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3º CICLO DE ESTUDOS
DOUTORAMENTO EM CUIDADOS PALIATIVOS

SPIRITUAL INTELLIGENCE IN INFORMAL CAREGIVERS OF PALLIATIVE CARE PATIENTS

DEVELOPMENT OF A COMPLEX INTERVENTION

Cristina Teixeira Pinto

D

2026

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INTELIGÊNCIA ESPIRITUAL EM CUIDADORES INFORMAIS DE DOENTES EM CUIDADOS PALIATIVOS

DESENVOLVIMENTO DE UMA INTERVENÇÃO COMPLEXA

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D

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Dissertação para obtenção do
grau de Doutor em Cuidados Paliativos,
apresentada à Faculdade de Medicina
da Universidade do Porto

"Many of our patients have faced greater life struggles than we have. The lessons they have learned about courage, grief, hope, and gratitude could have much to teach us, if we but recognized that in the school of life, they are the experts and we the novice."

Reena George in *J Clin Oncol (2010), 28 (10)*

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For all of you, I am grateful every day!

Cristina Teixeira Pinto, São João da Madeira, January 2026

AUTHOR'S DECLARATION

Doctoral thesis submitted in candidature for the degree of Doctor of Philosophy in Palliative Care, to the Faculty of Medicine of the University of Porto, and prepared in accordance with the criteria of this Faculty for the admission and classification of academic examinations, in force since 21 July 2021, namely those set out in point III.2 concerning the minimum requirements for the submission of the request for admission to the doctoral thesis examination.

In this context, the present dissertation is structured as a collection of full and original research articles, in all of which the candidate is the first author. None of the works included herein has been submitted for the award of any other academic degree and they are fully reproduced throughout this dissertation.

The candidate has also authored several presentations in the form of oral communications and posters, which are listed in the *curriculum vitae*.

SCIENTIFIC PUBLICATIONS

Articles published in peer-reviewed journals

Pinto, C. T., & Pinto, S. (2020). From spiritual intelligence to spiritual care: A transformative approach to holistic practice. *Nurse Education in Practice*, *47*. https://doi.org/10.1016/j.nepr.2020.102823

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Filipe Veiga (2024). *Mortality Pattern of Cancer Patients Followed in Palliative Care - Experience in a Portuguese Public Hospital*. Dissertation for the master degree in palliative care, Faculdade de Medicina da Universidade do Porto. Member of the academic jury. December 2024.

ABSTRACT

Introduction: Spirituality is a foundational pillar of palliative care. However, its systematic integration into clinical practice remains limited, particularly with regard to the specific needs of family caregivers. In this context, spiritual intelligence has emerged as a promising construct for operationalizing spiritual care by translating spiritual awareness into adaptive functioning, meaning-making, and relational engagement. Although spiritual intelligence interventions effectively reduce burnout in professional settings, their application among informal caregivers, namely those caring for cancer patients in palliative care, remains underdeveloped. Given the subjective and multifaceted nature of spiritual needs within this population, addressing them requires a complex, theory-driven intervention, designed to transform spiritual potential into measurable resilience and clinical well-being for informal caregivers.

Objectives: This study aimed to contribute to the development of a complex intervention for assessing and promoting spiritual intelligence of informal caregivers of adult cancer patients receiving palliative care. Specific objectives include: (1) to identify and map the attributes and dimensions characterizing the concept of spiritual intelligence; (2) to characterize the available instruments for assessing spiritual intelligence; (3) to analyze the psychometric properties of a spiritual intelligence assessment instrument adapted for Portuguese caregivers; (4) to analyze the spiritual intelligence profile of informal caregivers of cancer patients in palliative care; (5) to explore factors that facilitate or inhibit spiritual intelligence among caregivers; (6) to identify and analyze existing interventions targeting spiritual intelligence described in the literature; and (7) to develop a conceptual model and delineate the structural content of a complex intervention aimed at promoting spiritual intelligence in palliative care caregivers.

Methodology: Guided by the *Medical Research Council* framework for the development and evaluation of complex interventions, the study addressed the development phase through three stages: (1) evidence gathering, comprising a literature map and a cross-sectional quantitative analysis; (2) conceptual framework definition; and (3) process and outcomes modeling. All ethical standards were ensured, including approval by an Ethics Committee and the acquisition of informed consent from participants, whenever applicable.

Results: The concept analysis resulted in a revised definition of spiritual intelligence encompassing six core attributes: transcendental awareness, spiritual consciousness, equanimity, life wisdom, meaning and purpose-making, and existential questioning.

Scoping reviews confirmed spiritual intelligence's positive correlation with resilience and well-being, while revealing a significant lack of assessment instruments and interventions tailored to palliative care. Psychometric evaluation of the adapted instrument for Portuguese caregivers proved robust. Empirically, caregivers reported moderate-to-high spiritual intelligence levels (M=41.42 ±11.72), with personal meaning production as the strongest dimension. Multivariate analysis explained 35.6% of spiritual intelligence variance (R^2=0.356), identifying previous caregiving experience and resilience as facilitators, and patient physical symptom burden as an inhibitor. Higher spiritual intelligence significantly predicted lower caregiver burden, particularly through the self-efficacy perception dimension (β= -0.12, p ≤0.05). These findings informed a new conceptual model for a complex intervention; such programs should be structured, standardized, and supervised by multicultural expert panels to enhance internal resources and meaning-making during terminal illness.

Conclusions: This research positions spiritual intelligence as a measurable, dynamic, and modifiable resource within family caregiving in palliative care. By integrating conceptual clarification, empirical characterization, and intervention modelling, the study establishes a robust foundation for complex interventions aimed at strengthening caregivers' adaptive capacitiesand enhancing holistic palliative care delivery. Spiritual intelligence emerges not as a mere theoretical construct, but as a clinically relevant target. The integration of structured training programs into standard palliative support is highly recommended, prioritizing meaning-making, transcendental awareness, and existential reflection as core therapeutic pillars.

Keywords: Caregiver burden; Complex intervention; Family caregiver; Palliative care; Spiritual intelligence; Spirituality.

RESUMO

Introdução: A espiritualidade constitui um pilar fundamental dos cuidados paliativos. Contudo, a sua integração na prática clínica permanece limitada, particularmente no que se refere às necessidades específicas dos familiares cuidadores. Neste contexto, a inteligência espiritual tem emergido como um constructo promissor para a operacionalização do cuidado espiritual, ao traduzir a consciência espiritual em funcionamento adaptativo, construção de sentido e envolvimento relacional. Embora as intervenções baseadas na inteligência espiritual tenham demonstrado eficácia na redução do burnout em contextos profissionais, a sua aplicação junto de cuidadores informais, nomeadamente aqueles que cuidam de doentes oncológicos em cuidados paliativos, permanece subdesenvolvida. Atendendo à natureza subjetiva e multifacetada das necessidades espirituais nesta população, a sua abordagem requer uma intervenção complexa, teoricamente fundamentada, concebida para transformar o potencial espiritual em resiliência mensurável e bem-estar clínico nos cuidadores informais.

Objetivos: Este estudo teve como objetivo contribuir para o desenvolvimento de uma intervenção complexa destinada à avaliação e promoção da inteligência espiritual em cuidadores informais de doentes adultos com cancro em cuidados paliativos. Os objetivos específicos incluíram: (1) identificar e mapear os atributos e dimensões que caracterizam o conceito de inteligência espiritual; (2) caracterizar os instrumentos disponíveis para a avaliação da inteligência espiritual; (3) analisar as propriedades psicométricas de um instrumento de avaliação da inteligência espiritual adaptado para cuidadores portugueses; (4) analisar o perfil de inteligência espiritual de cuidadores informais de doentes oncológicos em cuidados paliativos; (5) explorar os fatores que facilitam ou inibem a inteligência espiritual entre os cuidadores; (6) identificar e analisar intervenções existentes dirigidas à promoção da inteligência espiritual descritas na literatura; e (7) desenvolver um modelo conceptual e delinear o conteúdo estrutural de uma intervenção complexa destinada à promoção da inteligência espiritual em cuidadores em cuidados paliativos.

Metodologia: O estudo seguiu a metodologia proposta pelo *Medical Research Council* para o desenvolvimento e avaliação de intervenções complexas, cumprindo os pressupostos da fase de desenvolvimento através de três etapas fundamentais: (1) recolha de evidência, incluindo um mapeamento da literatura e um estudo quantitativo transversal para caracterização da inteligência espiritual dos cuidadores informais; (2) definição do enquadramento conceptual; e (3) modelação dos processos e resultados.

Foram assegurados todos os pressupostos éticos inerentes a estudos desta natureza, incluindo parecer favorável por Comissão de Ética e a obtenção do consentimento informado dos participantes, sempre que aplicável.

Resultados: A análise conceptual resultou numa definição revista de inteligência espiritual, integrando seis atributos centrais: consciência do transcendente, consciência espiritual, equanimidade, sabedoria de vida, produção de significado e propósito e reflexão existencial. As *scoping reviews* confirmaram associações positivas entre inteligência espiritual, resiliência e bem-estar, ao mesmo tempo que evidenciaram uma escassez significativa de instrumentos de avaliação e intervenções adaptadas ao contexto dos cuidados paliativos. A avaliação psicométrica do instrumento adaptado para cuidadores portugueses demonstrou robustez. Empiricamente, os cuidadores apresentaram níveis moderados a elevados de inteligência espiritual (M = 41,42 ± 11,72), sendo a produção de significado pessoal a dimensão mais desenvolvida. A análise multivariada explicou 35,6% da variância da inteligência espiritual (R^2 = 0,356), identificando a experiência prévia de cuidar e a resiliência como fatores facilitadores, e a carga sintomática física do doente como fator inibidor. Níveis mais elevados de inteligência espiritual predisseram significativamente menor sobrecarga do cuidador, particularmente através da dimensão de percepção de autoeficácia ($\beta = -0,12$; $p \leq 0,05$). Estes resultados sustentaram o desenvolvimento de um novo modelo conceptual para uma intervenção complexa, sugerindo que tais programas devem ser estruturados, padronizados e supervisionados por painéis de especialistas multiculturais, de forma a potenciar recursos internos e a construção de significado em contexto de doença terminal.

Conclusões: Esta investigação posiciona a inteligência espiritual como um recurso mensurável, dinâmico e modificável no contexto do cuidador informal em cuidados paliativos. Ao integrar clarificação conceptual, caracterização empírica e modelação de intervenção, o estudo estabelece uma base sólida para o desenvolvimento de intervenções complexas destinadas a reforçar as capacidades adaptativas dos cuidadores e a promover a prestação de cuidados paliativos holísticos. A inteligência espiritual emerge não apenas como um constructo teórico, mas como um alvo clinicamente relevante. Recomenda-se fortemente a integração de programas estruturados de treino em inteligência espiritual no apoio paliativo padrão, privilegiando a construção de significado, a consciência transcendental e a reflexão existencial como pilares terapêuticos centrais.

Palavras-chave: Sobrecarga do cuidador; Intervenção complexa; Cuidador informal; Cuidados paliativos; Inteligência espiritual; Espiritualidade.

ABBREVIATIONS AND ACRONYMS LIST

APCP – Associação Portuguesa de Cuidados Paliativos (Portuguese Palliative Care Association)

COVID-19 – Coronavirus Disease 2019

EAPC – European Association of Palliative Care

MRC – Medical Research Council

OECD – Organisation for Economic Co-operation and Development

PhD – Doctor of Philosophy

PRISMA-ScR – Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews

SISRI-24 – Original version of the Spiritual Intelligence Self-Report Inventory (24 items)

SISRI – Adapted Portuguese version of the Spiritual Intelligence Self-Report Inventory (16 items)

STROBE – STrengthening the Reporting of OBservational studies in Epidemiology

U.Porto – University of Porto

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INTRODUCTION

This thesis documents the research within the framework of the Doctoral Program in Palliative Care at the Faculty of Medicine – University of Porto, as part of the requirements for the completion of the Doctor of Philosophy (PhD) degree in Palliative Care.

Focusing this work on "Spiritual intelligence in Informal caregivers of palliative care patients: development of a complex intervention" arises from a profound convergence of personal history and professional experience.

Caregiving emerged as a foundational value during formative years, particularly through the example of a close family member. Observing both the depth of dedication involved in the caregiving role and the enduring emotional impact of loss contributed to a deepened understanding of care, suffering, and relational responsibility, leaving a lasting influence on subsequent personal development and professional orientation.

From a professional perspective, prolonged clinical practice in palliative care has provided continuous exposure to the search for meaning and purpose that characterizes this field, as well as to the invaluable wisdom shared by patients and their families. These clinical encounters consistently reinforce the importance of bridging academic knowledge with lived experience and underscore the need to better understand and address the needs, vulnerabilities, and spiritual dimensions of family caregivers, in order to safeguard their well-being while supporting the patient's journey with dignity and compassion.

Together, these experiences reflect a commitment to integrating scientific evidence with the lived realities of caregiving, in order to contribute to more holistic, compassionate, and informed palliative care practices.

Spirituality in palliative care

The importance of spirituality in the holistic approach to individuals with palliative care needs is no longer a matter of debate. Current attention has increasingly shifted toward identifying spiritual needs, understanding their complexity, and determining the most effective ways to provide appropriate support (Balboni et al., 2022; Best et al., 2020; Puchalski et al., 2020; Sallnow et al., 2022).

Within this context, recurring questions such as “who?” and “how?” have emerged. There is broad consensus that, in palliative care, all members of the multidisciplinary team should be capable of addressing spiritual issues and supporting patients’ spiritual needs (Best et al., 2020; Puchalski et al., 2020). Indeed, as teamwork constitutes one of the fundamental pillars of palliative care practice, attention to the spiritual dimension is likewise understood as a shared team responsibility (Gijsberts, 2022).

While the question of “who” appears to be largely resolved, the operationalization of “how” remains challenging due to factors of various kinds, including time constraints, lack of privacy to address spiritual matters, insufficient training or education, discomfort in discussing spirituality with patients who may not share the same beliefs, fear of causing patient distress, or concern about disrupting family dynamics (Balboni et al., 2014; Bar-Sela et al., 2018). Among these factors, training in one’s own spirituality has been identified as having the greatest potential to facilitate the provision of spiritual care by health professionals (Bar-Sela et al., 2018).

By international consensus, spirituality can be understood as *“a dynamic and intrinsic aspect of humanity through which individuals seek meaning, purpose, and transcendence, and experience relationships with themselves, family, others, community, society, nature, and the significant or sacred. Spirituality is expressed through beliefs, values, traditions, and practices”* (Puchalski et al., 2014).

In this context, it is important to distinguish spirituality from religion, as these concepts, although related, are not synonymous. Religion is generally understood as an organized system of beliefs, rituals, and practices shared by a community and often oriented toward a transcendent or divine reality (Bauer & Johnson, 2019). Spirituality, by contrast, is a broader and more inclusive construct that may or may not be expressed through religious affiliation. It encompasses the individual’s search for meaning, purpose, and connectedness, and may be experienced independently of formal religious beliefs or practices (Balboni et al., 2022). Recognizing this distinction is particularly relevant in palliative care, where individuals may draw on diverse spiritual resources that extend beyond traditional religious frameworks, reinforcing the need for a person-centered approach to spiritual support.

Spiritual Intelligence

Understanding spirituality as a broad, dynamic, and non-exclusively religious dimension of human experience creates a necessary foundation for exploring how individuals perceive, integrate, and apply spiritual resources in their daily lives and in situations of profound vulnerability (Balboni et al., 2022). This perspective invites further reflection on the ways in which spirituality may be operationalized, developed, and mobilized to support adaptive functioning, meaning-making, and relational engagement. Within this framework, increasing attention has been directed toward constructs that seek to translate spiritual experience into measurable capacities, giving rise to the concept of spiritual intelligence.

With the development and ongoing debate surrounding the theory of multiple intelligences (Emmons, 2000; Gardner, 1983), the conceptual scope of intelligence has progressively expanded, from an initially rational and analytical perspective, embodied in the concept of intelligence quotient, to the recognition of the contribution of emotional intelligence, commonly referred to as emotional quotient, to individual success. In the late 90s, attention has shifted toward the existence of a unifying and integrative form of intelligence — spiritual intelligence — which enables individuals to draw upon spirituality in order to enhance everyday interactions and adaptive functioning (Amram & Dryer, 2008; Emmons, 2000; King & Decicco, 2009; Wigglesworth, 2012).

Spiritual intelligence has generated growing interest and has been explored across multiple fields of knowledge; however, it remains a construct lacking a universally accepted definition and characterization. Diverse theoretical perspectives have been proposed regarding its dimensions and components. Definitions range from *"the ability to behave with wisdom and compassion while maintaining inner and outer peace regardless of circumstances"* (Wigglesworth, 2012), to *"a set of mental capacities that contribute to the awareness, integration, and adaptive application of the immaterial and transcendent aspects of existence, leading to outcomes such as deep existential reflection, enhanced meaning-making, recognition of a transcendent self, and mastery of spiritual states"* (King & Decicco, 2009), among many others. Similar to other forms of intelligence, spiritual intelligence encompasses multiple components and dimensions, with notable discrepancies across authors. These dimensions may include, for example,

critical existential thinking, personal meaning production, transcendental awareness, and the expansion of conscious states (King & Decicco, 2009).

From a neurocognitive perspective, spiritual intelligence has been associated with interhemispheric synchronization and global brain activation (Amram, 2022). Although considered an innate human potential, its expression and development require intentional engagement and cultivation (King & Decicco, 2009). Higher levels of spiritual intelligence have been linked to behaviors such as generosity, compassion, openness, integrity, humility, kindness, and precision (Aliabadi et al., 2021; Sharifnia et al., 2022a). Studies involving nurses have demonstrated a significant relationship between spiritual intelligence and improved caring behaviors (Kaur et al., 2013; Sharifnia et al., 2022a). Furthermore, spiritual intelligence appears to be closely related to emotional intelligence, enhancing its effects (Kaur et al., 2013), as well as to a sense of personal ownership toward the institution, which in turn exerts a protective effect against burnout (Hojat & Zeinijahromi, 2017; Kaur et al., 2013). Additional evidence indicates higher levels of psychological well-being and a stronger sense of purpose in life among nurses with elevated levels of spiritual intelligence (Alrashidi et al., 2022).

While the relevance of spiritual intelligence has been increasingly recognized in healthcare professionals, particularly among nurses, its applicability extends beyond formal caregiving roles. Spiritual intelligence underpins meaning-making, emotional regulation, compassion, and resilience, capacities that are not exclusive to trained professionals but are equally, if not more, critical for those providing care in informal contexts (Adashek & Subbiah, 2020). In palliative care, where suffering, existential distress, and proximity to death are pervasive, individuals involved in sustained caregiving are repeatedly confronted with profound challenges that demand adaptive spiritual and existential resources (Coelho, 2024; Coelho et al., 2020; Guerriere et al., 2016; Mercadante et al., 2022). These considerations suggest that spiritual intelligence may play a pivotal role in supporting individuals who provide ongoing care outside formal healthcare structures, thereby warranting focused attention within this population.

Despite growing interest in spiritual intelligence, the scientific evidence base remains limited and fragmented, particularly within health and palliative care contexts. Most published work on spiritual intelligence originates from psychology, education, or

organizational studies, with comparatively few empirical investigations in clinical settings or caregiving populations. Recent systematic reviews highlight that spiritual intelligence has been studied predominantly in general or non-health-related samples, and that sociocultural perspectives influence how the construct is defined and interpreted across contexts and traditions, revealing inconsistency in conceptualization and measurement across studies (Fidelis et al., 2024; and see section 2.1.3.). In addition, existing instruments often lack cultural validation or demonstrate variability in underlying dimensions, challenging their applicability to diverse populations, including family caregivers in palliative care (Amram & Dryer, 2008; King & Decicco, 2009).

Among the identified ongoing challenges defining, operationalizing, and measuring spiritual intelligence, are areas that call for further exploration of assessment, and practical applications in real-life scenarios (Amram, 2022). Additionally, there remains a scarcity of research investigating spiritual intelligence specifically among family caregivers or within health care environments, and even fewer longitudinal or intervention-oriented studies that examine the functional role of spiritual intelligence in adaptive coping, psychological well-being, or caregiving outcomes (Hanefar et al., 2025). Taken together, these gaps underscore the need for clearer definitional boundaries, culturally sensitive measurement approaches, and studies that translate spiritual intelligence theory into practical interventions capable of enhancing family caregivers' adaptation and improve the quality of care in palliative care.

Targeting Spiritual Intelligence in informal caregivers

Among the diverse group of informal caregivers, the family caregiver occupies a unique position of accessibility, availability, and proximity to the patient (Pinto et al., 2023).

This role carries wide-ranging physical and emotional implications, yet, consistent with the current state of the literature, spiritual intelligence appears to remain insufficiently examined in this specific population (Chi et al., 2024; Marzban et al., 2022). Consequently, family caregivers warrant further conceptual and empirical focus. Advancing this field holds substantial potential benefits not only for the family members themselves but also for the quality of care and well-being of the patients they support (Evashwick et al., 2022).

For the purposes of this study, a family caregiver is defined broadly as any individual who provides continuous, in-person assistance with activities of daily living to adult patients with chronic or life-limiting illness, without financial compensation (Adashek & Subbiah, 2020). In the context of palliative care, the concept of family frequently includes non-blood-related significant persons. Accordingly, this study adopts a comprehensive definition encompassing relationships based on consanguinity (blood), legal ties, or affective bonds, who assist the patient with any daily activities that the patient is no longer able to perform independently (Pinto et al., 2023). This investigation will focus exclusively on family caregivers of adult oncology patients, in recognition of the specific characteristics and complexities inherent in this illness experience.

Within palliative care practice, caregivers are regarded as central contributors to the care process, while simultaneously being recognized as individuals with their own palliative needs shaped by the trajectory of illness and its cumulative emotional impact (Adashek & Subbiah, 2020; Mercadante et al., 2022). Caregivers closely witness the patient's progressive functional decline and the existential distress associated with approaching death, while bearing the sustained responsibility of managing day-to-day care and navigating the uncertainties and demands this entails (Coelho et al., 2020; Guerriere et al., 2016; Mercadante et al., 2022; Pinto et al., 2024).

The stressors, emotional burden, and practical difficulties faced by caregivers are substantial, persistent, and multifactorial. Caregiver burden may adversely influence patient well-being, exacerbate vulnerabilities and diminish quality of life (Coelho et al., 2020; Pinto et al., 2024). Conversely, caregiver resilience during this period is essential for the reconstruction of personal identity following bereavement, and their mental and physical health may remain significantly compromised over time, with potential implications for return to work, productivity, absenteeism, and pre-existing comorbidities (Adashek & Subbiah, 2020; Chi et al., 2024; Coelho, 2024). These findings reinforce the need to move beyond organizational and structural solutions alone and to consider interventions that strengthen caregivers' internal adaptive resources (Chi et al., 2024; Steinhauser et al., 2016).

Expectations placed upon family caregivers often mirror those associated with professional practice, both in terms of the quality of care delivered and the risk of physical, emotional, and psychological overload, yet caregivers typically remain with the

patient for considerably longer periods and without the technical preparation or institutional support afforded to health professionals(Abed et al., 2025). This reality is particularly salient in the context of home-based palliative care, given that being cared for and dying at home is consistently reported as a preference by patients and families and is widely regarded as an indicator of quality end-of-life care (Pinto et al., 2024). Aligned with this, international and national recommendations underscore the importance of strengthening community-based palliative care teams to support this preference (OECD, 2023, 2025a). However, despite policy recommendations, the availability of resources remains unequal, and in countries such as Portugal, limitations in community services continue to place a substantial burden on families (OECD, 2025b). The literature further indicates that these preferences are not always fulfilled, often due to factors such as caregiver burden and emotional exhaustion, expressed both by caregivers and patients, about becoming or being a burden (Pinto et al., 2024). As interest in spiritual intelligence has grown in recent years, particularly regarding its potential to support meaning-making, resilience, and coping in the face of suffering, it becomes increasingly relevant to extend this focus not only to patients but also to those who care for them within the complex relational space of family caregiving.

This recognition invites further consideration of the ways in which spiritual intelligence, when intentionally supported, may be mobilized as a resource within the caregiving experience, with implications extending beyond the caregiver to the patient.

Enhancing caregivers' spiritual intelligence may facilitate:

- the development of personal growth resources that reduce exhaustion, promote positive integration of illness and loss, and foster resilience while mitigating the risk of complicated grief (Mollaei et al., 2024);
- improved quality of care and satisfaction with the caregiving role, consistent with evidence reported in studies involving nurses (Aliabadi et al., 2021; Kaur et al., 2013);
- the empowerment of the individual who is most continuously present with the patient and possesses the deepest understanding of their beliefs, values, and life narratives, thus enabling timely and meaningful spiritual support (Kaur et al., 2013; Mehralian et al., 2023).

Spiritual intelligence training programs have been implemented in corporate settings to enhance leadership capacity, and similar interventions have been reported in the health

sector, particularly among nursing professionals (Heydari et al., 2017; Sharifnia et al., 2022b). Existing studies suggest that such interventions may produce significant and sustained improvements in various components of spiritual intelligence, reflected in increased competence in spiritual care and greater job satisfaction (Heydari et al., 2017; Sharifnia et al., 2022b).

Within palliative care, this growing interest aligns with international recommendations for strengthened education in spiritual care, such as those articulated by the *European Association for Palliative Care* (Best et al., 2020) and the *Lancet Commission on the Value of Death* (Sallnow et al., 2022), which highlights the importance of meaning, relationality, and existential support in end-of-life care.

Despite these promising developments, interventions targeting spiritual intelligence remain inherently complex. This complexity arises from the multifaceted and still evolving nature of the construct, the challenges associated with operationalizing its attributes, and the diversity of contexts, stakeholders, and mechanisms involved, particularly within palliative care, where care is delivered across settings and relies on close collaboration between professionals, patients, and family caregivers.

A complex intervention for spiritual intelligence

Complex interventions, increasingly applied in health research, are defined by the *Medical Research Council* as interventions composed of multiple interacting components, which make their development, implementation, and evaluation particularly challenging (Craig et al., 2008; Skivington et al., 2021).

In palliative care, interventions targeting family caregivers exemplify this complexity. Caregivers, including family caregivers, navigate a multidimensional caregiving role that encompasses emotional, psychological, social, and spiritual responsibilities, often under conditions of prolonged stress, uncertainty, and emotional burden (Adashek & Subbiah, 2020; Boston & Mount, 2006; Coelho et al., 2020). The provision of care in this context is influenced by a dynamic interplay of caregiver characteristics, patient needs, family dynamics, and healthcare system factors, making the delivery and evaluation of interventions inherently non-linear and context-sensitive (Guerriere et al., 2016; Takao et al., 2023).

Within this context, spiritual care represents a core, yet complex, dimension of support. It involves addressing existential concerns, promoting meaning-making, and fostering coping mechanisms that help caregivers sustain their well-being while supporting patients through life-limiting illness (Boston & Mount, 2006). Spiritual care is not a single action but a constellation of activities, including listening, reflection, counseling, and support in value-based decision-making that interact with caregivers' beliefs, personal growth trajectories, and relational dynamics with the patient (Gijsberts, 2022).

Approaching spiritual care through spiritual intelligence adds the complexity of the uniqueness of an individual's capacity to apply spiritual and existential awareness to problem-solving, meaning-making, and adaptive coping, especially in this inherently challenging caregiving context (Marzban et al., 2022). Spiritual intelligence encompasses self-awareness, critical existential reflection, the ability to navigate moral and ethical dilemmas, and the capacity to maintain inner resilience (Amram, 2022; King & Decicco, 2009), therefore, interventions targeting spiritual intelligence are inevitably complex because they aim to enhance internal capacities (as reflection and meaning-making) while simultaneously influencing external behaviors (like caregiving quality and relational interactions) and emotional states (through coping and resilience) (Sharifnia et al., 2022b). The mechanisms through which change occurs are multi-level, involving cognitive, emotional, behavioral, and relational processes that evolve differently for each caregiver depending on prior experiences, belief systems, and contextual stressors. Intervening in spiritual intelligence is not only a complex means to an end but can also produce complex outcomes. At the individual level, outcomes may include improved self-awareness, enhanced coping, and increased capacity for meaning-making(Alrashidi et al., 2022; Kaur et al., 2013). At the relational level, the caregiver's increased spiritual intelligence may positively influence patient-caregiver interactions and support more compassionate care (Aliabadi et al., 2021; Mehralian et al., 2023). At the systemic level, these changes may affect family dynamics and engagement with healthcare services (Mehralian et al., 2023). Moreover, the intervention may produce unintended or emergent outcomes, such as increased caregiver self-reflection leading to different grief manifestations or even existential distress (Coelho et al., 2020; Taylor, 2020), highlighting the importance of iterative adaptation and responsive evaluation in complex interventions.

The present study seeks to contribute to the development of an intervention aimed at enhancing spiritual intelligence among family caregivers of adult patients receiving palliative care. The research was guided by the *Medical Research Council* framework for the development and evaluation of complex interventions (Craig et al., 2008; Medical Research Council et al., 2019), which was in use at the initiation of this project (Figure 1). This framework emphasizes an iterative, adaptive process, which in practice meant that multiple studies were conducted concurrently to explore the conceptualization, assessment, and promotion of spiritual intelligence in this population. The research followed an integrative and responsive approach, allowing the refinement of both intervention components and assessment instruments as empirical evidence emerged.



Figure 1. Developing and evaluating complex interventions framework diagram.

(adapted from *Medical Research Council*, 2019).

Considering the above, this thesis is presented in the form of scientific articles produced within the scope of this doctoral program. These studies have been published in peer-

reviewed journals or are under review, and the candidate played a substantial role in all stages, including study design, data collection, interpretation and analysis of results, and preparation of the final manuscripts.

To facilitate understanding of the research process, the thesis is organized into three main chapters. **Chapter 1** introduces the methodology, written at the beginning of the study and used as a guide throughout the research. **Chapter 2** details intervention development, including identification of the evidence base (conceptual analysis, assessment instruments, caregiver profiles), selection of a theoretical framework by examining previous interventions, and modeling of processes and outcomes in a program designed to enhance caregiver well-being while supporting patient care. **Chapter 3** provides an integrated overview of the conducted studies, highlighting study limitations and offering suggestions for further research. This structure reflects the systematic, iterative progression of the investigation, aligned with the phases of the *Medical Research Council* framework (Craig et al., 2008; Medical Research Council et al., 2019).

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1. CHAPTER 1: Methodological Approach

This chapter presents the methodological approach adopted in this research, guided primarily by the *Medical Research Council* framework for the development and evaluation of complex interventions (Craig et al., 2008; Medical Research Council et al., 2019), while also taking into consideration the revised guidance published in 2021 (Skivington et al., 2021). Although the study was initiated before the release of the 2021 update, efforts were made to align with the updated directives without substantially altering the methodology originally planned.

The chapter outlines the research aims, questions, and hypotheses, along with the overall study design, research objectives, and ethical considerations applied throughout the investigation. Detailed information regarding the specific methodological procedures used in each study is provided and further elaborated in the specific articles in the following chapters.

1.1. Aim, research questions and hypotheses

Spirituality, as a central dimension of human existence, is an important area of focus within palliative care. However, its inherent complexity often poses challenges for clinical practice and systematic assessment (Best et al., 2020; Best et al., 2023; Gijsberts et al., 2019; Puchalski et al., 2020). In this context, spiritual intelligence emerges as a pivotal framework to address these challenges, representing the capacity to mobilize and apply spiritual resources to navigate the demands of caregiving (Amram, 2022; King & Decicco, 2009). Despite its clinical relevance, there is a significant scarcity of empirical knowledge regarding spiritual intelligence, particularly among informal and family caregivers (Fallah et al., 2023; Marzban et al., 2022b).

Guided by the *Medical Research Council* framework for complex interventions (Craig et al., 2008; Medical Research Council et al., 2019) and informed by the updated guidance published in 2021 (Skivington et al., 2021, 2024), the following Research Questions (RQ), Objectives (O), and Hypotheses (H) were defined, reflecting efforts to align the study with the revised framework while maintaining the originally planned methodology.

I. Theoretical and evidence-gathering phase

RQ 1: What are the defining attributes and dimensions of the concept of spiritual intelligence in the scientific literature?

O1: To identify and map the unique attributes and dimensions of the concept of spiritual intelligence.

RQ 2: Which instruments are available to assess spiritual intelligence, and what are their psychometric properties?

O2: To characterize the available instruments for monitoring spiritual intelligence reported in the literature.

O3: To analyze the psychometric properties (reliability and validity) of a spiritual intelligence assessment instrument adapted for Portuguese caregivers.

II. Exploratory and diagnostic phase (field study)

RQ 3: What is the spiritual intelligence profile of family caregivers of cancer patients in palliative care, and which factors influence it?

O4: To analyze the spiritual intelligence profile of family caregivers in the palliative care context.

O5: To explore the factors that facilitate or inhibit spiritual intelligence among these caregivers.

Considering this, the following Hypothesis (H) were considered:

H1: The spiritual intelligence of family caregivers varies significantly according to sociodemographic and clinical factors.

H2: The adaptation to the caregiving role is positively influenced by the caregiver's level of spiritual intelligence.

III. Intervention modeling phase

RQ 4: Which evidence-based components should integrate a promotion program for spiritual intelligence?

O6: To explore and analyze existing interventions aimed at promoting spiritual intelligence described in the scientific literature.

O7: To develop the conceptual model and the structural components of a complex intervention plan designed to promote spiritual intelligence in this population.

1.2. Study design

This study followed the methodology outlined by the *Medical Research Council* for the development and evaluation of complex interventions (Craig et al., 2008; Medical Research Council et al., 2019; Skivington et al., 2021, 2024). In 2021, the *Medical Research Council* published updated guidance on the development and evaluation of complex interventions, reframing the original framework to place greater emphasis on systems thinking, context, stakeholder engagement, and implementation from the earliest stages of research (Skivington et al., 2021, 2024). Rather than proposing a linear sequence of phases, the revised guidance conceptualizes complex interventions as dynamic events embedded within complex systems, where outcomes emerge through interactions between intervention components, contextual factors, and implementation processes. Key developments include a stronger focus on understanding mechanisms of change, addressing contextual variability, considering equity and sustainability, and integrating implementation and effectiveness considerations throughout the research lifecycle (Skivington et al., 2021, 2024).

Although the present research was initiated prior to the publication of this updated guidance (in 2021), we improve some efforts to align the study with these principles where feasible, particularly by adopting an iterative and adaptive research design, explicitly considering contextual influences within palliative care settings, and integrating findings across studies to inform intervention refinement. This approach ensured methodological continuity while enhancing alignment with the contemporary *Medical Research Council* perspective on complex intervention research. This framework envisages conducting the study in four phases: development, pilot study, evaluation, and dissemination. This project focuses strictly on the various steps of the first phase (development) (Figure 1).

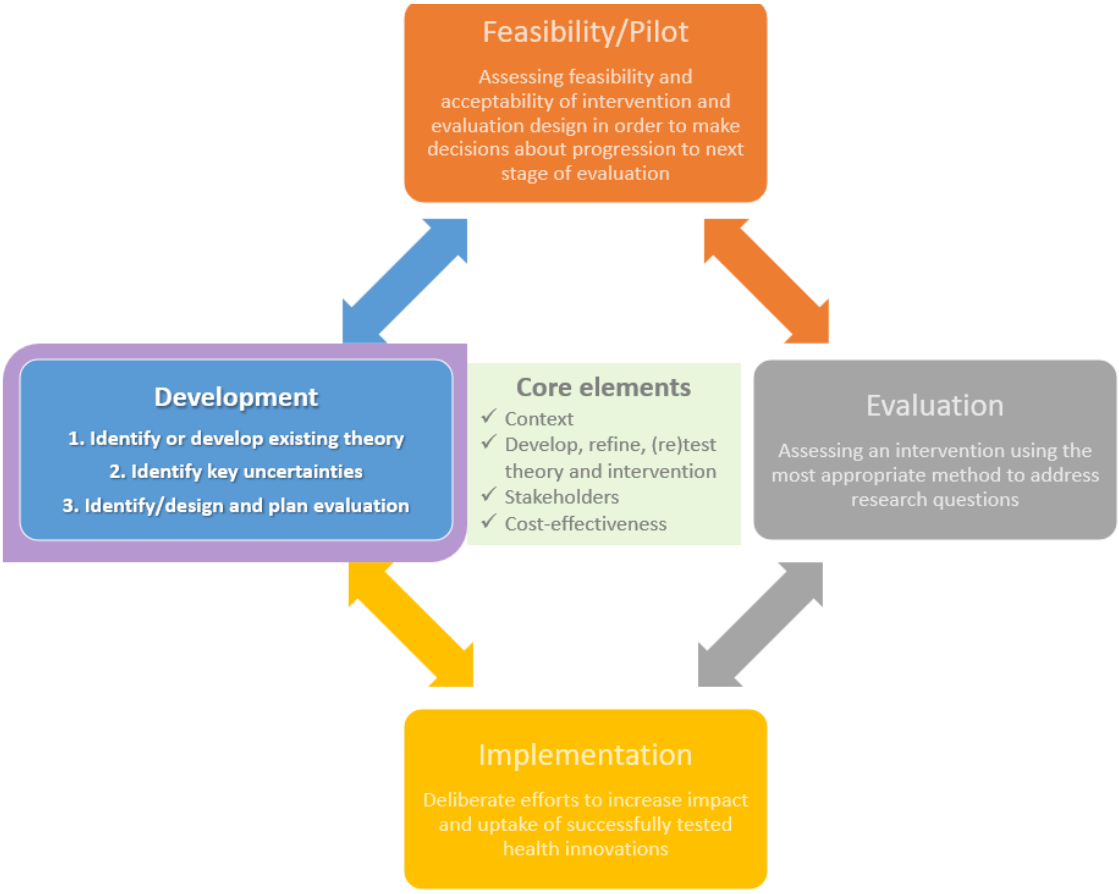


Figure 1. Development phase of complex interventions framework diagram.

(adapted from *Medical Research Council*, 2019 and 2021).

The development phase, also referred to as the theoretical or pre-clinical phase, was carried out in three steps, in accordance with the adopted methodological approach: (1) Theoretical and evidence gathering phase; (2) Exploratory and diagnostic phase (field study); (3) Intervention modeling phase.

The theoretical and evidence gathering phase, step 1, starts the research process by thoroughly revising the available literature on the study matter in order to theoretically support the design decisions towards fulfilling relevant knowledge gaps, operationalization of the problem and relevant outcomes. In this phase, a concept analysis and a scoping review was conducted to examine existing knowledge on spiritual intelligence.

This study addressed Research Questions 1 and 2, and the objectives operationalized within these questions.

Step 2, the exploratory and diagnostic phase, collects information from family caregivers of adult oncology patients in palliative care through a quantitative, cross-sectional study

to verify the psychometric reliability and validity of an instrument assessing spiritual intelligence on Portuguese family caregivers and analise spiritual intelligence profile and its influence on the adaptation to the caregiver role. This study addresses Research Questions 2 and 3 and its objectives.

The intervention modeling phase, step 3, starts with a theoretical framework developed based on spiritual intelligence theories and previously validated interventions targeting spiritual intelligence. This evidence was gathered through a scoping review of the existing literature on spiritual intelligence interventions and addressed Research Question 4 and the objective 6 within this research question.

The interventions revised were then adapted to the context of family caregivers of adult oncology patients in palliative care to design a proposed intervention aimed at enhancing spiritual intelligence and improving caregiver adaptation. This intervention will be suggested for future theoretical validation and pilot testing, complying with Objective 7.

Detailed considerations about the specific study designs addressed at each stage will be provided in the following chapters, namely in the published scientific papers and manuscripts. Table 1 provides a summary of the overall study design.

Table 1: Research design.

I. Theoretical and evidence gathering phase	
Research Question 1 **- What is the definition, and what are the attributes and dimensions of the concept of spiritual intelligence?**	
Objective 1: Identify, in the scientific literature, the unique attributes of the concept of spiritual intelligence.	*Specific Methodology:* Concept Analysis with Scoping Review
Research Question 2 **- Which instruments exist to assess spiritual intelligence, and what are their psychometric properties?**	
Objective 2: Characterize the instruments for monitoring spiritual intelligence reported in the scientific literature.	*Specific Methodology:* Scoping Review
Objective 3: Analyze the psychometric properties (reliability and validity) of an instrument for assessing spiritual intelligence in Portuguese caregivers of cancer patients receiving palliative care.	*Specific Methodology:* Quantitative, cross-sectional study

II. Exploratory and diagnostic phase	
Research Question 3 **- What is the spiritual intelligence profile of family caregivers of cancer patients receiving palliative care?**	
Objective 4: Analyze the spiritual intelligence of family caregivers of cancer patients receiving palliative care.	*Specific Methodology:* Quantitative, cross-sectional study
Objective 5: Explore the factors that facilitate or inhibit spiritual intelligence among family caregivers of cancer patients receiving palliative care.	
III. Intervention modeling phase	
Research Question 4 **- Which interventions have been described in the literature to promote spiritual intelligence?**	
Objective 6: Explore and analyze interventions aimed at promoting spiritual intelligence as described in the scientific literature.	*Specific Methodology:* Scoping review
Objective 7: Develop a complex intervention plan aimed at promoting spiritual intelligence in family caregivers of cancer patients receiving palliative care.	*Specific Methodology:* Complex intervention plan

1.3. Study population and eligibility criteria

The target population of this study comprises informal caregivers, a group encompassing the entire support network surrounding patients (Abed et al., 2025). Within this spectrum, the family caregiver emerges as an important, and frequently the most representative figure, occupying a central role in the "unit of care" (Alam et al., 2020; Pinto et al., 2023; Zhang et al., 2023). For the purposes of this study, a family caregiver is defined as an adult related to the patient by blood, law, or affection, who provides continuous, unpaid assistance with at least one activity of daily living to an adult cancer patient receiving palliative care (Pinto et al., 2023).

To ensure methodological consistency and clinical relevance, specific eligibility criteria were established. Family caregivers of adult cancer patients receiving palliative care were considered eligible if they:

- Provided support in outpatient contexts, such as home care or external consultations, where the demand for autonomy and spiritual resource mobilization is most evident;
- Assisted an adult cancer patient currently followed by a palliative care team.

The study excluded caregivers whose interaction with palliative care teams occurred exclusively during inpatient admissions, or within long-term care facilities (such as patients referred to the palliative care team during a hospital admission and died before hospital release or patients living in nursing homes or other institutions where formal caregivers are responsible for providing overall care). Furthermore, professional (paid) caregivers and individuals with documented cognitive impairment, which would preclude the assessment of spiritual intelligence, were not included.

Specific details related to the sampling procedures and participant characteristics for each study are provided in the respective articles and manuscripts in Chapter 2.

1.4. Ethical procedures

Research is essential for the advancement of knowledge and the evolution of best practices grounded in solid and consistent evidence. This requires rigor and transparency throughout all research processes, particularly when human participants are involved, ensuring that their individual rights are safeguarded above any research-related interest (All European Academies, 2017, 2023).

The present research, in all its components and stages, adheres to the ethical principles of reliability, honesty, respect, and accountability, as outlined in the *European Code of Conduct for Research Integrity* (All European Academies, 2017, 2023). Given the nature and focus of the research, it is particularly important to safeguard full respect for the uniqueness of participants' spiritual and religious experiences.

