differences largely stemming from prognosis, pain severity, changes in appearance, tumor location, and cancer-specific biological alterations (Pitman et al., 2018), as well as from patients' coping styles (Michałowska et al., 2019). Therefore, anxiety might be multifactorial and context-dependent response to illness.

In empowered oncology patients, anxiety may diminish due to improved communication with healthcare professionals and increased knowledge, resulting in fewer catastrophic interpretations (Kickbusch, 1998; Rogala, 2020). Thus, empowerment may reduce uncertainty rather than eliminate threat. Findings from previous research appear to support this hypothesis. Cuzco et al. (2022) found that patients in Intensive Care Units experienced reduced anxiety following an empowerment-focused intervention. Similarly, Duarte-Díaz et al. (2022, 2023) reported that higher empowerment levels were associated with decreased anxiety among diabetes patients. Comparable results have been observed in studies involving oncology populations. Therapeutic programs grounded in empowerment have been shown to decrease anxiety in patients with leukemia (Youcheng & Yu, 2023) as well as in patients with brain metastases after breast cancer surgery (Jiang et al., 2024), although not all researchers have demonstrated such effects in this group (Ryhänen et al., 2013). Benefits have also been reported among parents of pediatric oncology patients (Ozdemir Koyu & Kilicarslan, 2025).

Depression

Depression is a psychological disorder characterized by low mood, loss of interest, decreased energy, and a range of somatic symptoms (Pużyński & Wciórka, 2000; World Health Organization, 2022). It is among the most common mental health conditions in patients with cancer (Getie et al., 2025; Massie, 2004). In this population, diagnosis is often challenging due to overlapping symptoms such as fatigue, pain, or sleep disturbances (Massie, 2004). The etiology of depression in oncology patients is multifactorial, involving psychological factors (e.g., stress, difficulties in adaptation) and biological mechanisms (e.g., inflammation, side effects of therapy), and it has been associated with poorer treatment adherence and outcomes (Smith, 2015).

Given the complex nature of depression in this population, psychosocial interventions aimed at enhancing patient agency, such as empowerment-based approaches, may provide therapeutic benefits. Empowerment can reduce depressive symptoms by restoring a sense of control, enhancing self-esteem, and improving interactions with medical staff (Bulsara et al., 2006; Nutbeam & Kickbusch, 1998), thereby targeting key intrapersonal mechanisms implicated in depression. Several studies have reported that empowerment-based interventions reduce depressive symptoms in patients with cervical (Du et al., 2020), hematologic (Sezgin & Bektas, 2025; Youcheng & Li, 2022), and breast cancer with brain metastases (Jing et al., 2024), as well as in their relatives (Rostamvand et al., 2022). Similar findings have been observed in non-oncology populations, including patients in intensive care units (Cuzco et al., 2022) and individuals with diabetes (Duarte-Díaz et al., 2022, 2023), although generalizability is limited due to small sample sizes and heterogeneous study designs.

Post-Traumatic Growth

Post-traumatic growth (PTG) refers to both the outcome and the process of coping with traumatic experiences, encompassing life changes and shifts in fundamental personal assumptions (Ogińska-Bulik & Juczyński, 2010; Tedeschi & Calhoun, 1995; 1996). In the scientific literature, there is ongoing debate about whether cancer can be considered a traumatic experience (Sumalla et al., 2009). This debate arises from the fact that, in the context of cancer, it is difficult to identify a single, clearly defined stressor. The diagnosis, treatment procedures, bodily changes, or follow-up examinations may each function as sources of distress. Moreover, the course of the illness has an ambiguous beginning and end, and the threat it poses is chronic. While the stressor is internal to the body, making it physically inescapable, patients can still employ psychological coping strategies, such as denial, minimization, or cognitive distancing, which highlights the complex nature of distress in cancer. Despite these complexities, many researchers argue that classifying cancer as a traumatic experience is justified (Almeida et al., 2022; Gieseler et al., 2018). Studies have shown that patients with breast cancer (Cordova et al., 2001), prostate cancer (Wilson et al., 2014), head and neck cancers (Chang et al., 2022), as well as those undergoing bone marrow transplantation (Widows et al., 2005), may experience PTG. However, it is important to note that PTG is not limited to these types of oncological diseases and can potentially occur across a wide range of cancer diagnoses. Ogińska-Bulik (2015), drawing on findings from various studies, reports that in cancer patients post-traumatic growth most frequently manifests in changes in interpersonal relationships, appreciation of life, and spiritual change.

Empowerment may potentially play a meaningful role in fostering PTG by enhancing one's sense of agency and promoting active coping strategies, which in turn can facilitate reinterpretation and life changes (Bulsara et al., 2006; Rogala, 2020). Research increasingly points to an association between empowerment and PTG. Bulsara et al. (2004) found that empowered oncology patients reassessed their life priorities, supporting personal growth and a greater willingness to adapt to altered life circumstances. Üzar-Özçetin and Hiçdurmaz (2018) examined therapeutic interventions aimed at strengthening empowerment and PTG in cancer survivors, demonstrating significant improvements in PTG compared with a control group.

Quality of Life

According to the World Health Organization, quality of life refers to the way individuals perceive their position in life, taking into account culturally embedded norms, personal values, aspirations, and goals (The WHOQOL Group, 1994). In this perspective, quality of life is understood as a subjective and holistic evaluation of one's functioning and well-being, shaped by appraisals of specific domains of life (Papuć, 2011). Within the oncology context, the concept pertains to patients' perceptions of how cancer and its treatment affect their physical, psychological, and social functioning (Ferrans et al., 2005; Wilson & Cleary, 1995). Importantly, the impact of cancer is multifaceted: physical symptoms such as pain, sleep disturbances, and fatigue interact with psychological distress and social disruptions, creating complex pathways that influence overall quality of life (Nayak et al., 2017). Additionally, their quality of life is related to psychological symptoms such as depression, coping strategies, anxiety, and distress (Marzorati et al., 2025).