Accordingly, formal ethical procedures were established to ensure coherence and integrity throughout the various stages of the project (All European Academies, 2017, 2023; Código de Conduta e Boas Práticas da U.Porto, 2025; Código de Ética da U.Porto, 2025):

1. Formulation of research questions and definition of objectives
    a. The research questions addressed are relevant within the current scientific and professional landscape, and this project represents an added value for the development of knowledge and the planning of integrated, holistic interventions in palliative care.
    b. The independence and impartiality of the researchers in exploring the selected topic were fully ensured.
2. Collection of scientific evidence and conceptual framework
    a. Literature review and review of validated interventions in the field of spiritual intelligence.
        i. All literature reviews required for the project were conducted rigorously and in accordance with current scientific standards, supported by the best available evidence.
        ii. All sources of information were duly cited, drawing from primary sources whenever possible.

b. Quantitative study with family caregivers of cancer patients receiving palliative care
    i. All necessary institutional authorizations and ethical approvals were requested from the institutional ethics committee, whenever necessary (Annex 1).
    ii. The scope and objectives of the study, whenever applicable, were clearly explained to participants, followed by a written informed consent process prior to any involvement, ensuring voluntariness and freedom to withdraw at any time (Appendices 1 and 2).
    iii. No aspect of the patient's standard care was affected by the caregiver's and/or patient's decision to participate or not participate in the study.
    iv. The questionnaires administered were validated for the Portuguese population and as concise and clear as possible; still, assistance from the researcher was provided if needed (Appendix 3).
    v. Prior authorization was requested from the authors of the original instruments (Annexes 2, 3, 4 and 5).
    vi. Data collection and processing complied with strict confidentiality standards, ensuring anonymity and data protection through coding procedures and secure database management. All collected information was analyzed in aggregate form.
    vii. The data was analyzed with scientific rigor and compared with the best available evidence at the time.

3. Modelling of processes and outcomes
    a. The planning of the proposed intervention on spiritual intelligence respects the principle of non-maleficence, upholding the highest regard for individual integrity and human rights.
4. Dissemination of results
    a. At all stages in which dissemination of findings occurs, the intellectual property of all sources was and will be respected through appropriate citation.

i. The confidentiality of collected data remained a binding requirement in every form of dissemination (thesis, scientific articles, oral communications, or posters).
ii. The researchers committed to disseminating the results in reputable, indexed, peer-reviewed scientific journals to support knowledge sharing and scientific development.
iii. Whenever possible, the research results were published in open access format.

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2. CHAPTER 2: Results

This chapter presents the main results of the study, and is organized into three sequential stages (Table 1), each contributing to the foundation of a complex intervention designed to enhance spiritual intelligence among family caregivers of cancer patients in palliative care:

i. Stage I: Theoretical and evidence-gathering phase (O1 and O2).
ii. Stage II: Exploratory and diagnostic phase (O3, O4 and O5).
iii. Stage III: Intervention modeling phase (O6 and O7).

By integrating these three stages, this chapter transitions from a broad conceptual analysis to a specific diagnostic of caregivers' needs, providing the necessary evidence to model the proposed intervention.

Table 1. Study phases, objectives and results presentation.

I. Theoretical and evidence gathering phase	
Research Question 1 **- What is the definition, and what are the attributes and dimensions of the concept of spiritual intelligence?**	
Scientific paper 1: *From spiritual intelligence to spiritual care: A transformative approach to holistic practice* **Study design:** Commentary	*Objective 1:* Identify, in the scientific literature, the unique attributes of the concept of spiritual intelligence.
Scientific paper 2: *Spiritual intelligence: A scoping review with concept analysis on the key to spiritual care* **Study design:** Scoping review with concept analysis	
Research Question 2 **- Which instruments exist to assess spiritual intelligence, and what are their psychometric properties?**	
Scientific paper 3: *Spiritual intelligence: A scoping review on the gateway to mental health* **Study design:** Scoping review	*Objective 2:* Characterize the instruments for monitoring spiritual intelligence reported in the scientific literature.
***Section 2.2.2.*:** Spiritual Intelligence profile of family caregivers of cancer patients receiving palliative care **Study design:** Quantitative study	*Objective 3:* Analyze the psychometric properties (reliability and validity) of an instrument for assessing spiritual intelligence in Portuguese caregivers of cancer patients receiving palliative care.

II. Exploratory and diagnostic phase

Research Question 3

- What is the spiritual intelligence profile of family caregivers of cancer patients receiving palliative care?

Scientific paper 4: *Spiritual intelligence and family caregivers' self-efficacy in end-of-life: A cross-sectional study* **Study design:** Quantitative study ***Section 2.2.2.*:** Spiritual Intelligence profile of family caregivers of cancer patients receiving palliative care **Study design:** Quantitative study	*Objective 4:* Analyze the spiritual intelligence of family caregivers of cancer patients receiving palliative care. *Objective 5:* Explore the factors that facilitate or inhibit spiritual intelligence among family caregivers of cancer patients receiving palliative care.

III. Intervention modeling phase

Research Question 4

- Which interventions have been described in the literature to promote spiritual intelligence?

Scientific paper 5: *Models of spiritual intelligence interventions: A scoping review* **Study design:** Scoping review	*Objective 6:* Explore and analyze interventions aimed at promoting spiritual intelligence as described in the scientific literature.
***Section 2.3.2.*:** Modeling the intervention: Conceptual framework, processes, and outcomes	*Objective 7:* Develop a complex intervention plan aimed at promoting spiritual intelligence in family caregivers of cancer patients receiving palliative care.

2.1. Stage I: Theoretical and evidence-gathering phase

This section presents the results concerning the theoretical and evidence-gathering phase of the study, and integrates three studies (Scientific papers 1, 2, and 3) that provide the necessary theoretical framework and a systematic mapping of existing evidence. Collectively, these findings address objectives one, two and three. By establishing a rigorous definition of spiritual intelligence and identifying validated assessment tools, this phase constitutes the essential foundation upon which the subsequent diagnostic and modeling stages were built.

2.1.1. From spiritual intelligence to spiritual care: A transformative approach to holistic practice

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Doctorate Studies

From spiritual intelligence to spiritual care: A transformative approach to holistic practice

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ABSTRACT

Spiritual care has long been known for being as important as difficult to deliver. Many barriers to spiritual care practice have been reported but are still difficult to overcome. Yet, the answer may not be centred in the patient needs but in the healthcare provider' spiritual self-awareness and self-consciousness.

The debate is then opened on what concepts should really be addressed: spiritual care or spiritual intelligence and which should be trained since spiritual intelligence enhancement can bring many other benefits beyond increased quality of care, such as self-growing tools to better cope with the hardiness of the profession.

This paper introduces the debate around this issue, and opens the discussion to different perspectives and approaches to a troublesome educational subject.

In last years, the interest on spirituality has been expanding, particularly within patients facing life threating illness conditions.

Despite the paramount relevance of addressing spirituality as an important part of the holistic approach to patient care, it remains a soft spot for healthcare practitioners worldwide. Current investigation has focus a lot of interest in the spiritual needs of patients and families faced with serious illnesses, as well as the best ways to approach it, being consensual that within the palliative care setting all elements of the team should be able to provide spiritual care (Puchalski et al., 2009).

Even though healthcare professionals realize its importance, attending to such personal matters does not come easy to most (Balboni et al., 2014). Several studies emphasized that many healthcare practitioners are not confident about addressing spiritual care, yet the spiritual needs of patients and families have a fundamental role in their comfort and recovery (O'Brien et al., 2019; Zollfrank et al., 2015). Lack of time or privacy, inadequate training, finding it an uncomfortable/inadequate issue to engage and fear of upsetting the family dynamics are some of the main reasons pointed out by healthcare professionals for not providing spiritual care (Balboni et al., 2014; Bar-Sela et al., 2018; Rushton, 2014), which has significant implications for patients, families, organisations and educators.

Recent literature reviews aiming to establish a framework for spiritual care competency training (Attard et al., 2019) reinforced the previous findings that suggested that the main factor that might increase the delivery of spiritual care is the training of one's own spirituality (Bar-Sela et al., 2018). In fact, this suggested integrated model of spiritual care competency training identifies two phases in the learning process, one being more structural and the second contemplating the personal competency in spiritual care which includes self-awareness and use of self (Attard et al., 2019).

In a kind of plot twist the answer for better spiritual care seem not to be centred on the patients and families' needs but mainly in the healthcare professional spiritual self-awareness and self-consciousness.

This commentary aims to clarify the concepts of spirituality and spiritual intelligence and bring to discussion what should healthcare providers, namely nurses, be training in order to provide better spiritual care.

1. The concepts of spirituality and spiritual intelligence

Recent international consensus clarified the concept of spirituality as "a dynamic and intrinsic aspect of humanity through which persons seek ultimate meaning, purpose, and transcendence, and experience relationship to self, family, others, community, society, nature, and the significant or sacred. Spirituality is expressed through beliefs, values, traditions, and practices'', making clear that spirituality does not

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require any sort of religious belief (Puchalski et al., 2014, p.646, p.646).

By the end of the past century, the intense debate on multiple intelligences brought to light the new concept of "spiritual intelligence", as a unifying and integrative intelligence, allowing people to make use of spirituality in order to enhance daily interactions (Kadkhoda and Jahanic, 2012). Spiritual intelligence has gattered increasing attention since it first caught the eye of the economic sector, and many studies and interventions emerged in order to study the value of spiritually intelligent leadership. Since then, there has been a growing interest of the health sector for this matter, even though it still lacks consensual definition and characterization.

Amongst others definitions, spiritual intelligence has been described as "the ability to act with wisdom and compassion, while maintaining inner and outer peace, regardless of the circumstances" (Wigglesworth, 2012, p.3) and "a set of mental capacities which contribute to the awareness, integration, and adaptive application of the nonmaterial and transcendent aspects of one's existence, leading to such outcomes as deep existential reflection, enhancement of meaning, recognition of a transcendent self, and mastery of spiritual states" (King and Decicco, 2009, p.69). The dimensions of this intelligence also vary between authors, being the most frequently mentioned (with slight name variations) critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion (King and Decicco, 2009).

This kind of intelligence involves inter-hemispherical synchronization and total brain activation and although it is innate it requires intention to be activated and developed. It is associated with behaviours of generosity, kindness, humility, integrity, openness and precision (Esmaili et al., 2014), much appreciated in the healthcare settings.

Although the theme is still little addressed in the curricula of nurses and other healthcare professionals (Caldeira et al., 2016), when approached it tends to focus on the concept of spirituality, on the spiritual needs of the person, and on the competence for spiritual care. However, and within education programs, is equally important to address the concept of spiritual intelligence and its variations in different contexts and settings.

Is spiritual intelligence an important issue for recognizing and providing better spiritual care? Should we be training spiritual intelligence in healthcare curricula instead of spiritual care?

2. Training spiritual intelligence or spiritual care?

Recent studies with nurses have shown an important relationship between spiritual intelligence and better caring behaviour, specially concerning the transcendental awareness, personal meaning production and conscious state expansion dimensions (Kaur and Sambasivan, 2016). An important link between spiritual intelligence and emotional intelligence has also been established with a mutual enhancement effect (Kaur et al., 2013; Kaur and Sambasivan, 2016), as well as a significant positive impact on personal ownership feelings towards the working institution which helps prevent burnout (Kaur et al., 2013). Other studies refer to higher psychological well-being and purpose in life in nurses with higher spiritual intelligence (Sahebalzamani et al., 2013).

As previously mentioned, while studying the major causes for not providing spiritual care and ways to overcome it, evidence was found that making health care professionals more comfortable and aware of their own spirituality will eventually make them more prone to address this matter with their patients and more sensitive to their needs and requests, suggesting spirituality training to be included within staff educational programs (Bar-Sela et al., 2018).

In fact, spiritual intelligence training programs have been in use to promote better leadership in the industrial setting and similar training for nurses has been put to test with proven increase in spiritual intelligence scores. The existing studies with nurses included a series of training sessions aiming to increase spiritual intelligence in all its dimensions and it reflected positively in increased competency in spiritual care (Riahi et al., 2018) and in job satisfaction (Heydari et al., 2017).

These links between spiritual intelligence and better caring behaviour, personal ownership in the work setting, protection from burnout, psychological well-being, sense of life purpose and jog satisfaction in nurses suggest for benefits of spiritual intelligence training that go beyond the increase in quality of care and strengthens the emotional endurance of the healthcare professionals.

This growing evidence towards the benefits of spiritual self-care in nursing educational programs has recently been compiled (Docherty--Skippen et al., 2019) in an attempt to implement self-care practices in nursing curricula in Ontario as a way to attain job sustainability and avoid burnout-related absenteeism.

Training spiritual intelligence in healthcare professionals can equip them with self-growing tools that help prevent burnout and positively process all the professional hardiness they are faced with, enhancing resilience and a sense of well-being, while increasing the quality of care through better caring behaviour and spiritual care.

With the given evidence, we are now left with the question: should we be training spiritual intelligence in healthcare curricula instead of spiritual care?

The evidence suggests that, even if the healthcare professionals are aware of the importance of spiritual care, spiritual self-awareness precedes the ability to engage these issues with the patient. Healthcare professionals need to be comfortable with their own spirituality to better engage de patient's, plus the multiple personal benefits of this self-centred approach (Bar-Sela et al., 2018).

Since spirituality is such a unique core feature of the human being, spiritual care may have as many ways to it as the millions of people on the planet, meanwhile, spiritual intelligence training can make the healthcare professional open, aware and versatile in attending to such unique needs in a creative, effective and personalized million-ways.

3. Conclusions

Spiritual care is an unquestionable part of patient-centred holistic care, but still very difficult to address and put into practice. Most studies on spiritual care have focused mainly on the patient's needs and how to address them but keep missing the point of view of the provider and their needs in order to be able to deliver it. Growing evidence on spiritual intelligence brings new insight on the importance of spiritual self-awareness and training as a way for better quality of care and less burden for the healthcare professionals. Those who are responsible for healthcare professionals' curricula should take this into account while planning for educational programs aiming for better prepared workers.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.nepr.2020.102823.

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2.1.2 Spiritual intelligence: A scoping review with concept analysis on the key to spiritual care

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Review

Spiritual Intelligence: A Scoping Review with Concept Analysis on the Key to Spiritual Care

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Abstract

This study explores the concept of spiritual intelligence from an evolutionary perspective, providing a comprehensive and updated definition. A concept analysis was conducted following Rodgers' Evolutionary Method, supported by a scoping review in accordance with the Joanna Briggs Institute methodology. Studies explicitly addressing spiritual intelligence, regardless of population, setting, or discipline, were included across quantitative, qualitative, mixed-methods, and review designs. Four databases—PsycINFO, PubMed Central, Scopus, and Web of Science—were searched for publications up to 15 December 2025, using the term "spiritual intelligence." One-hundred-twelve articles met inclusion criteria and were analyzed through narrative synthesis and inductive analytical processing. Spiritual intelligence emerged as a construct encompassing adaptive cognition, higher consciousness, problem management, and personal growth, often referred to as Spiritual Quotient or Existential Intelligence. Antecedents included self and transcendental awareness, existential questioning, and search for meaning and purpose, while consequents comprised enhanced health, performance, self-awareness, and humanitarian orientation. Defining attributes were equanimity, life-wisdom, transcendental awareness, spiritual consciousness, meaning and purpose creation, and existential questioning. This evolutionary analysis traced the concept from theory to application, revealing its positive influence in daily life. Equanimity and life-wisdom were identified as core attributes, highlighting implications for training and integration of spiritual care in professional practice.

Keywords: concept analysis; intelligence; spiritual intelligence; spirituality; holistic health; spiritual care

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1. Introduction

The foundational concepts of cognitive intelligence (Howard, 1993) and emotional intelligence (Salovey & Mayer, 1990) have profoundly shaped our understanding of human intellect. However, while these traditional frameworks effectively illuminate our analytical ability and interpersonal skills, they may not fully encompass the depth of human experience or the innate search for meaning and purpose (Checa & Fernández-Berrocal, 2015). Thus, a broader perspective on intelligence is needed: one that encompasses not only 'how' we think and relate, but also 'why' we seek meaning and purpose. This has led to the exploration of spiritual intelligence as a distinct dimension of human intelligence.

Although definitions vary, studies applying the concept commonly describe spiritual intelligence as the ability to integrate spiritual or existential beliefs into daily functioning. For example, Babanazari et al. (2012) help understand spiritual intelligence as a meaning-making capacity that supports coping and psychological adjustment; Ajele et al. (2021) explore it as a set of values-based competencies that enhance comfort and well-being; and Amirian and Fazilat-Pour (2016) describe spiritual intelligence as the ability to apply spiritual principles to personal and interpersonal daily life challenges. These applications illustrate how spiritual intelligence is understood and operationalized across contexts, highlighting its relevance for expanding traditional models of intelligence and enriching approaches to human well-being and care.

Since the late nineties there has been a growing recognition of spirituality as an important source of adaptability and improved mental performance through many quantitative studies acknowledging the impact of spiritual intelligence in enhancing various daily life interactions as well as being a trainable asset for better mental and general health (Pinto et al., 2024). This evolution in our understanding has prompted the scientific community to conceptualize spiritual intelligence as a distinct dimension of human intelligence relevant not only to our psychological well-being, but also to practical aspects of daily life, including the provision and experience of care (Aliabadi et al., 2021; Ghalaychi et al., 2019; Kaur et al., 2013; Riahi et al., 2018). Indeed, as contemporary healthcare increasingly emphasizes person-centered approaches (Aliabadi et al., 2021; Pinto & Pinto, 2020), integrating spiritual intelligence into care practices offers meaningful opportunities to enhance comfort, coping, and overall well-being.

By recognizing and actively fostering spiritual intelligence, healthcare professionals, patients, and informal caregivers can build more empathetic, resilient, and purpose-driven therapeutic relationships (Aliabadi et al., 2021; Kaur et al., 2013). Practical efforts to advance the conceptualization and measurement of spiritual intelligence therefore hold significant promise for improving both the quality and the humanity of healthcare delivery.

2. Background

The discussion of spiritual intelligence emerges from the early premise that one's spiritual resources contribute to better daily functioning (Emmons, 2000). With this in mind, different authors began to conceptualize this capability within the multiple intelligence model perspectives (Gardner, 1983). This approach positions spiritual intelligence as an intelligence focused on the ability to engage with matters of meaning, values and purpose (Zohar & Marshall, 2000), and to explore existential questions about life and interconnectedness (Noble, 2001), while also integrating spiritual aspects into cognitive and emotional daily life matters (Vaughan, 2002; Wolman, 2001), and promoting personal growth, self-awareness, compassion and integrity (Wigglesworth, 2012).

Further insight on the spiritual intelligence concept brought along more structured frameworks with different dimensions or themes attributed to this kind of intelligence, such as critical existential thinking, personal meaning production, transcendental awareness (as in meta-awareness and a sense of interconnectedness) and conscious state expansion (as in heightened states of awareness), proposed by (King & DeCicco, 2009), or consciousness, grace, meaning, transcendence, truth, serenity and interconnectedness, suggested by (Amram & Dryer, 2008), amongst other perspectives.

Although spiritual intelligence is frequently discussed within spiritual or religious contexts, it is important to clearly differentiate it from spirituality, religion, and emotional intelligence. Pinto et al. highlight that spirituality refers broadly to personal beliefs, values, and existential meaning-making, while religion involves structured traditions, doctrines, and communal practices (Pinto et al., 2024). Emotional intelligence, in contrast, concerns

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the recognition and regulation of emotions in oneself and others, facilitating interpersonal relationships (Salovey & Mayer, 1990). Spiritual intelligence is distinguished from all three by its focus on the capacity to derive meaning, purpose, and value-based insight from all lived experiences and existential questions, enabling individuals to integrate these insights into decision-making and personal growth, thus conciliating spirituality with daily life experiences for better adaptability (Pinto et al., 2024).

Despite many theorists clarifying spiritual intelligence as a distinct, although related, concept from spirituality and its independence from religious affiliation or practices, it is frequent the misuse of terminology and the connection of spiritual intelligence to religiosity, conceptualizing it as the capacity to comprehend religious issues (Saeedi et al., 2014) to relate to one's deity (Anwar et al., 2020) or to utilize religious and spiritual patterns in everyday life (Imani et al., 2021).

These inconsistencies reinforce the need to further clarify the spiritual intelligence concept to guarantee its intercultural universality.

With spiritual intelligence being a developing, multidimensional concept, this evolutionary perspective is pivotal to analyzing its history as well as its current state and ongoing challenges across different cultural and disciplinary contexts, while also pointing toward future research directions that deepen our understanding of this complex human capacity.

Over the past two decades, interest in spiritual intelligence has grown steadily in education, health and psychology, but existing models still diverge in how they specify its core attributes, distinguish it from related constructs (e.g., spirituality, religiousness, personality) and justify its status as an 'intelligence'. At the same time, empirical studies increasingly associate spiritual intelligence with resilience, coping and mental health (Ajele et al., 2021; Hatami et al., 2019; Kaur et al., 2013; Khosravi & Nikmanesh, 2014; Narayanan & Jose, 2011; Parattukudi et al., 2021; Pinto et al., 2024; Polemikou & Vantarakis, 2019), which has intensified theoretical debate while leaving key conceptual issues unresolved, with new attributes, applications, and theoretical frameworks emerging since the initial proposed definitions. This has led to conceptual fragmentation and terminological drift, underscoring the need for an updated, evidence-based synthesis.

Building on this understanding, this study aims to provide a comprehensive and updated definition of spiritual intelligence based on its historical trajectory and contemporary patterns of use as well as on its cultural and contextual variability, thereby enhancing future research and measurement initiatives. More specifically, it aims to explore the concept's evolution in recent years to propose a refined conceptualization, one well-suited for assessing spiritual intelligence as an outcome.

3. Data Sources

We conducted a concept analysis study using Rodgers' Evolutionary Method (Rodgers & Knafl, 2000), an approach that views concepts as dynamic entities shaped by context and time. This inductive method systematically explores how a concept is used and understood in the literature, emphasizing its development rather than seeking a fixed definition. The method involves identifying key attributes, antecedents, consequences, related terms, and contextual variations, thereby allowing for a comprehensive understanding of the concept's evolution and current applications (Rodgers & Knafl, 2000).

To operationalize Rodgers' method, we specifically conducted a scoping review following the Joanna Briggs Institute methodology for scoping reviews (Peters et al., 2020). A scoping review is methodologically aligned with Rodgers' evolutionary concept analysis because it enables comprehensive mapping of a concept's attributes, antecedents, and consequences across diverse contexts. Its flexible yet rigorous structure allows the inclusion

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of empirical, theoretical, and gray literature, supporting the exploration of conceptual boundaries and historical changes over time.

A scoping review methodology was preferred over a systematic review since the strength of the results were not the main aim of our study and it would likely exclude relevant theoretical papers that are important in clarifying the concepts' evolution. A narrative review, on the other hand, would not grant the methodological transparency and reproducibility that Rodger's method requires. Thus, by capturing the breadth, variability, and evolution of the spiritual intelligence concept, while maintaining transparent methods, this scoping review enhances both the rigor and the exploratory nature required by Rodgers' framework. Data were reported according to the PRISMA extension for scoping reviews (PRISMA-ScR) (Page et al., 2021).

We included studies involving participants of any age, background, or setting. To ensure conceptual clarity, only studies that explicitly addressed spiritual intelligence were selected. Studies that focused solely on general spirituality, without direct reference to spiritual intelligence, were excluded. We considered literature from a broad range of contexts and disciplines, including but not limited to psychology, healthcare, and education, to capture the diversity of settings in which the concept is applied.

Regarding study types, we included quantitative studies that employed validated instruments for assessing spiritual intelligence and presented reproducible methodologies, reviews, qualitative, and mixed-methods studies. Editorials, conference abstracts, theoretical papers, and studies lacking sufficient methodological detail were excluded.

3.1. Search Strategy and Study Selection

We conducted a comprehensive search across four databases: PsycINFO, PubMed Central, Scopus, and Web of Science, using the search term 'spiritual intelligence.' The search strategy was tailored to each database and limited to studies published in English, French, Portuguese or Spanish, up to 15 December 2025.

After the initial search, all references were imported into Mendeley® for deduplication. Two independent reviewers screened titles and abstracts against the established inclusion criteria. Following this, three reviewers conducted a thorough review of the full-text. Disagreements were resolved through discussion or with a third reviewer.

3.2. Data Extraction and Analysis

Data were extracted from the included studies using a predesigned extraction form developed by the review team. We independently extracted key study characteristics, such as authorship, year of publication, country, participant demographics, study settings, objectives, methodologies, and the instruments used to assess spiritual intelligence, including their reported reliability and validity. We also collected findings relevant to the concept of spiritual intelligence, focusing on how it was defined, measured, and contextualized.

Following data extraction, we performed a narrative synthesis of the collected information, guided by Rodgers' Evolutionary Method of concept analysis (Rodgers & Knafl, 2000). This inductive analytical process involved systematically identifying and clustering the concept's defining attributes, examining its antecedents (events or factors preceding the concept's occurrence), and consequences (outcomes or effects of the concept) as described in the literature. We also analyzed surrogate terms and contextual variations that indicated how the concept's understanding or application shifted across different disciplines, populations, or over time. The final step involved formulating a refined conceptualization of spiritual intelligence, incorporating these essential elements and accounting for relevant contextual factors, thereby providing a definition well-suited for its assessment as an outcome.

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To further consolidate the data initially extracted and inductively coded by three independent human reviewers, we incorporated an artificial intelligence (AI)-assisted screening of the selected studies (Bennis & Mouwafaq, 2025). Specifically, a Large Language Model was used to perform a confirmatory analysis following the initial manual coding. This triangulated approach prioritized the nuanced insights of human interpretation, while harnessing the breadth and efficiency of AI. Any novel or divergent codes generated by the AI were systematically reviewed and discussed by two human reviewers. In cases of persistent disagreement or uncertainty regarding these AI-generated codes, a third reviewer was consulted to reach consensus. This process aimed to enhance the robustness, transparency, and validity of the final dataset.

All conceptual terms reported in this analysis emerged inductively from the included literature. While some interpretive synthesis was required to compile how these attributes were organized and articulated, no attribute was introduced by the authors alone; each reflects patterns of meaning, language, or conceptual emphasis present across the analyzed sources.

4. Overview of the Concept

Our searches of electronic databases identified 883 hits excluding duplicates. After screening, 473 hits were excluded, which identified 327 eligible studies. This resulted in 112 included studies (Supplementary Table S1). The results of this search and study inclusion process were reported according to the PRISMA-ScR flow diagram (Figure 1) (Page et al., 2021).

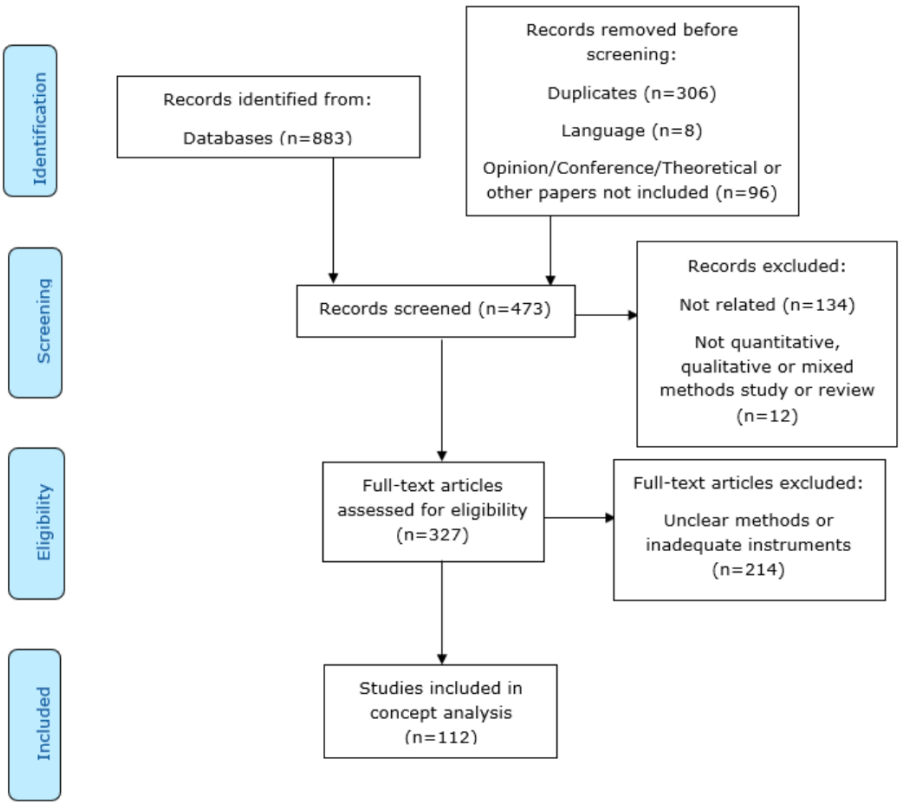


Figure 1. PRISMA-ScR flow diagram (Page et al., 2021).

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The included studies (Table 1) were published between 2005 and 2025 and originated predominantly from geographical areas where spirituality is deeply rooted into the social system and daily life, such as the Middle-East (n = 53), Asia (n = 19) and Europe (n = 19), despite the original theoretical works on the spiritual intelligence concept originating mainly from North America (Emmons, 2000; King & DeCicco, 2009; Noble, 2001; Vaughan, 2002; Wigglesworth, 2012; Wolman, 2001).

Table 1. Included studies on spiritual intelligence concept analysis.

Authors (Year)	Country	Setting	Participants	Study Design	Main Findings (Statistically Significant)
Abazari et al. (2025)	Iran	Healthcare	Nursing Students	Quantitative	No significant changes were found in SI with intervention (not directed at SI)
Afrashteh et al. (2025)	Iran	Community	Older Adults	Quantitative	Negative correlation between SI and death anxiety
Dávila-Valencia et al. (2025)	Peru	Healthcare	Nurses	Quantitative	Positive correlation between SI and Work Life Quality and with servant leadership.
Ghonchehpour et al. (2025)	Iran	Healthcare	Nursing and Midwifery Students	Quantitative	Positive correlation between SI and spiritual sensitivity
Grasmane et al. (2025)	Latvia	Education	Children (Primary School)	Quantitative	SI increased with targeted intervention in experimental group. Experimental group outperformed control group in post-test happiness, and spiritual well-being
Hanefar et al. (2025)	Malaysia	Community	Not Applicable	Bibliometric Analysis	Identifies 6 data clusters: mental health, well-being, leadership, workplace dynamics and the integration of SI with artificial intelligence
Kadhim et al. (2025)	Iran	Healthcare	Nurses	Quantitative	Positive correlation between SI and nurses' moral development.
Korkut and Çetin (2025)	Turkey	Healthcare	Nursing Students	Quantitative	Positive correlation between SI and nursing professional values
Moon and Woo (2025)	Korea	Community	Older Adults	Quantitative	SI negatively mediates the link between perceived burdensomeness and suicidal ideation
Baharodin (2025)	India	Community	Not Applicable	Literature Review	Identifies 4 core themes relating SI to marital satisfaction: stability; wisdom; love; and security
Özçalık and Ataş (2025)	Turkey	Healthcare	Patients (Pregnant Women)	Quantitative	No correlations established
Fidelis et al. (2024)	Portugal	Community	Not Applicable	Literature Review	Approaches SI concept from four different perspectives (Western, Eastern, Islamic, and Hindu).
Moshashaei et al. (2024)	Iran	Healthcare	Families of Mental Health Patients	Quantitative	Positive correlation between SI and spiritual well-being based on attachment to God with mediating role of belief in a just-world, persistence in long-term goals, and self-compassion
Pinto et al. (2024)	Portugal	Community	Not Applicable	Literature Review	Outlines SI positive correlations with: resilience; general, mental, and spiritual health; emotional intelligence; and favorable social behaviors and communication strategies; and negative correlations with: burnout and stress; depression and anxiety

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Table 1. *Cont.*

Authors (Year)	Country	Setting	Participants	Study Design	Main Findings (Statistically Significant)
Shahcheragh et al. (2024)	Iran	Healthcare	Nurses	Quantitative	Negative correlation between SI and moral distress and fatigue from caregiving.
Stiliya et al. (2024)	India	Healthcare	Not Applicable	Bibliometric Analysis	Identifies increasing interest in SI within nursing research.
Walter et al. (2024)	India & Israel	University	University Students	Quantitative	Positive correlation between SI and satisfaction with life
Yüksel et al. (2024)	Turkey	Sports	Football Players	Quantitative	SI dimensions vary with marital status, age, occupation, economic income and practicing sports.
Zeladita-Huaman et al. (2024)	Peru	Healthcare	Nurses	Quantitative	Positive correlation between SI and religious practices and professional experience.
Zhou et al. (2024)	China	Education	Not Applicable	Literature Review with Meta-Analysis	States SI as an independent predictive factors in educational achievement
Amiri et al. (2023)	Iran	Healthcare	Nurses	Quantitative	Positive correlation between SI and caring behavior.
Bhandari et al. (2023)	India	Sports	Hindu Ascetics	Quantitative	Negative correlation between SI and psychological distress
Cai et al. (2023)	Pakistan	University	University Students	Quantitative	SI positively moderates the relationship between green mindfulness and green entrepreneurial intention
Dacka and Rydz (2023)	Poland	Community	Young Adults	Quantitative	Positive correlation between SI and moral intelligence
Fidelis et al. (2023)	Brasil & Portugal	Healthcare	Healthcare Workers	Quantitative	Scale validation (adapted SISRI to leader's spiritual intelligence)
Khosravi (2023)	Iran	Healthcare	Medical Students	Quantitative	Negative correlation between SI and attitude toward euthanasia. SI negatively moderates the relationship between openness to experience and attitude toward euthanasia
Maghool et al. (2023)	Iran	Healthcare	Older Adults	Quantitative	Positive correlation between SI and fear and anxiety of corona.
Mehralian et al. (2023)	Iran	Healthcare	Nurses	Quantitative	Positive correlation between SI and competence and communication self-efficacy
Noroozi and Mohebbi-Dehnavi (2023)	Iran	Healthcare	Women with Breast Cancer	Quantitative	Positive correlation between SI and general health.
Pinto et al. (2023)	Portugal	Community	Not Applicable	Literature Review	Lists covered topics in SI interventions: self-awareness; self-management; self-consciousness; meaning in life; sense of holiness and interpersonal relationships
Rafiei et al. (2023)	Iran	Healthcare	Patients (Diabetics	Quantitative	SI predicts 7.2% of change in self-management among diabetes patients
Rajabi et al. (2023)	Iran	Healthcare	Drugs Users	Quantitative	SI was higher in the group of narcotics anonymous (counseling only) than that in the methadone group
Senmar et al. (2023)	Iran	University	University Students (Medical Sciences)	Quantitative	Positive correlation between SI and life satisfaction.
Yadollahpour et al. (2023)	Iran	Healthcare	Nurses	Quantitative	Negative correlation between SI and occupational stress

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Table 1. *Cont.*

Authors (Year)	Country	Setting	Participants	Study Design	Main Findings (Statistically Significant)
Zamani et al. (2023)	Iran	Healthcare	Medical Students	Quantitative	Negative correlation between SI and occupational stress
Zolfaghary et al. (2023)	Iran	Healthcare	Midwives	Quantitative	Negative correlation between SI and stress
Grasmane et al. (2022)	Latvia	Education	Children (Primary School)	Quantitative	Children scale validation
Marzban et al. (2022)	Iran	Healthcare	Family Caregivers of Mental Health Patients	Quantitative	Positive correlation between SI and resilience
Mokhtari et al. (2022)	Iran	Healthcare	Infertile Couples	Quantitative	No correlations established
Pishghadam et al. (2022)	Iran	Education	English as a Foreign Language Teachers	Quantitative	Negative correlation between SI and psychological reactance and burnout
Sharifnia et al. (2022a)	Iran	Healthcare	Not Applicable	Literature Review with Meta-Analysis	Positive correlation between SI and professional nursing practice components: the art of nursing; competence; attributes of practice; and personal commitment
Sharifnia et al. (2022b)	Iran	Healthcare	Not Applicable	Literature Review with Meta-Analysis	Enumerates the following benefits from SI interventions: increased SI; better communication skills; job satisfaction; spiritual care competence; and decrease in overall stress.
Abdolrezapour and Alipour (2021)	Iran	Education	English as a Foreign Language Female Students	Mixed-Methods	SI increased with targeted intervention in experimental group. Experimental group outperformed control group in post-test willingness to communicate.
Ahmadi et al. (2021)	Iran	University	University Students (Nursing)	Quantitative	Positive correlation between SI and spiritual care competence
Ajele et al. (2021)	Nigeria	Healthcare	Patients (Diabetics)	Quantitative	Positive correlation between SI and mental well-being and mindfulness. Negative correlation between SI and emotional dysregulation
Alamanda et al. (2021)	Malaysia	Organizations	Employees (Manufacturing & Service)	Quantitative	Positive correlation between SI and organizational citizenship behavior
Aliabadi et al. (2021)	Iran	Healthcare	Nurses	Quantitative	Positive correlation between SI and empathy
Atroszko et al. (2021)	Poland	Community	General Population	Quantitative	Scale validation (unfit model)
Badrudin et al. (2021)	Malaysia	Healthcare	University Students (Healthcare)	Quantitative	Positive correlation between SI and spiritual health
Dargahi and Veysi (2021)	Iran	University	Employees (Academic & Administrative)	Quantitative	Positive correlation between SI and employees' organizational commitment
Gera et al. (2021)	India	University	University Students (Finance)	Mixed-Methods	Positive correlation between SI dimensions and academic performance
Hojat and Badiyepeymaie-jahromi (2021)	Iran	Healthcare	Nurses	Quantitative	Positive correlation between SI and professional self-concept
Imani et al. (2021)	Iran	Healthcare	University Students (Healthcare)	Quantitative	Positive correlation between SI and clinical competency

Table 1. *Cont.*

Authors (Year)	Country	Setting	Participants	Study Design	Main Findings (Statistically Significant)
Liu et al. (2021)	China	Education	Primary School Teachers	Quantitative	SI varies with professional title, working location and age. Positive correlation between SI and awe. SI positively mediates relationship between awe and life satisfaction
Mróz et al. (2021)	Poland	Community	General Population	Quantitative	Positive correlation between SI and forgivingness
Oyewunmi et al. (2021)	Nigeria	University	Employees (Academic & Administrative)	Quantitative	Positive correlation between SI and job performance, job commitment and job satisfaction
Özsarı and Ilkim (2021)	Turkey	Sports	Physically Handicapped Badminton Players	Quantitative	SI dimensions vary with gender, age, marital status and sports experience
Parattukudi et al. (2021)	Canada	Healthcare	Patients (Mental Health)	Quantitative	Negative correlation between SI and depression
Rahmawaty et al. (2021)	Indonesia	Organizations	Employees (Microfinance)	Quantitative	Positive correlation between SI and communication competence and employee performance
Singla et al. (2021)	England	Education	Teachers	Quantitative	Positive correlation between SI and quality of work life
Anwar et al. (2020)	Malaysia	University	University Students (Finance)	Quantitative	Positive correlation between SI and emotional intelligence
Arnout (2020)	Egypt	Community	Unemployed People	Quantitative	SI negatively mediates the relationship between unemployed stress and mental health
Arsang-Jang et al. (2020)	Iran	Healthcare	Nurses	Quantitative	Positive correlation between SI and higher lever ethical decision making
Augusty and Mathew (2020)	India	Community	Not Applicable	Literature Review with Meta-Analysis	Proposes that SI is essential for holistic growth in developing nations
Martín-Sánchez et al. (2020)	Spain	Community	General Population	Mixed-Methods	Scale validation. Positive correlation between SI and resilience
Prabhu et al. (2020)	India	University	Not Applicable	Literature Review	Defines a new conceptual model of interaction between SI and spiritual leadership
Vasconcelos (2020)	Brazil	Community	Not Applicable	Literature Review	Proposes SI as the way to achieve and work on personal spirituality.
Dami et al. (2019)	Indonesia	University	University Students	Quantitative	SI increased with targeted intervention in experimental group. Experimental group post-test depression, anxiety and stress decreased significantly more than for control group.
Ebrahimi et al. (2019)	Iran	Healthcare	Rehabilitation Experts	Quantitative	Positive correlation between SI and resilience
Feng et al. (2019)	China	Community	Students, Employees & General Population	Mixed-Methods	Scale validation
Ghalaychi et al. (2019)	Iran	Healthcare	Midwives & Patients	Quantitative	Positive correlation between SI and patients' satisfaction
Hatami et al. (2019)	Iran	Healthcare	Patients (Pregnant Women)	Quantitative	Positive correlation between SI and resilience
Mosavinezhad et al. (2019)	Iran	University	University Students (Psychology)	Quantitative	Negative correlation between SI and social anxiety
Sharif et al. (2019)	Iran	Organizations (Military)	Disabled Veterans	Quantitative	Positive correlation between SI and death anxiety
Polemikou et al. (2019)	Greece	Community	General Population	Quantitative	Scale validation. Positive correlation between SI and resilience and meaning in life

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Table 1. *Cont.*

Authors (Year)	Country	Setting	Participants	Study Design	Main Findings (Statistically Significant)
Polemikou and Vantarakis (2019)	Greece	Healthcare	Emergency First Responders	Quantitative	Positive correlation between SI and death anxiety and dissociative experiences
Rahmanian et al. (2019)	Iran	Healthcare	Patients (Adolescents with Type 1 Diabetes)	Quantitative	No correlations established
Sharma (2019)	India	Community	Professional & Non-professional Working Women	Quantitative	Positive correlation between SI and adjustment
Abdollahpour and Khosravi (2018)	Iran	Healthcare	Patients (Pregnant Women)	Quantitative	Positive correlation between SI and happiness. Negative correlation between SI and fear of childbirth
Antunes et al. (2018)	Portugal	Community	General Population	Quantitative	Scale validation. Positive correlation between SI and meaning and purpose at work
Baloochi et al. (2018)	Iran	University	University Students (Healthcare)	Quantitative	SI varies with age, marital status and academic background. Negative correlation between SI and aggression
Fazlolah (2018)	Iran	Education	High School Teachers	Quantitative	Positive correlation between SI and informative, normative and commitment identity styles
Mahmood et al. (2018)	Malaysia	Organizations/Human Resources	Not Applicable	Literature Review	Suggests that SI is key to organizational development through conceptual connections to human resources and leadership development, holistic mechanisms and sustainability
Malini and Raju (2018)	India	University	University Students	Quantitative	Positive correlation between SI and motivation
Rahmanian et al. (2018)	Iran	Healthcare	Patients	Quantitative	Positive correlation between SI and self-efficacy
Riahi et al. (2018)	Iran	Healthcare	Nurses	Quantitative	SI and spiritual care competence increased with targeted intervention in experimental group. Experimental group outperformed control group in post-test spiritual care competence
Zarrinabadi et al. (2018)	Iran	University	Univesity Students (Medical Librarianship)	Quantitative	Confirmed high internal correlation among SI dimensions
Udin et al. (2017)	Indonesia	Organizations	Engineers	Quantitative	Positive correlation between SI and affective commitment and job performance
Amirian and Fazilat-Pour (2016)	Iran	University	University Students	Quantitative	Positive correlation between SI and general health and happiness
Chan and Siu (2016)	China	University	University Students	Quantitative	Scale validation. Positive correlation between SI and meaning in life and metapersonal self-construal
Geram (2016)	Iran	Education	Male Teachers	Quantitative	Positive correlation between SI and social adjustment
Jorge et al. (2016)	Portugal	Community	General Population	Quantitative	Scale validation
Anwar and Gani (2015)	Malaysia	Organizations	Employees (Manufacturing & Service)	Quantitative	Positive correlation between SI and organizational citizenship behavior
Mahasneh et al. (2015)	Jordan	University	University Students	Quantitative	Positive correlation between SI dimensions and personality traits

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Table 1. *Cont.*

Authors (Year)	Country	Setting	Participants	Study Design	Main Findings (Statistically Significant)
Khosravi and Nikmanesh (2014)	Iran	University	University Students	Quantitative	Positive correlation between SI and resilience. Negative correlation between SI and perceived stress
Nekouei et al. (2014)	Iran	Healthcare	Patients (Coronary Heart Disease)	Quantitative	SI is the main psychological protective factor for coronary heart disease
Saeedi et al. (2014)	Iran	University	Female University Students	Quantitative	Positive correlation between SI and religious orientation
Azizi and Zamaniyan (2013)	Iran	University	English as a Foreign Language Students	Quantitative	Positive correlation between SI and metacognitive and social strategies
Azizollah et al. (2013)	Iran	University	University Students	Quantitative	Positive correlation between SI and emotional intelligence and academic achievement
Hassan and Shabani (2013)	Iran	Education	Adolescents	Quantitative	Negative correlation between SI and mental health problems
Kaur et al. (2013)	Malaysia	Healthcare	Nurses and Patients	Quantitative	Positive correlation between SI and emotional intelligence and psychological ownership towards job. The relationship between SI and caring behavior is positively mediated by professional ownership and negatively mediated by burnout
Rani et al. (2013)	Malaysia	Healthcare	Nurses	Quantitative	Positive correlation between SI and work performance
Shahbakhsh and Moallemi (2013)	Iran	Healthcare	Patients (Addicts)	Quantitative	Positive correlation between SI and drug withdrawal time and resilience
Babanazari et al. (2012)	Iran	Education	Adolescents	Quantitative	Positive correlation between SI and happiness
King et al. (2012)	Canada	University	University Students & General Population	Quantitative	Positive correlation between SI and emotional intelligence
Narayanan and Jose (2011)	India	Education/Religion	Adolescents	Quantitative	Positive correlation between SI dimensions and resilience
King and DeCicco (2009)	Canada	University	University Students (Psychology)	Quantitative	Scale validation. Positive correlation between SI and meaning of life, metapersonal self-construal, mysticism, desirable responding and intrinsic-extrinsic religiosity
Martin and Hafer (2009)	USA	University	University Students (Finance)	Quantitative	Positive correlation between SI and emotional intelligence
Yang and Wu (2009)	China	Healthcare	Nurses	Quantitative	SI varies with academic background, social system and religious upbringing
Yang and Mao (2007)	China	Healthcare settings	Nurses	Quantitative	SI varies with religious affiliation and beliefs
Tirri et al. (2005)	Kosovo	Organizations (Military)	Peacekeepers	Quantitative	Scale validation

Footnote: SI, spiritual intelligence. Full article reference details available in Supplementary Material: Table S1.

Most studies were quantitative (n = 94) and investigated spiritual intelligence in different settings, such as healthcare settings (n = 46, predominantly addressing spiritual intelligence in nurses and patients), universities (n = 24, mainly focusing on students and some also including employees), schools/education (n = 12, evaluating both students and teachers), or studies open to the general population (n = 19) aiming to broadly characterize or validate spiritual intelligence measuring instruments.

In the selected quantitative studies, David King's (King & DeCicco, 2009) Spiritual Intelligence Self-Report Inventory—24 items were the most widely used instrument for measuring spiritual intelligence (n = 61).

4.1. References of the Concept and Areas of Application

The references of a concept concern the contexts in which it has been applied (Rodgers & Knafl, 2000). From the large variety of study settings described in Table 1, going from education to healthcare, organizations to sports or even military, one can recognize the wide usage of spiritual intelligence in daily life.

After close to a decade of theoretical development of the spiritual intelligence concept, the first quantitative studies started to take place (King et al., 2012; King & DeCicco, 2009; Martin & Hafer, 2009), initially still in the academic setting, targeting students and general population for better characterization of baseline spiritual intelligence and measuring instruments' validation but as the potential benefit of spiritual intelligence in mental health started to raise interest, studies in healthcare settings and aiming to study high-burdened professions as nursing or military workers soon followed, concentrating on the resilience, stress and spiritual coping benefits of spiritual intelligence.

The healthcare setting kept a strong interest in spiritual intelligence throughout time, expanding the research of its implications not only for the healthcare workers but also for patients with different health requirements (diabetics (Ajele et al., 2021; Rahmanian et al., 2018, 2019; Rafiei et al., 2023), coronary heart disease patients (Nekouei et al., 2014), pregnant women (Abdollahpour & Khosravi, 2018; Hatami et al., 2019), recovering addicts (Shahbakhsh & Moallemi, 2013; Rajabi et al., 2023), amongst others) centering on spiritual intelligence's potential towards better health outcomes, self-care and quality of care. With the COVID-19 pandemic's deep impact on the healthcare system raising important ethical dilemmas and mental health issues amongst healthcare professionals as well as patients, this interest grew significantly in the aftermath (Zamani et al., 2023; Yadollahpour et al., 2023; Maghool et al., 2023).

With growing evidence on spiritual intelligence's impact on communication and relational skills (Geram, 2016; Mosavinezhad et al., 2019; Mehralian et al., 2023), the study settings progressed to explore organizations (especially focusing on the benefits spiritual intelligence might bring to leadership and employee commitment (Dargahi & Veysi, 2021; Khastavaneh et al., 2018)) and the educational domain (studying spiritual intelligence impact on teachers' and students' teaching/learning strategies and dealing with the work/school stressors (Abdolrezapour & Alipour, 2021; Pishghadam et al., 2022; Singla et al., 2021)).

Thus, different areas of exercise of spiritual intelligence were studied across various populations all around the world and diverse cultural settings and religious beliefs, as reported on Table 1, contributing to a deeper and better understanding of spiritual intelligence through time and a growing impact of this concept concerning health care, educational and organizational development and practices as well as policy making.

Our analysis identified as major areas in which spiritual intelligence can be exploited: adaptative cognition processes, achieving elevated states of consciousness, problem management, personal growth, nurturing a humanitarian character, existentialism thinking, interpersonal relationships, mental health and work performance. Further details on the analysis of spiritual intelligence applications are described in Supplementary Table S2.

4.2. Concept Evolution

From its early conceptualizations, the understanding of spiritual intelligence concept has evolved significantly. Since the majority of the initial theoretical work on spiritual

intelligence did not comply with our study inclusion criteria, we provide an overview of the concept evolution throughout this period.

Considering a multiple intelligences model approach to cognition (Gardner, 1983), spiritual intelligence advocates attempted to extend models of human cognition beyond traditional cognitive and emotional domains. At the turn of the century, several authors independently proposed that spirituality-related capacities might constitute a distinct domain of intelligence. Zohar and Marshall framed spiritual intelligence as the ability to integrate rational and emotional processes to address existential questions and derive meaning from experience; despite needing voluntary intellectual processing, spiritual intelligence highly relies on personal beliefs and experiences, more than linguistic or logical data (Zohar & Marshall, 2000). In the same period, Emmons argued that spiritual intelligence should be understood as an adaptive problem-solving capacity that uses spiritual information to enhance functioning (Emmons, 2000). Shortly thereafter, Vaughan emphasized transcendental awareness and higher levels of consciousness as core components of the construct, further expanding its scope (Vaughan, 2002).

Later, King & DeCicco proposed a 4-dimensional model of spiritual intelligence comprising critical existential thinking, transcendental awareness, personal meaning production and conscious state expansion, contemplating the major dimensions previously addressed (King & DeCicco, 2009).

As the field progressed, researchers sought to clarify how spiritual intelligence differed from and interacted with other forms of intelligence. King and DeCicco further conceptualized spiritual intelligence as enabling a compassionate and values-driven response to others' distress, thus transcending the emotional intelligence's action-limited ability to empathetically mirror emotions (King & DeCicco, 2009).

Expanding on this, Wigglesworth proposed an equanimous and humanitarian demeanor as key expressions of spiritual intelligence, emphasizing the ability to keep inner and outer serenity and remaining calm, wise and compassionate in any given circumstance (Wigglesworth, 2012).

Taken together, these contributions illustrate an evolving concept that has moved from initial meaning-making and existential framing toward a broader, more operationalized understanding encompassing awareness, compassion, adaptive functioning, and integrative consciousness.

4.3. Surrogate Terms

Surrogate terms present as alternative terminology for a given concept (Rodgers & Knafl, 2000). In our analysis, spiritual intelligence was frequently referred to as spiritual quotient or existential intelligence, linking to the inherent cognitive process involved and the underlying multiple intelligence framework (Gardner, 1983).

Also, expressions as spiritual well-being were used, conveying the connection between spiritual intelligence and better life adjustment. A state of heightened consciousness was another of the identified surrogate terms, relating to the aspects of consciousness and awareness strongly associated with spiritual intelligence. Further details on surrogate terms analysis are described in Supplementary Material Table S3.

4.4. Related Concepts

Related concepts are frequently associated with the studied concept, usually sharing some common attributes (Rodgers & Knafl, 2000).

Spirituality, or in a broader sense, the spiritual experience or expertise is the most related concept to spiritual intelligence, its intimate connection coming from the premise that spiritual intelligence draws from spirituality and self-consciousness and by combining

it with deep cognitive processes that connect multiple intelligences achieves better personal outcomes in different life domains, such as health, performance, interpersonal relationships and organizational development.

For full details on related terms analysis refer to Supplementary Material Table S4.

4.5. Antecedents of the Concept

The antecedents of a concept are the premises in which it lays, the conditions required for it to occur (Rodgers & Knafl, 2000).

Deriving from the spiritual intelligence conceptualizations proposed in the various articles on our review, it is widely consensual that for spiritual intelligence to develop, it is required that the individual is connected to his spiritual-self and develops self and transcendental awareness, this is usually associated to a deep concern for existential questions and a search for meaning and purpose that derive from higher cognition. Spiritual intelligence also reflects self-investment and emotional awareness, usually associated with a humanitarian alignment.

Antecedents' full analysis is described in Supplementary Material Table S5.

4.6. Consequents of the Concept

Consequents are the byproducts of a concept, the outcomes of its application and development (Rodgers & Knafl, 2000).

Since most of the selected studies in this concept analysis were quantitative correlational studies (Table 1) with proper quality assessment of methodology, they provide invaluable evidence on the consequents of spiritual intelligence known to date and open way for future research that may add to the concept's evolutionary process further ahead.

Spiritual intelligence development and application was associated with better general and especially mental health (Ajele et al., 2021; Amirian & Fazilat-Pour, 2016; Bhandari et al., 2023; Dami et al., 2019; Nekouei et al., 2014; Parattukudi et al., 2021, better work performance (Ahmadi et al., 2021; Imani et al., 2021; Rahmawaty et al., 2021), humanitarian orientation (Kaur et al., 2013; Riahi et al., 2018), deep self-consciousness (Hojat & Badiyepeymaiejahromi, 2021; Rahmanian et al., 2018), a meaning and purposeful life (Babanazari et al., 2012; King & DeCicco, 2009), better organizational development (Alamanda et al., 2021; Anwar & Gani, 2015; Dargahi & Veysi, 2021; Singla et al., 2021) and interpersonal relationships (Aliabadi et al., 2021; Geram, 2016; Rahmawaty et al., 2021), and better intellectual performance (Gera et al., 2021) and problem management (Imani et al., 2021).

Detailed consequents' analysis available in Supplementary Material Table S6.

4.7. Defining Attributes

In order to achieve a revised definition of spiritual intelligence, it is essential to first assess its key attributes, the main characteristics that define and distinguishes the concept (Rodgers & Knafl, 2000).

From the inductive analysis of the selected studies, we were able to produce, by a final interpretative synthesis process of the gathered data, six main domains for spiritual intelligence: equanimity, life wisdom, transcendental awareness, spiritual consciousness, meaning and purpose creation, and existential questioning.

Spiritual intelligence is characterized by several key aspects. Firstly, it encompasses equanimity, reflecting the strong inner-coherence, integrity, and inner-balance that allows individuals to remain calm, wise, and compassionate in any given circumstance. This attribute was consistently reported in studies examining resilience and emotional regulation in spiritual contexts (Ajele et al., 2021; Hatami et al., 2019; Khosravi & Nikmanesh, 2014; King & DeCicco, 2009; Martin & Hafer, 2009; Polemikou et al., 2019).

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Another crucial facet is life wisdom, or the ability to navigate struggles with perseverance and a humanitarian approach to problems. Evidence for this attribute emerged mainly from studies describing reflective problem-solving and ethical decision-making (Amirian & Fazilat-Pour, 2016; Babanazari et al., 2012).

Furthermore, spiritual intelligence involves transcendental awareness, concerning the capacity to perceive what lies beyond oneself, including the ability to ascend to different levels of consciousness and attain a holistic or meta-view. Several studies highlighted participants' experiences of connectedness and elevated consciousness (Ajele et al., 2021; King & DeCicco, 2009).

It also incorporates spiritual consciousness, which enables higher cognition and the intellectual integration of spiritual experiences, as supported by research emphasizing reflective and meaning-contemplation processes (Ajele et al., 2021; Geram, 2016).

The creation of meaning and purpose is another vital element, both from daily life experiences and in a long-term perspective of life goals, being widely reported in multiple studies (Babanazari et al., 2012; Badrudin et al., 2021; King & DeCicco, 2009; Parattukudi et al., 2021).

Finally, spiritual intelligence pertains to the ability for deep existential questioning and a profound concern for knowledge, also a recurrent theme across literature (Badrudin et al., 2021; King & DeCicco, 2009; Polemikou et al., 2019).

Further details on the attributes analysis are described in Supplementary Material Table S7.

4.8. Model Case

According to Rodgers' evolutionary approach to concept analysis (Rodgers & Knafl, 2000), a model case serves to concretely illustrate the defining attributes of the concept in real life and that have been identified through the analysis process.

Mrs. Diana is a family caregiver supporting her husband through advanced illness within an interdisciplinary palliative care setting. Her journey provides a clear, concrete illustration of spiritual intelligence woven into daily care and collaboration with nursing and medical professionals.

Mrs. Diana demonstrates equanimity and calm, particularly in moments when her husband becomes more anxious or when unexpected symptoms arise. For example, when he feels more anxious, Mrs. Diana sits by his side, maintains a gentle tone, and takes a few deep breaths together with him before seeking help from the palliative care team. Nurses and physicians notice that she listens first, expresses understanding, and avoids reacting with panic, thus fostering a reassuring atmosphere even during periods of crisis.

She acts with integrity and purposeful communication, sharing her husband's values and preferences with the team and ensuring these are reflected in the ongoing integrated individual care planning.

Mrs. Diana's adaptability and resilience became clear when treatment plans needed to be changed, such as transitioning from active interventions to comfort-focused measures. She accepted these transitions without resentment, supporting her husband and participating actively in discussions with the interdisciplinary team to identify new ways to maintain his comfort and quality of life at home, the place where he prefers to be cared for and eventually die. Her ability to find meaning and motivation in her caregiving role is seen when she creates small daily rituals, such as sharing moments of gratitude with her husband and the nursing staff.

Mrs. Diana works closely with nurses and the medical team to facilitate spiritual and emotional well-being. For example, together they arrange times for quiet reflection, music, or favorite readings, respecting her husband's spiritual needs alongside clinical requirements.

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Throughout the process, Mrs. Diana's humanitarian conduct and interpersonal harmony are evident in the trust she builds: she thanks the staff, acknowledges each person's contribution, and encourages open discussion of difficult topics, including end-of-life preferences.

When discussions turn to prognosis and existential questions, Mrs. Diana's shows transcendental awareness as she helps her husband articulate his hopes and fears honestly, and cultivates an atmosphere where family, nurses, and doctors can all reflect together on what matters most, recognizing the shared humanity in these profound conversations.

In summary, Mrs. Diana's actions consistently demonstrate the defining attributes of spiritual intelligence within an interdisciplinary, person-centered palliative care context. Her approach promotes dignity, resilience, and holistic comfort, supported and amplified by the collaborative practice of nurses and physicians.

4.9. Definition of the Concept

Rodgers' method assumes that concepts are dynamic and continually changing; thus, revising the definition of spiritual intelligence at this point in time is but a summative expression of the concept's dominant features as known, and not intended to be final.

Based on the attributes consistently identified across the dataset and overall characteristics repeatedly linked to those attributes (Figure 2), we defined spiritual intelligence as a distinct, unifying, and trainable intelligence characterized by the capacity to actively derive meaning, purpose, and values from lived experiences and existential questions. This intelligence involves transcendental awareness and spiritual consciousness, enabling higher cognition and the intellectual integration of spiritual insights. Furthermore, spiritual intelligence fosters equanimity, life wisdom, and a humanitarian approach by allowing individuals to effectively utilize spiritual resources for problem-solving and daily interaction, thereby transforming spirituality into action.

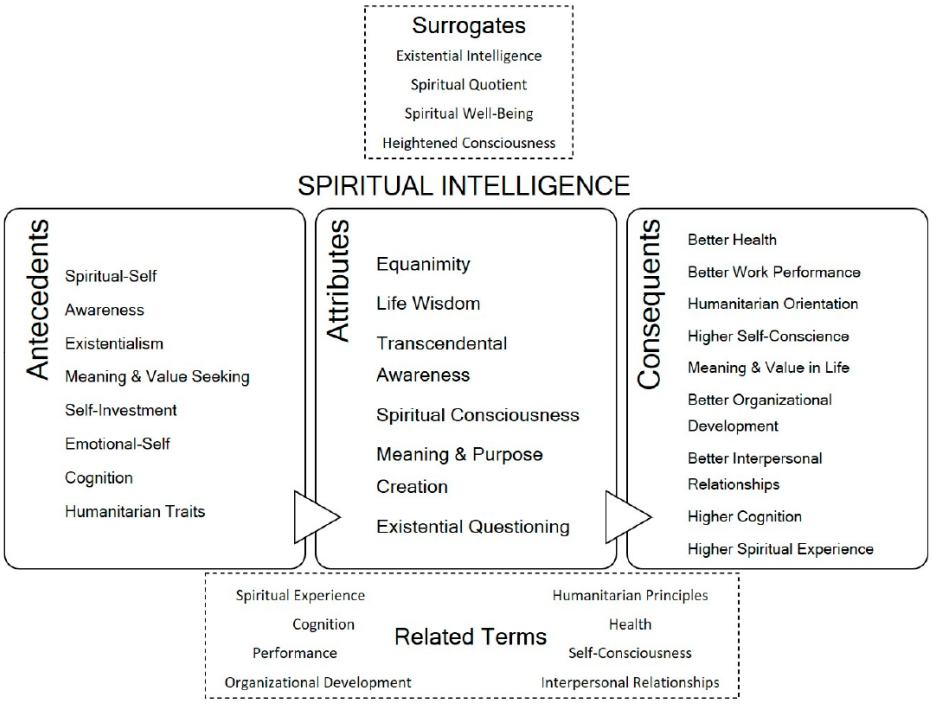


Figure 2. Visual diagram of spiritual intelligence concept.

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5. Discussion

Despite the effort to include multiple language literature in this analysis, the exclusion of Arabic, African and Asian native languages may limit to some extent the cultural diversity of our findings.

Nevertheless, we were able to achieve a worldwide representation of evidence through a broad time frame, which we believe is a strength in this evolutionary perspective over spiritual intelligence.

Since the concept is rather recent, we were able to gather and successfully explore literature from all fields of knowledge, giving this research a broad-spectrum approach to the concept of spiritual intelligence, allowing for a comprehensive review of its development through time.

The geographical distribution discrepancies of the studies should also be noted, as they highlight practical differences in the integration of spirituality and spiritual intelligence in daily life. Oriental cultures, where spirituality and religiosity are heavily linked to the quotidian life and even governments, show higher interest in researching the impact of spiritual intelligence and seem keener to tend to the spiritual-self. On the other hand, Occidental cultures where most governments are laic and the biomedical model originated and is still deeply rooted in many aspects of society (Hewa & Hetherington, 1995), the spiritual dimension still struggles to be seen, despite the recognition of its relevance and the recent consideration put into integrating this dimension in WHO's health definition (Peng-Keller et al., 2022).

More than focusing on the early theoretical conceptualization of spiritual intelligence, this analysis prioritized field-research, and empirical applications drawn from it, in order to refine and update the concept in a more functional perspective.

Spiritual intelligence research was significantly amplified by the development of measuring instruments (Amram & Dryer, 2008; King & DeCicco, 2009), enabling quantitative analysis of impact and correlational investigation. This new-found evidence brought to light new outcomes in the spiritual intelligence sphere of influence and confirmed the efficiency of interventions towards spiritual intelligence enhancement (Pinto et al., 2023, 2024).

More recent studies further support the relevance and applicability of spiritual intelligence by demonstrating significant associations to moral intelligence, forgivingness and personality traits, reinforcing the construct's links to ethical functioning, meaning-making, and personal development (Dacka & Rydz, 2023; Mróz et al., 2023). Also, in a more conceptual approach, Amram reviewed accumulated empirical and theoretical evidence, reinforcing our findings that validate spiritual intelligence based on its adaptability, cross-cultural validation, and neurological correlates, while also sharing ongoing challenges related to model convergence and measurement consistency (Amram, 2022). Although spiritual intelligence has been discussed in many contexts, no formal concept analysis has, to our knowledge, been published to date, making this review of antecedents and consequents truly insightful of the influence domain of spiritual intelligence.

Concerning antecedents, the notion that awareness, spiritual experiences, existentialism and emotional self-knowledge may precede spiritual intelligence can be major findings towards better targeted interventions (Ajele et al., 2021; Anwar et al., 2020; Augusty & Mathew, 2020; Dami et al., 2019; Imani et al., 2021; Khosravi & Nikmanesh, 2014; King et al., 2012; Parattukudi et al., 2021; Saeedi et al., 2014). Meanwhile, understanding that self-investment and seeking meaning and value are a driving force towards enhanced spiritual intelligence may help to understand how to achieve higher engagement (Abdolrezapour & Alipour, 2021; Bhandari et al., 2023; Kaur et al., 2013; Parattukudi et al., 2021; Rahmanian et al., 2018).

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On the other side, consequents as positive health impact (Amirian & Fazilat-Pour, 2016; Badrudin et al., 2021; Parattukudi et al., 2021), better work performance (Martin & Hafer, 2009; Rahmawaty et al., 2021; Rani et al., 2013; Riahi et al., 2018), higher organizational development (Anwar & Gani, 2015; Dargahi & Veysi, 2021; Gera et al., 2021; Prabhu et al., 2020) and enhanced interpersonal relationships (Anwar & Gani, 2015; Geram, 2016; Mosavinezhad et al., 2019) are outcomes that can be easily measured to determine efficiency of spiritual intelligence development. These consequents also carry great policy weight since they can advocate for the benefits of investing in spiritual intelligence training of professionals in many different areas of activity, especially in those where stress and burnout are more worrisome and when humanitarian orientation is crucial, such as healthcare, education and organizational leadership (Dargahi & Veysi, 2021; Gera et al., 2021; Hojat & Badiyepeymaiejahromi, 2021; Kaur et al., 2013; Pishghadam et al., 2022; Polemikou & Vantarakis, 2019; Prabhu et al., 2020; Rani et al., 2013; Singla et al., 2021).

Another important addition of this evolutionary concept analysis is the notion that internal consistency is fundamental to spiritual intelligence, thus, equanimity integrates the proposed definition as a core attribute, encompassing such consistency as well as a peaceful, trustful demeanor that projects from the individual to its surrounding context.

The notion that spiritual intelligent people can remain serene, wise and compassionate through challenging situations was suggested early on (Wigglesworth, 2012) but not consistently integrated in the concept definitions of different authors (King & DeCicco, 2009; Vaughan, 2002; Zohar & Marshall, 2000). This evolutionary concept analysis reinforces the claim that equanimity is a cornerstone attribute of spiritual intelligence.

Life wisdom also emerged as a novel attribute in this concept analysis. In this study, it is operationally defined as a combined psychological and spiritual capacity that grows from lived experience; it reflects the ability to navigate personal and interpersonal challenges with perseverance, discernment, and a humanitarian orientation. By integrating psychological elements (such as reflective judgment, emotional maturity, and adaptive coping), with spiritual elements (like meaning-making, ethical sensibility, and compassion), this combined capacity enables individuals to view hardship as an opportunity for growth, maintain a macro perspective in face of adversity, and respond to problems with compassion, ethical awareness, and a commitment to the wellbeing of others.

The six key attributes identified in this concept analysis: equanimity, life wisdom, transcendental awareness, spiritual consciousness, meaning and purpose creation, and existential questioning, partially overlap with constructs already assessed by existing instruments such as the SISRI-24 (King & DeCicco, 2009), the most frequently used instrument in spiritual intelligence research to date (Pinto et al., 2024). However, the newly identified attributes of equanimity and life wisdom are not represented in this instrument, highlighting a gap in this valuable measurement tool. This mismatch suggests that while SISRI-24 addresses core dimensions of spiritual intelligence, it may not fully operationalize its broader, evolving conceptualization.

This problem extends to other spiritual intelligence instruments, as for instance: Wigglesworth has somewhat reflected these new attributes in her proposed instrument while not contemplating matters of meaning and existential questioning (Wigglesworth, 2012); on another hand Amram & Dryer's instrument, approaches some aspects of equanimity but leaves out the newly identified life wisdom attribute (Amram & Dryer, 2008).

These findings underscore the need for further development or adaptation of assessment instruments to ensure they comprehensively capture the full range of evolving spiritual intelligence attributes identified in the recent literature.

Overall, contemporary research continues to emphasize spiritual intelligence as a trainable, outcome-relevant construct, while simultaneously underscoring the need for

clearer conceptual integration across models and instruments (Amram, 2022 Dacka & Rydz, 2023; Mróz et al., 2023).

6. Conclusions

This concept analysis demonstrates the impact of spiritual intelligence in many aspects of daily life but especially in enhancing positive health, work and interpersonal outcomes that can significantly contribute to a more resilient healthcare system.

The revised data supports an updated conceptualization of spiritual intelligence, emphasizing equanimity and life wisdom as two newly identified core attributes. These attributes expand the conceptual scope of spiritual intelligence and represent a key theoretical contribution of this work. The analysis also reinforces the importance of targeting antecedents as main focus for spiritual intelligence enhancement interventions and consequents as outcome measures to validate for such interventions.

Clarifying spiritual intelligence attributes and acknowledging its antecedents and consequents, as well as understanding how it can be successfully trained, allows for concrete policy and action towards an effective recognition and practical application of spiritual care.

Further investigation is required on the potential of targeted interventions to enhance spiritual intelligence based on this revised definition and its attributes, in order to establish its practical helpfulness. In particular, future studies should investigate whether attributes such as equanimity and life wisdom function primarily as psychological traits, spiritual dispositions, or a dynamic combination of both, and how this may change the evaluation of spiritual intelligence moving forward. Additionally, empirical studies assessing the outcomes of targeted interventions will be essential for evaluating the practical usefulness and broader implications of this refined conceptualization, along with extensive review of the existing assessment instruments to comply with the updated attributes.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/jintelligence14020024/s1, Table S1: Included studies on spiritual intelligence concept analysis full reference details. Table S2: Spiritual Intelligence areas of application analysis. Table S3: Spiritual intelligence surrogate terms analysis. Table S4: Spiritual intelligence-related terms analysis. Table S5: Spiritual intelligence antecedents' analysis. Table S6: Spiritual intelligence consequents' analysis. Table S7: Spiritual intelligence attributes' analysis.

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Abbreviations

The following abbreviations are used in this manuscript:

PRISMA-ScR	PRISMA extension for scoping reviews
AI	Artificial Intelligence

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Supplementary Materials

STable 1. Included studies on spiritual intelligence concept analysis full reference details.

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STable 2. Spiritual Intelligence areas of application analysis.

Areas of Application	Frequency
Adaptative Cognition	164
Critical contemplation of purpose, meaning and values	53
Drawing meaning and purpose from all physical and mental experiences	24
Adjustment	17
Creation and mastering of life purpose	15
Refrain from conditioning from social norms and stereotypes	8
Creativity	8
Reframe experiences	6
Abstract thinking	5
Elevated Consciousness	98
Sanctification of daily-life activities	29
Capacity to transcend the physical and material world	27
Realization of multidimensional reality	26
Ability to experience heightened states of consciousness	15
Problem Management	92
Holistic problem-solving	35
Overcoming difficulties using spiritual resources	28
Finding solutions to life problems	16
Achieving goals	13
Personal Growth	61
Connecting inner-self to life-world experiences	16
Pursuit of personal well-being	16
Positive self-concept	14
Achieving internal and external integrity and consistency	10
Humanitarian Principles	51
Ethical behavior	16
Acts of compassion	8
Wise behavior	7
Attitude of humility	4
Existentialism	35
Critically contemplate existential or metaphysical issues	32
Existentialism	3
Mental Health	30
Reduce stress and burnout	11
Reduce mental illness	11
Reduce depression	3
Emotional healing	3

Interpersonal Relationships	28
Being empathetic	10
Being accountable in interpersonal relationships	6
Using intelligence to serve others	5
Develop trust in others	4
Work Performance	20
Work integrity and independence	7
Self-motivation	5
Holistic care	5
Sense of achievement	2

Footnote: Frequency refers to the overall number of times the occurrence was mentioned in all the 112 included articles.

STable 3. Spiritual intelligence surrogate terms analysis.

Surrogate Terms	Frequency
Existential Intelligence	13
Existential Intelligence	4
Moral Intelligence	3
Soul's Intelligence	2
Fundamental Intelligence	1
Ultimate Intelligence	1
Spiritual Intellect	1
Wisdom Intelligence	1
Spiritual Well-being	7
Spiritual Well-being	5
Spiritual Strength	1
Spiritual Coping	1
Spiritual Quotient	5
Heightened Consciousness	4
Heightened Consciousness	1
Abstract Reasoning	1
Spiritual Consciousness	1
Spiritual Experiences	1

Footnote: Frequency refers to the overall number of times the occurrence was mentioned in all the 112 included articles.

STable 4. Spiritual intelligence related terms analysis.

Related Terms	Frequency
Spiritual Experience	142
Spirituality	50
Religious Beliefs	35
Spiritual Well-being	15
Spiritual Growth	11
Spiritual Leadership	4
Health	115
Mental Health	30
Well-being	23
Stress Coping and Emotional Regulation	16
Resilience	12
General Health	8
Quality of Life	7
Performance	72
Patient Care	44
Transformative Education	19
Work Performance	10
Leadership	8
Human Resources	5
Humanitarian Principles	57
Ethics and Moral Values	18
Empathy and Compassion	9
Happiness	6
Motivation	5
Cognition	59
Emotional Intelligence	26
Existential Intelligence	9
Rational Intelligence	7
Multiple Intelligences	4
Self-consciousness	49
Meaning and Purpose	10
Holism	8
Self-management and Efficacy	6
Mindfulness	5
Organizational Development	16
Organizational Behavior	5
Work Environment	5
Organizational Spirituality	2
Interpersonal Relationships	10
Human Relationships and Communication	4
Social Adjustment	3
Social System	2

Footnote: Frequency refers to the overall number of times the occurrence was mentioned in all the 112 included articles.

STable 5. Spiritual intelligence antecedents' analysis.

Antecedents	Frequency
Spiritual-self	55
Spiritual Self-awareness	25
Spiritual Experiences	12
Transcendental Integration	6
Spirituality	5
Awareness	29
Holistic View	12
Self-consciousness	9
Transcendental Awareness	5
Existentialism	15
Existential Questioning	9
Reflective Activities	4
Meaning and Value	11
Creating Meaning and Purpose	7
Integrative Organizing Principles and Values	4
Self-investment	9
Commitment to Self-care and Knowledge	7
Search for Wholeness	2
Emotional-self	8
Emotional Growth and Awareness	5
Empathy	3
Cognition	7
Inner Resources Perception	6
Humanitarian Traits	5
Forgiveness and Humility	2

Footnote: Frequency refers to the overall number of times the occurrence was mentioned in all the 112 included articles.

STable 6. Spiritual intelligence consequents' analysis.

Consequents	Frequency
Better Health	145
Reduced stress, anxiety and burnout	40
Better psychological adjustment and emotional regulation	34
Better mental health	27
Higher Quality of Life	12
General health	12
Better self-care and self-concept	10
Satisfaction in life	9
Better Work Performance	93
Better caring behavior	23
Better job performance	19
Increased self-efficacy and productivity	16
Higher job satisfaction	12
Academic eagerness	4
Humanitarian Orientation	74
Appropriate behavior	21
Resilience	19
Happiness	14
Flexibility	9
Motivation	4
Higher Self-conscience	40
Self-awareness	11
Holistic attitude and sense of wholeness	9
Ability to overcome hardships of life	8
Self-fulfilment and growth	5
Meaning and Value in Life	22
Meaningful life and relationships	13
Purposeful life	4
Meaningful work	3
Better Organizational Development	22
Organizational commitment	8
Organizational citizenship behavior	6
Organizational performance	5
Organizational development	3
Better Interpersonal Relationships	27
Better social adjustment	9
Better communication	9
Mutual understanding and empathetic relationships	4
Higher Cognition	12
Higher emotional intelligence	7
Holistic problem-solving	5
Higher intellectual development	4
Higher human performance	3
Higher Spiritual Experience	8
Transcendent spiritual states	3
Desire for religious experiences	2

Footnote: Frequency refers to the overall number of times the occurrence was mentioned in all the 112 included articles.

STable 7. Spiritual intelligence attributes' analysis.

Attributes	Frequency
Equanimity	232
Integrity	62
Calm and balanced	39
Adaptability and resilience	38
Body-mind wholeness	32
Moral and ethical behavior	26
Optimism and happiness	20
Creativity	15
Life Wisdom	196
Humanitarian conduct	105
Interpersonal harmony	57
Personal achievement	34
Transcendental Awareness	219
Transcendental awareness	85
Multiple levels of consciousness	76
Holistic thinking	47
Daily-life sanctification	11
Meaning and Purpose Creation	114
Meaning creation	77
Sense of purpose	12
Gratitude	9
Life goals	9
Motivation	7
Spiritual Consciousness	108
Higher cognition	51
Spiritual maturity	28
Immanence	17
Spiritual experiences	12
Existential Questioning	91
Deep understanding of existential	62
questions	15
Self-knowlegde	14
Intellectual pursuit of knowledge	

Footnote: Frequency refers to the overall number of times the occurrence was mentioned in all the 112 included articles.

2.1.3 Spiritual intelligence: A scoping review on the gateway to mental health

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REVIEW ARTICLE

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Spiritual intelligence: a scoping review on the gateway to mental health

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ABSTRACT

Spiritual Intelligence (SI) is an independent concept from spirituality, a unifying and integrative intelligence that can be trained and developed, allowing people to make use of spirituality to enhance daily interaction and problem solving in a sort of spirituality into action. To comprehensively map and analyze current knowledge on SI and understand its impact on mental health and human interactions, we conducted a scoping review following the Joanna Briggs Institute methodology, searching for 'spiritual intelligence' across PubMedCentral, Scopus, WebOfScience, and PsycInfo. Quantitative studies using validated SI instruments and reproducible methodologies, published up to 1 January 2022, were included. Selected references were independently assessed by two reviewers, with any disagreements resolved by a third reviewer. Data were extracted using a data extraction tool previously developed and piloted. From this search, a total of 69 manuscripts from 67 studies were included. Most studies ($n = 48$) were conducted in educational ($n = 29$) and healthcare ($n = 19$) settings, with the Spiritual Intelligence Self Report Inventory (SISRI-24) emerging as the predominant instrument for assessing SI ($n = 39$). Analysis revealed several notable correlations with SI: resilience ($n = 7$), general, mental, and spiritual health ($n = 6$), emotional intelligence ($n = 5$), and favorable social behaviors and communication strategies ($n = 5$). Conversely, negative correlations were observed with burnout and stress ($n = 5$), as well as depression and anxiety ($n = 5$). These findings prompt a discussion regarding the integration of the SI concept into a revised definition of health by the World Health Organization and underscore the significance of SI training as a preventative health measure.

PAPER CONTEXT

- **Main findings**: This scoping review of Spiritual Intelligence found positive correlations with resilience, general, mental and spiritual health, emotional intelligence, and favourable social behaviours and communication strategies, and negative correlations with burnout, stress, depression, and anxiety.
- **Added knowledge**: Spiritual Intelligence is an all-inclusive way to approach spirituality from a practical, daily problem-solving perspective that can be trained with several benefits for personal overall health, while also fostering substantial personal growth in social behaviors and skills.
- **Global health impact for policy and action**: Spiritual Intelligence training is urgently needed and should be integrated into global educational programs from early childhood as a health promotion strategy aiming to foster a more resilient and compassionate society.

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Background

Since the first steps of the multiple intelligences theory by Gardner [1], the discussion on this matter has ever since been around the concept of independent, yet intertwined, mental skill sets that work in different dimensions of human existence. Initially, Gardner's theory set eight main intelligence domains: visual-spatial; verbal-linguistic; musical-rhythmic; logical-mathematical; interpersonal; intrapersonal; naturalistic and bodily kinesthetic. This fruitful work later opened new horizons to the discussion of a new concept, entitled 'Spiritual Intelligence' (SI), in the late 90s, as the discussion on an intelligence domain concerning existential matters grew.

Acknowledging spirituality as the self-concept of one's soul, a search for the sacred or transcendent and the personal vertical relationship one establishes with what one deems sacred, it is a separate concept from SI (though related). Defined as the personal skill to bring one's own spirituality and the transcendental relationship with the sacred into daily problem solving, SI enhances one's

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mental fortitude by expanding personal metaviews on daily interactions, broadening senses of purpose and meaning, and drawing spiritual capital from social participation, pushing the person forward towards their goals [2]. Furthermore, SI is not to imply any religious belief or practice one chooses to integrate in their spiritual existence.

Closely linked to emotional intelligence (EI), SI facilitates the cognitive shift from the empathic ability to read and understand emotions to the compassionate ability to take action towards the ease of suffering without becoming overwhelmed by it [3]. Almost as if EI reads, the emotions but SI further 'reads the room' or the 'full picture', thus the metaview.

The core SI dimensions [2] are: (1) critical existential thinking, as the ability to answer deep existential questions in an open-minded and bias-free personal way, free from judgement and preconceptions allowing for self-evolution and self-actualization; (2) personal meaning production, as the ability to draw meaning from all good or bad, complex or simple, material or immaterial daily interactions and by making them meaningful integrating them in a positive and healthy way in one's personal history and elevating one's sense of well-being, meaning and purpose in life [4,5]; (3) transcendental awareness, as the ability to understand the world from a metaview perspective, aware both of the individual's participation in the universe and the universe within the individual, making every decision and life event more than a self-directed event and putting it to a larger scale that makes one unique and relevant to the universe in one choices, thus responsible for them, but also a reflect of the universal interactions, thus not at fault for what overruns us; and (4) conscious state expansion, as the ability to enter, at one's own will, into deeper states of spiritual attention and concentration (as in meditation) helping to capture from specific moments more than meets the eye and enabling a deeper connectedness to the sacred, nature or even other people, raising one's fulfilment and sense of belonging.

Even though spirituality is an inherent part of the human being, the willingness to tap into it in a self-aware and self-constructive way is what makes SI. This ability to voluntarily explore the spiritual self and make it grow in individual interactions makes for a more fulfilling and resilient existence [6].

Reinforcing the SI original concept, many quantitative studies throughout the past two decades have shown significant protective impact of SI concerning environmental, interpersonal and work-related stressors [7–12].

At this time, and considering a preliminary search on PubMedCentral (PMC), no scoping reviews (published or ongoing) were found on this topic. Therefore, a Scoping Review (ScR) was conducted using the methodology proposed by the Joanna Briggs Institute (JBI) for Scoping Reviews [13]. The aim of this review was to map and analyze the current knowledge in this field by synthesizing existing quantitative studies, with the goal of establishing the known ramifications of SI and better understanding its impact on mental health and human interactions.

Review questions

This ScR aims to answer the general problematic:

What is known from the literature about the influence of Spiritual Intelligence on human behavior and mental health?

More specifically, our review questions are:

(1) In what settings and populations is SI being studied?
(2) Which instruments for SI measurement are being used?
(3) What sociodemographic factors relate to SI?
(4) What positive correlations to SI have been reported?
(5) What negative correlations to SI have been reported?

Eligibility criteria

Participants

This ScR included any studies, with no age or sociodemographic background restrictions for the included samples or settings.

Concept

The included studies concern or directly address SI, as defined by King [2]. Studies merely focusing on the general concept of spirituality were excluded.

Context

We considered studies on a vast spectrum of settings and people, undertaken in multiple areas of knowledge, including but not limited to healthcare and psychology.

Types of studies

This ScR considered for inclusion any quantitative studies that use properly validated SI evaluation instruments and reproducible methodology (aims, inclusion criteria, sampling and instrument validation and reliability).

Text, proceedings, conference or opinion papers, abstracts, reviews, mixed methods and qualitative studies were excluded. Studies published in predatory journals

were considered for inclusion as long as they complied with the criteria and quality assessment.

Methods

This ScR was conducted in accordance with the Joanna Briggs Institute (JBI) methodology [13] and reported according to the PRISMA extension for scoping reviews (PRISMA-ScR) [14].

Search strategy

Studies published in English, French, Spanish or Portuguese were included, since these are languages the authors are fluent in.

Studies published up until 1 January 2022, were included to document the evolutionary timeline of the SI concept. A search for 'Spiritual Intelligence' (search term) was conducted on PMC, Scopus, WebOfScience and PsycInfo databases and the search strategy was adapted for each included database.

Study/source of evidence selection

Following the search, all identified citations were uploaded to Mendeley® and duplicates removed. Titles and abstracts were screened by two independent reviewers (CTP, LG) for assessment against the inclusion criteria. The full text of selected citations was then assessed in detail by two reviewers (CTP, LG). Any disagreements between the reviewers at each stage of the selection process were discussed among the team or reviewed by a third reviewer (SP, RN). The results of the search and study inclusion process were reported according to the PRISMA-ScR flow diagram (Figure 1) [14].

Data extraction

Data were extracted from the included papers by two independent reviewers (CTP, LG) using a data extraction tool developed by the reviewers. Prior to the study, the data extraction tool was pilot tested and trained by the reviewers with a total of 10 manuscripts with further cross-checking of the extracted data for consistency. The extracted data included various study details (authors, year, journal, country), as well as information on participants, study settings, aims, methodologies, SI instruments employed (including reliability and validation data), and key findings pertinent to the review objectives (including both positive and negative correlations to SI).

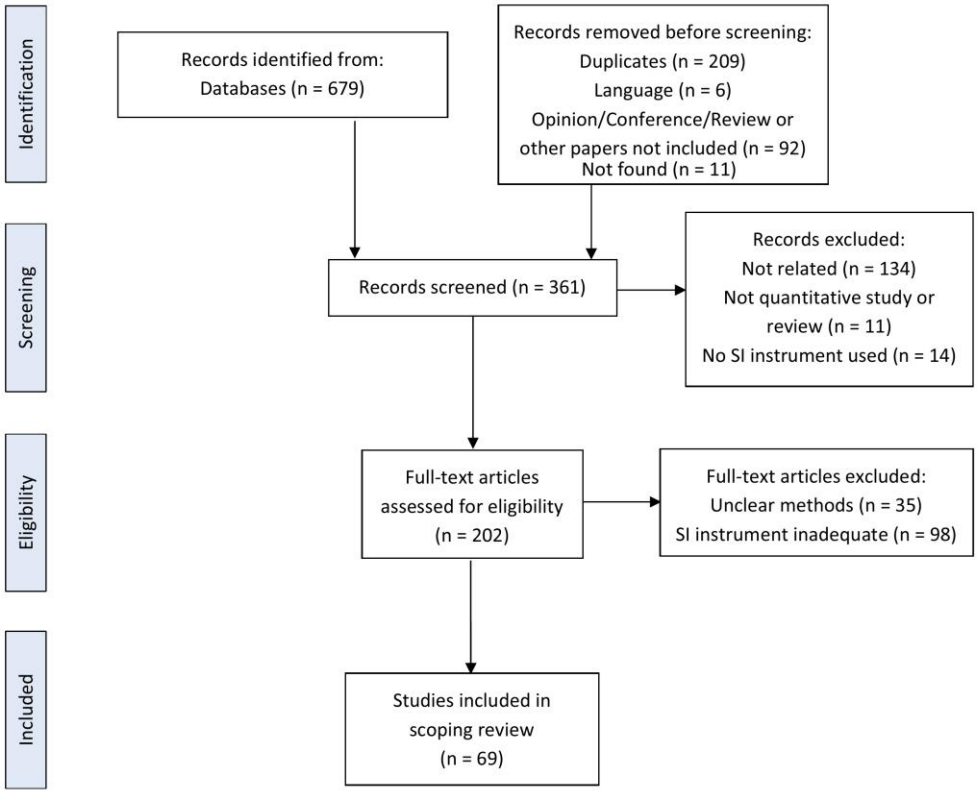


Figure 1. PRISMA-ScR flow diagram [14].