Empowerment is assumed to enhance patients' quality of life. Empowered individuals engage actively in decisions regarding their treatment, maintain a sense of control over their lives, and develop more collaborative relationships with healthcare professionals (Bulsara et al., 2006; Rogala, 2020). These processes may, in turn, improve psychological and social functioning as well as physical well-being.

While most studies focus on non-oncology patients, findings suggest a positive relationship between empowerment and health-related QoL. Forlani et al. (2006) and Moattari et al. (2012) reported improved health-related QoL in diabetic and hemodialyzed patients following

empowerment-based interventions. In oncology, Kaal et al. (2017) found that greater empowerment correlated with higher health-related QoL in adolescents and young adults. It has also been shown that empowerment-based interventions improve quality of life in patients with brain metastases after breast cancer surgery (Jiang et al., 2024), in patients with esophageal cancer (Wang et al., 2025), and among cancer survivors (Shin & Park, 2017).

Coping strategies

In response to life-threatening stressors such as disease, patients employ cognitive, emotional, and behavioral strategies to manage their impact, though their effectiveness varies (Folkman & Lazarus, 1988; Lashbrook et al., 2018). These strategies are reflected in different coping styles, ranging from constructive (e.g., fighting spirit, positive reinterpretation) to maladaptive (e.g., helplessness/hopelessness, anxious preoccupation), which influence patients' adjustment to the disease (Tomai et al., 2019; Watson et al., 1994). Fighting spirit is manifested in treating the illness as a challenge and taking actions aimed at combating it. Positive reinterpretation involves reinterpreting the illness in such a way that, despite awareness of its seriousness, one maintains hope and a sense of meaning in life. Anxious preoccupation is expressed as intense anxiety and a sense of threat that is difficult to control. Helplessness/hopelessness reflects a sense of lack of influence over the illness, confusion, and passive surrender to its consequences (Juczyński, 2009).

A cancer diagnosis is a significant life stressor (de Padova et al., 2021; Li et al., 2021). The way oncology patients cope with it depends on many factors, such as age, education, type and stage of cancer, and sense of self-efficacy (Kulpa et al., 2019; Miedema et al., 2007). Adaptive coping strategies in this patient population are associated with a higher quality of life (Ośmiałowska et al., 2021) and better sense of control as well as self-efficacy (Kulpa et al., 2019).

Empowerment may be associated with the use of adaptive coping strategies. This stems from the fact that empowered patients possess strengthened key psychological resources, such as a sense of control and agency (Bulsara et al., 2006; Zimmerman, 1995), which facilitate constructive responses to difficulties. Research suggests a link between empowerment and adaptive coping, particularly proactive engagement (Ziegler et al., 2022), though studies remain scarce. Bulsara et al. (2004) found that empowered hematological cancer patients, following a period of adaptation, exhibited fighting spirit and acceptance rather than denial, as well as openness to support. Similarly, Avery et al. (2023) identified the redefinition of illness experience, including acceptance of uncontrollable aspects, as a component of empowerment. Kaal et al. (2017) reported a negative correlation between empowerment and maladaptive coping in adolescents and young adults.

Considering the growing population of cancer patients and the importance of a patient-centered approach in medicine, the aim of this study was to develop a Polish adaptation of a tool for assessing empowerment in cancer patients and to examine whether empowerment is associated with a range of psychological indicators. Six hypotheses were formulated based on the scientific literature:

H1: Patient empowerment positively correlates with internal health locus of control and negatively with external health locus of control.

H2: Patient empowerment negatively correlates with anxiety symptoms.

H3: Patient empowerment negatively correlates with depressive symptoms.

H4: Patient empowerment positively correlates with overall post-traumatic growth as well as with the domains of self-perception, interpersonal relationships, appreciation of life, and spiritual change.

H5: Patient empowerment positively correlates with quality of life.

H6: Patient empowerment positively correlates with fighting spirit and positive redefinition and negatively with helplessness/hopelessness, and anxious preoccupation.

The present study was not preregistered. It was designed primarily as a psychometric adaptation and validation study combined with an exploratory correlational analysis. Importantly, the study hypotheses were theory-driven and formulated a priori, based on Zimmerman's model of psychological empowerment and existing empirical literature.

METHOD

Study Participants

The study included adult patients diagnosed with cancer who were undergoing active oncological treatment and care on an outpatient basis, including chemotherapy, radiotherapy, immunotherapy, or other anticancer medical interventions. Patients were included regardless of cancer type, location or stage, as long as they were undergoing therapy. Eligibility required the ability to independently complete questionnaires and provide informed consent to participate in the study. Exclusion criteria included minors, patients in the follow-up phase after treatment, those receiving only palliative care, as well as individuals unable to complete the study instruments independently or unwilling to provide consent. Since the inclusion and exclusion criteria were clearly defined, all individuals who applied for the study met the eligibility requirements and ultimately participated- no participants withdrew.