Results

Searches of electronic databases identified 470 hits, excluding duplicates (Figure 1). After screening, 159 hits were excluded, which identified 202 eligible manuscripts. This resulted in 69 included manuscripts reporting on 67 studies.

Among the 67 studies included for review, 32 were conducted in the Middle East ($n = 34$ manuscripts), 20 in Asia, nine in Europe, four in North America and two in Sub-Saharan Africa (Figure 2).

Until 2011, only five publications complied with our above-mentioned study quality assessment criteria; from 2011 until 2016, 14 studies; from 2016 to 2021, 30 studies and in 2021 alone a total of 20 relevant publications were found (Figure 3).

Concerning the study design, most were correlational ($n = 33$) or descriptive ($n = 18$), with nine reporting on tool validations/psychometric assessment and only two quasi-experimental.

Settings and populations

Regarding the setting in which the studies took place, the educational system was the most frequent ($n = 29$), with the most frequently studied population being university students ($n = 9456$) and teachers ($n = 1880$). The second most frequent setting was the healthcare system ($n = 19$). Participants included 2948 nurses, 2100 patients and 1069 healthcare students. Among the patients, most were diagnosed with diabetes ($n = 836$), coronary diseases ($n = 398$) or were pregnant women ($n = 379$).

Studies involving the general population ($n = 10$) included 6577 individuals while those focusing on organizations ($n = 5$) included a total of 5150 various employees (Table 1).

SI measuring instruments

The Spiritual Intelligence Self Report Inventory (SISRI-24) [2] was the most used SI measuring instrument ($n = 39$), with validation data from 11,331 individuals representing a wide variety of socio-demographic backgrounds, and demonstrating high reliability (all 39 studies reported Cronbach's α > 0,60; of which 76,9% with α > 0,80) (Table 2). The Integrated Spiritual Intelligence Scale (ISIS) [15] was used in five studies representing a total validation population of 2142, with not so strong reliability data (reported Cronbach's α ranging from 0,50 to 0,97).

Sociodemographics and SI

Reviewing the main findings from the included studies, the most frequently identified demographics related to SI were higher age ($n = 7$), religious affiliation ($n = 6$), and married status ($n = 4$). Other identified sociodemographic factors that favor SI included gender (with females reporting higher SI), higher education, childhood spirituality, a social system with fewer political constraints, ethnic attributes, geographic location (county living reported higher SI than country or towns) and community or shared living.

Positive correlations to SI

The most frequently identified attributes significantly positively correlated to SI were: resilience ($n = 7$);

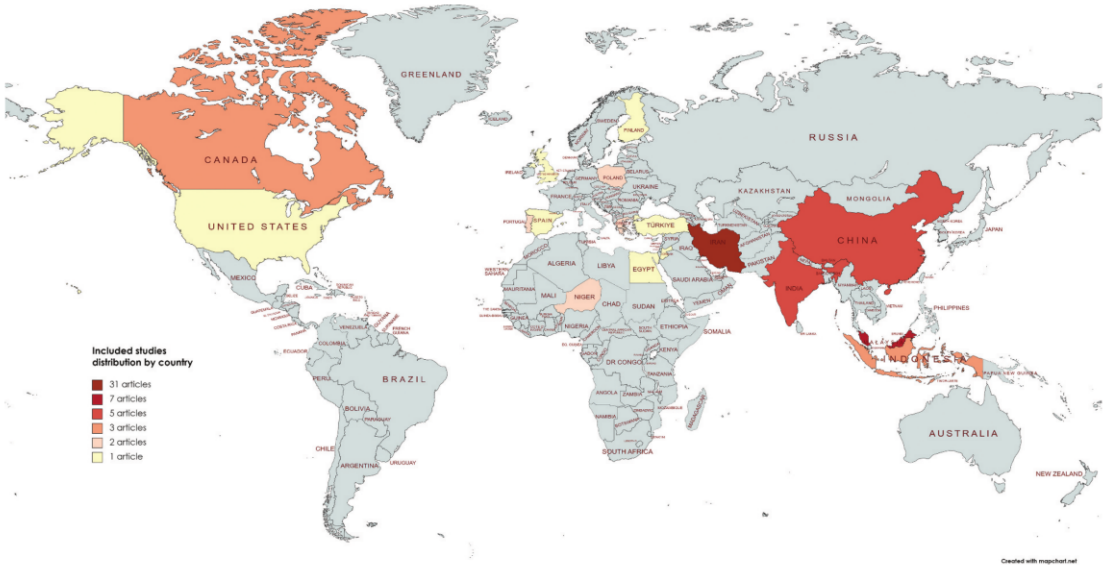


Figure 2. Geographic distribution of included studies.

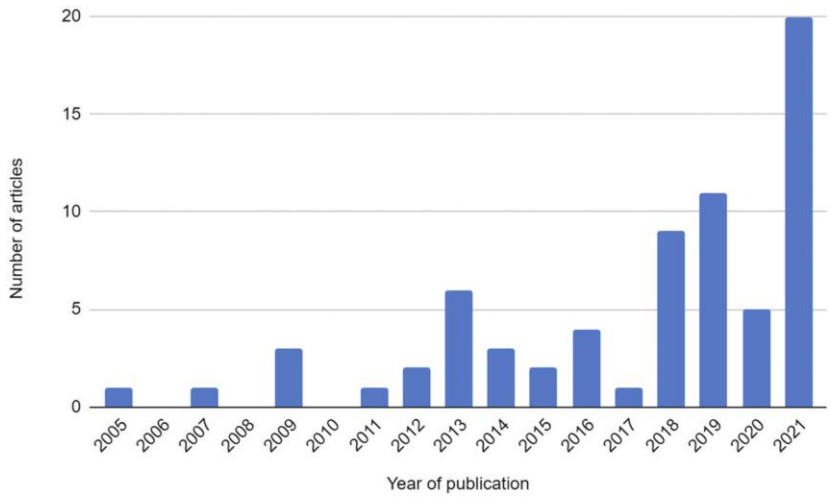


Figure 3. Number of included studies by year of publication.

general, mental and spiritual health ($n = 6$); EI ($n = 5$); favorable social behaviors and positive communication strategies ($n = 5$).

Negative correlations to SI

The most frequently identified attributes significantly negatively correlated to SI were burnout and perceived stress ($n = 5$), as well as depression and anxiety ($n = 5$).

The full extent of attributes correlated to SI is reported in Table 3, along with the direction of said correlation (positive or negative).

Globally addressing the main question of what is known about the influence of SI on human behavior and mental health, the gathered data suggests that SI is beneficial for mental health and for protecting against mental health risk factors, as well as being behaviorally well adaptive.

Discussion

Since the first mentions about SI, in 1997 by Zohar [16], and throughout the concept's journey into the Multiple Intelligences debate in the early 2000's, the vast majority of the scholarly work on developing the concept and proving its criteria compliance with criteria as a separate type of intelligence has been conducted in North America [2,17–21].

After this initial theoretical approach and once the concept gained maturity to start being tested in its daily life impact, there was an interesting geographic shift of attention with most studies featuring quantitative research on SI being published from Asia and the Middle East.

The historical attention Eastern cultures dedicate to holistic practices, mindfulness and intuition, as along with the common fusion of religious practices and beliefs within cultural and political settings, may explain the readiness to investigate the SI concept in action [22].

Although the initial interest on SI applicability was scarce, as more evidence was gathered, interest rose exponentially, particularly after the recent pandemic generated deep existential concerns and heightened awareness of the importance of spiritual and mental health worldwide.

Despite the majority of the studies being from Eastern culture settings, the most frequently used instrument to evaluate SI was the originally Canadian SISRI-24 [2]. Aside from being easy to apply, this tool segregates from any religious connections, allowing it to be trustworthy in any cultural and/or religious setting and also accurate in evaluating SI in big culturally diverse samples.

It is well established in Gardner's Multiple Intelligence Theory that one of the eight criteria for any type of intelligence should be its developmental history along the human lifespan, thus it is expected to grow from previous experiences and life challenges. Three different studies by Yang et al. [23–25], which included 953 nurses from Taiwan and China, helped explore SI demographics and yielded important conclusions. These studies not only confirmed its increase with age (as previously reported by King and DeCicco when validating the SISRI-24 scale [2]), but also revealed relevant associations with other demographic factors, such as religious affiliation and marital status.

Having some sort of religious belief or affiliation, even if not actively participating in religious rites and ceremonies, is also related to higher SI. Knowing that SI integrates dimensions of critical

Table 1. Summary of main findings in the included studies.

Author (year)	Type of study	Setting	Sample/Participants	Aims	SI instrument	Main results
Tirri et al. (2005)	Quantitative (cross-sectional descriptive)	Military	195 peacekeepers	SI and multiple intelligences profile	Own instrument	Scale validation
Yang et al. (2007)	Quantitative (cross-sectional descriptive-inferential)	Healthcare	130 nurses	SI profile among nurses and relationships with individual characteristics and religion	PsychoMatrix Spirituality Inventory, Wolman (2001)	Nurses with religious affiliation have higher SI scores and religious beliefs correlate to SI factors
King et al. (2009)	Quantitative (scale validation)	Education	619 psychology undergraduate students	Developing and validating a SI instrument	Own instrument (SISRI)	Scale validation; SI was positively correlated with meaning of life, metapersonal, mysticism, intrinsic-extrinsic religiosity and desirable responding
Martin et al. (2009)	Quantitative (cross-sectional descriptive)	Education	532 university business students	SI and EI effect on work-performance	Adapted from SI, Ashmos and Duchon (2000)	EI and SI are statistically correlated
Yang et al. (2009)	Quantitative (cross-sectional descriptive-inferential)	Healthcare	524 nurses	SI profile and demographics in two different Chinese societies	PsychoMatrix Spirituality Inventory, Wolman (2001)	Nurses with vocational schooling and religious affiliation had higher SI; age, childhood spirituality and social system were significant predictorsof SI
Narayanan et al. (2011)	Quantitative (cross sectional descriptive)	Education	220 Christian adolescents	SI and resilience among Christian youth	Integrated SI Scale, Amram and Dryer (2008)	Of the 22 SI capabilities studied, 16 were significantly positively correlated with resilience and explain 57% of its variance
King et al. (2012)	Quantitative (cross-sectional descriptive-correlational)	General Population	420 (362 university students & 58 general population)	Relationship between EI and SI, empathy as a potential component of SI	SISRI-24, King and DeCicco (2009)	Assessing Emotions Scale (Schutte et al., 1998) and Trait Meta Mood Scale (Salovey et al., 1995) displayed significant low-to-moderate positive correlations with the SISRI-24; Multidimensional Emotional Empathy Scale (Caruso & Mayer, 1998) showed no relation to SISRI-24
Honarmand et al. (2012)	Quantitative (cross-sectional descriptive-correlational)	Education	221 adolescents	SI and happiness of adolescents in Iran	Spiritual sensitivity scale	Positive relation between happiness and SI; SI can predict 67% of variations in happiness scores
Kaur et al.. (2013)	Quantitative (cross-sectional descriptive)	Healthcare	448 nurses (& 348 patients)	Nurses' caring behavior and SI, EI, psychological ownership and burnout	SISRI-24, King and DeCicco (2009)	Positive relationship between SI and EI; nurses with higher SI have higher levels of psychological ownership towards their jobs which also mediates the positive relationship between SI and caring behavior;
Azizollah et al. (2013)	Quantitative (cross-sectional descriptive-correlational)	Education	250 university students	SI and EI effect on student achievement	SISRI-24, King and DeCicco (2009)	Interrelationships between different types of intelligence (SI, EI) and achievement
Shahbakhsh et al. (2013)	Quantitative (cross-sectional descriptive-correlational)	Healthcare	100 patients referred to the addiction center	SI and resilience effect on withdrawal time of individuals treated with methadone	SISRI-24, King and DeCicco (2009)	Positive correlation between resilience and SI and withdrawal time and SI
Rani et al. (2013)	Quantitative (cross-sectional descriptive-inferential)	Healthcare	506 nurses	SI effect on nurses' work performance	Integrated SI Scale, Amram and Dryer (2008)	Positive correlation between SI and work performance; nurse's tenure is moderating factor between SI and work performance
Hassan et al. (2013)	Quantitative (cross-sectional descriptive-correlational)	Education	247 adolescents	SI, EI and mental health in adolescents	Integrated SI Scale, Amram and Dryer (2008)	SI highly positively related with EI; SI has significant indirect effect via EI on reducing mental health problems explaining 68% of variance; SI and its dimensions were highly negatively related with mental health problems
Azizi et al. (2013)	Quantitative (cross-sectional descriptive-correlational)	Education	120 EFL students	SI and EFL learners' use of vocabulary learning strategies	SISRI-24, King and DeCicco (2009)	Significant correlation between SI and metacognitive strategies and social strategies; females showed higher spiritual intelligence scores
Khosravi et al. (2014)	Quantitative (cross-sectional descriptive-correlational)	Education	307 university students	SI, resilience and perceived stress among students	SISRI-24, King and DeCicco (2009)	Positive and significant relationship between SI and resilience; SI predicts 10% of resilience variance; negative and significant relationship between SI and perceived stress; SI predicts 11% of perceived stress variance

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Table 1. (Continued).

Author (year)	Type of study	Setting	Sample/Participants	Aims	SI instrument	Main results
Khayyam Nekouei et al. (2014)	Quantitative (cross-sectional descriptive-correlational)	Healthcare	398 patients with coronary heart disease	Psychological risk and protective factors and quality of life in patients with coronary heart disease	SQ-21 Wigglesworth (2021)	Among the protective factors of coronary heart disease, SI with a factor loading of 0.58 had the maximum value
Saeedi et al. (2014)	Quantitative (cross-sectional descriptive-correlational)	Education	115 female students	SI and religious orientation of students	Own instrument	Positive correlation between SI and religious orientation; last year students have higher SI
Anwar et al. (2015)	Quantitative (cross-sectional descriptive-correlational)	Organizations	107 employees of manufacturing and service industries	SI effect on employee citizenship behavior in manufacturing and service employees	Adapted from SISRI-24 King and DeCicco (2009)	Organizational citizenship behavior is positively correlated with SI, which answers for 24.8% of its variation
Mahasneh et al. (2015)	Quantitative (cross-sectional descriptive)	Education	682 university students	SI profile and link to personality traits	SISRI-24, King and DeCicco (2009)	Positive significant relationship between SI and personality traits which explains 12% variance in critical existential thinking, 10,7% in personal meaning production, 5,7% in transcendental awareness and 9,3% in conscious state expansion SI dimensions
Chan et al. (2016)	Quantitative (scale validation)	Education	213 university students	Developing and validating a SI instrument	SISRI-24, King and DeCicco (2009)	Scale validation; SI was positively correlated with meaning in life, metapersonal self-construal and satisfaction with life
Jorge et al. (2016)	Quantitative (scale validation)	General population	718 adults	Developing and validating a SI instrument	Integrated SI Scale, Amram and Dryer (2008)	Scale validation
Amirian et al. (2016)	Quantitative (cross sectional descriptive-correlational)	Education	384 university students	SI, general health and happiness among students	SISRI-24, King and DeCicco (2009)	Higher SI positively relates and predicts better general health and happiness
Geram, Kazem (2016)	Quantitative (cross-sectional descriptive-correlational)	Education	300 male teachers	SI and EI effect on social adjustment of male high-school teachers	SI Questionnaire, Badii et al. (2000)	Significant positive relation between social adjustment and SI
Udin et al.. (2017)	quantitative (cross sectional descriptive-correlational)	Organizations	239 automobile engineers	SI and intrinsic motivation effect on affective commitment and engineer performance	Own instrument	SI positively affects affective commitment and engineer performance
Fazlolah, MirDrikvand (2018)	Quantitative (cross-sectional descriptive-correlational)	Education	290 high school teachers	identity styles and SI of high school teachers	SI Questionnaire, Abdullah Zadeh (2008)	Positive correlation between SI and informative identity style, normative style and commitment identity
Riahi et al. (2018)	Quantitative (quasi-experimental)	Healthcare	82 ICU nurses (40 experimental vs 42 control group)	SI training and nurses' competence in spiritual care	SISRI-24, King and DeCicco (2009)	Higher SI after intervention; higher spiritual care competence after intervention; mean scores of spiritual care competence in the experimental group were higher than the control group;
Malini et al. (2018)	Quantitative (cross-sectional descriptive)	Education	523 undergraduate students	students SI and motivation and the mediating effects of gender	SI, Hildebrant (2011)	Moderate influence of motivation on SI; all SI domains are significantly correlated to the overall motivation
Abdollahpour et al. (2018)	Quantitative (cross-sectional descriptive)	Healthcare	245 pregnant women	SI and happiness effect on fear of childbirth in pregnant women	SISRI-24, King and DeCicco (2009)	People with higher score of SI are happier; negative correlation between SI with fear of childbirth; mothers who had no fear of childbirth had a higher level of SI
Antunes et al. (2018)	Quantitative (scale validation)	General Population	767 adults	Developing and validating an SI instrument	SISRI-24, King and DeCicco (2009)	Scale validation
Zarrinabadi et al. (2018)	Quantitative (cross-sectional descriptive-correlational)	Education	260 university medical librarianship students	Validating an SI instrument	SISRI-24, King and DeCicco (2009)	Internal validity of SI instrument confirmed
Baloochi et al. (2018)	Quantitative (cross-sectional descriptive-correlational)	Education	300 bachelor students of medical sciences	SI and aggression among Iranian medical sciences students	SISRI-24, King and DeCicco (2009)	Significant positive correlation between SI and older age, married status and management study field; negative relationship between SI and aggression, predicting 29,5% of variation

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Table 1. (Continued).

Author (year)	Type of study	Setting	Sample/Participants	Aims	SI instrument	Main results
Rahmanian et al. (2018 & 2019)	Quantitative (cross-sectional descriptive-correlational)	Healthcare	200 adolescents with type 1 diabetes	SI effect on selfmanagement in adolescents with type 1 diabetes	SISRI-24, King and DeCicco (2009)	SI can predict 4.7% of diabetes selfmanagement changes and its effect on diabetes selfmanagement with special impact of SI dimension of personal meaning production
				SI and selfefficacy in diabetic adolescents		significant relationship between SI and selfefficacy
				SI and demographics in diabetic adolescents		none of the variables were related
Sharma, Sonia (2019)	Quantitative (graphic survey method)	General population	530 women (280 professional vs 250 non-professional workers)	SI, EI and life satisfaction among professional and non-professional working women	SI Scale, Dhar and Dhar (2010)	professional working women with high spiritual intelligence are better adjusted than their counterparts
Hatami et al. (2019)	Quantitative (cross-sectional descriptive)	Healthcare	134 pregnant women	SI and resilience relationship with fear of childbirth in pregnant women	SISRI-24, King and DeCicco (2009)	significant correlation between SI and resilience; SI higher in natural childbirth than cesarean; SI higher in nulliparous women than multipara; SI higher with education level; age increases level of resilience and SI
Polemikou et al. (2019)	Quantitative (cross-sectional descriptive)	Organizations	182 first responders	SI as a moderator between death anxiety and dissociative post-traumatic stress disorder among first responders	SISRI-24, King and DeCicco (2009)	weak positive associations between SI and death anxiety as well as with dissociative experiences; SI and death anxiety predict/explain 77% of the variance in dissociative experiences; death anxiety was significantly related to dissociation, and SI significantly moderated that relationship with higher SI in high-level dissociation group
Polemikou et al. (2019)	Quantitative (scale validation)	General population	1777 adults	Developing and validating an SI instrument	SISRI-24, King and DeCicco (2009)	scale validation; SI was positively correlated with meaning in life and resilience; inverse correlation between SI and nonreligious-nonspiritual scale (higher scores represent weak institutional religiousness/individual spirituality)
Dami et al. (2019)	Quantitative (quasi-experimental)	Education	64 students with final exams (32 intervention vs 32 control groups)	Effectiveness of depression, anxiety, stress and SI focused group counseling for students facing final exams	SISRI-24, King and DeCicco (2009)	SI increased after the intervention compared to the control group, mainly due to the critical existential thinking and personal meaning production components; after the intervention also depression, anxiety and stress experienced a significant decrease compared to the control group
Mosavinezhad et al. (2019)	Quantitative (cross-sectional descriptive)	Education	300 university psychology students	SI and personal beliefs effect on social anxiety among students	SISRI-24, King and DeCicco (2009)	negative correlation between SI and social anxiety; existential critical thinking, personal meaning and purpose, and transcendental consciousness dimensions of SI inversely predict social anxiety in up to 42% of its variance
Feng et al. (2019)	Quantitative (scale validation)	General population	605 university students and employees	Developing and validating an SI instrument	own instrument (Scale of SI for the Chinese Context)	scale validation
Ghalaychi et al. (2019)	Quantitative (cross-sectional descriptive-correlational)	Healthcare	200 midwives (& their patients with vaginal births)	Spiritual health and SI of midwifery students and satisfaction of patients with vaginal childbirth	SISRI-24, King and DeCicco (2009)	positive correlation between SI of midwives and mothers' satisfaction with vaginal childbirth
Ebrahimi Barmi et al. (2019)	Quantitative (cross-sectional descriptive-correlational)	Healthcare	163 rehabilitation experts	SI and resilience of rehabilitation staff	SISRI-24, King and DeCicco (2009)	positive relationship between SI and resilience in rehabilitation staff

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Table 1. (Continued).

Author (year)	Type of study	Setting	Sample/Participants	Aims	SI instrument	Main results
Pahlevan Sharif et al. (2019)	Quantitative (cross-sectional descriptive-correlational)	Military	211 male Iran–Iraq war veterans with war-related disabilities	SI, spiritual well-being and death anxiety among Iranian veterans	SISRI-24, King and DeCicco (2009)	significant positive relationship between SI and death anxiety
Sondakh et al. (2020)	Quantitative (scale validation)	Education	548 undergraduate students	Developing and validating a SI instrument	own instrument (Hi-ACT)	scale validation
Arnout et al. (2020)	Quantitative (cross-sectional descriptive)	General population	761 unemployed persons	Relationship between unemployment stress, SI and mental health components	SI scale (SIS-27), Arnout (2016)	factors of spiritual intelligence (spiritual mindfulness, spiritual abilities, and spiritual presence) intermediate between unemployment stress and mental health of unemployed adults
Anwar et al. (2020)	Quantitative (cross-sectional descriptive)	Education	250 Muslim business administration university students	Developing and validating a SI instrument and SI relationship to EI among students	own instrument (SI from an Islamic perspective)	significant relationship between SI from an Islamic perspective and EI
MARTÍN-SÁNCHEZ et al. (2020)	Quantitative (scale validation)	General population	528 adults	Developing and validating a SI instrument	Cuestionario de Inteligência Espiritual	gender differences in SI domains profiles (women higher: transcendence, compassion, forgiveness and gratitude; men higher: freedom and pain); conscience, transcendence, freedom and pain SI domains increase with education; different religious beliefs promote different SI profiles; shared living relates to higher transcendence, meaning, compassion and pain SI domains; significant positive correlation to resilience
Arsang-Jang et al. (2020)	Quantitative (cross-sectional descriptive-correlational)	Healthcare	376 nurses	SI and ethical decision making in hospital nurses	SISRI-24, King and DeCicco (2009)	postconventional nursing principled thinking relates positively to SI dimensions of critical existential thinking and personal meaning production, as well as total SI while preconventional nursing principled thinking relates negatively to the same variables
Behzad et al. (2021)	Qquantitative (cross-sectional descriptive)	Healthcare	145 university healthcare students (children of war martyrs or veterans)	Clinical competence and SI in students who are children of war victims	SI Questionnaire, Kazdin et al. (1986)	highest mean score of SI in nursing students and lowest in radiology students; direct, positive, and significant linear relationship between SI and clinical competency
Badrudin et al. (2021)	Quantitative (cross-sectional descriptive-correlational)	Healthcare	924 nursing and medical students	SI and spiritual health amongst Muslim students during the COVID-19 pandemic	SISRI-24, King and DeCicco (2009)	positive relationship between SI and spiritual health
Liu et al. (2021)	Quantitative (cross-sectional descriptive-correlational)	Education	569 primary school teachers	Mediating effect of SI between awe and life satisfaction among primary school teachers and ethnicity impact	Integrated SI Scale, Amram and Dryer (2008)	SI differs among teachers with different professional titles (third-grade title were higher than the others); working location significantly affects spiritual intelligence (highest SI for county); age and awe positively correlated with SI; SI plays a completely mediating role between awe and life satisfaction
Rahmawaty et al. (2021)	Quantitative (cross-sectional descriptive-correlational)	Organizations	196 microfinance employees	SI and EI effect on employee performance and the mediating role of communication competence	Zohar and Marshall (2000)	positive and significant influence of SI on communication competence and employee performance
Abdolrezapour et al. (2021)	Quantitative (explanatory sequential mixed-methods)	Education	47 female EFL students (22 intervention vs 25 control group)	SI intervention impact on EFL learners' willingness to communicate and SI	SISRI-24, King and DeCicco (2009)	learners improved their willingness to communicate and their SI over time as a result of the intervention, with better performance of the experimental group on the posttest

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Table 1. (Continued).

Author (year)	Type of study	Setting	Sample/Participants	Aims	SI instrument	Main results
Gera et al. (2021)	Quantitative (cross-sectional descriptive) and exploratory qualitative	Education	125 MBA students	SI impact on students' academic performance	SISRI-24, King and DeCicco (2009)	SI domains of critical existential thinking and personal meaning production have a positive effect on academic performance explaining 19,9% of its variance
ÖZSARI et al. (2021)	Quantitative (cross-sectional descriptive)	Sports	31 physically handicapped badminton players	SI profile of physically disabled badminton players	SISRI-24, King and DeCicco (2009)	personal meaning generation dimension of SI was higher in male badminton players; personal meaning generation, awareness and conscious state expansion dimensions of SI were higher with age and married status; players with 3–5 years of sports experience had significantly lower SI scores
Paweł et al. (2021)	Quantitative (scale validation)	General population	833 adults	Validity of a general factor of SI as a psychological construct	SISRI-24, King and DeCicco (2009)	model did not fit to the data
Singla et al. (2021)	Quantitative (cross-sectional descriptive-correlational)	Education	451 college teachers	SI and quality of work life of college teachers and the mediating role of psychological capital	SISRI-24, King and DeCicco (2009)	relationship between SI and quality of work life is highly significant; psychological capital is a partial mediator in this relationship
Ahmadi et al. (2021)	Quantitative (cross-sectional descriptive-correlational)	Education	510 undergraduate nursing students	SI and spiritual care in nursing students	SISRI-24, King and DeCicco (2009)	positive correlation between competence in spiritual care and SI, in all dimensions of both concepts; SI higher with age, married status, clinical practice experience and higher academic year; SI explains 7% of the variance in competence in spiritual care
Hojat et al. (2021)	Quantitative (cross-sectional descriptive-correlational)	Healthcare	344 nurses	SI and professional self-concept among Iranian nurses	SI Questionnaire, Abdullah Zadeh (2008)	positive correlation between professional self-concept and SI, except for leadership subcategory; SI explains 13.3% of the changes in professional self-concept
Bhandari et al. (2021)	Quantitative (cross-sectional descriptive)	Yoga institute	70 Hindu ascetics	SI and distress of Hindu ascetics following material/sensual restrains and selfless service	SISRI-24, King and DeCicco (2009)	SI could account for a 14.4% variance in physical distress, 9.9% variance in psychological distress and 11.3% variance in total distress as a predictor; psychological distress can be positively predicted by conscious states expansion dimension of SI; high negative correlation between SI (mainly transcendental awareness dimension) and physical distress
Oyewunmi et al. (2021)	Qquantitative (cross-sectional descriptive-correlational)	Education	216 academic and administrative staff	SI effect on job performance, commitment and satisfaction	SISRI-24, King and DeCicco (2009)	Positive relationships between SI and job performance, job commitment, and job satisfaction
Ajele et al. (2021)	Quantitative (cross-sectional descriptive)	Healthcare	636 adult diabetics	SI and mindfulness effects and mediating role between emotional dysregulation, depression and mental well-being in persons with diabetes	SISRI-24, King and DeCicco (2009)	Mental well-being, depression, emotional dysregulation and mindfulness positive significantly correlated with SI; significant and positive direct effects of depression on mental well-being which was significantly moderated by mindfulness and SI; significant indirect relationship between depression and mental well-being via emotional dysregulation, which was significant and positively moderated by SI; significant positive direct relationship between SI and mindfulness explaining 8% of its variance; significant positive direct relationship between SI and mental well-being
Dargahi et al. (2021)	Quantitative (cross-sectional descriptive)	Education	267 school workers (181 employees & 86 management)	Ideal hybrid intelligence and employees' organizational commitment	SISRI-24, King and DeCicco (2009)	Significant relationship between cultural, spiritual and moral intelligence, which constitute the dimensions of ideal hybrid intelligence; significant correlation of this ideal hybrid intelligence and employees' organizational commitment; SI significantly affects employees' organizational commitment

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Table 1. (Continued).

Author (year)	Type of study	Setting	Sample/Participants	Aims	SI instrument	Main results
Mróz et al. (2021)	Quantitative (cross-sectional descriptive-correlational)	General population	605 adults	SI and forgiveness	SISRI-24, King and DeCicco (2009)	All SI dimensions positively related to forgivingness dimensions; different aspects of dispositional forgiveness mediated the link between two SI dimensions (personal meaning production and transcendental awareness) and episodic forgiveness, measured as a revenge and benevolence motivation, these two SI dimensions also related to a greater disposition to forgive with negative correlation to revenge and positive correlation to benevolence towards a specific offender; SI dimension of critical existential thinking negatively correlated with reduction of unforgivingness of situations; personal meaning production ad transcendental awareness dimensions of SI showed inverse correlation with revenge motivation
Alamanda et al. (2021)	Quantitative (cross-sectional descriptive-correlational)	Organizations	4125 manufacturing and serving employees	SI and organizational citizenship behaviors	PsychoMatrix Spirituality Inventory, Wolman (2001)	Positive relationship between SI and organizational citizenship behavior
Aliabadi et al. (2021)	Quantitative (cross-sectional descriptive-correlational)	Healthcare	338 nurses	SI and nurses' empathy with COVID-19 patients	SISRI-24, King and DeCicco (2009)	Positive relationship between empathy and SI; SI explains 39,6% of empathy variation
Parattukudi et al. (2021)	Quantitative (cross-sectional descriptive-correlational)	Healthcare	39 mental health clinic patients	SI and depression	SISRI-24, King and DeCicco (2009)	Negative relationship between SI and depression, with significant gender differences in SI profile correlations
Pishghadam et al. (2021)	Quantitative (cross-sectional descriptive-correlational)	Education	270 EFL teachers	Rractance and SI effect on EFL teachers burnout	SISRI-24, King and DeCicco (2009)	SI negatively correlates to psychological reactance and burnout; SI partially mediates the relationship between reactance and burnout

Table 2. SISRI-24 worldwide validation data from selected studies.

Geographical area	Validation population	α Cronbach
North America	Total population 1039	α 0,92 to 0,94 (total)
Canada	619 undergraduates	α 0,92 (total)
	420 adults and university students	α 0,94 (total)
Europe	Total population 4699	α 0,92 (total)
Greece	1794 general population	α 0,92 (total)
Portugal	767 general population (80% university students)	α 0,84 to 0,86 (dimensions)
Poland	833 general population	α 0,77 to 0,88 (dimensions)
England	605 general population	α 0,77 to 0,88 (dimensions)
	700 college teachers	α 0,74 to 0,87 (dimensions)
Middle East	Total population 3855	α 0,68 to 0,92 (total)
Turkey	57 handicapped athletes	α 0,88 (total)
Jordan	716 university students	α 0,86 (total)
Iran	250 university students	α 0,87 (total)
	384 university students	α 0,89 (total)
	10 adolescents	α 0,90 (total)
	70 addiction patients	α 0,67 (total)
	260 university students	α 0,92 (total)
	200 midwives	α 0,92 (total)
	300 medical students	α 0,75 (total)
	25 rehabilitation experts	α 0,92 (total)
	120 university students	α 0,86 (total)
	211 male war veterans	α 0,68 (total)
	300 university students	α 0,89 (total)
	47 female English as Foreign Language students	α 0,86 (total)
	270 English as Foreign Language teachers	α 0,87 to 0,91 (dimensions)
	630 undergraduate nursing students	α 0,91 (total)
	5 cultural and theology experts	α 0,87 (total)
Africa	Total population 500	α 0,91 (total)
Nigeria	500 academic and administrative staff	α 0,91 (total)
Asia	Total population 408	α 0,87 (total)
Hong Kong	213 undergraduate students	α 0,87 (total)
India	125 MBA students	α 0,87 (total)
	70 Hindu Ascetics	α 0,89 to 0,95 (dimensions)
SouthEast Asia	Total population 830	α 0,88 to 0,92 (total)
Indonesia	240 Christian university students	α 0,92 (total)
Malaysia	448 nurses	α 0,92 (total)
	112 employees	α 0,88
	30 nursing and medical students	α 0,78 to 0,84 (dimensions)

Table 3. SI correlated attributes by major domains.

Human life domain	SI correlated attributes
Personal domain	resilience (+); happiness (+); emotional dysregulation (-); self-management (+); self-efficacy (+); personality traits; depression and anxiety (-); death anxiety (+); meaning in life (+); satisfaction in life (+); general, mental and spiritual health (+)
Social domain	forgiveness (+); empathy (+); favorable social behavior (+); communication skills (+); aggression (-), ethical thinking (+)
Work domain	work performance (+); academic/cognitive performance (+); job satisfaction (+); burnout and perceived stress (-); motivation (+); psychological ownership (+); commitment (+); professional self-concept (+); quality of work life (+)

(+) positive correlation; (-) negative correlation.

existential thinking and transcendental awareness, it is easily understandable that any sort of religious engagement may act as a trigger for such personal awareness, even if not essential for its development [19,23].

Higher SI was also related to married status and shared living situations and this may either come from a place of cause as of consequence, or both. When we further analyze the personal and social attributes related to SI, it is clear the implications and benefits for a shared existence scenario. For instance, higher SI relates to resilience, happiness, compassion, satisfaction in life, forgiveness, empathy, communication skills, commitment, less emotional dysregulation and less aggression. All the previous attributes can either be facilitators of a couple's relationship and/or developed and enhanced through the marital partnership, increasing SI for married people [24,26].

The overall documented implications of SI increase the evidence supporting the necessity for a long-overdue revision of the World Health Organization (WHO) definition of health to adequately reflect the impact of this domain. If recurring arguments on the ambiguity of 'spiritual' and its relatability to 'religion' may be valid points against its inclusion on a revised definition of health, perhaps a different perspective is needed [27].

From a SI perspective, one can argue that everyone should be allowed and encouraged to freely and creatively explore existential matters, become aware of their spirituality and engage in it as they see fit.

Furthermore, individuals should be encouraged to find meaning in both simple daily experiences and major life events, and to adopt a conscious metaview of life. These practices foster the self-awareness necessary for the development of SI, which has a significant impact on health and healthcare.

In fact, intervention studies aiming to improve SI in adolescents and university students have consistently reported both its success in increasing SI scores [28,29] and in reducing stress, anxiety and depression [29,30], proving the effectiveness and benefit of these interventions from early ages towards better mental health and healthier coping strategies.

On a personal level, SI has consistently been associated with resilience. The ability to find meaning in daily simplicity and to consider everyday events in the context of a bigger picture makes individuals more likely to accept adversity as a challenge and seek constructive and comforting problem-solving strategies. Different authors studied the relationship between SI and resilience with consistent significant positive correlations [31–33] and report prediction models with SI explaining variances from 10% [32] to 18% [34] on resiliency scores.

This capacity to find meaning in life in a broad sense but also in the smallest tasks, brings the also described higher sense of happiness (described SI-related variances of 19,8% [35] up to 67% [36]), higher life satisfaction [37] and fewer depression symptoms (SI accounting for 55% negative variance, according to Parattukudi et al. [38]).

The deeper self-knowledge and self-awareness cultivated through full attention to body, mind and soul/spiritual-self, enhance an individual's self-management, self-efficacy and emotional self-regulation skills. These attributes not only contribute to stronger mental and spiritual health (as evidenced by reduced depression, anxiety, and death anxiety), but also foster a greater respect for the sacredness of the physical body and better health behaviors. Such behaviors have been shown to lead to better overall health outcomes, as demonstrated in the management of cardiovascular disease and diabetes management [39–41].

As SI grows from the singularity of one's individual spirituality, it then projects widely in the 'give and take' of social interactions, becoming a practical aspect of one's cognition. These social contexts are where the personal benefits of self-awareness and self-compassion transform into a metaview of life and relationships.

When SI is high, forgiveness and empathy run easily [42,43] A mind free from pre-conceptions and judgment, with sharp ethical thinking promoted by a multi-angled and multi-level vision of the problems, is easier to communicate with and has the plasticity to adjust to the interpersonal needs in different social settings [44,45]. These favorable social behaviors that come from the understanding and acceptance of a world full of personal truths and doubts, lessens the social anxiety (as shown by Mosavinezhad et al., SI determines 42,9% of social anxiety variation [11]) and aggressive behaviors (according to Ballochi et al., SI negative impact over aggression accounts for 29,5% of its variation [46]).

In the specific domain of the workplace, it is of utmost importance for the quality of work life that individuals can derive meaning from their labor and recognize the broader impact of their work. Singla et al. demonstrated a 49.5% variance in quality of work life related to SI among college teachers [47]. The spiritual capital one is able to draw from work enhances performance, with SI documented to impact performance ranging from 31.5% to 76.7% [9,48,49]. Additionally, organizational citizenship behaviors [50] and organizational commitment have reported a direct impact from SI of 10.8% according to Handayani et al. [48], and an indirect impact on employees through managers' SI of 18% according to Dargahi and Veysi [51]. A recent scoping review on models of SI intervention programs suggests that 7–8 group sessions of 90 minutes, focusing mainly on transcendental awareness, critical existential thinking and conscious state expansion, through guided open discussions on ethical, existential and spiritual big issues and meditation or mindfulness exercises can benefit self-awareness, self-management and self-consciousness and also increase meaning in life and sense of holiness, promoting better relationships [52].

A particular subset of employees that would greatly benefit from such SI intervention programs being implemented in their pre-graduate curricula are the healthcare professionals. In a time of great advances in artificial intelligence, people crave for meaningful connections to each other, specially at times of vulnerability and disease as in grave illness or palliative care settings when existential matters are daily present for both patients and healthcare professionals. In fact, a recent systematic review on the benefits of SI training for nurses [53], consolidates evidence of significant increases in communication skills, spiritual care competence and job satisfaction, allied with reduced stress.

Nurses with higher SI also demonstrate a stronger professional self-concept, with 13.3% of the variance attributed to SI according to Hojat and Badiyepeymaiejahromi [54]. They also exhibit greater psychological ownership over their work (12,0% SI-related variance determined by Kaur et al. [12]), as they perceive their role within the universal flow of things.

This positive attitude around the workplace as well as the personal and social skills already explored that relate to higher SI, are consistently reported to prevent burnout and reduce perceived professional stress [12].

Besides personal advantages for healthcare workers, SI was also positively related to better caring behavior [12], spiritual care competency [26,55], ethical decision-making [44] and empathy [43] from nurses.

The above-mentioned scoping review on models of SI interventions [52] was also effective in compiling relevant data on the benefits of SI training for healthcare professionals. These interventions not only succeed in increasing SI levels but also result in post-intervention reductions in perceived stress, higher job satisfaction, improved spiritual care competence, and enhanced communication skills.

Healthcare professionals are very exposed to profound suffering, adversity, and challenges, encompassing not only physical and mental needs but also ethical and spiritual dilemmas. Thus, patients and their families need compassionate care, tailored to their individual and unique needs. Given the compelling arguments in favor of the positive implications of SI, it seems only fitting that this relevant topic finds its way into all fields of healthcare education curricula [56], benefiting both healthcare workers and patients.

Strengths and limitations

The major strengths of this ScR come from its broad search strategy and systematic methodology, which allowed for a thorough mapping of the existing evidence on SI. The quality of the reported evidence was also guaranteed through double independent analysis and methodology check of all screened manuscripts by two independent reviewers. Last, but not least, we proceeded to a careful integration and interpretation of the results in the light of the current knowledge.

Although our search included different languages (English, French, Spanish, and Portuguese), the subsequent identification of significant contributions to the study of SI from Oriental and Arabic countries may have limitations, as it may have missed publications in these languages. Since no grey literature was included for analysis, there is a possibility that early evidence on SI or evidence from areas of knowledge that do not typically undergo peer review may have been overlooked.

Conclusion

Integrating basic SI stimulation interventions into global children's educational programs, from early years to the higher education (specially in healthcare professions), may be the simplest, most efficient and cost-effective approach to ensure a stronger mental health foundation for our future generations. Additionally, it can promote healthy coping mechanisms, health-related behaviors, and foster the development of more compassionate and tolerant adults.

From the above-exposed evidence, it is clear that SI training is effective in increasing SI levels and brings along major benefits towards general health, mental and spiritual health.

Anticipated main challenges toward implementing SI stimulation interventions include the risk of them being overshadowed by religious perspectives. Hence, we propose that general recommendations for SI training programs, encompassing both content and application, be developed through culturally diverse expert consensus. These interventions should always be supervised by a selected group of counselors who can ensure that the training protocols are being adequately applied. Pre-test/post-test evaluations should also be undertaken to provide further evidence of the adequacy of the protocol and to facilitate additional research and exploration of the impact of SI interventions.

Author contributions

The study conception and design were performed by Cristina Teixeira Pinto, Sara Pinto and Rui Nunes. Material preparation, data collection and analysis were performed by Cristina Teixeira Pinto, Lúcia Guedes and Sara Pinto. The first draft of the manuscript was written by Cristina Teixeira Pinto and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Ethics and consent

Due to the revision nature of the work, no formal ethics approval was required.

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2.2. Stage II: Exploratory and diagnostic phase

Moving from the conceptual framework to clinical scenarios, this section details the diagnostic findings derived from the field study involving family caregivers of adult cancer patients in palliative care. The section is focused on scientific paper 4, and addresses research question 3 (objectives 4 and 5) by uncovering the spiritual intelligence profile of this specific population. These empirical insights provide a clear understanding of the factors that shape family caregivers' resilience and burden, serving as the essential bridge between theoretical knowledge and the actual design of the intervention.

2.2.1. Spiritual Intelligence and Family Caregivers' Self-Efficacy in End-of-Life: A Cross-Sectional Study

Pinto, C. T., Coelho, A., Castro, L., Nunes, R., Pinto, S.

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RESEARCH Open Access

Spiritual intelligence and family caregivers' self-efficacy in end-of-life: a cross-sectional study

Cristina Teixeira Pinto[1,2*], Ângela Coelho[1], Luísa Castro[3], Rui Nunes[4] and Sara Pinto[4]

Abstract

Background Burden influences caregiving experiences for family caregivers and patients. While family caregivers are crucial in end-of-life, their burden remains under-researched, particularly regarding the role of spiritual intelligence in shaping this experience.