The study involved 120 oncology patients (65 women, 55 men) aged from 30 to 83 years (M = 56.20; SD = 12.08). Time since diagnosis ranged from 1 to 112 months (M = 22.23; SD = 22.1). Diagnoses included breast (30), lung (13), esophageal (12), colorectal (12), cervical (4), laryngeal (4), bladder (4), pancreatic (3), tongue (3), blood (3), testicular (3), ovarian (3), skin (2), kidney (2), palatine tonsil (2), rectal (2), stomach (1), and bone cancer (1). The remaining patients did not report their diagnosis. Education levels were primary (13), secondary (61), and higher

(46). Participants were recruited via social media, online platforms, direct outpatient clinic contact, and snowball sampling. Participation was voluntary and initiated by patients themselves through email or response to an informational announcement distributed by a clinical psychologist. Clinical staff were not involved in data collection, and eligibility criteria were verified prior to participation based on self-reported information.

No formal calculation of a minimum sample size was conducted due to the exploratory nature of the study and limitations related to the availability of cancer patients. In psychological research with this population, convenience sampling is often used, taking into account recruitment difficulties and variability in participants' health status. A similar explanation is also suggested by Bottaro & Faraci (2022).

Instruments

The validated instruments administered for this study were as follows:

Patient Empowerment Scale (PES): The Polish translation of the PES (Bulsara et al., 2006) includes 15 items assessing empowerment. Participants rate items on a 4-point scale (1 = *strongly disagree*, 4 = *strongly agree*). Scores range from 15 to 60, with higher scores indicating greater empowerment. In the original tool, an extended Rasch measurement model was selected to evaluate the psychometric properties of scale items, such as validity and reliability, as well as to explore how study participants respond to each statement. A Person Separation Index of .78 was considered to indicate an acceptable level of reliability.

Measuring patient empowerment is a complex issue. Some measurement tools are disease-specific, whereas the literature review indicates a predominance of general approaches in this area (Mora et al., 2022). The PES scale was selected because it was developed directly on the basis of the experiences of oncology patients. Its content was derived from data gathered through 20 in-depth interviews with patients representing various cancer types, as well as from a comprehensive review of the literature on coping strategies, empowerment of the individual and self-efficacy.

Mini-Mental Adjustment to Cancer (MINI-MAC) Scale: The Polish adaptation (Juczyński, 2009) of the MINI-MAC (Watson et al., 1994) measures coping strategies in oncology patients across four dimensions: fighting spirit, positive redefinition, helplessness/hopelessness, and anxious preoccupation. Items are rated on a 4-point scale (1 = *strongly disagree*, 4 = *strongly agree*). The higher the mean score, the more intense the coping strategy. Cronbach's alpha reliability coefficients range from .87 to .92.

Multidimensional Health Locus of Control (MHLC): The Polish adaptation (Juczyński, 2009) of the MHLC (Wallston et al., 1978) consists of 18 items assessing internal and external (powerful others and chance) health locus of control. Items are rated on a 6-point scale (1 = *strongly disagree*, 6 = *strongly agree*). The possible score range for each scale is from 6 to 36. The dimension score is the sum of the points obtained from the diagnostic items of the respective subscale. Higher scores indicate greater intensity of the health locus of control dimension Cronbach's alpha coefficients range from .54 to .74.

EORTC QLQ-C30 Questionnaire: The Polish version of the EORTC QLQ-C30 questionnaire (Aaronson et al., 1993) assesses quality of life (QoL) in oncology patients. The overall QoL scale includes two questions, rated from 1 (*Very Poor*) to 7 (*Excellent*), with a final score range of 2–14. Higher average scores reflect better QoL.

This instrument was selected because it is specifically designed for oncology patients and has been employed in studies on empowerment within this population (Momennasab et al., 2024; van den Berg et al., 2013).

Hospital Anxiety and Depression Scale – Modified (HADS-M): the Polish adaptation (de Walden-Gałuszko et al., 2000; de Walden-Gałuszko & Majkowicz, 2001) of the original HADS (Zigmond & Snaith, 1983) measures anxiety and depression symptoms. It includes 16 items: seven for anxiety, seven for depression, and two for aggression/irritation, with responses rated from 0 to 3. The possible score range for the anxiety and depression scales is 0–21. Higher scores indicate greater intensity of these states. Cronbach's alpha reliability coefficients for various somatic patient populations are .80 for anxiety, .85 for depression, and .76 for aggression/irritation.

Although the HADS was originally used primarily in studies involving hospitalized patients, numerous publications demonstrate its broad application across different oncology care settings. As emotional well-being remains important at every stage of the cancer trajectory (Annunziata et al., 2020), the scale has been successfully employed both among ambulatory oncology patients (e.g., Kulpa et al., 2023; Naser et al., 2021; Tsunoda et al., 2005; Van den Berg et al., 2013) and in online follow-up assessments conducted several years after diagnosis (Breidenbach et al., 2022).

Post-Traumatic Growth Inventory (PTGI): The Polish adaptation (Ogińska-Bulik & Juczyński, 2010) of the PTGI (Tedeschi & Calhoun, 1996) assesses post-traumatic growth (PTG) following a life crisis. The inventory (Ogińska-Bulik & Juczyński, 2010) includes 21 items across four subscales: self-perception (9 items; range: 0-45), interpersonal relationships (7 items; range: 0-35), appreciation of life (3 items; range: 0-15), and spiritual change (2 items; range: 0-10).Total score ranges from 0 to 105 and the overall score is represented by the average score obtained across all items of the instrument with higher scores reflecting greater PTG. Cronbach's alpha coefficients range from .63 to .87.

Although other instruments for assessing post-traumatic growth exist (Tedeschi et al., 2017; Zięba et al., 2010), we decided to use the classic PTGI, which remains the most widely applied tool for measuring positive post-traumatic changes in oncology patients (Marziliano et al., 2020). This choice ensured the possibility of comparing the obtained results with the existing, extensive scientific literature, both older and more recent.

Procedure

Questionnaire Adaptation

The PES author's consent was first obtained for adapting the instrument to the Polish context. The adaptation process began with translating the 15 items from English to Polish. A Polish psychologist with expertise in oncology, psychometrics, and the English language reviewed the translation for accuracy and clarity, leading to revisions based on their feedback. By 'expertise in the English language' we mean that the psychologist possesses advanced proficiency in both written and spoken English, which includes familiarity with scientific terminology and the ability to accurately interpret and translate complex medical and psychological concepts. The second stage involved back translation, which was then reviewed by the original PES author, resulting in the final version of the questionnaire.

The Study

The study was conducted using a paper-and-pencil format. It began with participants being informed of the study objectives, after which they signed the informed consent and the General Data Protection Regulation (GDPR) consent forms. They then completed several questionnaires: the Polish adaptations of the PES, MINI-MAC, MHLC, EORTC QLQ-C30, HADS-M, and PTGI. Upon completion, participants received a bookshop voucher as compensation, confirming receipt by signing a separate document. The entire process took approximately 45 minutes.

Compliance with ethical standards

The Ethics Committee of the Institute of Psychology at Kraków's University of the National Education Commission approved the study (Approval number 01/03/2024). The study was conducted in accordance with the ethical standards as set forth in the 1964 Declaration of Helsinki and its later amendments

The study was conducted in available consultation rooms by qualified psycho-oncologists, with support from senior psychology students trained in research procedures and ethical principles for working with individuals diagnosed with cancer. As an initial step, patients evaluated their current well-being to determine their readiness to participate in the study. Before the study began, participants were thoroughly informed about its nature, including that some questions might require them to reflect on their personal experiences with illness and evaluate various aspects of their psychological and physical well-being. It was emphasized that such activities could sometimes lead to temporary discomfort, stress, or a lowered mood. Participants were assured that their participation was voluntary and anonymous, that they could withdraw from the study at any time without providing a reason, and that they had the right to ask questions about the study and its procedures. After completing the study, researchers checked in with participants to see how they were feeling, offered supportive conversation, and, if needed, provided brief relaxation techniques to help improve their well-being.

Participants were informed that the study was not intended as a diagnostic assessment and would not provide clinical evaluation regarding conditions such as anxiety or depression. They were made aware that the purpose of the research was purely observational and aimed at understanding experiences and well-being, rather than identifying or diagnosing mental health disorders. Participants were advised that if they experienced significant emotional discomfort, stress, or persistent low mood, they were encouraged to seek support from the hospital's psychological services, which were available to all patients.

RESULTS

Statistical analyses were conducted using IBM SPSS Statistics (version 29) and Jamovi 2.3.28.0. Missing data accounted for less than 1% of all responses and concerned a small number of items in the PTGI and MHLC scales. As scale scores were calculated using mean values, missing data were not imputed, because valid indices could be computed based on the available responses. This article assumed the significance level as $\alpha = .05$.

In the present study, information on cancer type and timeframe from diagnosis was collected; however, these variables were not included in the statistical analyses. This decision was driven by several methodological considerations. First, the aim of the study was to identify the overall pattern of associations between empowerment and mental functioning in the oncology patient population as a whole, rather than to examine clinical differences across cancer types. This approach is used in both quantitative (Kaal et al., 2017) and qualitative (Dopelt et al., 2022) research. Nonetheless, these variables may have a potential moderating role and therefore represent an important avenue for future research. Second, the sample was highly heterogeneous, encompassing numerous cancer types with very small representation, many of which were represented by only one or a few individuals. Such dispersion made it impossible to conduct reliable between-group comparisons or to use these variables as covariates without risking substantial loss of statistical power and instability of estimates.

Confirmatory Factor Analysis of the Patient Empowerment Questionnaire

A confirmatory factor analysis (CFA) was performed on the PES-PL questionnaire to verify its univariate structure. Model fit for factor model was evaluated using complementary fit indices (CFI, TLI, RMSEA, SRMR, and the χ^2 statistic), interpreted in accordance with methodological recommendations discussed by Kyriazos (2018). Acceptable model fit was defined as CFI and TLI values $\geq .90$, RMSEA $\leq .08$, and SRMR $\leq .08$. The results did not support the expected structure, as indicated by the following fit indices:

- Root mean square error of approximation RMSEA = .128 (above the permissible value RMSEA < .08).
- Confirmatory fit index CFI = .894 (below the minimum value CFI > .9).

- Standardized root mean square residual SRMR = .059 (below the permissible value SRMR < .08 but above the good fit value SRMR < .05).
- Tucker-Lewis index TLI = .876 (below the minimum value TLI < .9).

The chi-squared test result also proved statistically significant: $\chi^2(90) = 215.24$; $p < .001$ indicates a divergence between the observed covariance matrix and the one implied by the model. Jamovi does not allow for the creation of a graph displaying factor loadings. Therefore, all necessary values, including the factor loadings for all test items, are presented in Table 1.