Objectives To explore the level and type of burden of family caregivers of palliative adult cancer patients and its relationship to variables related to: caregiver; patient; and caregiving process; exploring associated factors of burden.

Methods A quantitative, cross-sectional study including adult, unpaid, primary family caregivers providing support in at least one daily life activity to adult cancer patients. Caregiver burden was assessed using the Zarit Caregiver Burden Scale and spiritual intelligence through Spiritual Intelligence Self-Assessment Inventory. Linear regression analysis was used to examine significant relationships. The study followed the STROBE guidelines for reporting observational research and ethical procedures were ensured.

Results The mean burden level was intense, predominantly on burden subdimension "Expectations Towards Caregiving". Significant correlations were found between burden and caregiver age, social support, financial status, caregiver having chronic diseases or being on pain medication and resilience. The multivariable model identified key associated factors: caregiver's older age, having no social support, having other dependents, and lower resilience, explaining approximately 40% of the burden. Spiritual Intelligence subdimension of "Personal Meaning Production" was associated with lower burden on "Self-efficacy Perception" subdimension.

Conclusions Family caregivers face specific struggles. Policies should provide structured support and financial resources. Interventions to prevent burden should include resilience and spiritual intelligence training, aiming to improve caregivers' self-efficacy.

Keywords Caregivers, Caregiver Burden, Cancer, Palliative Care, Self Efficacy, Spiritual Intelligence

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Introduction

The strain that vulnerable populations put on their families and their need for assistance has captured political attention in recent years, leading to the implementation of policies that support family caregivers in many European countries [1]. The estimated value of the work performed by family caregivers in Europe rounds 2.4% of the region's gross domestic product, demonstrating their enormous impact on society [1]. However, the financial toxicity of caregiving places substantial daily strain on family caregivers [2]. This is especially relevant as increased life expectancy has led to a rise in chronic illnesses, heightening the demand for medical care and family caregiver support. Thus, the need for family caregivers continues to grow worldwide and is projected to further increase, with the number of dependents in Europe expected to rise by 36% between 2013 and 2060 [3, 4].

Yet, most family caregivers do not actively choose this role but rather assume it due to family circumstances. Within the palliative care context, their pivotal role is especially recognized and relevant, as many patients prefer home-based care and to die at home. This preference poses significant challenges for family caregivers, given society's limited capacity to address the complex needs of palliative patients, often resulting in caregiver burden [5]. While providing care to patients with chronic and advanced illnesses, family caregivers are routinely tasked with self-care assistance, medication management, medical appointment accompaniment, healthcare communication, and financial paperwork [6].

Caring for patients with advanced cancer in end-of-life is especially challenging [7]. While a cancer diagnosis brings stigma, fear and uncertainty, family caregivers endure long-term stress, escalating responsibilities, and multifaceted burden across physical, emotional, social, and financial domains [8]. Patient symptom severity and relationship dynamics further influence caregiver burden. Indeed, terminal cancer care can therefore compromise caregiver's health, quality of life, and contribute to emotional and spiritual distress [9].

Beyond these challenges and instrumental tasks, family caregivers also provide emotional, spiritual and social support, while directly experiencing their loved one's suffering and, sometimes, feeling anticipatory grief [10, 11]. They significantly influence patient decision-making, particularly regarding end-of-life choices and place of death [5]. While caregiving can lead to physical, psychological, emotional, social, and financial burdens, it can also foster feelings of purpose, gratitude, and strengthened bonds [5, 12].

The ability to find meaning and purpose through such challenges is closely linked to the caregiver's spiritual dimension, as it goes beyond personal beliefs or religious practices, involving the capacity to apply values and worldviews in daily problem-solving. This capacity is addressed by the emerging concept of spiritual intelligence, which has gained growing attention as a distinctive cognitive asset supporting adaptive responses, especially in demanding contexts like family caregiving [13, 14].

According to King's model, spiritual intelligence comprises four domains: critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion. Unlike spirituality or religiosity, which focus on beliefs, practices, or spiritual well-being, spiritual intelligence centers on mobilizing spiritual resources for practical adaptation, resilience, and growth [14, 15]. It is not dependent on religious affiliation and can be enhanced and measured across diverse populations.

Despite its relevance, spiritual intelligence remains underexplored, especially in Western societies and within palliative care [16, 17].

Addressing caregivers' needs, including emotional, psychological, practical and spiritual support, continues to be essential [18]. Competency training, with a particular emphasis on spiritual care and the development of spiritual intelligence [17] can cultivate meaning and resilience, though this aspect is often undervalued, even within end-of-life care contexts [19].

Caregiving is thus a paradoxical experience, encompassing both positive and negative emotions [5, 20], but the presence of meaning and purpose has been associated to reduced caregiver burden, while its absence may undermine interpersonal relationships and self-efficacy, intensifying burden [21, 22]. Overburdened caregivers may struggle to meet patients' needs, which can in turn affect patients' well-being, lead to institutionalization or hospital admission, and change patient preferences for home-based end-of-life care [5, 20, 23].

Understanding factors associated with greater burden can help to identify family caregivers at risk and plan interventions that prevent the negative consequences of burden to both caregiver and patient. Yet, recognizing the internal resources that can mitigate this burden, such as spiritual intelligence and self-efficacy, is equally crucial for providing comprehensive support. Exploring how spiritual intelligence relates to self-efficacy in caregiving offers a valuable new perspective and may help address both the challenges and strengths in palliative care.

Objectives

This study aims to (i) explore the level and type of burden experienced by family caregivers of palliative care cancer patients; (ii) analyze the associations between the caregivers' burden and a set of variables including: caregiver sociodemographic characteristics, caregiving-related

factors, caregiver spiritual intelligence dimension of "Personal Meaning Production", caregiver resilience and patient clinical and sociodemographic characteristics; and determine potential associated factors of caregiver burden.

Methods

Study design and setting

We conducted a cross-sectional quantitative study from 1st July 2021 to 1st May 2024 in a Portuguese Palliative Care Outpatient service. The study was reported according to the *Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)* guidelines for cross-sectional studies (Additional File 1) [24].

Participants

This study focused on family caregivers of adult cancer patients followed by a Portuguese palliative care outpatient service.

In the context of palliative care, it is important to highlight that the concept of family frequently includes non-blood-related significant persons. For our study, we adopted a broad definition of family caregiver, encompassing relationships based on blood (consanguinity), law (legal ties), or affection (affective bonds), that assist patient, with no paid retribution, with any daily life activity that the patient has become unable to fulfill on his own. This assistance includes a wide range of activities that may differ in nature, duration, and intensity [25].

Eligibility criteria included all adult primary family caregivers, unpaid, who provided continuous support to adult cancer patients. Family caregivers who were paid for their services, cognitively impaired, as well as those caring for patients who were institutionalized (e.g. in nursing homes or assisted living residences) or only assessed by the palliative care team during hospital admission, were excluded.

Participants were recruited using a convenience sampling approach. The minimal sample size to collect was 64, considering a multiple regression model with 5 predictors, a medium-large effect size ($f^2 = 0.25$), a 0.05 type I error probability and a power of 85%.

Data collection

Data were collected via a structured questionnaire comprising three sections: (i) caregiver sociodemographics and health, (ii) caregiver burden [26, 27], spiritual intelligence [14, 28], resilience [29, 30], and (iii) patient sociodemographics and clinical data (completed by a palliative care physician). The questionnaire was administered either in-person on-paper at the outpatient service or online via Google Forms®, with professional support available for both modalities to assist participants and minimize missing data. The online option was included when COVID-19 restrictions required remote consultations (mainly between 2021 and mid-2022), and as restrictions eased from mid-2022, participants were allowed to choose whichever method they preferred.

Caregiver burden was assessed using the 22-item Zarit Burden Interview (Portuguese version; Cronbach's $\alpha = 0.93$), which evaluates four dimensions: impact of caregiving, interpersonal relationships, expectations towards caregiving, and self-efficacy perception [27]. In our sample, this tool demonstrated high internal consistency (Cronbach's $\alpha = 0.91$). Responses were rated on a 5-point Likert scale (1 = never, 5 = always), yielding scores ranging from 22 to 110, and categorized as no burden (< 46), moderate burden (46–56), and intense burden (> 56).

Spiritual intelligence was assessed using the Portuguese version of the King's Spiritual Intelligence Self-Report Inventory, a 16-item self-reported questionnaire rated on a 5-point Likert scale. This instrument, in the Portuguese version, assesses three dimensions ("Critical Existential Thinking", "Personal Meaning Production" and "Transcendental Awareness"), each reflecting cognitive aspects of spiritual intelligence [28]. In this study, we focused primarily on the "Personal Meaning Production" dimension (Cronbach's $\alpha = 0.84$). Higher scores indicate greater spiritual intelligence. In our sample, Cronbach's α for this dimension was 0.81.

Resilience was evaluated using the 33-item Friborg's Resilience Scale for Adults (Portuguese version), which measures six dimensions (self-perception, social competence, family coherence, social resources, personal structure, and future planning; Cronbach's $\alpha = 0.90$) [30]. This study's Cronbach's α was 0.91. Responses were rated on a 7-point Likert scale, yielding scores from 33 to 231.

Ethical procedures

This study received ethical approval, and comprehensive measures were implemented to ensure participant confidentiality and data protection (questionnaires were anonymous and paired between caregiver and patient by a randomly generated single-use 4-character code; the database was password protected and only available to the research team). All participants (family caregivers and patients) provided informed consent before enrollment.

Study variables

The dependent variable was the total Zarit Burden Scale score. Independent variables included caregiver characteristics (e.g., gender, age, relationship to patient, social support, health, employment status), caregiving factors (e.g., support, duration, hours, prior experience), caregiver spiritual intelligence "Personal Meaning Production" score, caregiver resilience score and patient

variables (e.g., gender, age, Palliative Performance Scale (PPS) score [31], main complaint, Edmonton Symptom Assessment Scale (ESAS) score [32], palliative care follow-up duration).

Table 1 Characteristics of study participants (*N*=64 dyads)

Patient Variables	
Patient Gender, *n* (%)	
Male	29 (45.3)
Female	35 (54.7)
Caregiver Variables	
Caregiver Gender, *n* (%)	
Male	18 (28.1)
Female	46 (71.9)
Relationship to Patient, *n* (%)	
Spouse or Sibling	21 (32.8)
Descendent or In-Law	43 (67.2)
Family Type, *n* (%)	
Nuclear	55 (87.5)
Extended	8 (12.5)
Social Support, *n* (%)	
None or Close to None	37 (67.2)
Some Support	21 (32.8)
Working Status, *n* (%)	
Full-time	21 (32.8)
Part-time	5 (7.8)
Others (Unemployed, Retired, Leave)	38 (59.4)
Financial Status, *n* (%)	
Unstable	40 (62.5)
Stable	24 (37.5)
Chronic Diseases, *n* (%)	
Yes	37 (57.8)
No	27 (42.2)
Use of Chronic Medication, *n* (%)	
Yes	45 (70.3)
No	19 (29.7)
Caregiving Variables	
Help in Caregiving, *n* (%)	
Yes	39 (60.9)
No	25 (39.1)
Previous Experience, *n* (%)	
Yes	24 (37.5)
No	40 (62.5)
Other Dependents, *n* (%)	
Yes	15 (23.4)
No	49 (76.6)
Zarit Caregiver Burden Scale	
Total Score, *mean* (±SD)	56.09 (±15.80)
Impact of Caregiving, *mean* (±SD)	27.20 (±9.96)
Interpersonal Relationship, *mean* (±SD)	9.95 (±4.03)
Expectations Towards Caregiving, *mean* (±SD)	14.73 (±3.20)
Self-Efficacy Perception, *mean* (±SD)	4.20 (±2.14)

SD Standard Deviation

Statistical analysis

Data collected through Google Forms® were exported to a Microsoft Excel® 2016 spreadsheet (USA). Statistical analyses were performed using SPSS® Statistics (version29.0; SPSS Inc., Chicago, Illinois, USA) and Jamovi® 2.3.28. Categorical variables were summarized using absolute and relative frequencies, n (%). Quantitative variables not deviating from normality were described with means and standard deviations, otherwise, medians and interquartile intervals were presented. Normality was assessed through histogram inspection and confirmed with Kolmogorov-Smirnov test.

For multivariable regressions, we interpreted results by examining unstandardized regression coefficients (B), 95% confidence intervals (CI), p-values (p), F-statistics, and R^2 values. We included variables with a p-value ≤ 0.20 in simple regression into the multiple regression model, setting the final model significance at $p \leq 0.05$.

Linear regression models' assumptions were verified through (i) visual analysis of the histogram to assess the normality of residuals; (ii) t-test to determine whether mean residuals were equal to zero; and (iii) plots of residuals versus the fitted predictive values to check for homoscedasticity. For each final multiple model, maximum variance inflation factors (and tolerance ranges) were reported to check for multicollinearity issues, which were considered absent when Variance Inflation Factor (VIF) < 5.

Results

Characterization of caregiver-patient dyads

The sample size met the predefined criteria. Reasons for non-participation were primarily related to the high emotional and physical burden experienced by family caregivers, leading some eligible individuals to decline participation. Consequently, a final sample of 64 dyads who met all inclusion criteria were enrolled in the study. No missing data were observed among participants, as all dyads who consented to participate completed the study assessments in full. Participants characteristics are shown in Table 1.

The patients' mean age was 75.63 ± 13.35 years, with the majority being women (54.7%). Their average PPS was 47.34% (± 13.36), indicating they were mainly bedridden or sedentary and required significant assistance. The most common symptoms were pain (45.31%), asthenia (17.2%), and dyspnea (10.9%). The reported intensity of the main symptoms was moderate (5.78 ± 1.73 on ESAS). On average, patients had been under palliative care follow-up for close to 7 months (208.59 ± 311.48 days). Additional data can be found in Additional File 2.

The mean age of family caregivers was 55.61 ± 13.48 years, with 29.7% aged 65 or older. Even though 40% of

family caregivers were still employed either full or part-time, financial instability was reported in 62.5%.

A significant majority of family caregivers were female (71.9%). In 87.5% of the cases, caregivers and patients came from nuclear families. Most caregivers (67.2%) provided care to their parents, followed by their spouses or siblings (32.8%).

More than half of the caregivers (57%) reported at least one chronic condition, with cardiovascular diseases being the most prevalent (25%), followed by musculoskeletal (21.9%) and psychiatric disorders (15.6%). Most (70.3%) caregivers reported regular use of chronic medication, primarily for hypertension (32.8%) and psychiatric conditions (29.7%) (Additional File 2).

Caregiving process and family caregiver's burden

Caregivers spent more than half their day (15 ± 9.11 h) providing care, with 43.8% offering 24-hour care, and had been doing so for close to 2 years (23.52 ± 25.24 months). Besides taking care of the patient, 23.4% also cared for other dependents and 62.5% had no previous caregiving experience.

The mean burden level in this sample was classified as intense (56.09 ± 15.80 on the Zarit Burden Scale), with 46.9% of caregivers experiencing high levels of burden and 23.4% reporting moderate burden. The most significant burden was found in the "Expectations towards caregiving" dimension (referring to the burden coming from expectations, fears and availability of the caregiver), with the highest average score per item (3.68 points). This was followed by the "Impact of caregiving" (referring to the burden related to direct caregiving tasks) (2.47 points), "Perception of self-efficacy" (reflecting the caregiver's opinion on his/her performance) (2.10 points), and "Interpersonal relationship" (referring to the burden associated to the relationship strain between caregiver and patient) (1.99 points).

Protective and risk factors

Simple linear regression analysis (Table 2) revealed significant positive correlations between caregiver burden and several variables: caregiver age, social support, financial status, caregiver having chronic diseases, the use of chronic pain medication by caregivers, as well as a significant negative correlation to resilience. Additional File 3 shows simple linear regression analysis.

The final multivariable regression model, explained 41.4% of the variance in caregiver burden (R^2=0.414; F = 10.4; $p \leq 0{,}001$). The model identified that higher caregiver age, having no help, having other dependents and lower resilience were significantly associated with increased caregiver burden.

The same analysis was subsequently run for all burden dimensions as reported in Table 2.

Considering only the modifiable variables in the multivariable models: having no help, resilience and spiritual intelligence dimension of "Personal Meaning Production" have a significant impact on burden, especially considering the "Self-Efficacy Perception" dimension.

No multicollinearity issues were detected since the maximum VIF (tolerance range) values for each model were respectively: 1.19 (0.844–0.983) in total burden; 1.25 (0.799–0.947) in impact of caregiving; 2.44 (0.411–0.930) in interpersonal relationship; 1.11 (0.899–0.974) in expectations towards caregiving; 1.17 (0.953–0.978) in self-efficacy perception.

Discussion

Over the past decades, several studies have consistently reported high burden levels among caregivers of patients with advanced or terminal cancer [33–35]. Considering the typical disease trajectory of cancer, it comes as no surprise that this study's advanced cancer patients' caregivers also experienced intense burden.

Although palliative care teams' support is considered to help lessen the caregiver's burden [36], this should not be the only avenue explored [37]. The idea of a holistic approach to the caregiver needs has been on the rise and aims to help them flourish rather than endure through the hardships [38]. Our study offers a novel contribution by specifically examining the relationship between caregiver burden and spiritual intelligence, a concept often overlooked in traditional burden research, that can potentially empower the caregiver towards better role-adjustment and both patient and self-care [16].

When examining the individual dimensions of the Portuguese version of Zarit Burden Scale, "Expectations Towards Caregiving" presented the highest impact on family caregivers' burden. This dimension refers to the caregivers' fears, concerns, availability and perception of capacity to care in a foreseeable future and reflects emotional stressors to the caregiver [27]. Caregiving in terminal cancer, although usually not as long-term as in dementia patients, can be highly emotionally strenuous. Indeed, findings from previous studies indicate that in the context of end-stage cancer, caregivers face not only the patients' frailty and suffering, but also their grief and a sense of loss of control [36]. These needs are part of a broader spectrum of caregiver burden, which manifests in a diversity of physical symptoms (sleep disorders, fatigue, pain, weakness, loss of appetite, weight loss) and/or psychological symptoms (depression, anxiety, stress) that have been associated with immunological impairment, coronary disease and even higher all-cause mortality rates [20]. Consistently with these reports, our study showed significant correlations between caregiver burden and caregiver's chronic disease as well as the need for chronic pain and/or psychiatric medication, revealing

Table 2 Caregiver total burden and its dimensions multivariable regression models (*N*=64 dyads)

Variables	Total Burden	Impact of Caregiving	Interpersonal Relationship	Expectations Towards Caregiving	Self-Efficacy Perception
	B [95% CI]	B [95% CI]	B [95% CI]	B [95% CI]	B [95% CI]
Patient Gender					
Female				Reference	
Male				1.43 [0.09, 2.77] *	
Patient PPS				-0.08 [-0.13, -0.03] **	
Patient Main Complaint ESAS					-0.50 [-0.74, -0.25] ***
Caregiver Age	0.34 [0.08, 0.59]**	0.23 [0.06, 0.40] **	0.08 [0.02, 0.14] **		
Caregiver Gender					
Female		Reference			
Male		-4.80 [-9.55, -0.04] *			
Help in Caregiving					
Yes	Reference		Reference	Reference	Reference
No	6.53 [0.07, 13.00] *		2.28 [0.63, 3.92] **	1.43 [0.05, 2.81] *	1.20 [0.37, 2.02] **
Other Dependents					
No	Reference	Reference			
Yes	10.38 [2.53, 18.23] **	6.43 [1.28, 11.57] *			
Financial Status					
Unstable				Reference	
Stable				-2.06 [-3.46, -0.66] **	
Caregiver Chronic Medication					
No					Reference
Yes					-1.45 [-2.35, -0.54] **
Resilience Total Score	-0.23 [-0.33, -0.13] ***	-0.13 [-0.19, -0.06] ***			
Self-Perception			-0.27 [-0.42, -0.13] ***		-0.12 [-0.18, -0.06] ***
Future Planning				-0.22 [-0.33, -0.10] ***	
Social Competence					
Personal Structure					
Family Coherence			-0.23 [-0.37, -0.10] ***		
Social Resources			0.19 [0.05, 0.32] **		
SI – Personal Meaning Production					-0.12 [-0.24, -0.01] *
R2	0,414	0.365	0.458	0.410	0.486
F	10.4***	8.49***	9.80***	8.07***	11.0

B B coefficient, *CI* Confidence interval. * $p \leq 0{,}05$; ** $p \leq 0{,}01$; *** $p \leq 0{,}001$. *PPS* Palliative Performance Status, *ESAS* Edmonton Symptom Assessment Scale, *SI* Spiritual Intelligence

the significant physical and emotional strain involved in caregiving.

This clinical data on the caregivers should raise the alarms on their frailty, both physical and mental, and considering that many of them don't choose this role for themselves but rather are driven to it by family dynamics, to what extent are they further sacrificing their health to comply with the caregiving duties [39].

Our study also revealed several sociodemographic factors associated with caregiver burden, largely aligning with established trends in literature. Notably, while the impact of caregiver age remains debated, our findings, with a significant proportion of elderly family caregivers, support the increased susceptibility to burden in older individuals, mirroring observations in previous studies [40].

Conversely, although prior research consistently highlights female caregivers' heightened risk of burden [41, 42], this trend was not statistically significant in our sample. However, the consistent finding across studies, including our own, of the detrimental impact of limited social support on caregiver burden underscores the crucial role of robust social networks. This aligns with evidence demonstrating the protective effects of quality

family relationships [36] and frequent family visits [43] against caregiver strain.

Furthermore, our study confirmed the positive correlation of financial instability and caregiver burden, a finding consistent with previous reports [43] The growing recognition of financial toxicity as a significant stressor for family caregivers, profoundly impacting both caregiver and patient well-being [2], highlights the urgent need for interventions addressing these challenges.

These findings emphasize the need for comprehensive caregiver assessments focusing on sociodemographic vulnerabilities. Targeted interventions, such as financial support and strengthening social networks, are crucial for mitigating burden, as proposed by OECD [4]. Socially, the necessity for robust community resources and adequate caregiver education is evident [44]. Integrating sociodemographic support into palliative care strategies is essential for improving the quality of life for both caregivers and patients [38, 45].

While direct correlations regarding the caregiving process did not reveal significant associations, multivariable analysis highlighted the detrimental impact of lacking support and managing other dependents. This aligns with previous studies [8] underscoring the complex interplay of caregiving responsibilities and support systems. Similarly, patient-related variables, though not directly correlated with overall burden, significantly influenced burden subdimensions in multivariable analysis. This reinforces prior evidence [46, 47] demonstrating that low patient performance status is a critical associated factor of caregiver strain.

These multivariable findings collectively illustrate the multifaceted nature of caregiver burden, influenced by demographic, social, economic, morbidity, patient, and family factors [45]. Recognizing this complexity is vital for developing effective interventions.

Although some factors are immutable, this study provides valuable insights into modifiable aspects of caregiver burden. By focusing on areas amenable to intervention, such as strengthening support networks and addressing patient frailty, healthcare providers and policymakers can implement targeted strategies to alleviate caregiver strain and improve overall patient and family well-being.

While significant associations were identified, the relatively small sample size ($N = 64$ dyads) may have limited the statistical power of the multivariable analyses, particularly for detecting smaller effects.

This study emphasizes the need for a holistic approach, acknowledging the diverse pressures faced by caregivers and advocating for policies that support their multifaceted needs. From a policy perspective, it is urgent to ensure adequate support for family caregivers [38] including financial assistance and formal recognition of their vital societal role, both of which are essential to provide high-quality caregiving outcomes [2, 45].

A key contribution of this study lies in highlighting the significant role of caregiver resilience and spiritual intelligence in mitigating burden. Our findings demonstrate that resilience, across all dimensions, relates to reduced burden. Moreover, the "Personal Meaning Production" dimension of spiritual intelligence significantly relates to enhanced caregiver self-efficacy, a novel finding with important clinical implications.

Although some degree of reverse causality may be considered, our findings align with other recent reports on significant inverse relationship between spiritual intelligence (especially "Personal Meaning Production" dimension) and breast cancer patients caregivers' burden [48].

In fact, spiritual intelligence has been consistently associated with positive outcomes, including improved resilience, emotional regulation, mental and spiritual health, empathy, motivation, self-efficacy, and reduced burnout, depression, and anxiety [15]. Our study extends this understanding by demonstrating its correlation to enhanced self-efficacy and reduced burden among caregivers of advanced cancer patients.

Therefore, interventions aimed at reducing caregiver burden should prioritize fostering both resilience and spiritual intelligence [17, 18, 49, 50] Special attention should be given to resilience dimensions such as "Self-perception", "Family Coherence", "Social Resources", and "Future Planning", as well as the "Personal Meaning Production" aspect of spiritual intelligence.

A recent review on interventions aiming to enhance resilience for cancer caregivers shows best results through cognitive-behavioral strategies, as well as mindfulness [50]. These same intervention methods were identified in spiritual intelligence training protocols [17].

Also, targeting resilience dimensions of "Self-perception"(self-worth), "Family Coherence" (connection and unity in making sense of life's challenges), "Social Resources" (support network from friends and community), and "Future Planning" (goals for the future) can be (at least partially) achieved by spiritual intelligence training of "Transcendental Awareness" and "Personal Meaning Production" dimensions in programs that include mindfulness, finding meaning and purpose in all daily-life experiences, time management according to meaning priority, and establishing one's life purpose, aims and short and long-term goals [17, 38, 50].

These findings carry significant clinical and social implications. The assessment of resilience and spiritual intelligence should be urgently incorporated into clinical practice, enabling the identification of caregivers at risk of overload. Targeted interventions, such as resilience training programs and spiritual intelligence development

practices, can be implemented to strengthen these resources in caregivers [17, 18, 49, 50].

Strengths and limitations

The primary strength of this study lies in its novel contribution to the understanding of caregiver burden, particularly by exploring it from the unique perspective of caregivers' spiritual intelligence. To our knowledge, this makes it one of the first studies to delve into this crucial aspect, especially within the palliative care context.

Beyond this innovative focus, the study also gains strength from its global relevance, reflecting international trends in caregiver burden. It provides invaluable firsthand perspectives and insights from family caregivers of palliative care patients that would not be accessible through proxy studies. This direct approach offers a deeper understanding of caregivers' experiences, particularly during the delicate end-of-life phase, when 'overkeeping' is common. Crucially, while the focus in end-of-life care often remains predominantly on the patient, with family caregivers frequently being proxies, our study distinctly shifts this lens to directly examine their unique needs and experiences.

The use of validated instruments also enhances result reliability, contributing novel knowledge, particularly within the Portuguese context, and exploring innovative variables like caregiver health and spiritual intelligence. Nevertheless, while the Portuguese versions of Zarit Burden Scale and Friborg's Resilience Scale for Adults have both been extensively used and its reliability thus strengthened, the Portuguese version of SISRI-24 is still recent and needs further validation efforts for better psychometric robustness.

While design limitations, such as convenience sampling and sample size, are acknowledged, they are common in exploratory studies and do not undermine the findings' relevance. The cross-sectional design limits causality but provides a valuable snapshot of variable associations. Palliative care team follow-up, though limiting generalizability, highlights these services' importance. Sample size may have limited relationship identification, and topic complexity may have left some variables unexplored.

Conclusions

Family caregivers of advanced cancer patients face a complex and intense burden, rooted in their physical and psychological vulnerabilities, alongside social and financial inequities. Our findings thoroughly explored different dimensions of caregiver burden and identified specific struggles within the "Expectations Towards Caregiving" and identify associated factors such as older age, lack of social support, additional dependents, and lower resilience.

Crucially, our study points to the powerful role of internal resources, demonstrating that spiritual intelligence, particularly "Personal Meaning Production", relates to significantly lower "Self-efficacy Perception" dimension of burden scores. Acknowledging this need to strengthen caregivers' coping mechanisms through a spiritual approach, enhancing the ability to draw meaning from adverse experiences is the major take home message of this research.

Therefore, policies must prioritize structured support, including spiritual competency training and financial resources to address these systemic inequities. Furthermore, interventions designed to prevent caregiver burden should specifically target and enhance resilience and spiritual intelligence, thereby strengthening caregivers' self-efficacy.

Future research with larger, diverse populations is essential to consolidate this evidence and further elucidate contributing factors to caregiver burden in different cultural and subgroup settings. Comparative studies of interventions efficacy can help tailor these interventions to achieve ideal outcomes in caregiving as well as in caregiver general and mental health.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12904-026-02119-8.

Additional file 1: STROBE Statement checklist for cross-sectional studies.

Additional file 2: Full descriptive statistics on caregiver, caregiving process and patient variables.

Additional file 3: Linear regression analysis of total burden and it's dimensions.

Transparency declaration

SP (the guarantor of the study) declares that the manuscript is an honest, accurate, and transparent account of the study reported; no important aspects of the study have been omitted, and any discrepancies from the planned (and, if relevant, registered) study have been explained.

Authors' contributions

CTP, SP and RN designed the study and implemented it. CTP and AC collected the data and SP, RN and LC contributed to data management. CTP and LC performed the statistical analysis. RN and SP provided methodological guidance and oversight. CTP drafted the manuscript with input from all authors. All authors reviewed and approved the final version for publication. SP is the guarantor of the study.

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Data availability

All essential data supporting the findings of this study are included in the article. The broader dataset is part of an ongoing PhD project and, for that reason, is not publicly available at this stage. However, it may be shared by the corresponding author upon reasonable request.

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Additional File 1. STROBE Statement checklist for cross-sectional studies.

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	1
		Introduction	
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	2-3
Objectives	3	State specific objectives, including any prespecified hypotheses	3-4
		Methods	
Study design	4	Present key elements of study design early in the paper	4
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	4
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	4-5
Bias	9	Describe any efforts to address potential sources of bias	4-5
Study size	10	Explain how the study size was arrived at	4
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	5-6
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	5-6
		(*b*) Describe any methods used to examine subgroups and interactions	5-6
		(*c*) Explain how missing data were addressed	4
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	Not applicable
		(*e*) Describe any sensitivity analyses	Not applicable
		Results	
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	6
		(b) Give reasons for non-participation at each stage	6
		(c) Consider use of a flow diagram	Not applicable

Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	6-7
		(b) Indicate number of participants with missing data for each variable of interest	Not applicable
Outcome data	15*	Report numbers of outcome events or summary measures	7-8
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Appendix C
		(*b*) Report category boundaries when continuous variables were categorized	Not applicable
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	Not applicable
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	Not applicable
		Discussion	
Key results	18	Summarise key results with reference to study objectives	8-11
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	11
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	8-11
Generalisability	21	Discuss the generalisability (external validity) of the study results	8-11
		Other information	
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	12

Checklist retrieved from:

Equator Network. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)Statement: guidelines for reporting observational studies. Equator Network: Enhancing the quality and transparency of health research. Updated March 6, 2023. Accessed July 1, 2025. https://www.equator-network.org/wp-content/uploads/2015/10/STROBE_checklist_cross-sectional.docx.

Additional File 2. Full descriptive statistics on caregiver, caregiving process and patient variables. (N=64 dyads)

Patient Variables	
Patient Age, *mean* (±SD)	75.63 (±13.35)
Patient Gender, *n* (%)	
Male	29 (45.3)
Female	35 (54.7)
Follow-up Time (days), *mean* (±SD)	208.59 (±311.48)
Palliative Performance Status, *mean* (±SD)	47.34 (±13.36)
Main Symptom Reported, *n* (%)	
Pain	29 (45.3)
Asthenia	11 (17.2)
Dyspnea	7 (10.9)
Agitation	5 (7.8)
Gastrointestinal symptoms	5 (7.8)
Anxiety and Depression	3 (4.7)
Insomnia	3 (4.7)
Others	1 (1.6)
Main complaint ESAS score, *mean* (±SD)	5.78 (±1.73)
Caregiver Variables	
Caregiver Age, *mean* (±SD)	55.61 (±13.48)
Caregiver Gender, *n* (%)	
Male	18 (28.1)
Female	46 (71.9)
Relationship to Patient, *n* (%)	
Spouse or Sibling	21 (32.8)
Descendent or In-Law	43 (67.2)
Family Type, *n* (%)	
Nuclear	55 (87.5)
Extended	8 (12.5)
Social Support, *n* (%)	
None or Close to none	37 (67.2)
Some support	21 (32.8)

Working Status, *n* (%)	
Full-time	21 (32.8)
Part-time	5 (7.8)
Others (Unemployed, Retired, Leave)	38 (59.4)
Financial Status, *n* (%)	
Unstable	40 (62.5)
Stable	24 (37.5)
Chronic Diseases, *n* (%)	
Yes	37 (57.8)
No	27 (42.2)
Chronic Cardiovascular Disease, *n* (%)	
Yes	16 (25.0)
No	48 (75.0)
Chronic Respiratory Disease, *n* (%)	
Yes	6 (9.4)
No	58 (90.6)
Chronic Metabolic Disease, *n* (%)	
Yes	9 (14.1)
No	55 (85.9)
Chronic Psychiatric Disease, *n* (%)	
Yes	10 (15.6)
No	54 (84.4)
Chronic Muscle-Skeletal Disease, *n* (%)	
Yes	14 (21.9)
No	50 (78.1)
Other Chronic Diseases, *n* (%)	
Yes	8 (12.5)
No	56 (87.5)
Use of Chronic Medication, *n* (%)	
Yes	45 (70,3)
No	19 (29,7)
Hypertension Medication, *n* (%)	
Yes	21 (32.8)
No	43 (67.2)

Respiratory Medication, *n* (%)	
Yes	2 (3.1)
No	62 (96.9)
Cholesterol Medication, *n* (%)	
Yes	13 (20.3)
No	51 (79.7)
Metabolic Medication, *n* (%)	
Yes	5 (7.8)
No	59 (92.2)
Psychiatric Medication, *n* (%)	
Yes	19 (29.7)
No	45 (70.3)
Chronic Pain Medication, *n* (%)	
Yes	7 (10.9)
No	57 (89.1)
Other Chronic Medication, *n* (%)	
Yes	12 (18.8)
No	52 (81.3)
Caregiving Variables	
Duration of Caregiving (months), *mean* (±SD)	23.52 (±25.24)
Hours of Caregiving per Day, *mean* (±SD)	15.17 (±9.11)
Help in Caregiving, *n* (%)	
Yes	39 (60.9)
No	25 (39.1)
Previous Experience, *n* (%)	
Yes	24 (37.5)
No	40 (62.5)
Other Dependents, *n* (%)	
Yes	15 (23.4)
No	49 (76.6)
Zarit Caregiver Burden Scale	
Total Score, *mean* (±SD)	56.09 (±15.80)
Impact of Caregiving, *mean* (±SD)	27.20 (±9.96)

Interpersonal Relationship, *mean* (±SD)	9.95 (±4.03)
Expectations Towards Caregiving, *mean* (±SD)	14.73 (±3.20)
Self-Efficacy Perception, *mean* (±SD)	4.20 (±2.14)

Footnote: SD, Standard Deviation. ESAS, Edmonton Symptom Assessment Scale.

Additional File 3. Linear regression analysis of total burden and it's dimensions (N=64).

Simple Linear Regression	Total Burden Score		Impact of Caregiving		Interpersonal Relationships		Expectations Towards Caregiving		Perception of Self-Efficacy	
	B [CI 95%]	P-value	B [CI 95%]	P-value	B [CI 95%]	P-value	B [CI 95%]	P-value	B [CI 95%]	P-value
Patient Variables										
Gender										
Male	Reference		Reference		Reference		Reference		Reference	
Female	-7.46 [-15.22; 0.31]	0.059	-5.18 [-9.87; -0.48]	0.031*	-1.03 [-2.98; 0.92]	0.300	-1.37 [-2.90; 0.16]	0.079	0.12 [-0.93; 1.16]	0.823
Age	0.13 [-0.17; 0.43]	0.396	0.10 [-0.09; 0.28]	0.310	0.03 [-0.05; 0.10]	0.503	0.01 [-0.05; 0.07]	0.828	-0.00 [-0.04; 0.04]	0.961
Literacy										
None or basic	Reference		Reference		Reference		Reference		Reference	
Mid-level to high education	2.50 [-5.77; 10.80]	0.548	1.58 [-3.45; 6.61]	0.537	0.35 [-1.70; 2.38]	0.740	2.11 [-1.41; 1.83]	0.799	0.36 [-0.72; 1.44]	0.512
Palliative Performance Status	-0.09 [-0.39; 0.21]	0.561	-0.05 [-0.24; 0.14]	0.583	0.02 [-0.06; 0.09]	0.674	-0.06 [-0.12; 0.00]	0.057	0.01 [-0.04; 0.05]	0.779
Follow-up Time	0.00 [-0.01; 0.02]	0.696	0.00 [-0.01; 0.01]	0.948	0.00 [-0.00; 0.00]	0.593	0.00 [-0.00; 0.00]	0.842	0.00 [0.00; 0.00]	0.011*
Main complaint ESAS score	0.24 [-2.09; 2.57]	0.836	0.37 [-1.09; 1.84]	0.612	0.03 [0.56; 0.62]	0.924	0.32 [-0.14; 0.79]	0.171	-0.48 [-0.77; -0.19]	0.002**

Caregiver Variables										
Gender										
Male	Reference		Reference		Reference		Reference		Reference	
Female	5.16	0.244	4.30	0.110	0.71	0.523	1.10	0.208	-0.95	0.099
	[-3.60; 13.91]		[-0.98; 9.58]		[-1.46; 2.88]		[-0.61; 2.81]		[-2.09; 0.18]	
Age	0.36	0.015*	0.18	0.055	0.11	0.003**	0.05	0.069	0.02	0.459
	[0.07; 0.64]		[0.00; 0.36]		[0.04; 0.18]		[-0.00; 0.11]		[-0.03; 0.06]	
Relationship to patient										
Spouse or sibling	Reference		Reference		Reference		Reference		Reference	
Descendent or in-law	-7.23	0.076	-3.31	0.202	-2.20	0.033*	-1.88	0.020*	0.16	0.776
	[-15.22; 0.75]		[-8.40; 1.78]		[-4.21; -0.18]]		[-3.48; -0.29]		[-0.95; 1.27]	
Family Type										
Extended	Reference		Reference		Reference		Reference		Reference	
Nuclear	-5.89	0.328	-4.05	0.273	-1.05	0.484	-0.30	0.800	-0.48	0.547
	[-17.83; 604]		[11.31; 3.20]		[-4.00; 1.90]		[-2.66; 2.05]		[-2.05; 1.09]	
Social Support										
Some support	Reference		Reference		Reference		Reference		Reference	
None or close to none	8.17	0.033*	4.20	0.086	1.71	0.083	1.66	0.033*	0.61	0.253
	[0.66; 15.68]		[-0.60; 9.00]		[-0.23; 3.65]		[0.13; 3.18]		[-0.44; 1.65]	
Literacy										
None or basic	Reference		Reference		Reference		Reference		Reference	
Mid-level to high education	0.42	0.917	0.62	0.805	-0.53	0.600	-1.17	0.137	1.50	0.003**
	[-7.60; 8.44]		[-4.26; 5.49]		[-2.50; 1.44]		[-2.71; 0.37]		[0.52; 2.49]	

Working Status										
Not Working (Unemployed, Retired, Leave)	Reference		Reference		Reference		Reference		Reference	
Working (Full or Part-time)	-6.64	0.099	-2.93	0.238	-2.12	0.031*	-0.65	0.417	-0.93	0.080
	[-14.6; 1.29]		[-7.81; 1.94]		[-4.05; -0.20]		[-2.23; 0.92]		[-1.96; 0.11]	
Financial Status										
Stable	Reference		Reference		Reference		Reference		Reference	
Unstable	8.08	0.039*	4.99	0.044*	1.06	0.301	1.71	0.031*	0.33	0.552
	[0.40; 15.76]		[0.14; 9.84]		[-0.95; 3.06]		[0.16; 3.26]		[-0.75; 1.40]	
Chronic Diseases										
No	Reference		Reference		Reference		Reference		Reference	
Yes	7.59	0.049*	4.84	0.046*	2.03	0.038*	1.21	0.127	-0.48	0.367
	[0.05; 15.14]		[0.08; 9.59]		[0.11; 4.00]		[-0.34; 2.76]		[-1.53; 0.57]	
Chronic Cardiovascular Disease										
No	Reference		Reference		Reference		Reference		Reference	
Yes	2.04	0.658	0.40	0.890	1.48	0.194	-0.23	0.803	0.40	0.517
	[-7.13; 11.22]		[-5.19; 5.98]		[-0.75; 3.71]		[-2.03; 1.57]		[-0.80; 1.59]	
Chronic Respiratory Disease										
No	Reference		Reference		Reference		Reference		Reference	
Yes	2.04	0.842	1.62	0.703	-0.13	0.939	0.66	0.627	-0.78	0.391
	[-12.28; 15.01]		[-6.68; 9.91]		[-3.49; 3.23]		[-2.01; 3.33]		[-2.55; 1.00]	

Chronic Metabolic Disease											
	No	Reference		Reference		Reference		Reference		Reference	
	Yes	2.04	0.802	0.93	0.794	0.83	0.563	0.44	0.701	-0.75	0.320
		[-9.10; 12.88]		[-6.03; 7.89]		[-1.98; 3.64]		[-1.80; 2.68]		[-2.24; 0.73]	
Chronic Psychiatric Disease											
	No	Reference		Reference		Reference		Reference		Reference	
	Yes	-2.01	0.715	-0.24	0.944	0.06	0.968	-0.87	0.424	-0.95	0.187
		[-12.95; 8.94]		[-6.91; 6.43]		[-2.64; 2.75]		[-3.00; 1.26]		[-2.36; 0.46]	
Chronic Muscle-Skeletal Disease											
	No	Reference		Reference		Reference		Reference		Reference	
	Yes	6.92	0.149	5.23	0.073	1.25	0.298	1.35	0.155	-0.90	0.154
		[-2.54; 16.38]		[-0.49; 10.94]		[-1.10; 3.60]		[-0.51; 3.20]		[-2.14; 0.34]	
Other Chronic Diseases											
	No	Reference		Reference		Reference		Reference		Reference	
	Yes	6.46	0.282	4.05	0.273	0.23	0.878	2.45	0.035*	0.20	0.806
		[-5.45; 18.38]		[-3.20; 11.31]		[-3.20; 2.73]		[0.17; 4.72]		[-1.38; 1.77]	
Use of Chronic Medication											
	No	Reference		Reference		Reference		Reference		Reference	
	Yes	5.00	0.258	3.84	0.156	1.25	0.256	1.02	0.243	-1.11	0.053
		[-3.76; 13.76]		[-1.46; 9.14]		[-0.91; 3.41]		[-0.69; 2.74]		[-2.23; 0.02]	
Hypertension Medication											
	No	Reference		Reference		Reference		Reference		Reference	
	Yes	-0.64	0.881	-0.73	0.782	0.21	0.842	0.25	0.764	-0.37	0.508
		[-9.11; 7.84]		[-5.88; 4.43]		[-1.87; 2.30]		[-1.40; 1.91]		[-1.48; 0.73]	

Respiratory Medication										
	No	Reference		Reference		Reference		Reference		Reference	
	Yes	8.16	0.476	7.02	0.319	-0.47	0.871	3.37	0.133	-1.76	0.244
		[-14.61; 30.93]		[-6.79; 20.82]		[6.10; 5.16]		[-1.03; 7.77]		[-4.72; 1.20]	
Cholesterol Medication										
	No	Reference		Reference		Reference		Reference		Reference	
	Yes	-6.01	0.224	5.18	0.084	-0.81	0.513	0.43	0.663	-0.45	0.495
		[-15.78; 3.77]		[-11.06; 0.70]		[-3.24; 1.62]		[-1.50; 2.36]		[-1.74; 0.84]	
Metabolic Medication										
	No	Reference		Reference		Reference		Reference		Reference	
	Yes	4.02	0.589	3.90	0.394	1.35	0.466	-0.15	0.922	-1.09	0.266
		[-10.77; 18.81]		[-5.07; 12.87]		[-2.28; 4.99]		[-3.05; 2.76]		[-3.01; 0.83]	
Psychiatric Medication										
	No	Reference		Reference		Reference		Reference		Reference	
	Yes	4.81	0.269	3.60	0.176	0.22	0.843	1.73	0.041*	-0.74	0.198
		[-3.82; 13.43]		[-1.62; 8.83)		[-1.93; 2.36]		[0.07; 3.38]		[-1.86; 0.39]	
Pain Medication										
	No	Reference		Reference		Reference		Reference		Reference	
	Yes	18.50	0.002**	11.32	0.002**	3.90	0.011*	2.70	0.028*	0.57	0.498
		[7.07; 29.94]		[-4.08; 18.56]		[0.91; 6.89]		[0.30; 5.11]		[-1.09; 2.23]	

Other Medications											
	No	Reference		Reference		Reference		Reference		Reference	
	Yes	1.63	0.750	2.31	0.463	-0.76	0.550	1.15	0.255	-1.07	0.108
		[-8.56; 11.81]		[-3.86; 8.49]		[-3.27; 1.74]		[-0.83; 3.12]		[-2.38; 0.24]	
Caregiving Variables											
Help											
	Yes	Reference		Reference		Reference		Reference		Reference	
	No	6.80	0.093	2.62	0.297	1.98	0.046*	1.36	0.089	0.85	0.112
		[-1.17; 14.77]		[-2.30; 7.54]		[0.03; 3.93]		[-0.21; 2.92]		[-0.20; 1.89]	
Duration (months)		0.00	0.995	-0.00	0.991	0.00	0.973	0.00	0.841	-0.00	0.792
		[-0.16; 0.16]		[-0.10; 0.10]		[-0.04; 0.04]		[-0.03; 0.04]		[-0.02; 0.02]	
Hours per day		0.20	0.368	0.15	0.286	-0.02	0.731	0.08	0.079	-0.01	0.787
		[-0.24; 0.64]		[-0.13; 0.42]		[-0.13; 0.09]		[-0.01; 0.17]		[-0.07; 0.05]	
Previous Experience											
	Yes	Reference		Reference		Reference		Reference		Reference	
	No	-4.78	0.244	-3.61	0.151	-1.14	0.264	0.11	0.895	-0.14	0.796
		[-12.91; 3.35]		[-8.53; 1.17]		[-3.14; 0.86]		[-1.50; 1.71]		[-1.22; 0.93]	
Other Dependents											
	Yes	Reference		Reference		Reference		Reference		Reference	
	No	-6.23	0.183	-4.44	0.121	-0.58	0.620	-0.96	0.304	-0.26	0.681
		[-15.49; 3.02]		[-10.05; 1.17]		[-2.89; 1.72]		[-2.78; 0.87]		[-1.48; 0.97]	

Questionnaires										
SI - Personal Meaning Production	-0.67 [-1.70; 0.36]	0.197	-0.31 [-0.96; 0.34]	0.384	-0.20 [-0.46; 0.06]	0.121	0.03 [-0.18; 0.24]	0.751	-0.19 [-0.32; -0.06]	0.005*
Resilience	-0.25 [-0.36; -0.14]	<0.001***	-0.15 [-0.22; -0.08	<0.001***	-0.06 [-0.09; -0.03]	<0.001***	-0.03 [-0.05; -0.00]	0.023*	-0.02 [-0.03; 0.00]	0.047*
Self-perception	-1.02 [-1.51; -0.54]	<0.001***	-0.58 [-0.89; -0.27]	<0.001***	-0.24 [-0.36; -0.11]	<0.001***	-0.11 [-0.22; -0.00]	0.046*	-0.10 [-0.17; -0.03]	0.008*
Future Planning	-1.41 [-2.00; -0.81]	<0.001***	-0.82 [-1.20; -0.44]	<0.001***	-0.33 [-0.49; -0.18]	<0.001***	-0.22 [-0.35; -0.09]	0.001***	-0.04 [0.13; 0.06]	0.449
Social Competence	-0.93 [-1.41; -0.44]	<0.001***	-0.54 [-0.85; -0.23]	<0.001***	-0.24 [-0.36; -0.12]	<0.001***	-0.08 [-0.18; 0.03]	0.161	-0.07 [-0.14; 0.00]	0.051
Personal Structure	-0.98 [-1.88; -0.07]	0.036*	-0.52 [-1.10; 0.06]	0.080	-0.19 [-0.43; 0.04]	0.103	-0.20 [-0.38; -0.01]	0.039*	-0.07 [-0.20; 0.06]	0.272
Family Coherence	-0.83 [-1.31; -0.35]	0.001***	-0.54 [-0.84; -0.24]	<0.001***	-0.20 [-0.32; -0.07]	0.002**	-0.06 [-0.16; 0.05]	0.272	-0.03 [-0.10; 0.04]	0.374
Social Resources	-0.50 [-0.93; -0.07]	0.023*	-0.30 [-0.58; -0.03]	0.029*	-0.09 [-0.20; 0.02]	0.111	-0.06 [-0.15; 0.03]	0.182	-0.05 [-0.11; 0.01]	0.120

Footnote: B, unstandardized regression coefficient. CI, confidence interval. * p<0.05; ** p<0.01; *** p<0.001. ESAS, Edmonton Symptom Assessment Scale. SI, Spiritual Intelligence

2.2.2. Spiritual Intelligence profile of family caregivers of cancer patients receiving palliative care

While previous manuscripts (see *section 2.1.2.*) examined primarily the relationship between spiritual intelligence and caregiver burden, the current section provides a comprehensive characterization of the spiritual intelligence profile among family caregivers of cancer patients receiving palliative care. This analysis directely addresses specific objectives 3, 4, and 5, exploring the psychometric properties of the assessment tool and identifying the facilitators and inhibitors of spiritual intelligence in a palliative care context (research questions 2 and 3). By reporting these descriptive and analytical findings, this section complements prior manuscripts and offers a detailed empirical portrait of the sample. All methodological procedures, including study design, sampling strategy, data collection, and psychometric properties of the instruments used, are identical to those previously described in the field study article. The study was previously approved by an Ethics Committee (Annex 1) and informed consent was obtained (Appendices 1 and 2).