Table 1. Values of factor loadings together with the statistical significance (Z) test results in the confirmatory factor analysis (CFA) for each test item of the original 15-item version of the patient empowerment questionnaire (the PES questionnaire)

Test item	*FL*	*SE*	*Z*	*p*
Item 1	.61	.06	9.46	<.001
Item 2	.68	.07	10.32	<.001
Item 3	.61	.07	8.71	<.001
Item 4	.60	.07	8.58	<.001
Item 5	.45	.08	5.73	<.001
Item 6	.67	.06	10.37	<.001
Item 7	.59	.07	8.72	<.001
Item 8	.66	.07	9.87	<.001
Item 9	.63	.07	9.05	<.001
Item 10	.53	.06	8.36	<.001
Item 11	.71	.07	10.95	<.001
Item 12	.69	.08	8.87	<.001
Item 13	.74	.07	10.98	<.001
Item 14	.65	.07	9.94	<.001
Item 15	.57	.07	8.36	<.001

Note: FL – factor loading; SE = standard error; Z – significance test result for each item; p – the p value for the Z test.

The analysis of Table 1 identified two test items with low factor loadings (below .55), indicating a weak relationship with the latent factor: item 5 (FL = .45) and item 10 (FL = .53). As a result, these two items were removed from the adapted questionnaire.

Moreover, the analysis showed high values of modification indices (MI) for the relationships between certain items, which indicated a relation between their residual errors. Thus, the model took into account the covariances between the residual errors of the test items which had the highest values of modification indices:

- Test items 6 and 11 (MI = 12.09).
- Test items 1 and 2 (MI = 9.70).
- Test items 12 and 15 (MI = 9.18).
- Test items 4 and 13 (MI = 9.46).

The results for the developed model indicated a good to very good fit:

- Root mean square error of approximation RMSEA = .065 (below the permissible value RMSEA < .08).
- Confirmatory fit index CFI = .970 (within the good fit range CFI > .95).
- Standardized root mean square residual SRMR = .040 (within the good fit range SRMR < .05).
- Tucker-Lewis index TLI = .961 (within the good fit range TLI > .95).

Table 2 shows the factor loading values for thus developed model. Those values proved higher than the assumed minimal threshold FL > .55.

Table 2. Values of factor loadings together with the statistical significance (Z) test results in the confirmatory factor analysis (CFA) for each test item of the modified 13-item version of the patient empowerment questionnaire (the PES questionnaire)

Test item	*FL*	*SE*	*Z*	*p*
Item 1	.60	.07	9.19	<.001
Item 2	.67	.07	10.04	<.001
Item 3	.60	.07	8.58	<.001
Item 4	.60	.07	8.47	<.001
Item 6	.66	.07	10.05	<.001
Item 7	.59	.07	8.83	<.001
Item 8	.66	.07	9.88	<.001
Item 9	.62	.07	8.92	<.001
Item 11	.71	.07	10.80	<.001
Item 12	.70	.08	8.92	<.001
Item 13	.76	.07	11.50	<.001
Item 14	.65	.07	9.87	<.001
Item 15	.57	.07	8.24	<.001

Note: FL – factor loading; SE = standard error; Z – significance test result for each item; p – the p value for the Z test.

The factor analysis yielded a modified version of the original 15-item questionnaire, now consisting of 13 items (with items 5 and 10 excluded), which demonstrated good fit indices. The reliability analysis of this revised scale showed a Cronbach's alpha coefficient of .91, indicating high reliability.

Correlation Between Patient Empowerment and Mental Functioning Indicators

To achieve validity analysis and hypothesis verification, the results of the PES-PL questionnaire were correlated with those of other questionnaires measuring constructs related to mental functioning using the Pearson correlation coefficient (PCC). Table 3 presents the basic descriptive statistics of the measured variables, while Table 4 displays the correlation results. The low values of skewness (Skewn. < |1|) and kurtosis (Kurt. < |2|) (Table 3) indicate the absence of outliers, thereby supporting the use

Table 3. Descriptive statistics of the measured variables (N = 120)

Variable	*M*	*SD*	*Skewn.*	*Kurt.*	*Min.*	*Max.*	*W*	*p*
patient empowerment	45.96	9.74	-.45	-.59	24	60	.08	.06
quality of life	3.80	1.24	.17	-.38	1	7	.13	<.001
MHLC								
internal	23.24	5.25	-.01	-.33	9	37	.08	.10
external powerful others	22.77	5.38	.18	-.45	10	35	.09	.03
external chance	21.80	5.75	-.63	.11	6	33	.09	.02
HADS-M								
anxiety	7.42	4.71	.27	.22	0	17	.10	.003
depression	6.82	5.09	.49	-.80	0	20	.13	<.001
PTGI								
self-perception	1.85	1.17	.45	-.90	.00	4.56	.12	<.001
interpersonal relationships	2.18	1.25	.19	-1.14	.00	5.0	.11	.002
appreciation of life	2.34	1.50	.23	-1.19	.00	5.0	.15	<.001
spiritual change	1.82	.97	.08	-.45	.00	4.5	.14	<.001
overall PTG	2.02	2.83	.02	-.95	.00	2.8	.08	.08
MINI MAC								
fighting spirit	2.75	.72	-.40	-.80	1.14	4.0	.12	<.001
positive redefinition	2.66	.66	-.47	-.44	.71	3.86	.15	<.001
helplessness/ hopelessness	1.88	.68	.58	-.75	1.0	3.42	.13	<.001
anxious preoccupation	2.22	.69	.11	-.70	.86	4.0	.07	.20

Note: M – mean; SD = standard deviation; Skwen, – skewness; Kurt. – kurtosis; Min. – minimum value; Max. – maximum value; W – Shapiro – Wilk test result; p – p-value for Shapiro-Wilk test.

Table 4. Results of the Pearson correlation analysis measuring the relationship between patient empowerment and variables reflecting Zimmerman's three components of psychological empowerment: intrapersonal, interactional, and behavioral

		Patient empowerment (PES-PL)	
Construct	**Variable**	***r***	***p***
Multidimensional Health Locus of Control (MHLC)	Internal control	.31	<.001
	Powerful others	-.05	.606
	External chance	-.24	.008
Mental functioning (HADS-M)	Anxiety	-.46	<.001
	Depression	-.60	<.001
Post-Traumatic Growth (PTGI)	Self-perception	.36	<.001
	Interpersonal relationships	.32	<.001
	Appreciation of life	.27	.003
	Spiritual change	.07	.422
	Overall post-traumatic growth	.31	<.001
Quality of life (EORTC QLQ-C30)	Health-related quality of life	.50	<.001
Strategies of coping with the disease (MINI-MAC)	Anxious preoccupation	-.37	<.001
	Fighting spirit	.28	.002
	Helplessness/hopelessness	-.52	<.001
	Positive redefinition	.22	.014

Note: r – Pearson's r correlation coefficient; p – p-value for correlation coefficient.

of parametric correlation analysis. We also assessed whether it would be appropriate to control for disease duration and cancer type as covariates in the correlation analysis. This proved unnecessary in the case of disease duration, which was not related to the PES score ($r = .09$, $p = .345$), and impossible for cancer type due to the large number of categories and low cell counts (detailed data are provided in the sample characteristics).

The analysis revealed significant relationships between PE and most variables, with two exceptions: the belief that others controlled the patient's health (MHLC) and spiritual change in post-traumatic growth (PTGI), both showing no significant correlation. Higher PE was linked to stronger internal HLOC and less reliance on external chance and circumstance, partially supporting hypothesis 1. Stronger PE also correlated with fewer anxiety and depression symptoms, confirming hypotheses 2 and 3. Additionally, PE showed a positive correlation with overall PTG and its dimensions of self-perception, interpersonal relationships, and appreciation of life, but not with spiritual change, partially confirming hypothesis 4. A positive correlation between PE and QoL was found, confirming hypothesis 5. Higher PE levels were associated with more frequent use of fighting spirit and positive redefinition strategies, and less use of anxious preoccupation or helplessness/hopelessness, confirming hypothesis 6.

The analysis reported strong correlations ($r > .5$) for the strategy of helplessness/hopelessness (MINI-MAC), QoL and depression. The remaining relationships were moderate or weak.

DISCUSSION

The primary aim of this project was to develop a Polish adaptation of the tool for assessing empowerment among oncology patients (Bulsara et al., 2006). CFA analysis enabled a detailed evaluation of the unidimensional structure of the PES in the Polish adaptation and identified elements that could be improved to better align the measure with the characteristics of the target population. It is worth noting that the resulting 13-item structure differs from the original 15-item version; however, the removal of two items (items 5 and 10) was deemed necessary, as their low factor loadings indicated minimal informational contribution and semantic redundancy (relative to item 4). Consequently, retaining the original 15-item structure would violate the principle of measurement parsimony and could compromise the psychometric stability of the model. The tool demonstrated satisfactory psychometric properties. However, it is important to consider the extent to which the shortened version of the scale reflects the key aspects of the empowerment construct- our preliminary item analysis indicates that the core of the construct has been preserved. This supports the assumption that empowerment, as operationalized in the PES, is primarily captured by central dimensions related to perceived agency and engagement. Nevertheless, further validation of the PES-PL is required, including, among others, testing measurement stability and evaluating the tool's performance across different patient groups. Such analyses would allow for a more precise assessment of the scale's generalizability. The original PES instrument was also adapted for the Greek population of patients with chronic insomnia (Tsoli et al., 2019), where the original structure of the scale was retained, suggesting that structural modifications may be context- and population-dependent rather than indicative of deficiencies in the original instrument.

The study also aimed to explore the correlation between oncology patients' empowerment (PE) and various health and mental functioning indicators, addressing the limited research in this area. These variables were selected in accordance with Zimmerman's (1995) model of psychological empowerment. While PE has been shown to aid the recovery of somatic patients (Casirati et al., 2023; Eskildsen et al., 2017), most studies focus on physical health, with less attention to mental health. This imbalance limits a comprehensive understanding of empowerment as a psychological resource in chronic illness. Furthermore, much of the research on PE and mental health has been conducted amongst non-oncology patients (e.g., Cuzco et al., 2022; Forlani et al., 2006) or healthy individuals (Marton et al., 2021). Nevertheless, it is important to emphasize that the construct of empowerment remains conceptually broad and operationally heterogeneous, particularly within the context of clinical psychology of somatic illness, which limits the precision of its empirical assessment. This heterogeneity complicates direct comparisons across studies and underscores the need for context-specific validation. Moreover, the present findings reflect general patterns across a heterogeneous oncology sample and do not account for disease stage, treatment trajectory, or temporal dynamics. Therefore, interpretations regarding patient functioning should be made with caution, and the results cannot be directly extrapolated to specific cancer types or phases of treatment.