Psychometric characterization of a spiritual intelligence instrument

The spiritual intelligence profile of family caregivers was assessed using the Portuguese version of the Spiritual Intelligence Self-Report Inventory (SISRI) (Antunes et al., 2018). Although the original instrument proposes four factors, the psychometric validation for this Portuguese sample resulted in a 16-items structure reorganized into three core dimensions: critical existential thinking, personal meaning production, and conscious state expansion. The transcendental awareness dimension did not emerge as an independent factor in this population.

In our study, internal consistency analysis confirmed high reliability for the SISRI total score (Cronbach's $\alpha = 0.899$), as well as for its core dimensions: personal meaning production ($\alpha = 0.811$), critical existential thinking ($\alpha = 0.827$), and conscious state expansion ($\alpha = 0.828$).

Spiritual intelligence profile and influencing factors

Following confirmation of adequate internal consistency, descriptive analyses were performed to characterize the spiritual intelligence profile of family caregivers.

Descriptive analysis highlighted that family caregivers of cancer patients receiving palliative care possess moderate to high spiritual intelligence levels (*M*=41,42 ± 11,72 on SISRI), with 50% of the sample scoring in the 'high' range and 46,9% in the 'moderate' range. Among the dimensions, "personal meaning production" emerged with the highest mean score (average 2,89 points per item), followed by "conscious states expansion" (2,50 points) and "critical existential thinking" (2,42 points).

To examine the factors influencing spiritual intelligence, a two-stage analytical approach was followed. First, bivariate analyses (Simple Linear Regression) were conducted (Table 1), identifying significant positive associations between total spiritual intelligenceI and the absence of external help (*p*=0.038), previous caregiving experience (*p*=0.029), and overall resilience (*p*=0.041).

At the dimensional level, "conscious state expansion" was significantly higher among descendants or in-laws compared to spouses (*p*=0.035) and was negatively impacted by the caregiver's working status (*p*=0.026). Specific dimensions were influenced by different variables (Table1).

Table 1. Linear regression analysis of total spiritual intelligence and its dimensions.

Simple Linear Regression	Total Spiritual Intelligence Score		Critical Existential Thinking		Personal Meaning Production		Conscious States Expansion	
	β Coeficient [CI 95%]	P value	β Coeficient [CI 95%]	P value	β Coeficient [CI 95%]	P value	β Coeficient [CI 95%]	P value
Patient Variables								
Gender								
Male	Ref		Ref		Ref		Ref	
Female	-2,44 [-8,14; 3,25]	0,400	-2,05 [-4,75; 0,65]	0,137*	-0,21 [-2,09; 1,67]	0,828	-0,19 [-2,32; 1,95]	0,864
Age	0,02 [-0,20; 0,24]	0,845	-0,05 [-0,15; 0,06]	0,388	0,00 [-0,07; 0,07]	0,993	0,07 [-0,01; 0,15]	0,100*
Literacy								
None or basic	-1,72 [-7,64; 4,21]	0,570	-1,93 [-4,75; 0,88]	0,178*	-0,27 [-2,22; 1,69]	0,789	0,49 [-1,73; 2,69]	0,667
Mid-level to high education	Ref		Ref		Ref		Ref	
Palliative Performance Status	-0,08 [-0,31; 0,14]	0,455	-0,04 [-0,15; 0,07]	0,451	-0,03 [-0,11; 0,04]	0,350	-0,01 [-0,09; 0,07]	0,835
Follow-up Time	0,00 [-0,01; 0,01]	0,708	0,00 [-0,00; 0,00]	0,463	-0,00 [-0,00; 0,00]	0,392	0,00 [-0,00; 0,01]	0,415
Main complaint ESAS score	0,44 [-1,28; 2,17]	0,609	0,29 [-0,54; 1,12]	0,487	0,31 [-0,26; 0,87]	0,282	-0,15 [-0,79; 0,49]	0,640
Caregiver Variables								
Gender								
Male	Ref		Ref		Ref		Ref	
Female	0,97 [-5,36; 7,30]	0,763	0,31 [-2,73; 3,55]	0,842	1,69 [-0,35; 3,74]	0,105*	-1,03 [-3,38; 1,32]	0,391
Age	-0,11 [-0,33; 0,11]	0,315	-0,03 [-0,14; 0,07]	0,555	-0,06 [-0,13; 0,02]	0,126*	-0,02 [-0,11; 0,06]	0,556
Relationship to patient								
Spouse or sibling	Ref		Ref		Ref		Ref	
Descendent or in-law	5,16 [-0,77; 11,10]	0,088*	1,52 [-1,37; 4,42]	0,302	1,29 [-0,68; 3,26]	0,200*	2,35 [0,16; 4,54]	0,035**

Family Type								
Nuclear	4,91 [-3,62; 13,44]	0,259	0,71 [-3,42; 4,85]	0,735	2,64 [-0,12; 5,40]	0,061*	1,55 [-1,63; 4,74]	0,339
Extended	Ref		Ref		Ref		Ref	
Social Support								
None or close to none	5,92 [0,34; 11,50]	0,038**	2,72 [0,03; 5,41]	0,047**	0,63 [-1,26; 2,52]	0,515	2,57 [0,51; 4,62]	0,014**
Some support	Ref		Ref		Ref		Ref	
Literacy								
None or basic	-3,04 [-8,73; 2,66]	0,296	-1,65 [-4,38; 1,08]	0,236	-0,08 [-1,97; 1,81]	0,934	-1,31 [-3,42; 0,81]	0,227
Mid-level to high education	Ref		Ref		Ref		Ref	
Working Status								
Working (Full or Part-time)	Ref		Ref		Ref		Ref	
Not Working (Unemployed, Retired, Leave)	-5,25 [-10,90; 0,41]	0,069*	-1,49 [-4,25; 1,27]	0,291	-1,40 [-3,28; 0,48]	0,144*	-2,36 [-4,44; -0,28]	0,026**
Financial Status								
Unstable	2,14 [-3,72; 8,00]	0,474	1,73 [-1,06; 4,53]	0,224	0,77 [-1,16; 2,70]	0,436	-0,36 [-2,55; 1,83]	0,749
Stable	Ref		Ref		Ref		Ref	
Chronic Diseases								
Yes	Ref		Ref		Ref		Ref	
No	4,01 [-1,67; 9,70]	0,167*	1,38 [-1,38; 4,13]	0,326	0,97 [-0,91; 2,86]	0,311	1,66 [-0,45; 3,77]	0,123*
Chronic Cardiovascular Disease								
Yes	Ref		Ref		Ref		Ref	
No	5,40 [-1,05; 11,84]	0,101*	1,58 [-1,55; 4,72]	0,323	1,58 [-0,55; 3,71]	0,145*	2,23 [-0,16; 4,62]	0,068*
Chronic Respiratory Disease								
Yes	Ref		Ref		Ref		Ref	
No	3,59 [-6,14; 13,33]	0,469	2,58 [-2,08; 7,23]	0,278	0,12 [-3,10; 3,33]	0,944	0,90 [-2,73; 4,54]	0,627

Chronic Metabolic Disease								
	Yes	Ref		Ref		Ref		Ref	
	No	2,17	0,603	2,00	0,315	-0,01	0,995	0,18	0,910
		[-6,01; 10,35]		[-1,90; 5,91]		[-2,71; 2,69]		[-2,88; 3,23]	
Chronic Psychiatric Disease								
	Yes	Ref		Ref		Ref		Ref	
	No	2,40	0,548	2,02	0,291	0,16	0,902	0,22	0,884
		[-5,43; 10,22]		[-1,72; 5,75]		[-2,42; 2,75]		[-2,71; 3,14]	
Chronic Muscle-Skeletal Disease								
	Yes	Ref		Ref		Ref		Ref	
	No	3,65	0,295	1,10	0,515	0,56	0,628	1,99	0,122*
		[-3,18; 10,48]		[-2,20; 4,40]		[-1,70; 2,82]		[-0,53; 4,51]	
Other Chronic Diseases								
	Yes	Ref		Ref		Ref		Ref	
	No	6,63	0,125*	2,29	0,275	1,93	0,176*	2,41	0,134*
		[-1,83; 15,08]		[-1,82; 6,39]		[-0,87; 4,73]		[-0,74; 5,57]	
Use of Chronic Medication								
	Yes	Ref		Ref		Ref		Ref	
	No	2,66	0,408	0,46	0,765	1,01	0,337	1,18	0,323
		[-3,64; 8,96]		[-2,58; 3,51]		[-1,06; 3,09]		[-1,16; 3,53]	
Hypertension Medication								
	Yes	Ref		Ref		Ref		Ref	
	No	5,38	0,075*	2,02	0,168*	1,15	0,255	2,21	0,049**
		[-0,54; 11,30]		[-0,85; 4,89]		[-0,83; 3,13]		[0,01; 4,41]	
Respiratory Medication								
	Yes	Ref		Ref		Ref		Ref	
	No	-5,24	0,529	-2,07	0,606	-2,65	0,333	-0,53	0,864
		[-21,56; 11,08]		[-9,92; 5,79]		[-8,00; 2,71]		[-6,63; 5,57]	
Cholesterol Medication								
	Yes	Ref		Ref		Ref		Ref	
	No	0,24	0,947	0,82	0,636	-0,32	0,788	-0,26	0,846
		[-6,84; 7,32]		[-2,58; 4,22]		[-2,65; 2,01]		[-2,90; 2,38]	

Metabolic Medication									
	Yes	Ref		Ref		Ref		Ref	
	No	-0,84	0,876	-0,11	0,967	-0,39	0,825	-0,34	0,865
		[-11,46; 9,77]		[-5,21; 4,99]		[-3,89; 3,10]		[-4,30; 3,61]	
Psychiatric Medication									
	Yes	Ref		Ref		Ref		Ref	
	No	-0,45	0,888	-0,04	0,980	0,02	0,982	-0,43	0,714
		[-6,68; 5,79]		[-3,03; 2,96]		[-2,03; 2,08]		[-2,76; 1,89]	
Pain Medication									
	Yes	Ref		Ref		Ref		Ref	
	No	-4,50	0,330	-4,73	0,028**	0,97	0,525	-0,74	0,670
		[-13;56; 4,56]		[-8,96; -0,50]		[-2,02; 3,97]		[-4,14; 2,66]	
Other Medications									
	Yes	Ref		Ref		Ref		Ref	
	No	3,70	0,317	1,95	0,272	0,13	0,917	1,62	0,238
		[-3,54; 10,95]		[-1,53; 5,42]		[-2,27; 2,53]		[-1,07; 4,31]	
Caregiving Variables									
Help									
	Yes	Ref		Ref		Ref		Ref	
	No	4,56	0,119*	2,27	0,107*	0,46	0,636	1,83	0,092*
		[-1,17; 10,29]		[-0,49; 5,02]		[-1,46; 2,38]		[-0,30; 3,96]	
Duration (months)		-0,02	0,759	-0,02	0,611	0,00	0,843	-0,01	0,730
		[-0,14; 0,10]		[-0,07; 0,04]		[-0,04; 0,04]		[-0,05; 0,04]	
Hours per day		-0,03	0,876	0,04	0,579	-0,06	0,288	-0,01	0,843
		[-0,35; 0,30]		[-0,11; 0,20]		[-0,16; 0,05]		[-0,13; 0,11]	
Previous Experience									
	Yes	Ref		Ref		Ref		Ref	
	No	-6,33	0,029**	-3,53	0,010**	-1,50	0,122*	-1,29	0,243
		[-12,00; -0,65]		[-6,23; -0,84]		[-3,40; 0,40]		[-3,46; 0,88]	
Other Dependents									
	Yes	Ref		Ref		Ref		Ref	
	No	-1,89	0,581	0,31	0,853	-1,26	0,261	-0,94	0,463
		[-8,60; 4,82]		[-2,93; 3,54]		[-3,45; 0,94]		[-3,43; 1,56]	

	Questionnaires							
Burden	-0,08 [-0,26; 0,11]	0,417	0,02 [-0,07; 0,11]	0,620	-0,04 [-0,10; 0,02]	0,197*	-0,06 [-0,13; 0,01]	0,090*
Impact of Caregiving	-0,11 [-0,40; 0,19]	0,484	0,03 [-0,12; 0,17]	0,690	-0,05 [-0,14; 0,05]	0,348	-0,09 [-0,20; 0,02]	0,114*
Interpersonal Relationships	-0,27 [-1,01; 0,46]	0,460	0,09 [-0,26; 0,44]	0,615	-0,19 [-0,43; 0,05]	0,121*	-0,18 [-0,45; 0,10]	0,201
Expectations Towards Caregiving	-0,20 [-1,13; 0,73]	0,669	-0,04 [-0,48; 0,41]	0,866	0,05 [-0,26; 0,35]	0,751	-0,21 [-0,55; 0,13]	0,224
Self-Efficacy Perception	-0,48 [-1,87; 0,91]	0,491	0,37 [-0,29; 1,03]	0,264	-0,62 [-1,05; -0,19]	0,005**	-0,23 [-0,75; 0,28]	0,368
Resilience	0,09 [0,00; 0,18]	0,041**	0,01 [-0,04; 0,05]	0,779	0,04 [0,01; 0,06]	0,019**	0,05 [0,02; 0,08]	0,002**
Self-perception	0,54 [0,16; 0,93]	0,007**	0,10 [-0,10; 0,29]	0,331	0,16 [0,03; 0,29]	0,014**	0,28 [0,15; 0,42]	<0,001**
Future Planning	0,76 [0,28; 1,24]	0,002**	0,16 [-0,08; 0,41]	0,193*	0,23 [0,07; 0,39]	0,005**	0,37 [0,20; 0,54]	<0,001**
Social Competence	0,48 [0,10; 0,86]	0,014**	0,06 [-0,13; 0,25]	0,522	0,22 [0,10; 0,34]	<0,001**	0,20 [0,06; 0,34]	0,006**
Personal Structure	0,73 [0,05; 1,40]	0,035**	0,14 [-0,20; 0,47]	0,413	0,23 [0,01; 0,45]	0,045**	0,36 [0,12; 0,60]	0,004**
Family Coherence	-0,13 [-0,52; 0,26]	0,510	-0,13 [-0,32; 0,06]	0,166*	-0,00 [-0,13; 0,13]	0,951	0,01 [-0,14; 0,15]	0,951
Social Resources	0,12 [-0,21; 0,45]	0,463	-0,03 [-0,19; 0,13]	0,712	0,05 [-0,06; 0,16]	0,390	0,11 [-0,02; 0,23]	0,088*

Footnote: B, unstandardized regression coefficient. CI, confidence interval. * p<0.05; ** p<0.01; *** p<0.001. ESAS, Edmonton Symptom Assessment Scale. SI, Spiritual Intelligence

To identify independent predictors of spiritual intelligence, a multivariate regression model was then constructed using variables with $p < 0.20$ from the bivariate analysis. The final model explained 35.6% of spiritual intelligence variance (R^2=0.356) (Figure 1). Higher spiritual intelligence levels were independently predicted by:

- Previous caregiving experience;
- Higher scores in the "Future Planning" resilience dimension;
- Absence of external help.

Overall, spiritual intelligence showed substantial variability among caregivers and was significantly associated with caregiving experience, resilience, and contextual factors, underscoring its empirical relevance in this population.

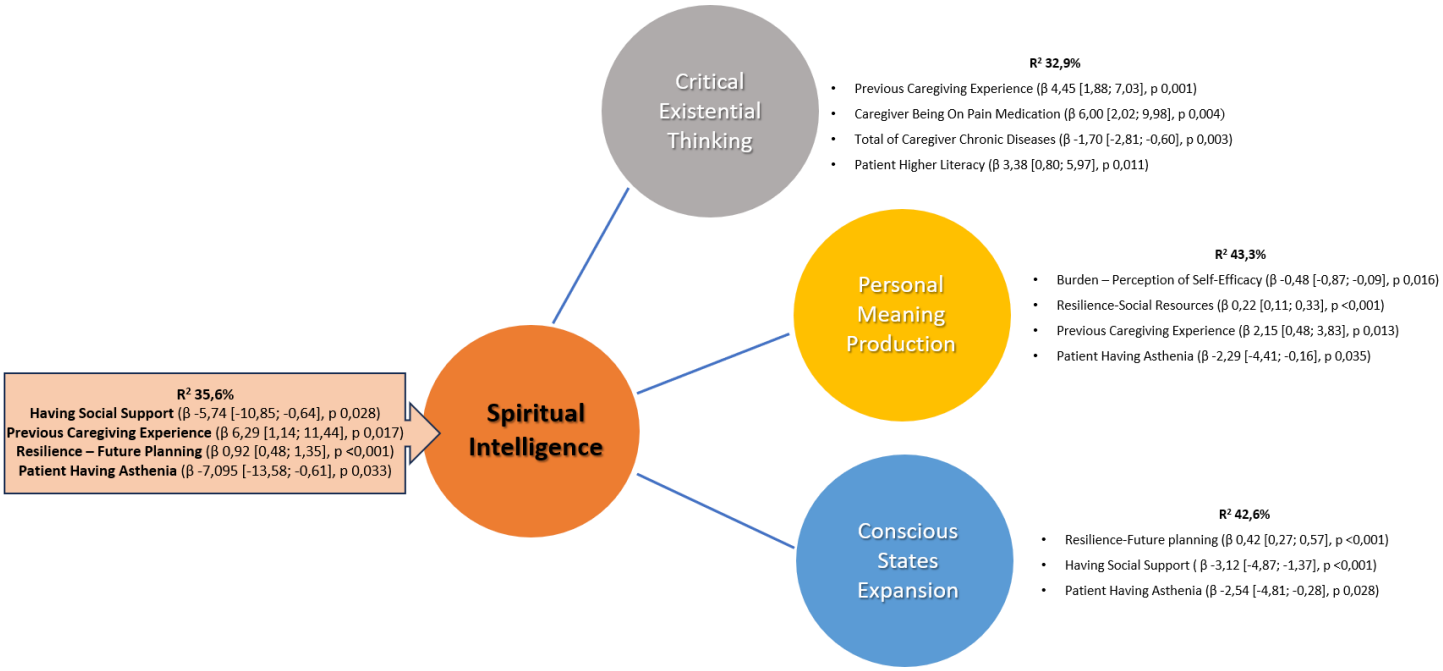


Figure 1 Spiritual intelligence and its related variables multivariate model diagram.

2.2.3. Assessment of hypothesis

The hypothesis that spiritual intelligence varies according to sociodemographic and clinical factors (H1) was partially supported. Significant associations were identified between higher levels of spiritual intelligence and specific caregiving-related characteristics, including prior caregiving experience and the absence of formal caregiving support, as well as higher resilience scores, particularly within the “future planning” domain. In addition, clinical characteristics of the patient were also relevant, with patient-reported asthenia showing a negative association with caregivers’ spiritual intelligence in the multivariate model. Together, these results indicate that spiritual intelligence among family caregivers is influenced by a combination of individual, experiential, and clinical factors rather than being uniformly distributed across the population.

The second hypothesis, which proposes that adaptation to the caregiving role is positively influenced by family caregivers’ levels of spiritual intelligence (H2), was also partially supported by the findings of this study. Specifically, higher levels of spiritual intelligence were significantly associated with the self-efficacy dimension of caregiver burden, suggesting that caregivers with greater spiritual intelligence perceived themselves as more capable and effective in managing caregiving demands. Among the dimensions of spiritual intelligence, personal meaning-making emerged as a key explanatory factor, showing a positive relationship with caregivers’ self-efficacy perceptions. This suggests that the capacity to derive meaning and purpose from the caregiving experience may strengthen caregivers’ confidence in their ability to cope with challenges and fulfill their role.

These results indicate that spiritual intelligence does not exert a uniform influence across all dimensions of caregiver adaptation but appears to operate through specific mechanisms, particularly those related to meaning-making and perceived competence. Consequently, these findings provide empirical evidence for the role of spiritual intelligence as a protective resource, identifying personal meaning-making as a key pillar in the psycho-social-spiritual adaptation to the caregiving role.

2.3. Stage III: Intervention modeling phase

This final section culminates the development process by translating accumulated evidence into a structured intervention plan. It integrates two complementary components: first, scientific paper 5, a scoping review on existing interventions targeting spiritual intelligence that allowed for a detailed overview on themes, duration, structure and outcomes from interventions in various settings (research question 4, objective 6). The second component synthesizes these findings with the preceding evidence base to fulfill objective seven. This article addresses research question 3 (Which interventions have been described in the literature to promote spiritual intelligence?) and research objective 4 (Explore and analyze interventions aimed at promoting spiritual intelligence as described in the scientific literature).

By characterizing the potential value of spiritual intelligence as a protective resource, this phase establishes the empirical support and the necessary modelling of processes and outcomes required for the design of a future intervention. This synthesis directly contributes to the architectural framework of the proposed complex intervention, aligning clinical needs with evidence-based strategies for the caregiving journey.

2.3.1. Models of spiritual intelligence interventions: A scoping review

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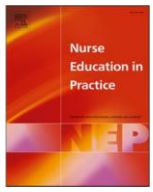
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Models of spiritual intelligence interventions: A scoping review

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ABSTRACT

Objective: To summarize the effects of spiritual intelligence (SI) training in several contexts and to identify the most consensual patterns in SI intervention design.
Introduction: The "adaptive application" of spirituality in life is called SI, the ability to use spirituality in everyday problem-solving and it is proven to relate to better clinical and spiritual care (SC) competency in healthcare professionals. Interventions aiming to increase SI have been tested in different settings with benefits that can have a significant impact on the way healthcare professionals approach SC.
Inclusion criteria: It included any quantitative studies that used reproducible methodology and reported on the implementation of interventions aiming to increase SI. Text, proceedings, conference or opinion papers, abstracts, reviews, mixed methods and qualitative studies were excluded from this scoping review.
Methods: Scoping review of quantitative studies on "spiritual intelligence" (query term) that include SI intervention programs (inclusion criteria) conducted on PubMed Central, Scopus, Web Of Science and PsycInfo databases, using the Joanna Briggs Institute methodology. Studies published until the 1st january 2022 were included. The studies' selection, extraction and synthesis of data was carried out by two independent reviewers.
Results: From the 10 articles/studies included, six were quasi-experimental and three experimental. Most (n=9) were conducted in Iran. The most common target samples of the studies were nurses (4 studies) and students (4 studies). SI training protocols, although based in group sessions, varied in their content between the different studies. SI interventions reported significant increase of SI levels, improvement of communications skills and reduction of anxiety, stress and depression levels.
Conclusions: Despite the consensus among studies regarding the benefits of spiritual intelligence programs, more studies are needed to gauge long-term outcomes. There is also a need to standardize training protocols in spiritual intelligence.

1. Introduction

Spirituality is a subjective experience associated with the essence of life, interpersonal relationships, relation with the environment and specially with the transcendental (Saucier and Skrzypińska, 2006). This concept goes beyond the religious context and is actually even independent from any religious affiliation (Saucier and Skrzypińska, 2006). Despite spirituality being a transversal experience to all human beings, among healthcare professionals' spirituality and spiritual care are difficult to tackle (Balboni et al., 2014). Factors like the lack of formation training, privacy and time to adequately address spiritual care and the fear of going against family and patient dynamics lead to an undervaluation of this issue (Balboni et al., 2014).

The "adaptive application" of spirituality in life is called spiritual intelligence, which means the ability to use spirituality in everyday problem-solving (Zohar, 1998). From King's point of view, it involves four dimensions: critical existence intelligence, the ability to "critically contemplate the nature of existence"; personal meaning production, the capacity to construct a life purpose and give meaning to daily shores and interactions; transcendental awareness, the ability to recognize "transcendent dimensions of the self, of others and of the environment"; conscious state expansion, the "control over entering and exiting higher or spiritual states of consciousness" (King, 2008).

SI is the cognitive foundation for spiritual competence development,

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enabling individuals to address their own beliefs and be open to others. Spiritual competence is of major relevance for healthcare professionals, translating in their ability to answer to the patient's spiritual needs in an empathetic way (Hodge, 2016).

Since patients' spiritual needs tend to increase with the severity of illness and the proximity of death, it is of no great surprise that spiritual competence has been established as a core competency for palliative care professionals and seen its way into many nursing curricula worldwide (The essentials: Core competencies for professional nursing education, 2021).

As any other intelligence, SI can be trained and enhanced with impressive results on a variety of personal and social skills. A recent systematic review on the impact of SI training on nurses and nursing students reported solid evidence on the increase of communication skills, job satisfaction and spiritual care competence and simultaneously, reduced stress levels (Sharifnia et al., 2022). Plenty of other studies in many other fields outside the scope of healthcare, also report benefits from SI training. Given the heterogeneity of contexts, methods and topics covered at spiritual intelligence training, as well as the variety of its potential impacts, there is a need to sum up the literature data in this area.

In a preliminary search, no scoping reviews (ScR) compiled the full impact of SI training or the intervention models used for the training programs. Since the evidence on its benefits is becoming more and more consistent, it is important to determine what the best intervention models are.

Therefore, the objective of this ScR is to assess and summarize the effects of spiritual intelligence training in various contexts and to identify the most consensual patterns in SI intervention design, as well as research gaps and recommendations, bearing in mind the importance of this issue in solving the everlasting problem of teaching spiritual care to healthcare professionals.

2. Review questions

This ScR aims to answer the general problematic:

What is known from the literature about the influence of SI on human behavior and mental health?

Addressing the following detailed questions:

1. In what settings and populations is SI being studied?
2. Which instruments for SI measurement are being used?
3. What sociodemographic factors relate to SI?
4. What positive correlations to SI have been reported?
5. What negative correlations to SI have been reported?

3. Eligibility criteria

3.1. Participants

This ScR included any studies focused on people from different backgrounds, with no age or sociodemographic background restrictions.

3.2. Concept

The included studies concern or directly approach SI, according to the definition of SI by King (King, 2008). No studies merely concerning the concept of spirituality will be included.

3.3. Context

We considered studies on a vast spectrum of settings and people, undertaken in multiple areas of knowledge.

3.4. Types of sources

This scoping review considered for inclusion any quantitative studies with clear reproducible methodology (aims, inclusion criteria, sampling and instrument validation and reliability) that report on the implementation of interventions aiming to increase SI.

Text, proceedings, conference or opinion papers, abstracts, reviews, mixed methods and qualitative studies were excluded from this scoping review. Predatory journal articles were considered for inclusion provided they complied with the criteria and quality assessment.

4. Methods

This scoping review was conducted in accordance with the Joanna Briggs Institute (JBI) methodology for ScR (Peters et al., 2020).

4.1. Search strategy

Studies published in English, French, Spanish or Portuguese were included, since these are languages in which the authors are fluent. Studies published anytime up until 1 January 2022 were included, as to document the evolutionary time frame of the SI concept.

A search for "Spiritual Intelligence" (query term) from inception to 1st January 2022 was conducted via EBSCOhost on *PubMed Central, Scopus, Web of Science* and *PsycInfo* databases and the search strategy was adapted for each database.

4.2. Study/source of evidence selection

Following the search, all identified citations were uploaded to *Mendeley* and duplicates removed. Titles and abstracts were screened by two independent reviewers (CTP, LG) for assessment against the inclusion criteria. The full text of selected citations was then assessed in detail by two reviewers (CTP, LG). Any disagreements between the reviewers at each stage of the selection process were discussed or reviewed by a third independent reviewer (SP, RN). The results of the search and study inclusion process are described in the PRISMA-ScR flow diagram (Fig. 1) (Page et al., 2021).

4.3. Data extraction

Data were extracted from the included papers by two independent reviewers (CTP, LG, FV) using a data extraction tool developed by the reviewers. Prior to the study, the data extraction tool was pilot tested and trained by the reviewers with a total of ten articles with further cross-checking of the extracted data for consistency.

4.4. Variables

The extracted data includes specifics on the included papers (authors, year, journal, country), participants, setting, study aims, study methods, SI instruments used (including reliability and validation data) and key findings relevant to the review questions posed (positive and negative correlations to SI).

5. Results

5.1. Literature search

A total of 679 citations were found in electronic searches, resulting in 361 unique citations after removal of duplicates. Based on the inclusion criteria, titles and abstracts were assessed for relevance, resulting in 12 citations. Full texts were analyzed and two were excluded; one study was qualitative and SI training was not applied in the other study. As such, ten citations were included in this ScR. Table 1 shows a synthesis of the ten studies included in this ScR.

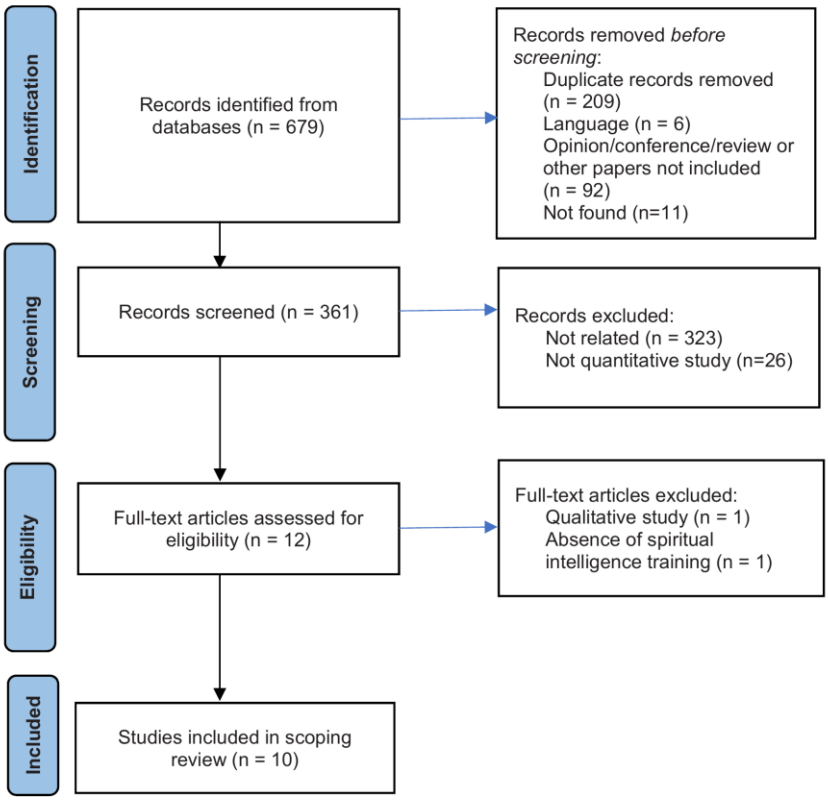


Fig. 1. PRISMA-ScR flow diagram (Peters et al., 2020).

5.2. Characteristics of the included studies

The included studies date back to 2012. Among the studies included, there are seven quasi-experimental (Maryam et al., 2012; Majidi and Moradi, 2018; Ebrahimi et al., 2015; Dami et al., 2019; Riahi et al., 2018; Abdolrezapour and Alipour, 2021; Arad et al., 2022) and three experimental studies (Abbas et al., 2018; Heydari et al., 2017; Lotfabadi et al., 2020); two of the experimental studies are randomized controlled trials (Abbas et al., 2018; Lotfabadi et al., 2020). The studies were conducted in Iran (n=8) (Majidi and Moradi, 2018; Ebrahimi et al., 2015; Riahi et al., 2018; Abdolrezapour and Alipour, 2021; Arad et al., 2022; Abbas et al., 2018; Heydari et al., 2017; Lotfabadi et al., 2020), Malaysia (n=1) (Maryam et al., 2012) and Indonesia (n=1) (Dami et al., 2019). Studies were all published in English between 2012 and 2021 (Maryam et al., 2012; Majidi and Moradi, 2018; Ebrahimi et al., 2015; Dami et al., 2019; Riahi et al., 2018; Abdolrezapour and Alipour, 2021; Arad et al., 2022; Abbas et al., 2018; Heydari et al., 2017; Lotfabadi et al., 2020).

In seven studies, outcomes were assessed immediately after the end of the SI training program (Maryam et al., 2012; Majidi and Moradi, 2018; Ebrahimi et al., 2015; Dami et al., 2019; Riahi et al., 2018; Abdolrezapour and Alipour, 2021; Arad et al., 2022); in five studies, outcomes were reassessed three to eight weeks after intervention (Maryam et al., 2012; Riahi et al., 2018; Arad et al., 2022; Abbas et al., 2018; Heydari et al., 2017); in Dami et al. study (2019), results were reassessed one week after the final semester exam (target event for the intervention) (Dami et al., 2019). In the remaining studies, the first assessments were made one to two months after the end of the intervention (Abbas et al., 2018; Heydari et al., 2017; Lotfabadi et al., 2020).

5.3. Participants characteristics

Overall, 553 participants were enrolled in the ten studies. The number of participants for each study ranged from 20 to 94. Nurses were represented in four studies (Riahi et al., 2018; Arad et al., 2022; Abbas et al., 2018; Heydari et al., 2017) as well as students (Maryam et al., 2012; Ebrahimi et al., 2015; Dami et al., 2019; Abdolrezapour and Alipour, 2021) representing the 2 largest target samples. Other participants included cancer patients in one study (Lotfabadi et al., 2020) and elderly in another (Majidi and Moradi, 2018). Most participants were female (n=353). Healthcare (n=5) (Riahi et al., 2018; Arad et al., 2022; Abbas et al., 2018; Heydari et al., 2017; Lotfabadi et al., 2020) and education (n=4) (Maryam et al., 2012; Ebrahimi et al., 2015; Dami et al., 2019; Abdolrezapour and Alipour, 2021) settings were the most common; one study was conducted in a nursing home context (Majidi and Moradi, 2018).

5.4. Spiritual intelligence interventions

All SI interventions involved group sessions. Most of the interventions (n=6) were planned to have 7–8 sessions of 90 minutes each, spread out for a 2-month period (Majidi and Moradi, 2018; Ebrahimi et al., 2015; Dami et al., 2019; Abdolrezapour and Alipour, 2021; Abbas et al., 2018; Heydari et al., 2017). Control groups did not receive any intervention most studies (n=7) (Majidi and Moradi, 2018; Ebrahimi et al., 2015; Dami et al., 2019; Riahi et al., 2018; Arad et al., 2022; Abbas et al., 2018; Lotfabadi et al., 2020). Training protocols were based on various studies, namely by Zohar and Marshall (Arad et al., 2022; Abbas et al., 2018; Heydari et al., 2017), King (Majidi and Moradi, 2018; Lotfabadi et al., 2020) and Bowell (Maryam et al., 2012; Dami et al., 2019).

5.5. Type of outcome measure

From the 10 included studies, only 4 measured post-intervention SI as an outcome (Maryam et al., 2012; Dami et al., 2019; Riahi et al.,

Table 1
Synthesis of the studies included in the scoping review.

Author (s), year of publication and countries of study	Title	Setting	Type of study	Sample	Aims	SI instrument Cronbach alfa	**SI intervention type, time per session and total program duration**	SI dimensions according to King, 2008 and topics covered	**Main results**
Maryam, Habibah, Krauss, Siti (2012). Malaysia (Maryam et al., 2012)	An Intervention Programme to improve Spiritual Intelligence among Iranian Adolescents in Malaysia	High school	Quasi-experimental	32 students	To determine if a SI intervention program help to improve SI among Iranian female adolescents	Integrated Spiritual Intelligence Scale (ISIS). (0.97)	IG:SI training based on Bowell's protocol. Five 130-minute group sessions; 2 months. CG: life skills training.	Dimensions: CET, PMP, TA. Topics: self-awareness, personal meaning production, self-management, purpose in life, gratitude	A positive relation between SI training and SI levels was found, particularly in the following dimensions: awareness; beauty; gratitude; joy; freedom; purpose; embodiment; intuition; acceptance; mindfulness; optimism; peacefulness; self-acceptance; holism; sacredness; egoless.
Abbas, Reza, Bordbar, Moghadam, Ali (2018). Iran (Abbas et al., 2018)	Effect of Spiritual Intelligence Training on Perceived Stress in a Psychiatric Nurse	Healthcare	Randomized controlled trial	60 psychiatry nurses	To determine the effect of teaching SI on nurses' perceived stress	Not used	IG: SI training based on studies by Zohar and Marshall, Emmons and Sisk et al. Seven 90-minute group sessions; 2 months. CG: no training.	Dimensions: CET, PMP, TA, CSE. Topics: self-consciousness, self-honesty, holiness, relationship with the transcendent, self-control, empathy, flexibility	Perceived stress decreased in the intervention group both at post-intervention phase and at 1-month evaluation.
Majidi, Moradi (2018). Iran (Majidi and Moradi, 2018)	Effect of teaching the components of spiritual intelligence on death anxiety in the elderly	Nursing home	Quasi-experimental	20 elderlies	To determine the effects of SI teaching on death anxiety in the elderly living in the nursing home	Not used	IG: SI training based on King's model. Eight 90-minute group sessions; 2 months. CG: no training.	Dimensions: CET, PMP, TA, CSE. Topics: flexibility, critical existential thinking, personal meaning production, transcendental awareness, conscious state expansion, interpersonal relationships	Learning the components of SI decreased death anxiety (particularly the dimensions of death of relatives and seeing dying companions).
Ebrahimi, Jalilabadi, Ghareh, Kh, Amini, Arkian (2015). Iran (Ebrahimi et al., 2015)	Effectiveness of training of spiritual intelligence components on depression, anxiety, and stress of adolescents	High school	Quasi-experimental	40 adolescent students	To determine the impact of SI exercise on stress, anxiety and depression on adolescents	Not used	IG: Cognitive-behavioral group therapy. Eight group sessions (session duration and total program duration not specified). CG: no training.	Dimensions: PMP, TA, CSE. Topics: self-consciousness, holiness, coping, gratitude, interpersonal relationships, personal meaning production	SI exercise decreased the levels of stress, anxiety and depression on adolescents
Heydari, Meshkinyazd, Soudmand (2017). Iran (Heydari et al., 2017)	The effect of spiritual intelligence training on job satisfaction of psychiatric nurses	Healthcare	Experimental	60 psychiatry nurses	To determine the impact of teaching SI on job satisfaction	Not used	IG: SI training based on studies by Zohar and marshall, Emmons and Sisk and Torrancel. Seven 90-minute group sessions; 2 months. CG: lecture on psychiatric signs and symptoms and common terminologies.	Dimensions: CET, PMP, TA, CSE. Topics: self-consciousness, relationship with the transcendent, self-honesty, holiness, interpersonal relationships, self-control	Job satisfaction increased in the intervention group both at 1 and 2 months after SI teaching program
Lotfabadi, Hashemi, Sarabian, Mohammadi,	The effect of the components of King's spiritual intelligence group	Healthcare	Randomized controlled trial	54 cancer patients	To determine the impact of SI training on stigma in cancer patients	Not used	IG: SI training based on King's model. Ten 90-minute group	Dimensions: CET, PMP, TA, CSE. Topics: spiritual needs, critical	SI training decreased stigma score and subscales of impossible

(*continued on next page*)

Table 1 (*continued*)

Author (s), year of publication and countries of study	Title	Setting	Type of study	Sample	Aims	SI instrument Cronbach alfa	**SI intervention type, time per session and total program duration**	SI dimensions according to King, 2008 and topics covered	**Main results**
Salarhaji (2020). Iran (Lotfabadi et al., 2020)	training on Stigma in patients with cancer						sessions; 5 weeks. CG: no training (routine care from the hospital).	existential intelligence, self-awareness, personal meaning production, interpersonal relationships	improvement and social discrimination experience
Dami, Setiawan, Sudarmanto, Lu (2019). Indonesia (Dami et al., 2019)	Effectiveness of group counseling on depression, anxiety, stress and components of spiritual intelligence in student	University	Quasi-experimental	64 students	To determine the effects of group counseling with a spiritual approach on students levels of depression, anxiety, stress and SI in facing the final semester exam	Spiritual Intelligence Self-Report Inventory (SISRI-24), (0.918)	IG: SI training based on Bowell's protocol. Seven 60-minute group sessions; 7 weeks. CG: no training	Dimensions: CET, PMP, TA, CSE. Topics: conscious state expansion, holiness, critical existential intelligence, transcendental awareness, interpersonal relationships	SI component increased in the intervention group, particularly for critical existential intelligence and personal meaning production dimensions. Depression, anxiety and stress levels decreased in the intervention group.
Riahi, Goudarzi, Hasanvand, Abdollahzadeh, Ebrahimzadeh, Dadvari (2018). Iran (Riahi et al., 2018)	Assessing the Effect of Spiritual Intelligence Training on Spiritual Care Competency in Critical Care Nurses	Healthcare	Quasi-experimental	82 critical care nurses	To determine the effects of SI training on the nurses' competence in spiritual care	SISRI-24, (0.88)	IG: SI training based on studies by Emmons and Hassan.Eight 90-minute group sessions; 2 months. CG: no training.	Dimensions: CET, PMP, TA, CSE. Topics: conscious state expansion, self-awareness, meaning of life, problem-solving, forgiveness, interpersonal relationships, commitment, insight	SI score and spiritual care competence were higher in the intervention group.
Abdolrezapour, Alipour (2021). Iran (Abdolrezapour and Alipour, 2021)	Fostering spiritual intelligence and a concomitant development of WTC in EFL learners	Education	Quasi-experimental	47 English as a Foreign Language (EFL) students	To determine the impact of SI training on EFL learners' willingness to communicate and SI	SISRI-24, (0.86)	IG: SI training based on studies by Ferreira. Eight 120-minute group sessions; 2 months. CG: 2-hour English instruction.	Dimensions: CET, PMP, TA. Topics: self-awareness, connectedness, meaning in life, interpersonal relationship, self-management, personal meaning production, critical existential thinking	SI training led to improvements in learners' willingness to communicate and SI scores
Mahmoudirad, Bagherian (2015). Iran (Arad et al., 2022)	The Effect of Spiritual Intelligence Training on Communication Ability for Nurses	Healthcare	Quasi-experimental	94 nurses	To determine the impact of spiritual intelligence training on communication skills for nurses	SI not used	IG:SI training based on studies by Zohar and Marshall, Sisk and Torrance, Moeini. Twelve 90-minute group sessions; 2 months. CG: no training	Dimensions: CET, PMP, TA. Topics: self-awareness, relation with transcendent, honesty, intuition, meaning in life, morality, interpersonal relationships, self-controlling, flexibility	Intervention group had higher scores of communication skills and components of listening and regulating affections.

SI: spiritual intelligence; IG: intervention group; CG: control group; CET: critical existential training; PMP: personal meaning production; TA: transcendental awareness; CSE: conscience state expansion.

2018; Abdolrezapour and Alipour, 2021). SISRI-24 was the most used instrument (n=3) (Dami et al., 2019; Riahi et al., 2018; Abdolrezapour and Alipour, 2021). Other outcomes measured after SI interventions were stress and anxiety levels (n=3) (Majidi and Moradi, 2018; Ebrahimi et al., 2015; Dami et al., 2019), depression (n=2) (Ebrahimi et al., 2015; Dami et al., 2019), job satisfaction (n=1) (Heydari et al., 2017) and cancer stigma (n=1) (Lotfabadi et al., 2020).

5.6. *Impact of SI training*

Interventions showed benefits on the studied samples. SI training significantly incremented SI levels in high school, university and English as a foreign language (EFL) students and critical care nurses (Maryam et al., 2012; Dami et al., 2019; Riahi et al., 2018; Abdolrezapour and Alipour, 2021). A significant positive impact of SI interventions was also observed in job satisfaction (Psychiatry nurses) (Heydari et al., 2017), spiritual care competence (critical care nurses) (Riahi et al., 2018),

Table 2
Synthesis of the studies SI intervention protocols.

Author (s), year of publication and countries of study	**Title**	SI intervention protocol	Content of SI training (adapted by authors)			
			CET	**PMP**	**TA**	**CSE**
Maryam, Habibah, Krauss, Siti (2012). Malaysia (Maryam et al., 2012)	An Intervention Programme to improve Spiritual Intelligence among Iranian Adolescents in Malaysia	Yes	Open discussion on life matters. Evaluate situations with open minds. Short and long-term aims in life.	Finding the meaning of each situation. Manage time according to the importance in life. Short and long-term aims in life. Explain mission in the world.	Increase awareness about each situation. Consider all aspects of each situation. List things that they should be grateful for and express gratitude.	-
Abbas, Reza, Bordbar, Moghadam, Ali (2018). Iran (Abbas et al., 2018)	Effect of Spiritual Intelligence Training on Perceived Stress in a Psychiatric Nurse	Yes	Training honesty with yourself. Addressing ethical issues with compassion, flexibility, humility, forgiveness and creativity.	Training intuitive meaning and its role in life.	Increasing self-consciousness.	Training the ability to behave kindly and empathetically regardless of the circumstance.
Majidi, Moradi (2018). Iran (Majidi and Moradi, 2018)	Effect of teaching the components of spiritual intelligence on death anxiety in the elderly	No	-	-	-	-
Ebrahimi, Jalilabadi, Ghareh, Kh, Amini, Arkian (2015). Iran (Ebrahimi et al., 2015)	Effectiveness of training of spiritual intelligence components on depression, anxiety, and stress of adolescents	Yes	-	Training ability to garnish daily activities with a sense of holiness.	Training ability to garnish daily activities with a sense of holiness.	Muscle relaxation and slow breathing training. Mental imagery exercises. Training entrance in spiritual states of consciousness. Training environmental mastery.
Heydari, Meshkinyazd, Soudmand (2017). Iran (Heydari et al., 2017)	The effect of spiritual intelligence training on job satisfaction of psychiatric nurses	Yes	Training honesty with yourself. Addressing ethical issues with compassion, flexibility, humility, forgiveness and creativity.	Training intuitive meaning and its role in life.	Increasing self-consciousness.	Training the ability to behave kindly and empathetically regardless of the circumstance.
Lotfabadi, Hashemi, Sarabian, Mohammadi, Salarhaji (2020). Iran (Lotfabadi et al., 2020)	The effect of the components of King's spiritual intelligence group training on Stigma in patients with cancer	Yes	Open discussion on SI and related concepts. Open discussion on life purpose and spiritual needs. Answering existential and fundamental questions. Questions about philosophy and the purpose of the world creation.	Training methods to find the meaning of life. Extracting meaning from material and psychological experiences. Set life goals.	Training self-awareness and its barriers. Transcendent goals in life. Paying attention to spirituality and developing awareness.	Breath and mental relaxation training. Meditation training
Dami, Setiawan, Sudarmanto, Lu (2019). Indonesia (Dami et al., 2019)	Effectiveness of group counseling on depression, anxiety, stress and components of spiritual intelligence in student	Yes	Open discussion on SI and related concepts. Answering existential and fundamental questions.	Meaning of life.	Transcendental consciousness. Adding a sense of holiness to daily activities.	Singing and prayer. Breath and muscle relaxation. Entering a spiritual atmosphere in a state of consciousness. Religious readings.
Riahi, Goudarzi, Hasanvand, Abdollahzadeh, Ebrahimzadeh, Dadvari (2018). Iran (Riahi et al., 2018)	Assessing the Effect of Spiritual Intelligence Training on Spiritual Care Competency in Critical Care Nurses	Yes	Open discussion on SI and related concepts. Problem solving with a spiritual approach. Commitment to a healthy life.	Meaning of life and daily activities even in the event of suffering.	Spiritual self-awareness. Increasing intuition and insight.	Understanding calmness from religious words or expressions and prayer.
Abdolrezapour, Alipour (2021). Iran (Abdolrezapour and Alipour, 2021)	Fostering spiritual intelligence and a concomitant development of WTC in EFL learners	Yes	Open discussion on SI and related concepts. Connectedness and existential questions. Reflective activities.	Purpose of life.	Self-awareness. Training metaview of problems.	-
Mahmoudirad, Bagherian (2015). Iran (Arad et al., 2022)	The Effect of Spiritual Intelligence Training on Communication Ability for Nurses	No	-	-	-	-

SI: spiritual intelligence; CET: critical existential training; PMP: personal meaning production; TA: transcendental awareness; CSE: conscience state expansion.

willingness to communicate (EFL learners) (Abdolrezapour and Alipour, 2021), communication skills and regulating affections (nurses) (Arad et al., 2022).

Significant negative effects were observed among High School and University students, where SI training decreased stress, anxiety and depression levels (Ebrahimi et al., 2015; Dami et al., 2019). Stress levels also significantly decreased among Psychiatry nurses who received SI interventions (Abbas et al., 2018). Death anxiety significantly reduced in nursing home elderly and cancer stigma dropped in cancer patients (Majidi and Moradi, 2018; Lotfabadi et al., 2020).

5.7. SI interventions content

In relation to King's SI dimensions, personal meaning production and transcendental awareness were approached in all SI interventions (Maryam et al., 2012; Majidi and Moradi, 2018; Ebrahimi et al., 2015; Dami et al., 2019; Riahi et al., 2018; Abdolrezapour and Alipour, 2021; Arad et al., 2022; Abbas et al., 2018; Heydari et al., 2017; Lotfabadi et al., 2020). Critical existential thinking was approached in nine studies (Maryam et al., 2012; Majidi and Moradi, 2018; Dami et al., 2019; Riahi et al., 2018; Abdolrezapour and Alipour, 2021; Arad et al., 2022; Abbas et al., 2018; Heydari et al., 2017; Lotfabadi et al., 2020) and conscious state expansion was addressed in seven studies (Majidi and Moradi, 2018; Ebrahimi et al., 2015; Dami et al., 2019; Riahi et al., 2018; Abbas et al., 2018; Heydari et al., 2017; Lotfabadi et al., 2020).

The most common topics covered in SI interventions were self-awareness, self-management, self-consciousness, meaning in life, sense of holiness and interpersonal relationships (including empathy and flexibility to the others). Further detail on interventions' strategies for approaching SI dimensions are detailed in Table 2.

6. Discussion

The purpose of this ScR was to summarize the evidence in relation to the impacts of SI training on human behavior and mental health. Sociodemographic characteristics of the samples, the type of SI interventions and the instruments of SI measurement were also focused in this review.

From the initial works on SI concept in the late 90 s, there's a considerable 15-year gap until the first SI intervention studies, accounting for the need to: first, clarify the concept; then, understand its correlations and impact; and finally, start to intervene to modify outcomes.

Although randomization was not performed in most studies, outcome data consistently showed SI training increased SI levels in different populations in distinct contexts (Maryam et al., 2012; Dami et al., 2019; Riahi et al., 2018; Abdolrezapour and Alipour, 2021). It also showed that SI interventions had positive effects in job satisfaction and communication skills and decreased stress, depression and anxiety (Majidi and Moradi, 2018; Ebrahimi et al., 2015; Dami et al., 2019; Abdolrezapour and Alipour, 2021; Arad et al., 2022; Abbas et al., 2018; Heydari et al., 2017).

In no studies were long-term effects reassessed beyond two months after the end of the sessions. For this reason, more studies are needed to better estimate the long-lasting impact of SI over time as well as to evaluate the need to eventually repeat SI training for higher consolidated results.

SI training implicated complex, subjective and very distinct interventions, not only in respect to the number and duration of the sessions but also in respect to its content and approach. Outcomes were also evaluated with subjective measures and only four studies used SI instruments (Maryam et al., 2012; Dami et al., 2019; Riahi et al., 2018; Abdolrezapour and Alipour, 2021). From this point of view, it is important in the future to study and compare the effectiveness of the protocols and perhaps standardize the SI interventions and the instruments to measure SI pre- and post-intervention.

Concerning the content of SI interventions, it seems most consensual that self-awareness, self-management, self-consciousness, meaning in life, sense of holiness and interpersonal relationships, as well as relaxation and meditation techniques, need to be addressed and debated amongst participants to stimulate personal growth in all four SI dimensions.

SI training showed effects in decreasing cancer stigma among cancer patients and death anxiety among elderly (Majidi and Moradi, 2018; Lotfabadi et al., 2020). Despite the absence of studies in a palliative care setting, this data suggests promising benefits of SI since elderly and cancer patients represent the most common populations and death anxiety is highly prevalent (Tobin et al., 2022; Hu et al., 2022). Nevertheless, more investigation in those contexts is needed to assess SI outcomes and the effects on symptom burden.

Nowadays the pace of healthcare work is often not compatible with adequate training in the area of spiritual intelligence and the provision of integrated and personalized spiritual care becomes compromised. Thus, it is important to acknowledge the benefits of such training, for both the healthcare professional as for the patients and incorporate spiritual intelligence training as part of pre-graduate curricula for any healthcare profession.

Although this ScR was conducted with rigor, some limitations should be noted. The outcomes, despite being significant, were mainly based on single trials. Most studies were conducted in Iran, so sociocultural and religious differences should be considered when outcomes are analyzed and compared with Western countries, for which there is limited evidence (Majidi and Moradi, 2018; Ebrahimi et al., 2015; Dami et al., 2019; Riahi et al., 2018; Abdolrezapour and Alipour, 2021; Arad et al., 2022; Abbas et al., 2018; Heydari et al., 2017; Lotfabadi et al., 2020).

This ScR used multiple databases and four different languages, strengthening and broadening the evidence support it provides. Being a recent concept, the authors considered it important not to exclude gray literature and predatory journal articles, as not to risk missing out on significant and valid research. A study limitation may come from the exclusion of Arabic languages and it is possible that potentially relevant publications were omitted.

7. Conclusion

Ten studies related to SI training in various contexts were reviewed. Among the effects of SI interventions, increase of SI levels, improvement of communications skills and reduction of anxiety, stress and depression levels stand out (Maryam et al., 2012; Majidi and Moradi, 2018; Dami et al., 2019; Riahi et al., 2018; Abdolrezapour and Alipour, 2021; Arad et al., 2022; Abbas et al., 2018; Heydari et al., 2017). Although studies consistently revealed benefits in implementing SI intervention strategies, more evidence is needed to measure long term outcomes.

Based on the findings from this ScR, the authors consider it would be highly recommendable the implementation of SI training programs throughout the healthcare professionals' curricula. These SI training programs should progress to standardization but at least include the most consensual domains of: personal meaning production, transcendental awareness and critical existential thinking.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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2.3.2 Modelling the intervention: Conceptual framework, processes, and outcomes

Family caregivers of patients with advanced cancer in palliative care are exposed to sustained emotional, existential, relational, and practical demands that place them at high risk of psychological distress, burden, and impaired well-being (Adashek & Subbiah, 2020; Applebaum & Breitbart, 2013; Thana et al., 2021; Zhang et al., 2023). While contemporary palliative care frameworks increasingly recognize spirituality as a core dimension of holistic care (Best et al., 2020; Gijsberts et al., 2019; Peng-Keller et al., 2022; Sallnow et al., 2022), less attention has been given to the caregiver's capacity to operationalize spirituality as an adaptive, functional resource in daily caregiving (Boston & Mount, 2006; Selman et al., 2018; Uzun et al., 2024). In this context, spiritual intelligence emerges as a theoretically robust and clinically relevant construct to support caregivers' coping, meaning-making, and resilience (Fallah et al., 2023; Marzban et al., 2022; Mollaei et al., 2024).

Spiritual Intelligence is conceptualized as a distinct yet related construct to spirituality, defined as the ability to intentionally access, integrate, and apply spiritual resources to enhance daily functioning, problem-solving, and interpersonal interactions (Amram, 2022; King & Decicco, 2009). Unlike spirituality as a belief system or existential orientation, spiritual intelligence represents a trainable set of cognitive-reflective capacities that translate spiritual awareness into action (Fidelis et al., 2024; Sharifnia et al., 2022a). Based on the dominant conceptualization proposed by King and operationalized in the SISRI-24 (King & Decicco, 2009)., it encompasses four core dimensions:

1. critical existential thinking,
2. personal meaning production,
3. transcendental awareness, and
4. conscious state expansion.

These dimensions provide the structural basis for understanding how individuals navigate suffering, uncertainty, and relational responsibility in complex life contexts (see *sections 2.1.2* and *2.1.3*).

The role of spiritual intelligence as a protective resource

Evidence synthesized in the preceding scoping reviews (see *sections 2.1.2.; 2.1.3.* and *2.3.1.*) demonstrates consistent positive associations between higher spiritual intelligence levels and resilience, mental health, psychological well-being, emotional intelligence, and adaptive social behaviors. These findings support the conceptualization of spiritual intelligence as a protective psychosocial-spiritual resource, particularly relevant in high-burden caregiving environments where emotional and spiritual exhaustion and existential distress are prevalent (Fallah et al., 2023; Zhang et al., 2023; and see *section 2.1.3.*)

Within this context, spiritual intelligence offers a framework through which family caregivers may reinterpret adversity, sustain a sense of purpose, and engage compassionately without becoming overwhelmed by suffering.

Empirical findings from our research, including the studies examining the relationship between spiritual intelligence and family caregiver burden (Fallah et al., 2023; and see *section 2.2.1.*), indicate that higher levels of spiritual intelligence are associated with lower perceived burden and more adaptive coping profiles, suggesting that spiritual intelligence may reduce the negative psychological impact of prolonged caregiving. This protective effect appears to operate through enhanced meaning-making, greater transcendental perspective, and improved integration of emotional and spiritual resources into daily caregiving practices (see *section 2.2.1.*).

The theoretical framework underpinning the proposed intervention therefore positions spiritual intelligence as a modifiable internal capacity that mediates the relationship between caregiving stressors and caregiver outcomes (Amram, 2022; Sharifnia et al., 2022b; and see *section 2.3.1.*). Drawing on the intervention modelling work, spiritual intelligence is understood not merely as an individual trait but as a dynamic process activated through reflective practices, intentional awareness, and relational engagement (Amram, 2022; Fidelis et al., 2024; Sharifnia et al., 2022a). By strengthening spiritual intelligence dimensions, caregivers may develop greater existential coherence, emotional regulation, and compassionate presence, which in turn positively influence both caregiver well-being and the quality of care provided to the patient.

This framework assumes that caregiving occurs within a complex system influenced by personal, relational, and contextual factors (Adashek & Subbiah, 2020; Benson et al.,

2023; Coelho, 2024; Mercadante et al., 2022). Baseline caregiver characteristics (e.g., age, prior spiritual orientation, emotional intelligence, caregiving context) interact with spiritual intelligence capacities to shape adaptive responses. The intervention is therefore designed to enhance spiritual intelligence through structured activities that foster meaning production, critical reflection on existential issues, awareness of transcendence in caregiving relationships, and conscious regulation of attention and presence.

In summary, this theoretical framework conceptualizes spiritual intelligence as a central protective and transformative mechanism in family caregiving within palliative care. Grounded in empirical evidence and contemporary spiritual intelligence evidence base, it provides a coherent foundation for modelling intervention processes and outcomes aimed at reducing caregiver burden, enhancing psychological and spiritual well-being, and promoting sustainable, compassionate caregiving.

Operationalizing the intervention: modelling components and processes

According to the *Medical Research Council* framework for the study and development of complex interventions (Craig et al., 2008; Skivington et al., 2021), the modelling of processes and outcomes constitutes a pivotal stage, as it clarifies how theoretical constructs are translated into intervention components and how these components are expected to generate change.

In the present study, this phase operationalizes the theoretical framework that conceptualizes spiritual intelligence as a dynamic, trainable, and protective resource for family caregivers of adult cancer patients receiving palliative care.

Grounded in contemporary models of spiritual intelligence and supported by emerging empirical evidence, the proposed intervention assumes that caregiving-related burden is not solely determined by exposure to stressors, but is significantly influenced by caregivers' capacity to meaningfully interpret, integrate, and respond to these experiences (Fallah et al., 2023; Irani et al., 2025; Kaur et al., 2013; Shahcheragh et al., 2024). Accordingly, the modelling process identifies the core components, mechanisms of action, and expected outcomes through which a spiritual intelligence-focused intervention may enhance family caregivers' adaptation, resilience and well-being.

a. Intervention components and structural framework

The proposed intervention is designed to activate and strengthen core dimensions of spiritual intelligence: existential questioning, meaning and purpose production, spiritual and transcendental awareness, and equanimity (Dhumal et al., 2023; King & Decicco, 2009; Sharifnia et al., 2022b; and see *section 2.3.1.*). More than isolated actions compounding this complex intervention, these components are intentionally integrated to ensure feasibility and ethical sensitivity within the highly demanding context of palliative care.

The conceptual architecture of the intervention must include existential reflection and meaning-making practices (Dharmawardene et al., 2016; Dhumal et al., 2023; Sharifnia et al., 2022b; and see *sections 2.2.1* and *2.3.1.*). By engaging in structured exercises focused on questions of suffering, finitude, and purpose, family caregivers are encouraged to move beyond the immediate stressor toward a level of cognitive reappraisal. These processes may facilitate the development of a personal sense of meaning within the caregiving experience, allowing for a more resilient interpretation of adversity (Dharmawardene et al., 2016; Sharifnia et al., 2022b; and see *sections 2.2.1.* and *2.3.1.*).

Complementing this reflective work, the intervention must incorporate spiritual and transcendental awareness practices *(*Dharmawardene et al., 2016; and see *sections 2.1.3, 2.2.1* and *2.3.1.)*., including but not limited to mindfulness, contemplative attention, and symbolic reflection. These practices are designed to broaden the family caregiver's perspective, fostering an awareness of connections that transcend daily clinical demands, whether through relational, existential, or sacred dimensions. To ensure these insights are effectively translated into practice, our model emphasizes reflective integration into daily care. Through facilitated dialogue or journaling, family caregivers are guided to consciously apply their spiritual insights to everyday situations, thereby enhancing their intentionality and presence during caregiving interactions.

Finally, the intervention must operationalize these internal capacities through compassion and conscious presence training (Sharifnia et al., 2022a). By cultivating non-judgmental awareness and self-compassion, family caregivers will develop the emotional regulation necessary to sustain a compassionate presence. This integrated approach ensures that spiritual intelligence is used as a functional and protective

resource, supporting both the family caregiver's resilience and well-being and the quality of the patient-caregiver relationship.

b. Implementation considerations and delivery modalities

Evidence from previously described spiritual intelligence interventions conducted in the general population, healthcare professionals, and, to a lesser extent, family caregivers, supports both the feasibility and effectiveness of programs aimed at enhancing spiritual intelligence (Sharifnia et al., 2022b; and see *section 2.3.1.*). Across these contexts, group-based formats have been the most frequently adopted approach and offer a cost-effective strategy for reaching a greater number of participants (Heydari et al., 2017; Nordentoft et al., 2025; Riahi et al., 2018; Sharifnia et al., 2022b; and see section 2.3.1.). Beyond logistical advantages, group-based delivery is especially congruent with the nature of spiritual intelligence development. Shared reflective spaces enable participants to exchange perspectives, normalize experiences of suffering and vulnerability, and collectively reframe adversity. Within this relational context, caregivers may actively cultivate core spiritual intelligence attributes such as tolerance, non-judgment, compassion, and conscious presence, not only through guided exercises but also through peer interaction. An additional benefit of group interventions is the spontaneous emergence of mutual support networks, which may persist beyond the formal intervention period and constitute an important ancillary resource for caregivers (Nordentoft et al., 2025).

A well-documented barrier to caregiver participation in supportive interventions is the difficulty or reluctance to temporarily relinquish caregiving responsibilities (Abreu et al., 2016). Group-based formats may help mitigate this barrier by maximizing the perceived benefit of each session through intensified interaction and shared learning.

Hybrid delivery models, combining in-person and online sessions, may further enhance feasibility and accessibility (Naoum et al., 2021; Tkatch et al., 2017; Zhai et al., 2023). While exclusively online interventions offer flexibility and reduce logistical constraints, they may limit the depth of interpersonal engagement that is particularly valuable in spiritually oriented work. Conversely, in-person sessions facilitate richer relational dynamics and experiential learning but may be less accessible for some caregivers (Umubyeyi et al., 2025). A hybrid approach may therefore represent an optimal balance, allowing in-person sessions to focus on relational and experiential components, while

online sessions support reflective exercises, psychoeducational content, and continued dialogue in a more flexible format.

Taken together, these considerations suggest that a group-based, potentially hybrid intervention model aligns well with both the theoretical foundations of spiritual intelligence and the practical realities of family caregiving in palliative care. Such an approach may maximize reach, acceptability, and sustainability, while preserving the depth of engagement required to support meaningful spiritual and existential development.

c. Mechanisms of change

The intervention is hypothesized to act through four key mechanisms, namely interconnected cognitive reframing, emotional regulation, relational attunement and protective feedback loops in a way that activation of reflective capacities an existential processes helps caregivers develop greater awareness of their internal experiences and belief systems, enabling intentional responses to caregiving challenges (King & Decicco, 2009). Also, adaptive meaning construction, through critical existential reflection, enables caregivers to reconstruct the meaning of illness, caregiving, and loss in ways that reduce distress and enhance coherence (Applebaum et al., 2013; McAndrew et al., 2023; Park, 2010). By integrating spiritual resources and increased transcendental awareness this intervention also supports the use of spiritual perspectives as coping resources in moments of uncertainty and suffering (Amram, 2022).

Reinforcing these skills through practice and repeated engagement in reflective and awareness-based activities promotes consolidation of spiritual intelligence skills and sustained adaptive functioning. These processes are understood as dynamic and iterative, evolving alongside changes in the patient's condition and caregiving demands.

d. Expected Outcomes

To evaluate the effectiveness of the intervention, outcomes are organized into primary and secondary levels:

<u>Primary Outcomes:</u>

- Increased levels of spiritual intelligence across its core dimensions.
- Reduced caregiver burden and psychological distress.
- Enhanced resilience and adaptive coping with caregiving demands.

Secondary Outcomes:

- Improved quality of caregiving and relational engagement.
- Better attention to patients' spiritual needs.
- Greater sense of meaning, purpose, and existential coherence.
- Improved emotional well-being and self-reported quality of life.

These outcomes reflect both individual-level benefits for caregivers and indirect benefits for patients through improved caregiving quality, namely for spiritual care.

Consistent with the *Medical Research Council* framework (Craig et al., 2008; Medical Research Council et al., 2019; Skivington et al., 2021), both process and outcome indicators must be assessed to evaluate intervention feasibility and effectiveness. Quantitative measures must include validated instruments assessing spiritual intelligence (King & Decicco, 2009), caregiver burden (Zarit et al., 1980), and psychological well-being, while qualitative approaches must explore caregivers lived experiences of the intervention and perceived mechanisms of change.

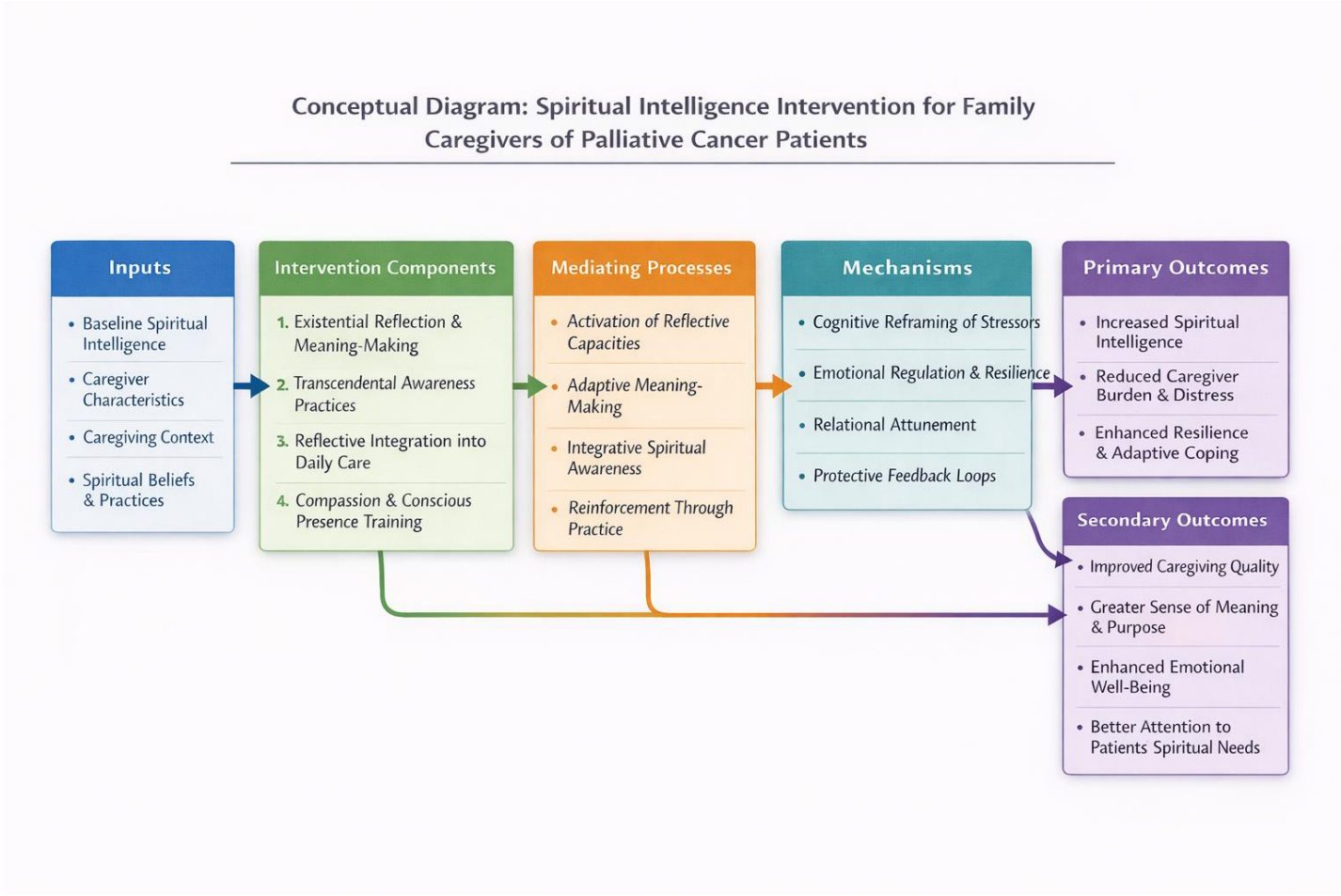


Figure 1. Conceptual diagram of spiritual intelligence intervention for family caregivers of palliative care patients.

In summary, the modelling of processes and outcomes translates the theoretical understanding of spiritual intelligence as a protective, modifiable capacity into a structured intervention pathway, as shown in Figure 1. By articulating the components, mechanisms, and expected impacts, this model provides a robust foundation for piloting, refining, and evaluating a complex intervention aimed at supporting family caregivers of patients with advanced cancer in palliative care.

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3. CHAPTER 3: Integrated overview of the performed studies

This chapter brings together the findings of the studies conducted within this thesis, offering a critical synthesis of their collective contributions rather than a reiteration of individual results. It situates the conceptual, empirical, and intervention-modelling outputs within a single interpretative framework, examining how they converge to address the research questions and objectives defined at the outset. Grounded in the *Medical Research Council* framework for the development of complex interventions (Craig et al., 2008; Skivington et al., 2021), the chapter provides a reflective appraisal of the overall research process and its contribution to advancing knowledge on spiritual intelligence in family caregiving within palliative care.

3.1. Discussion

The discussion section critically interprets the main findings arising from this research in light of existing theory, empirical evidence, and contemporary palliative care practice. Organized thematically, it first addresses the conceptual evolution of spiritual intelligence and its refinement through empirical evidence, then examines its relevance within healthcare and palliative care contexts. The discussion subsequently focuses on family caregivers, integrating new empirical findings on spiritual intelligence profiles, associated factors, and caregiver adaptation, before considering implications for intervention design and health systems.

Conceptual debate and theoretical evolution of spiritual intelligence

While analytical cognition and emotional competence are widely recognized as core intrinsic components of human cognitive functioning, spiritual intelligence remains a subject of ongoing debate (Amram, 2022; Gardner, 2000; King & Decicco, 2009; Zohar & Marshall, 2000). Scholarly discussions surrounding spirituality—whether approached from existential, philosophical, or religious perspectives—are frequently shaped by cultural, geographical, and even political contexts, rendering its academic treatment inherently sensitive and complex (Koenig, 2012; Peng-Keller et al., 2022; Puchalski et al., 2014).

Approaching spirituality through the lens of multiple intelligence theory represents an important conceptual shift (Emmons, 2000; Zohar & Marshall, 2000). Although this perspective has been met with critique regarding its theoretical boundaries and empirical validation (Gardner, 2000; Mayer, 2000), it has gained increasing legitimacy as empirical evidence accumulates and conceptual refinement progresses. Nevertheless, continued efforts are required to clarify the construct of spiritual intelligence, critically appraise its functional role, and explore its systemic implications within healthcare contexts.

Although the initial conceptualization of spiritual intelligence originated primarily in Western academic settings (Emmons, 2000; King & Decicco, 2009), empirical research has expanded most robustly within Middle Eastern and Asian cultural contexts (Hanefar et al., 2025; Mollaei et al., 2024; Riahi et al., 2018; Stiliya et al., 2024). In more sacral

societies where spiritual and religious dimensions are more explicitly integrated into daily life, the potential applications of spiritual intelligence were recognized earlier and subjected to systematic investigation, with overall broader engagement with the concept more recently, particularly following the COVID-19 pandemic, which exposed profound existential, ethical, and relational vulnerabilities and reignited societal reflection on meaning, suffering, and interconnectedness (Aliabadi et al., 2021; Badrudin et al., 2021; Koenig, 2020; Maghool et al., 2023).

Refining the concept of spiritual intelligence: integrating theory and evidence

Given this expanding theoretical and empirical landscape, there is a clear need to revisit and refine original models of spiritual intelligence to reflect contemporary evidence (Fidelis et al., 2024; and see *section 2.1.3.*). The concept analysis developed within this research contributes to this effort by integrating findings from multiple quantitative studies, resulting in a more coherent and updated conceptualization of spiritual intelligence. The proposed framework identifies six core attributes: transcendental awareness, spiritual consciousness, equanimity, life wisdom, meaning- and purpose-making, and existential questioning (see *section 2.1.2.*). This synthesis reconciles previously divergent theoretical perspectives and provides a unifying structure grounded in empirical findings.

Notably, the revised framework reinforces King's dimensions of spiritual intelligence—transcendental awareness, personal meaning production, critical existential thinking, and conscious state expansion (King & Decicco, 2009), while also incorporating elements emphasized by Zohar and Marshall, Emmons, Wigglesworth, and Amram and Dryer since attributes such as equanimity and life wisdom capture inner peace, compassion, and humanitarian orientation, while spiritual consciousness and existential questioning reflect a holistic and integrative worldview that is consistently described across previous theoretical frameworks (Amram & Dryer, 2008; Emmons, 2000; Wigglesworth, 2012; Zohar & Marshall, 2000).

This expanded conceptual framework offers a more comprehensive understanding of how spiritual intelligence operates within relational and existential contexts. Its relevance becomes especially relevant in environments where existential vulnerability is paramount, such as palliative care (Best et al., 2020; Boston & Mount, 2006; Puchalski

et al., 2014; Sallnow et al., 2022). In such settings, the capacity to navigate suffering, uncertainty, and end-of-life transitions draws directly on the cognitive, emotional, and existential resources encompassed by spiritual intelligence (McAndrew et al., 2023). By emphasizing the potential of spiritual intelligence to promote positive health, occupational, and relational outcomes, this revised definition strengthens the rationale for developing structured interventions and informs future policy and practice aimed at fostering resilient, patient-centered healthcare systems (Akbarizadeh et al., 2013; Aliabadi et al., 2021; Kaur et al., 2013).

Spiritual intelligence in healthcare and palliative care: from policy to practice

Historically, spiritual themes occupied a peripheral position within mainstream scientific discourse, often confined to specialized or lower-impact outlets (Koenig, 2012; Saad & De Medeiros, 2020). This landscape has changed substantially. The growing presence of spiritual intelligence research in high-impact, peer-reviewed journals reflects increasing recognition of its scientific and clinical relevance (Hanefar et al., 2025; Stiliya et al., 2024). The publication of the conceptual frameworks and empirical findings developed in this thesis within first-quartile journals, undergoing rigorous peer appraisal, further underscores that spirituality, and spiritual intelligence in particular, has become a legitimate and integral domain of contemporary scientific inquiry.

The recognition of spirituality as a dimension of human well-being is also reflected in the World Health Organization's longstanding efforts to articulate a holistic definition of health (Dhar et al., 2013; Koenig, 2012; Peng-Keller et al., 2022). While integrating spirituality into evidence-based frameworks presents conceptual and methodological challenges, namely, ensuring frameworks remain inclusive yet scientifically neutral, international momentum continues to grow toward embedding spiritual care within healthcare education (Puchalski et al., 2020; Puchalski et al., 2014). This trend is particularly evident in palliative care, where interdisciplinary spiritual care is well established and supported by international recommendations that emphasize reflective practice, self-awareness, identification of spiritual needs, integration into care planning, and respect for cultural and religious diversity (Best et al., 2020; Best et al., 2023).

Despite these recommendations, a persistent gap remains between policy, education, and clinical practice. Many healthcare professionals report limited competence and

confidence in providing spiritual care (Balboni et al., 2014; Rushton, 2014). The absence of consensual instructional and evaluative frameworks points to a broader need for evidence-based models capable of bridging the gap between spiritual intelligence theory and practical clinical applications.

Beyond educational barriers, systemic constraints further hinder the provision of spiritual care. Chronic workforce shortages, time pressures, and lack of privacy in overcrowded clinical environments pose significant obstacles (OECD, 2023a, 2025a, 2025b; Rushton, 2014; Selman et al., 2018). Addressing these challenges requires more than incremental adjustments; it necessitates a profound paradigm shift toward the humanization of care and the development of healthcare systems that genuinely support holistic patient-centered practice.

Even within palliative care teams, recognized for their relational and compassionate approach to patients' and family, these constraints persist and may limit optimal performance (Balboni et al., 2014; Gijsberts et al., 2019). The Portuguese context reflects similar challenges, with important regional inequities in access to palliative care, insufficient funding, and shortages of specialized professionals (Dos Santos et al., 2024; Manuel et al., 2023). These limitations affect not only service delivery but also teams' capacity to engage in continuing education that supports the provision of state-of-the-art care, including training in spiritual care.

Spiritual intelligence as a modifiable resource in the healthcare professionals

Within this context, the scoping review on spiritual intelligence (conducted as part of this research) highlights the potential of addressing spirituality through a universal, pragmatic, and problem-solving framework (see *section 2.1.3.*). Given that spiritual self-awareness is a cornerstone of spiritual care competence, training spiritual intelligence offers significant benefits for personal health, growth, and interpersonal functioning (Akbarizadeh et al., 2013; Aliabadi et al., 2021; Ghonchehpour et al., 2025; Riahi et al., 2018).

By bringing together evidence showing that higher spiritual intelligence is associated with greater resilience, better overall and mental health, emotional intelligence, and communication skills, and with lower levels of burnout, stress, depression, and anxiety, this review highlights the relevance of spiritual intelligence for healthcare education

(see *section 2.1.3.*). Interventions targeting spiritual intelligence may therefore support adaptive coping, psychological well-being, healthier behaviors, and the development of compassionate, tolerant, and relational caring practices (Kaur et al., 2013; Riahi et al., 2018; Sahebalzamani et al., 2013; Sharifnia et al., 2022a; Snelgar et al., 2017).

The benefits of spiritual intelligence training for healthcare professionals have been increasingly documented over time, with evidence further reinforced by the psychological tension experienced during and after the COVID-19 pandemic and the attention drawn to mental health in its aftermath (Ajele et al., 2021; Alrashidi et al., 2022; Badrudin et al., 2021; Koenig, 2020). For example, interventions targeting nurses have demonstrated improvements not only in their spiritual intelligence but also in the quality of spiritual and general care delivered (Fashi, 2017; Riahi et al., 2018; Sharifnia et al., 2022b). This dual benefit provides a strong evidence base for operationalizing spiritual care education and training through spiritual intelligence-enhancing practices that can strengthen the quality of care as much as mitigate the negative mental health impact of being exposed to suffering and hardiness.

Family caregivers in palliative care: burden, meaning and spiritual intelligence

These considerations are especially pertinent in palliative care, where existential distress, moral uncertainty, and ethical decision-making are frequent in daily practice (Boston & Mount, 2006; McAndrew et al., 2023). While these challenges affect healthcare professionals, they are often even more pronounced for family caregivers. In palliative care, patients and family caregivers are conceptualized as a dynamic duo of palliative care needs; however, caregivers occupy a uniquely complex position in these dynamics since they are both at the center of the palliative care intervention – together with the patient, experiencing anticipatory grief, role and relationship changes and emotional suffering – while also functioning as indispensable partners in care delivery for the palliative care team, providing continuous assistance to the patient's daily needs, managing symptoms, medications, and healthcare interactions (Alam et al., 2020; Applebaum & Breitbart, 2013; Mercadante et al., 2022; Payne & EAPC Task Force on Family Carers, 2010; Pinto et al., 2024).

Acknowledging this dual role requires addressing caregivers' emotional and spiritual needs while also recognizing their capacity to contribute meaningfully to patients'

holistic care. Patients frequently identify family members as their preferred providers, namely for spiritual support, given shared values, beliefs, and life narratives (Boston & Mount, 2006; Rego et al., 2020; Selman et al., 2018). This natural trust underscores the importance of empowering caregivers through spiritual intelligence development.