The first hypothesis proposed a correlation between PE and health control (H1). This hypothesis was partially confirmed. Patients with higher levels of empowerment were more likely to report internal control over their health and less frequently attributed their health to external factors such as chance and fate. This pattern is consistent with theoretical assumptions linking empowerment to a stronger sense of personal influence over health-related behaviors. However, no correlation was found between empowerment and the perceived influence of others-another external factor. The obtained results contrasts with previous studies, which indicate that oncology patients typically exhibit lower levels of internal HLOC compared to individuals with other chronic illnesses (Arraras et al., 2002; Chen et al., 2001). This discrepancy may reflect differences in sample characteristics or shifts in contemporary models of patient participation in care. Impotantly, the obtained results do not imply full control over cancer which is inherently unpredictable- but rather a sense of control over areas that can indeed be influenced, such as adherence to medical recommendations or communication with healthcare staff. Thus, empowerment appears to be associated with perceived controllability of

modifiable aspects of illness management**.** The lack of an association between empowerment and the "powerful others" is consistent with the fact that, according to the PES, empowerment primarily reflects a sense of personal agency and an active role, rather than a denial of the importance of professionals. Psycho-oncology literature emphasizes that effective empowerment is based on collaboration and partnership with medical personel, rather than exclusively independent patient action (Eskildsen et al., 2017; Rogala, 2020). Similar conclusions have been drawn in other studies, where authors have linked empowerment to a responsible attitude toward one's own health, reflected in behaviors such as seeking additional information or collaborating with healthcare providers (Dopelt et al., 2022; Marton et al., 2021).

The second and third hypotheses proposed a negative correlation between PE and the signs and symptoms of anxiety (H2) and depression (H3). These hypotheses were confirmed. Higher levels of empowerment were associated with lower intensity of anxiety and depression. These associations suggest that empowerment may be linked to more adaptive psychological functioning in the context of cancer. Although studies on these correlations specifically among oncology patients are limited, similar findings have been reported in other groups of somatic patients (Cuzco et al., 2022; Duarte-Díaz et al., 2022, 2023) and in several studies involving cancer patients (Du et al., 2020; Jiang et al., 2024; Sezgin & Bektas, 2025; Youcheng & Yu, 2023). In individuals with cancer, symptoms of anxiety and depression are common and may occur at various stages of the disease (Getie et al., 2025; Pitman et al., 2018). The negative association between empowerment and anxiety aligns with observation that patients with higher empowerment often report reduced sense of uncertainty. Greater clarity regarding one's situation and role may be linked to lower anticipatory anxiety. As patients gain knowledge and improve communication with healthcare staff, they are less likely to anticipate negative consequences of the disease and its treatment (Barlow, 1988), thereby decreasing the tendency to catastrophize their health situation. In the case of depression, the observed association may reflect different factors. A key factor may be the enhancement of a sense of agency in areas where patients can actually exert influence, such as choosing among treatment options offered by their physician. Such perceptions are theoretically linked to motivation and meaning, which are central components in depressive symptomatology. Increasing a sense of meaning and control over daily functioning despite the presence of a chronic illness and significant psychological burden also appears important. Furthermore, higher levels of empowerment are associated with better health outcomes (Eskildsen et al., 2017), while depression may be partially a consequence of inflammatory processes related to the disease or its treatment (Smith, 2015). These multiple pathways highlight the complexity of the observed associations.

The fourth hypothesis proposed a positive correlation between PE and post-traumatic growth (PTG) (H4). This hypothesis was partially confirmed. Higher levels of empowerment were associated with greater PTG, with patients reporting more significant changes in self-perception, interpersonal relationships, and appreciation of life. These findings correspond with previous research showing a strong positive association between empowerment and PTG (Bulsara et al., 2004; Üzar-Özçetin & Hiçdurmaz, 2018). It should be noted, however, that the study employed the classical PTGI (Tedeschi & Calhoun, 1996), which primarily captures positive post-traumatic changes. This represents a conceptual simplification, as contemporary frameworks recognize the mixed nature of post-traumatic changes (Zięba et al., 2019).

Taking responsibility for health-related decisions and adopting a proactive attitude (Nutbeam & Kickbusch, 1998; Rogala, 2020) may support oncology patients in coping with the trauma of a cancer diagnosis. Such an approach promotes the reinterpretation of the illness experience, allowing individuals to recognize new possibilities and positive aspects of their situation- elements essential for PTG. Empowerment further strengthens the sense of self-efficacy, enabling patients to notice new strengths, skills, and resources within themselves.

The absence of a correlation with spiritual change warrants further investigation. It is possible that spirituality may represent a specific dimension of post-traumatic growth, one strongly dependent on culture, prior beliefs, and individual trajectories of adaptation to illness. This suggests that spiritual change may by linked to the different psychological mechanisms than those captured by empowerment**.** Empowerment primarily relates to active agency (Rogala, 2020), whereas spiritual change is often associated with processes that extend beyond personal control, such as transcendence or the search for meaning. This may explain the lack of an observed relationship between these variables. Furthermore, it should be emphasized that PTG is a dynamic process. Its various dimensions may emerge with different intensity depending on the time elapsed since diagnosis, which means that the absence of a link with spiritual change may reflect, for example, the stage of illness.

The fifth hypothesis proposed a positive correlation between PE and quality of life (QoL) (H5). This hypothesis was confirmed: higher levels of empowerment were associated with higher QoL. Similar results have been reported in previous studies involving both oncology patients (Jiang et al., 2024; Kaal et al., 2017; Wang et al., 2025) and non-oncology patients (Forlani et al., 2006). This consistency across populations suggests that empowerment is broadly linked to general life assesment. This may indicate that taking responsibility for one's own health and treatment is related to an improved subjective perception of one's situation. The strengthened sense of self-efficacy may play a significant role in this relationship (Bulsara et al., 2006). Additionally, better understanding one's situation and engaging in open communication with healthcare providers (Eskildsen et al., 2017) may facilitate collaboration with the medical team, thus improving the patient's QoL. Thus, it is possible that collaboration with

the healthcare team mediates the relationship between empowerment and quality of life. Another potential mechanism underlying this relationship may also involve the reduction of anxiety and depressive symptoms. However, given the correlational design, these mechanisms remain hypothetical. Additionally, it should be noted that quality of life is a highly complex construct encompassing various dimensions of functioning: physical, social, and psychological (Ferrans et al., 2005; Wilson & Cleary, 1995). This is particularly important in the context of oncology patients, for whom the disease may disrupt each of these areas. It appears that empowered patients, through their own actions, may improve their functioning across these domains; nevertheless, this issue requires further investigation.

Finally, the sixth hypothesis proposed a correlation between PE and cancer coping strategies (H6). This hypothesis was confirmed. Higher levels of empowerment were positively correlated with more frequent use of adaptive coping strategies- such as fighting spirit and positive personal redefinition- and negatively correlated with the use of maladaptive strategies, including anxious preoccupation and helplessness/hopelessness. These associations suggest conceptual overlap between empowerment and active coping orientations. The obtained results align with existing qualitative (Bulsara et al., 2004) and quantitative studies (Ziegler et al., 2022). This relationship may stem from the fact that empowerment shares characteristics with adaptive coping strategies. For instance, the fighting spirit strategy involves an active approach, while helplessness/hopelessness reflects a passive stance (Watson et al., 1994). The former is congruent with empowerment, while the latter opposes it (Rogala, 2020). It is also possible that the reduced levels of anxiety and depression associated with PE, as observed in this study, play an important role. Better mental health, after all, facilitates the use of more adaptive coping strategies (Kulpa et al., 2014).

The present study was not experimental in design; therefore, causal relationships cannot be established. All observed associations should be interpreted with caution and understood as correlational in nature. Further longitudinal and intervention-based studies are required to examine the temporal stability of these relationships and to explore potential mechanisms underlying the observed associations.

STUDY LIMITATIONS

The study had several limitations. The first limitation concerns the inclusion of model modifications based on modification indices, which were only partially supported by theoretical considerations, as the covariances between test items reflected semantic similarity in some, but not all, cases. While the application of post hoc modifications led to acceptable model fit indices in the factor analysis, this improvement should be interpreted primarily as a statistical adjustment rather than confirmation of the scale's underlying structure. Replication in independent samples is therefore necessary to verify the robustness, replicability, and generalizability of the observed factor structure. In addition, it should be noted that the PES was originally designed as a generalized instrument intended for use across diverse cancer patient populations in a busy clinical setting. This pragmatic design goal, while increasing clinical utility, may limit the degree to which a single-factor structure fully captures nuanced differences between patient subgroups, further underscoring the need for additional validation across clinical contexts.

The second limitation concerns the substantial clinical heterogeneity of the sample, encompassing a wide range of cancer diagnoses with highly uneven group sizes. As a result, differences related to specific cancer types or disease trajectories could not be explored, and the findings reflect only general patterns within the broader oncology population. Additionally, the study does not consider factors such as disease stage, treatment course, or temporal changes, which limits the clinical relevance of the findings. Consequently, the observed associations provide only a broad, nonspecific overview of patients' functioning during cancer treatment.

Third, the correlational design of the study restricts the ability to draw conclusions about the causal direction of the observed associations between empowerment and mental functioning. Although the results indicate meaningful relationships, it remains unclear whether greater empowerment leads to improved psychological well-being, whether better mental functioning facilitates a stronger sense of empowerment, or whether both are influenced by other unmeasured factors.

Fourth, the study did not include information on cancer progression or disease severity, which may be relevant to patients' psychological experiences and levels of empowerment. Therefore, the findings represent general patterns across individuals at different stages of the disease, rather than capturing potential nuances related to clinical status.

Fifth, the use of the classical PTG concept (Tedeschi & Calhoun, 1996) represents a conceptual simplification of the complex processes involved in posttraumatic change. Focusing exclusively on positive posttraumatic change constitutes an important limitation and may obscure the complexity of patients' psychological adjustment.

Sixth, the cross-sectional design of the study, based on a single measurement point, does not allow for the assessment of changes in empowerment and psychological functioning over time. Consequently, potential dynamics occurring before, during, and after treatment could not be captured. Furthermore, no formal analysis was conducted to determine the optimal number of participants. The sample size was consistent with prior research conducted in oncology populations (e.g., Bulsara & Styles, 2013), however it may still limit the detection of more subtle effects or interactions between variables.

Summary and Future Research Directions

This study is among the first to examine the correlations between empowerment and various mental health indicators in oncology patients. The findings

indicate a relationship between patient empowerment and cancer coping strategies, health locus of control, quality of life, anxiety, depression, and post-traumatic growth. Additionally, the study involved adapting an empowerment assessment tool for oncology patients, with the Polish version now available for use in future research. When designing future studies, however, it is important to keep in mind the methodological limitations of this instrument, described in the previous section. In future research on patient empowerment, it would be advisable to test the current structure of the instrument in an independent sample to confirm the stability of its fit (cross-validation). Additionally, it may be worthwhile to refine the wording of items whose error terms showed strong covariances without a clear theoretical rationale. The development of a multidimensional instrument for assessing patient empowerment could also be considered. However, in the present study, the supplementary exploratory factor analysis indicated that such an approach was not warranted.

The results and the instrument can contribute to psychological practice by promoting empowerment in patients. However, as a correlational study, future research should explore causal relationships between the variables and investigate whether these correlations differ across various cancer diagnoses to provide a more detailed understanding of mental functioning in oncology patients.

ADDITIONAL INFORMATION

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