Beyond its association with caregiver burden, the present study provides an empirical characterization of the spiritual intelligence profile of family caregivers of patients with advanced cancer receiving palliative care. Overall, caregivers demonstrated moderate to high levels of spiritual intelligence, suggesting the presence of pre-existing spiritual and existential resources that may be mobilized in the context of caregiving. This finding aligns with literature describing caregiving at the end of life as a meaning-intensive experience, in which individuals are repeatedly confronted with questions of purpose, responsibility, suffering, and finitude (Boston & Mount, 2006; McAndrew et al., 2023). Rather than reflecting a generalized spiritual deficit, the observed profile suggests a selective development of spiritual intelligence capacities shaped by caregiving demands.

Among the dimensions of spiritual intelligence, personal meaning production emerged as the most strongly developed capacity in this population. This predominance underscores the central role of meaning-making in the caregiving experience, particularly in palliative care contexts where uncertainty, loss, and existential vulnerability are pervasive. The capacity to construct meaning from adversity has been consistently associated with psychological adjustment, resilience, and sustained engagement in caregiving roles (Park, 2010; Applebaum & Breitbart, 2013). The relatively lower scores observed in critical existential thinking and conscious state expansion may reflect the pragmatic and emotionally saturated nature of caregiving, in which caregivers prioritize functional meaning over abstract existential inquiry or altered states of awareness. These findings reinforce the conceptualization of spiritual intelligence as a relational and adaptive construct, responsive to lived experience rather than purely philosophical reflection.

The use of the Portuguese version of the Spiritual Intelligence Self-Report Inventory (SISRI) (Antunes et al., 2018) further contributes to understanding how spiritual intelligence is expressed in this cultural and clinical context. The absence of transcendental awareness as an independent dimension in the Portuguese validation mirrors findings from other culturally grounded adaptations and may indicate that

transcendence is experienced in more relational, embodied, or existential terms rather than as a distinct cognitive domain (Antunes et al., 2018; Fidelis et al., 2024). In palliative caregiving, spirituality is often enacted through presence, meaning-making, and relational connection rather than explicit transcendental beliefs, supporting the suitability of this adapted instrument for capturing functional spiritual intelligence in family caregivers. This reinforces the importance of culturally sensitive measurement approaches when studying spirituality-related constructs in health contexts.

In our research study, the SISRI demonstrated excellent internal consistency in a population of family caregivers of patients receiving palliative care, further extending its psychometric applicability to a context characterized by high existential and emotional burden and provide a robust empirical foundation for the interpretation of the related findings (see *section 2.2.2.*).

Findings from this research confirm the relationship between high levels of burden among caregivers of palliative care patients, and known associated factors such as age, limited social support, reduced resilience, and competing caregiving responsibilities (see *section 2.2.1.*). A novel contribution of this study lies in identifying meaning and purpose-making (a previously confirmed intrinsic attribute of spiritual intelligence (see *section 2.1.2.*)) as significantly associated with caregivers' self-efficacy, a key dimension of burden. This finding supports the strategic targeting of spiritual intelligence to enhance caregivers' capacity to cope with suffering, both their own and the patient's (Applebaum et al., 2013; McAndrew et al., 2023).

The variability observed in family caregivers' spiritual intelligence further highlights its sensitivity to contextual and experiential factors. Higher levels of spiritual intelligence were independently associated with the absence of caregiving help, previous caregiving experience, and greater resilience, particularly in future-oriented planning (see *section 2.2.2.*). These findings suggest that sustained exposure to caregiving demands may foster spiritual intelligence through experiential learning, adaptive reflection, and the necessity to derive meaning under conditions of limited external support (Guerriere et al., 2016; Mollaei et al., 2024). Conversely, the negative association between patients' asthenia and caregivers' spiritual intelligence may reflect the depleting effect of intense physical caregiving demands, which can constrain caregivers' cognitive and emotional resources for reflection and meaning-making. Together, these results support the

understanding of spiritual intelligence as a dynamic and context-dependent capacity and resource, shaped by both adversity and available coping resources.

Consistent with previous evidence, lower spirituality has been associated with higher emotional burden, with inner peace emerging as a key protective factor (Vigna et al., 2020). Also, existential distress among caregivers appears responsive to spiritual education and meaning-making interventions (McAndrew et al., 2023), further reinforcing the relevance of targeting core spiritual intelligence attributes such as equanimity and purpose-making. Additional studies have also associated caregivers' spiritual intelligence to emotional intelligence, communication skills, and social cognition, strengthening the case for its broad psychosocial benefits (Kaur et al., 2013; Mehralian et al., 2023).

Taken together, these findings suggest that spiritual intelligence among family caregivers is neither fixed nor uniformly distributed, but rather emerges through caregiving experience, contextual pressure, and adaptive meaning-making. The selective strengthening of certain spiritual intelligence dimensions, alongside the vulnerability of others under conditions of physical and emotional overload, underscores the relevance of intentional interventions aimed at fostering spiritual intelligence in this population. Such interventions may not only reinforce existing strengths, particularly meaning-making capacities, but also support family caregivers in developing more balanced and sustainable spiritual resources, thereby informing the rationale for the intervention model proposed in the following section.

Implications for intervention design, home-base care and healthcare systems

The scoping review of spiritual intelligence interventions included in this research compiles evidence-base for the adequacy of the strategic targeting of spiritual intelligence and identifies the most consensual contents in the interventions described in the literature – (existential reflection, meaning and purpose making, awareness of the spiritual and transcendent, and training of compassionate and conscious presence) that align with both the revised conceptual framework and caregivers' expressed needs (Uzun et al., 2024; and see *section 2.3.1.*).

Existing interventions across general populations, healthcare professionals, and caregivers demonstrate the feasibility and validity of spiritual intelligence programs

(Riahi et al., 2018; Sharifnia et al., 2022; and see *section 2.3.1.*). Group-based formats, as the one suggested in this research's model, offer cost-effective delivery and foster shared reflection, reframing of adversity, and the cultivation of tolerance and compassion. For caregivers, group interventions also generate valuable peer support networks (Nordentoft et al., 2025).

In resource-constrained healthcare systems such as Portugal's, regional group or hybrid (in-person and online) interventions may be particularly feasible. While caregivers often face barriers related to time constraints and caregiving responsibilities, flexible delivery formats can enhance accessibility (Abreu et al., 2016; OECD, 2025b). Although digital interventions may introduce concerns about digital exclusion, evidence suggests that online or hybrid programs can achieve outcomes comparable to, or even exceeding, face-to-face formats (Naoum et al., 2021; Zhai et al., 2023).

By enhancing caregivers' resilience and confidence in their caregiving role, spiritual intelligence interventions may also support sustained home-based palliative care, aligning with patients' predominant preference to remain and die at home, while reducing pressure on acute care services (Noskova et al., 2025; OECD, 2023b, 2025a; Pinto et al., 2024; Umubyeyi et al., 2025). Moreover, such interventions may function as primary prevention strategies, strengthening coping resources, reducing anxiety and depression (frequently reported by advanced cancer patients' caregivers), and promoting existential coherence that may positively influence the grieving process (Applebaum et al., 2013; Coelho et al., 2020; McAndrew et al., 2023; Noskova et al., 2025; Park, 2010; Taylor, 2020).

Overall, interventions targeting family caregivers in palliative care have demonstrated benefits for caregivers' mental health, quality of life, and self-regulation, as well as for patients' end-of-life experience and quality of care. While engagement barriers persist, particularly related to caregiving demands, hybrid and flexible intervention models appear well suited to address these challenges. Within this context, spiritual intelligence interventions emerge as a theoretically grounded, empirically supported, and pragmatically feasible strategy to enhance both caregiver well-being and the quality of palliative care delivery (see *sections 2.1.3., 2.2.1* and *2.3.1.*).

In summary, this body of work advances the understanding of spiritual intelligence as a meaningful, actionable, and ethically grounded construct within palliative care, particularly in relation to family caregivers (see *sections 2.1.2.* and *2.1.3.*). By refining the conceptual framework of spiritual intelligence, synthesizing the existing evidence, and empirically demonstrating its protective role in caregiver burden and self-efficacy, this research provides a robust foundation for the development of complex interventions tailored to the realities of caregiving at the end of life (Coelho, 2024; and see *section 2.2.1.*). Framed within contemporary challenges facing palliative care, namely resource constraints, increasing reliance on family caregiving, and the imperative for holistic, person-centered care, spiritual intelligence emerges not merely as an individual attribute, but as a modifiable resource with the potential to benefit caregivers, patients, and healthcare systems alike (Best et al., 2020; OECD, 2025a; Payne & EAPC Task Force on Family Carers, 2010; Sallnow et al., 2022). The findings support the relevance, feasibility, and timeliness of investing in spiritual intelligence interventions, and underscore the need for future research to test, refine, and implement such approaches in diverse clinical and cultural contexts.

3.2. Strengths and limitations of the study

This section critically appraises the methodological, conceptual, and empirical strengths of the research, alongside the limitations that should be considered when interpreting its findings. Rather than detracting from the value of the work, these limitations are examined as intrinsic to the complexity of studying spiritual intelligence and family caregiving within palliative care contexts. Attention is given to how methodological choices, contextual constraints, and external factors shaped the research process, while also highlighting how these same factors informed the robustness, originality, and relevance of the overall contribution.

Strengths

This doctoral research presents several strengths that collectively enhance its scientific rigor, originality, clinical relevance, and contribution to palliative care research and practice.

First, the thesis is structured as a collection of peer-reviewed scientific articles, many of which have been published in international journals ranked in the first and second quartiles. This publication-based format constitutes a substantial strength, as the work has already undergone extensive international peer review, methodological scrutiny, and theoretical critique. Acceptance in high-impact journals reflects the robustness of the research design, the clarity of its conceptual framing, and the relevance of the topic within the contemporary scientific landscape. Importantly, this process contributed to the refinement of arguments, strengthening of methodological decisions, and enhancement of the coherence allowing clarity of the final body of work.

Second, this research makes a significant conceptual contribution by updating and refining the construct of spiritual intelligence. By integrating established theoretical models with empirical evidence derived from multiple quantitative studies, the thesis advances a more coherent and operationally meaningful conceptualization of spiritual intelligence. This conceptual clarification is particularly relevant in health and palliative care contexts, where clarity of constructs is essential for valid measurement, intervention design and ethical application. The proposed framework reconciles

previously fragmented perspectives and provides a solid foundation for future research and practice-oriented interventions.

Third, the empirical focus on family caregivers of patients receiving palliative care represents a major strength and an innovative contribution. To the author's knowledge, this is one of the first studies to systematically assess spiritual intelligence in family caregivers of palliative care patients within the Portuguese context, which further strengthens this contribution by providing a clearer empirical portrait of how spiritual intelligence manifests in this population. By generating original data on caregivers' spiritual intelligence levels, dimensions, and associated factors, this research opens new avenues for understanding caregivers' adaptive resources and highlights spiritual intelligence as a potentially modifiable factor with implications for caregiver burden, self-efficacy, and well-being. By bringing empirical attention to a population that is central to palliative care yet frequently underrepresented in intervention research, this thesis contributes to both national and international discussions on caregiver support.

Fourth, this research is strongly grounded in sustained clinical experience in palliative care, which constitutes an important methodological and interpretive strength. Clinical practice informed the formulation of research questions, the selection of outcomes, and the ethical positioning of the study, ensuring close alignment with the realities of patients and family caregivers in everyday care settings. This clinical grounding supported a person-centered and relational approach, conceptualizing the patient–caregiver dyad as a unique and dynamic unit whose interaction shapes both the caregiving experience and engagement with the therapeutic team. Rather than approaching family caregivers as a homogeneous group or reducing spiritual intelligence to an abstract psychological variable, the research deliberately embraced the complexity, vulnerability, and contextual specificity of caregiving in palliative care. This perspective enhanced the interpretive depth of the findings and reinforced the clinical relevance and ethical sensitivity of the proposed intervention model, particularly within the Portuguese healthcare context.

Fifth, the integration of conceptual analysis, observational research, and intervention modelling within a single, coherent research program represents an additional strength. Guided by the *Medical Research Council* framework for the development of complex interventions (Craig et al., 2008; Medical Research Council et al., 2019), the research

adopts a systematic and iterative approach that explicitly links theory, measurement, empirical exploration, intervention design and practice. This integration strengthens the internal coherence of the thesis and ensures that the proposed intervention is grounded not only in theoretical justification and empirical evidence, but also in clinical feasibility and real-world applicability, avoiding the development of an intervention model detached from clinical practice.

Limitations

Despite the strengths of this research, several limitations should be acknowledged.

One limitation arises from the article-based structure of the thesis. While this format enhances scientific dissemination and methodological rigor, it may lead to some degree of content repetition across chapters, particularly regarding theoretical background and contextual framing. Although efforts were made to minimize redundancy in the integrated overview, some overlap is inherent to this format and may affect the reading experience.

A second set of limitations relates to the characteristics of the study population. Participants were family caregivers of patients followed predominantly in outpatient or ambulatory palliative care settings. While this facilitated recruitment and data collection, it may have introduced selection bias and limits the representativeness of the sample. Caregivers of patients in inpatient, institutionalized, or more advanced clinical trajectories may experience different levels of burden, distress, and spiritual challenges that were not fully captured in this study. In addition, the focus on family caregivers of adult cancer patients (although justified by the specific illness trajectory and caregiving demands) restricts the applicability of findings to caregivers of patients with non-cancer palliative conditions, who may face distinct caregiving experiences.

Third, issues related to sample representativeness and response bias should be considered. Participation was voluntary, which may have favored the inclusion of caregivers with greater availability, engagement, or openness to reflective and spirituality-related topics. As a result, family caregivers experiencing more severe burden or distress may be underrepresented. Furthermore, the relative homogeneity of the sample in terms of cultural context and care setting may limit the transferability of findings to more diverse caregiving populations.

Fourth, the empirical study included in this research employed a cross-sectional design and relied on self-report measures. Consequently, causal relationships cannot be established, and findings may be influenced by information bias, including social desirability bias, particularly given the existential and value-laden nature of spirituality and caregiving. Nevertheless, these methodological choices were appropriate for the exploratory and theory-building aims of the research and were addressed through cautious interpretation of results and triangulation with existing evidence.

Fifth, limitations related to the literature informing the conceptual and scoping reviews should be acknowledged. A substantial proportion of the available empirical studies on spiritual intelligence originate from Middle Eastern and Asian contexts, where cultural, religious, and healthcare frameworks differ from those of Western settings. While this literature has been essential in advancing empirical knowledge on spiritual intelligence, cultural differences may influence both conceptualization and measurement of the construct. Additionally, variability in methodological quality excluded from the reviews potentially relevant evidence published in journals with less rigorous peer-review processes. These factors reinforce the need for critical appraisal and contextual interpretation of the evidence base.

Finally, data collection was partially conducted during the COVID-19 pandemic, which posed significant challenges. The pandemic context affected caregivers' access to services, and availability to participate in research, influencing both recruitment and research timeline compliance. While this context may have also intensified certain stressors (thus influencing responses), it also reflects a real-world scenario that underscores the relevance of examining spiritual and existential resources during periods of heightened vulnerability.

Taken together, these limitations reflect challenges inherent to conducting clinically grounded, ethically sensitive research in palliative care rather than fundamental weaknesses of the study. Importantly, they inform clear directions for future research, including broader and more diverse samples, longitudinal designs, and culturally sensitive intervention testing.

3.3. Implications for clinical practice and directions for further research

Building on the integrated findings of this thesis, this section outlines the implications for palliative care practice, education, and future research. It considers how spiritual intelligence may be operationalized as a clinically relevant and ethically grounded resource to support family caregivers, while also identifying priorities for further empirical testing, refinement, and implementation of spiritual intelligence–based interventions. Particular attention is given to the translation of evidence into practice and to research directions necessary to strengthen the intervention's feasibility, effectiveness, and adaptability across contexts.

Implications for clinical practice

The findings of this research carry important implications for palliative care practice, particularly regarding the recognition of family caregivers as integral members of the unit of care and as individuals with distinct emotional, existential, and spiritual needs. By demonstrating meaningful associations between spiritual intelligence, caregiver burden, self-efficacy, and adaptive coping, this work supports a more comprehensive clinical approach that moves beyond exclusively practical or psychosocial assessments to include caregivers' internal meaning-making and existential resources.

From a clinical perspective, these findings reinforce the importance of approaching each patient–caregiver dyad as a unique and evolving relational unit. Caregivers' responses to illness, suffering, and loss are shaped not only by external demands but also by their personal narratives, values, and capacity to integrate caregiving into their life story. Attending to spiritual intelligence in clinical encounters allows professionals to better understand how caregivers interpret their role, sustain hope or equanimity, and negotiate the emotional and moral complexity of caring for a loved one at the end of life.

In practice, this implies that caregiver assessment in palliative care should incorporate sensitivity to meaning-making processes, existential distress, and inner coping resources that influence how caregiving challenges are perceived and managed. Early identification of caregivers who struggle to construct meaning, maintain emotional balance, or reconcile caregiving with their personal identity may enable timely,

preventive interventions, rather than reactive responses once burden, exhaustion, or disengagement are already established.

Importantly, recognizing spiritual intelligence in caregivers does not entail imposing spiritual beliefs or practices. Rather, it supports a deeply person-centered approach in which caregivers' own values, worldviews, and existential frameworks are acknowledged and respected. This stance aligns closely with the ethical foundations of palliative care, particularly respect for dignity, autonomy, and cultural diversity, and avoids the instrumentalization of spirituality while still engaging meaningfully with its clinical relevance.

The findings also highlight the need for healthcare professionals to develop greater awareness and confidence in recognizing spiritual intelligence–related strengths and vulnerabilities in caregivers. This does not require clinicians to assume the role of spiritual experts, but rather to cultivate reflective skills, attentive listening, and the ability to identify when caregivers may benefit from targeted support or referral. Integrating spiritual intelligence awareness into palliative care education may enhance interdisciplinary collaboration and improve the alignment between caregiver needs and available resources, particularly within the Portuguese healthcare context, where family caregivers often carry substantial responsibility with limited formal support.

At a systems level, the proposed intervention model offers a pragmatic and clinically realistic approach to caregiver support. Group-based or hybrid delivery formats may be especially relevant in resource-constrained settings, allowing services to extend meaningful support without imposing excessive additional demands on palliative care teams. By strengthening caregivers' internal coping capacities, such interventions may contribute to sustaining home-based care when desired, supporting continuity of care, and enhancing the overall quality of the palliative care experience for both patients and their families.

Directions for future research

While this research provides a strong conceptual and empirical foundation, further investigation is required to consolidate and expand the field of spiritual intelligence within palliative care and caregiving research. A primary priority for future research is the empirical testing of the proposed spiritual intelligence intervention through pilot

and feasibility studies. Such studies should examine acceptability, recruitment and retention rates, intervention fidelity, and preliminary effectiveness, particularly in relation to caregiver burden, psychological well-being, meaning-making, and spiritual outcomes. These steps are essential to determine the real-world applicability of the model and to inform subsequent large-scale trials.

Longitudinal research designs are also needed to capture the dynamic nature of spiritual intelligence across the caregiving trajectory. Understanding how spiritual intelligence evolves over time and how it interacts with disease progression, caregiving intensity, relational changes, and bereavement, would provide critical insight into when and how interventions should be offered. Longitudinal data would also help clarify whether spiritual intelligence functions primarily as a stable personal resource, a context-sensitive capacity, or a modifiable process responsive to targeted support.

Future studies should further explore the integration of spiritual intelligence interventions with established palliative care approaches, such as meaning-centered therapy, dignity therapy, and psychosocial support models. Rather than representing competing frameworks, these approaches may be complementary, sharing underlying mechanisms related to meaning construction, existential coherence, and relational connection. Comparative, hybrid, or stepped-care intervention designs may help identify synergistic effects and optimize content delivery while avoiding unnecessary duplication of efforts.

Cultural validation and contextual adaptation remain critical directions for future research. Spiritual intelligence is inherently shaped by cultural, social, and existential contexts; therefore, assessment instruments and intervention models must be carefully adapted and evaluated across diverse populations. Extending this line of research to non-cancer palliative populations, different caregiving arrangements, and varied healthcare systems will be essential to assess generalizability, equity of access, and cultural relevance.

Beyond methodological and conceptual considerations, future research should also contribute to strengthening the broader field of spirituality in health and caregiving research. Despite growing evidence of its relevance, spirituality (particularly caregiver spirituality) remains undervalued in health research agendas and funding priorities. There is a pressing need for funding bodies, policymakers, and research institutions to

recognize spirituality and spiritual well-being as legitimate and integral determinants of health, comparable in importance to psychological and social dimensions. Increased investment in this area is essential to support rigorous research, intervention development, and implementation studies capable of translating spiritual care principles into sustainable health practices.

Finally, future research must continue to engage critically with the ethical dimensions of spiritual intelligence interventions. While enhancing spiritual intelligence holds significant promise, there is an ethical imperative to avoid instrumentalizing spirituality or framing it as a responsibility or expectation placed upon caregivers. Ongoing ethical reflection and participatory research approaches are needed to ensure that interventions remain voluntary, supportive, culturally sensitive, and grounded in caregivers' lived experiences, values, and autonomy.

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CONCLUSION

This research set out to explore spiritual intelligence within the context of family caregiving in palliative care and to contribute to the development of a complex intervention aimed at supporting family caregivers of adult cancer patients. Grounded in the recognition of spirituality as a core dimension of holistic palliative care, this work addressed a significant gap in the literature by shifting the focus from spirituality as a broad and often abstract construct to spiritual intelligence as a functional, measurable, and potentially modifiable capacity with direct relevance for caregiving adaptation and well-being.

Following a progressive and coherent research trajectory aligned with the *Medical Research Council* framework for complex interventions, this thesis achieved its central objectives across the development, exploratory, and modelling phases. The spiritual intelligence concept analysis clarified the defining attributes and dimensions of spiritual intelligence: equanimity, life-wisdom, transcendental awareness, spiritual consciousness, meaning and purpose creation, and existential questioning; distinguishing it from related constructs such as spirituality, religiosity, emotional intelligence, and resilience. This conceptual refinement resulted in an updated and integrative framework that provided the necessary theoretical rigor to support subsequent measurement and intervention development.

The scoping review further mapped the existing evidence on spiritual intelligence, highlighting its associations with mental health, well-being, caring behaviors, and resilience, while also identifying important gaps related to informal caregiving and palliative care populations. This study also identified the available instruments for assessing spiritual intelligence and synthesized evidence regarding their psychometric properties, while the empirical work contributed to the evaluation of the reliability of a spiritual intelligence assessment instrument adapted for Portuguese for family caregivers of patients receiving palliative care, with SISRI demonstrating excellent internal consistency in this population. Together, these studies reinforced the feasibility of operationalizing spiritual intelligence in healthcare contexts and highlighted the importance of culturally sensitive measurement approaches.

The exploratory and diagnostic phase of the research provided an empirical characterization of the spiritual intelligence profile of family caregivers of cancer patients receiving palliative care. The findings revealed moderate to high levels of spiritual intelligence within this population, with a particular predominance of personal meaning production, underscoring the centrality of meaning-making in the caregiving experience. Spiritual intelligence was shown to vary according to sociodemographic, experiential, and clinical factors, confirming that it is not a static trait but a context-sensitive capacity shaped by caregiving demands, resilience, and illness-related factors. The empirical study findings further demonstrated that spiritual intelligence is positively associated with caregivers' adaptation to the caregiving role, particularly through its relationship with self-efficacy perceptions. The identification of personal meaning-making as a key explanatory dimension reinforced the conceptualization of spiritual intelligence as a protective resource that supports caregivers in integrating suffering, responsibility, and loss while maintaining confidence in their caregiving abilities. These results also reaffirmed the importance of recognizing family caregivers not only as providers of care, but as individuals with distinct palliative, emotional, and spiritual needs.

Building on these conceptual and empirical insights, the final phase of the research advanced to the modelling of processes and outcomes for a complex intervention targeting spiritual intelligence. Consistent with the *Medical Research Council* framework, the proposed intervention model articulates explicit links between evidence-based components, underlying mechanisms of change, and anticipated outcomes. Spiritual intelligence is positioned as a dynamic and trainable capacity capable of enhancing meaning-making, emotional regulation, resilience, compassionate presence, and attention to patients' spiritual needs, with benefits extending to both caregivers and patients.

Beyond its theoretical and empirical contributions, this research holds important implications for palliative care practice, education, and future research. Clinically, it underscores the ethical and professional responsibility to recognize and support family caregivers as integral members of the unit of care, who's well-being directly influences patient experience and care continuity. Educationally, it highlights the need to equip healthcare professionals with conceptual and practical tools to identify spiritual

vulnerability and foster spiritual intelligence in caregivers. From a research perspective, it provides a robust foundation for future pilot testing, feasibility studies, and longitudinal evaluations of spiritual intelligence interventions.

Several limitations must be acknowledged. The cross-sectional design of the empirical study limits causal inference, and reliance on self-report measures may introduce response bias. Additionally, the cultural and contextual specificity of the sample warrants caution in generalizing findings. Nevertheless, these limitations also inform clear directions for future research, including longitudinal and mixed-methods designs, broader validation of spiritual intelligence instruments, and cross-cultural adaptation and testing of intervention models.

In summary, this research positions spiritual intelligence as a meaningful, actionable, and ethically grounded construct within palliative care, offering a theoretically sound and clinically applicable model for caregiver support. By clarifying the concept, characterizing its expression and determinants in caregivers, and translating evidence into a structured intervention model, this work addresses a critical gap between theory and practice. It affirms the necessity of attending to caregivers' spiritual and emotional well-being and offers a coherent framework through which spiritual intelligence may be intentionally cultivated to sustain those who accompany patients through the palliative journey.

APPENDICES AND ANNEXES

This section includes supplementary materials that support the thesis. Materials produced by the author are presented as *Appendices*, whereas documents not authored by the author are presented as *Annexes.*

To ensure clarity while maintaining the original context of the documents, all appendix titles are presented in English, followed by their original language designation in parentheses. Documents that were originally developed or applied in Portuguese (e.g., informed consent forms, assessment tools) are presented in their original language to preserve their clinical and cultural integrity.

APPENDIX 1 – Caregiver Informed Consent Form

(Documento de Consentimento Informado, Livre e Esclarecido do Cuidador)

FORMULÁRIO DE CONSENTIMENTO INFORMADO (Cuidador)

Investigadora Principal

Cristina Teixeira Pinto

Assistente hospitalar de Medicina Interna, doutoranda em Cuidados Paliativos na Faculdade de Medicina da Universidade do Porto. Contactos: cristinat.silva@chedv.min-saude.pt

O presente estudo, intitulado **"Inteligência Espiritual em Cuidadores Informais de Doentes em Cuidados Paliativos: Desenvolvimento de uma Intervenção Complexa"**, a desenvolver no âmbito do meu doutoramento em Cuidados Paliativos na Faculdade de Medicina da Universidade do Porto, tem por objetivos contribuir para a criação de uma intervenção complexa sobre a inteligência espiritual de cuidadores de doentes oncológicos em Cuidados Paliativos, nomeadamente:

- Fornecer ferramentas de crescimento pessoal que o protejam da exaustão e de complicações no processo de luto;
- Melhorar a qualidade dos cuidados prestados e a satisfação com os mesmos;
- Capacitar o cuidador a prestar, ele próprio, apoio espiritual ao doente, enquanto elemento mais disponível e familiarizado com os seus padrões, valores e crenças.

Este estudo não lhe trará nenhuma despesa ou risco, sendo a sua participação voluntária. Adicionalmente, pode retirar-se a qualquer altura, ou recusar participar, sem que tal facto tenha consequências para si.

Se decidir participar, será garantida a confidencialidade e uso exclusivo dos dados recolhidos para o presente estudo, bem como o anonimato mediante a codificação de dados.

Agradeço a vossa colaboração, atenciosamente.

Cristina Teixeira Pinto

……

Declaro ter lido e compreendido este documento. Foi-me garantida a possibilidade de, em qualquer altura, recusar participar neste estudo sem qualquer tipo de consequências. Desta forma, aceito participar neste estudo e permito a utilização dos dados que de forma voluntária forneço, confiando em que apenas serão utilizados para esta investigação e nas garantias de confidencialidade e anonimato que me são dadas pelo/a investigador/a.

Nome: … … … … … … … ……. … … … ……. … … … … … … … … … … … … …

Assinatura:… … … … … … … ……. … … … … … ... … … … … … … … … … Data: …… /…… /……..

APPENDIX 2 – Patient Informed Consent Form

(Documento de Consentimento Informado, Livre e Esclarecido do Doente)

FORMULÁRIO DE CONSENTIMENTO INFORMADO (Doente OU Representante)

Investigadora Principal

Cristina Teixeira Pinto

Assistente hospitalar de Medicina Interna, doutoranda em Cuidados Paliativos na Faculdade de Medicina da Universidade do Porto. Contactos: cristinat.silva@chedv.min-saude.pt

O presente estudo, intitulado **"Inteligência Espiritual em Cuidadores Informais de Doentes em Cuidados Paliativos: Desenvolvimento de uma Intervenção Complexa"**, a desenvolver no âmbito do meu doutoramento em Cuidados Paliativos na Faculdade de Medicina da Universidade do Porto, tem por objetivos contribuir para a criação de uma intervenção complexa sobre a inteligência espiritual de cuidadores de doentes oncológicos em Cuidados Paliativos, nomeadamente:

- Fornecer ferramentas de crescimento pessoal que o protejam da exaustão e de complicações no processo de luto;
- Melhorar a qualidade dos cuidados prestados e a satisfação com os mesmos;
- Capacitar o cuidador a prestar, ele próprio, apoio espiritual ao doente, enquanto elemento mais disponível e familiarizado com os seus padrões, valores e crenças.

Este estudo não lhe trará nenhuma despesa ou risco, sendo a sua participação voluntária. Adicionalmente, pode retirar-se a qualquer altura, ou recusar participar, sem que tal facto tenha consequências para si.

Se decidir participar, será garantida a confidencialidade e uso exclusivo dos dados recolhidos para o presente estudo, bem como o anonimato mediante a codificação de dados.

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Nome: … … … … … … … ..... … … … ..... … … … … … … … … … … … … …

Assinatura (próprio):… … … … … … … ..... … … … … … ... … … … … … … … … Data: …… /…… /……..

Assinatura (representante):… … … … … … … ..... … … .. … … … … … … … … Data: …… /…… /……..

APPENDIX 3 – Data Collection Form

(Formulário de Colheita de Dados)

Formulário de Colheita de Dados

(destacável)

Estudo:

Inteligência Espiritual em Cuidadores Informais de Doentes em Cuidados Paliativos: Desenvolvimento de uma Intervenção Complexa.

Instruções de preenchimento

Passo 1: Formulários de consentimento informado (2 páginas)

Entregue pelo investigador de apoio, leitura e assinatura pelo cuidador e pelo doente (ou representante deste quando se encontre incapacitado).

Passo 2: Formulário SECÇÃO 1 (Dados Demográficos do Cuidador, 1 página), inquérito feito e preenchido pelo investigador de apoio mediante respostas do cuidador.

Se resposta à questão 1 for NÃO ou à questão 2 for SIM, não se dará continuidade ao inquérito por representarem critérios de exclusão.

Passo 3: Formulário SECÇÃO 2 (Questionários Inteligência Espiritual, Sobrecarga do Cuidador e Resiliência, 3 páginas), a preencher autonomamente pelo cuidador (investigador de apoio poderá prestar esclarecimento e deverá garantir o preenchimento integral dos questionários).

Passo 4: Investigador de apoio deverá atribuir **código alfanumérico único de cuidador** aos formulários preenchidos e folha de formulário do doente em causa para posterior emparelhamento e identificar adequadamente todas as páginas do formulário.

Passo 5: Formulário SECÇÃO 3 (Dados Demográficos e Clínicos do Doente, 1 página), recolha de dados do processo clínico do doente pelo investigador principal.

SECÇÃO 1

(a preencher pelo investigador de apoio)

Código do Cuidador: _____

Dados Demográficos do Cuidador

1. É o cuidador principal do doente? Não ☐ (excluído); Sim ☐

2. É remunerado pelo cuidado que presta ao doente? Não ☐; **Sim ☐ (excluído)**

3. Sexo: Feminino ☐; Masculino ☐

4. Idade: ____ anos

5. Relação de parentesco com o doente: Não ☐; Sim ☐

5.1) Se SIM, qual?_____

Continuar se pretender responder ao resto do questionário e cumpre critérios (cuidador principal e não remunerado):

6. Tipo de família: Nuclear ☐; Alargada ☐

7. Suporte social: Nenhum ☐; Pouco ☐; Algum ☐; Bastante ☐; Sempre ☐

8. Tem ajuda de outras pessoas para cuidar do doente? Não ☐; Sim ☐

9. Nível de escolaridade: Não frequentou ☐; Ensino Primário ☐; Ensino Secundário ☐; Ensino Superior ☐

10. Qual a sua situação laboral? Empregado a tempo inteiro ☐; Empregado em part-time ☐; Baixa/CIT ☐; Reformado ☐; Outro_____

11. Como classificaria a sua situação económica neste momento?

Nada confortável ☐; Ligeiramente confortável ☐; Moderadamente confortável ☐; Confortável☐; Muito confortável ☐

12. Há quanto tempo cuida do doente? _____anos // meses (riscar a opção que não se aplique)

13. Quantas horas por dia cuida do doente? _____horas

14. Já cuidou de alguém doente antes? Não ☐; Sim ☐

15. Tem a seu cargo mais algum doente/incapacitado/criança menor? Não ☐; Sim ☐

16. Tem alguma doença crónica? Não ☐; Sim ☐

16.1) Se SIM, qual?_____

17. Toma medicação regularmente? Não ☐; Sim ☐

15.1) Se SIM, qual/para quê?_____

SECÇÃO 2

(a preencher pelo cuidador)

Código do Cuidador: _____

Inventário de autoavaliação de inteligência espiritual, IAIE

Versão portuguesa do SISRI-24 (Roque A, 2017)

As afirmações que se seguem são concebidas para medir vários comportamentos, processos de pensamento e características mentais. Leia cuidadosamente cada afirmação e escolha qual das 5 respostas possíveis se adequa melhor a si, selecionando o número correspondente. Se não tiver a certeza, ou se a afirmação lhe parecer não se aplicar a si, escolha a resposta que lhe parecer melhor. Por favor responda honestamente e dê respostas baseadas em como você é de facto e não como gostaria de ser.

As 5 respostas possíveis são:

0 – Não tem nada a ver comigo | 1 – não tem muito a ver comigo | 2 – tem alguma coisa a ver comigo | 3 – tem muito a ver comigo | 4 – tem tudo a ver comigo

1. Interrogo-me ou reflito muitas vezes sobre a natureza da realidade.	0 1 2 3 4
2. Dedico tempo a refletir sobre o propósito ou a razão de ser da minha existência.	0 1 2 3 4
3. Sou capaz de atingir níveis elevados de consciência ou de consciencialização.	0 1 2 3 4
4. Sou capaz de refletir profundamente sobre o que acontece após a morte.	0 1 2 3 4
5. A minha capacidade para encontrar significado e propósito na vida ajuda-me a adaptar-me a situações stressantes.	0 1 2 3 4
6. Consigo controlar quando é que entro em estados elevados de consciência ou de consciencialização.	0 1 2 3 4
7. Tenho desenvolvido as minhas próprias teorias acerca da vida, da morte, da realidade e da existência.	0 1 2 3 4
8. Sou capaz de definir um propósito ou uma razão de ser para a minha vida.	0 1 2 3 4
9. Sou capaz de passar livremente entre níveis de consciência ou de consciencialização.	0 1 2 3 4
10. Vejo muitas vezes os problemas e as escolhas mais claramente em estados de consciência/consciencialização mais elevados.	0 1 2 3 4
11. Tenho refletido muitas vezes sobre a relação entre os seres humanos e o resto do universo.	0 1 2 3 4
12. Sou capaz de tomar decisões de acordo com o meu propósito na vida.	0 1 2 3 4
13. Reconheço qualidades nas pessoas que são mais significativas do que os seus corpos, personalidade ou emoções.	0 1 2 3 4
14. Tenho refletido profundamente sobre se existe ou não um poder ou força maior (ex. deus, deusa, ser divino, maior energia, etc.).	0 1 2 3 4
15. Sou capaz de encontrar significado e propósito nas minhas experiências quotidianas.	0 1 2 3 4
16. Tenho desenvolvido as minhas próprias técnicas para entrar em estados de consciência ou consciencialização mais elevados.	0 1 2 3 4

Código do Cuidador: _____

Escala de sobrecarga do cuidador (Sequeira, 2007)

A Escala de Zarit é uma escala que avalia a sobrecarga objectiva e subjectiva do cuidador informal. Leia atentamente cada uma das afirmações, e indique de que modos se aplicam ao eu caso, **colocando o sinal X no espaço que melhor corresponder à sua opinião**.

	Nunca	Quase nunca	Às vezes	Muitas vezes	Quase sempre
1. Sente que o seu familiar solicita mais ajuda do que aquela que realmente necessita?					
2. Considera que devido ao tempo que dedica ao seu familiar já não dispõe de tempo suficiente para as suas tarefas?					
3. Sente-se tenso/a quando tem de cuidar do seu familiar e ainda tem outras tarefas por fazer?					
4. Sente-se envergonhado(a) pelo comportamento do seu familiar?					
5. Sente-se irritado/a quando está junto do seu familiar?					
6. Considera que a situação actual afecta de uma forma negativa a sua relação com os seus amigos/familiares?					
7. Tem receio pelo futuro destinado ao seu familiar?					
8. Considera que o seu familiar está dependente de si?					
9. Sente-se esgotado quando tem de estar junto do seu familiar?					
10. Vê a sua saúde ser afectada por ter de cuidar do seu familiar?					
11. Considera que não tem uma vida privada como desejaria devido ao seu familiar?					
12. Pensa que as suas relações sociais são afectadas negativamente por ter de cuidar do seu familiar?					
13. Sente-se pouco à vontade em convidar amigos para o(a) visitarem devido ao seu familiar?					
14. Acredita que o seu familiar espera que você cuide dele como se fosse a única pessoa com quem ele(a) pudesse contar?					
15. Considera que não dispõe de economias suficientes para cuidar do seu familiar e para o resto das despesas que tem?					
16. Sente-se incapaz de cuidar do seu familiar por muito mais tempo?					
17. Considera que perdeu o controle da sua vida depois da doença do seu familiar se manifestar?					
18. Desejaria poder entregar o seu familiar aos cuidados de outra pessoa?					
19. Sente-se inseguro acerca do que deve fazer com o seu familiar?					
20. Sente que poderia fazer mais pelo seu familiar?					
21. Considera que poderia cuidar melhor do seu familiar?					
22. Em geral sente-se muito sobrecarregado por ter de cuidar do seu familiar?					

Código do Cuidador: _____

Escala de Resiliência para Adultos (Pereira et al., 2011)

Por favor, pensando na forma como geralmente é, ou como foi **durante o último mês**, o que pensa e sente em relação a si mesmo e em relação às pessoas que são importantes para si. Para cada uma das afirmações que se seguem, por favor **coloque um círculo no número** que melhor o(a) descreve.

1	Quando acontece alguma coisa imprevista	Frequentemente sinto-me desorientado(a)	1 2 3 4 5 6 7	Encontro sempre uma solução
2	Os meus planos para o futuro são	Difíceis de realizar	1 2 3 4 5 6 7	Possíveis de realizar
3	Eu gosto de estar	Com outras pessoas	1 2 3 4 5 6 7	Sozinho
4	A perspectiva da minha família sobre o que é importante na vida é	Muito diferente da minha	1 2 3 4 5 6 7	Muito semelhante à minha
5	Posso discutir assuntos pessoais com	Ninguém	1 2 3 4 5 6 7	Amigos/familiares
6	Estou no meu melhor quando	Tenho um objectivo claro por que lutar	1 2 3 4 5 6 7	Consigo levar um dia de cada vez
7	Os meus problemas pessoais	Sei como resolvê-los	1 2 3 4 5 6 7	Não têm solução
8	Sinto que o meu futuro parece	Muito promissor	1 2 3 4 5 6 7	Incerto
9	Ser flexível em contextos sociais	Não é importante para mim	1 2 3 4 5 6 7	É muito importante para mim
10	Eu sinto-me	Muito feliz com a minha família	1 2 3 4 5 6 7	Muito infeliz com a minha família
11	Aqueles que são bons a encorajar-me	São alguns amigos próximos/familiares	1 2 3 4 5 6 7	Estão em lado nenhum
12	Quando inicio novas coisas/projectos	Raramente planeio com antecedência, apenas ando para a frente com as coisas	1 2 3 4 5 6 7	Prefiro ter um plano minucioso
13	Os meus juízos e decisões	Duvido frequentemente deles	1 2 3 4 5 6 7	Confio completamente neles
14	Os meus objectivos	Sei como atingi-los	1 2 3 4 5 6 7	Não tenho a certeza de como atingi-los
15	Novas amizades são algo	Que faço facilmente	1 2 3 4 5 6 7	Que tenho dificuldade em fazer
16	A minha família caracteriza-se por	Desunião	1 2 3 4 5 6 7	Coesão saudável
17	A ligação entre os meus amigos é	Fraca	1 2 3 4 5 6 7	Forte
18	Sou bom (boa) a	Organizar o meu tempo	1 2 3 4 5 6 7	Desperdiçar o meu tempo
19	Acreditar em mim	Ajuda-me em períodos difíceis	1 2 3 4 5 6 7	Pouco me ajuda em períodos difíceis
20	Os meus objectivos para o futuro são	Pouco claros	1 2 3 4 5 6 7	Bem pensados
21	Conhecer novas pessoas é	Difícil para mim	1 2 3 4 5 6 7	Algo em que sou bom
22	Em períodos difíceis, a minha família	Mantém uma visão positiva do futuro	1 2 3 4 5 6 7	Vê o futuro como negro
23	Quando um familiar passa por uma crise/ emergência	Sou imediatamente informado	1 2 3 4 5 6 7	Leva bastante tempo até que me digam
24	Regras e rotinas habituais	Estão ausentes no meu dia-a-dia	1 2 3 4 5 6 7	Simplificam o meu dia-a-dia
25	Em períodos difíceis tenho tendência a	Ver tudo negro	1 2 3 4 5 6 7	Encontrar algo bom que me ajuda a crescer/prosperar
26	Quando estou com outras pessoas	Rio-me facilmente	1 2 3 4 5 6 7	Raramente me rio
27	Perante outras pessoas, a nossa família mostra	Pouco apoio entre os seus membros	1 2 3 4 5 6 7	Lealdade com os seus membros
28	Eu recebo apoio de	Amigos/familiares	1 2 3 4 5 6 7	Ninguém
29	Acontecimentos na minha vida que não consigo influenciar	Consigo lidar com eles	1 2 3 4 5 6 7	São uma constante fonte de preocupação
30	Para mim, pensar em bons tópicos de conversa é	Difícil	1 2 3 4 5 6 7	Fácil
31	Na minha família, gostamos de	Fazer coisas juntos	1 2 3 4 5 6 7	Fazer coisas sozinhos
32	Quando preciso	Não tenho ninguém que me possa ajudar	1 2 3 4 5 6 7	Existe sempre alguém que me pode ajudar
33	Os meus amigos/familiares próximos	Apreciam as minhas qualidades	1 2 3 4 5 6 7	Não gostam das minhas qualidades

SECÇÃO 3

(a preencher pelo investigador principal)

Código do Cuidador: _____

Dados Demográficos do Doente

1. Sexo: Feminino ☐; Masculino ☐

2. Idade: ____ anos

3. Nível de escolaridade: Nível de escolaridade: Não frequentou ☐; Ensino Primário ☐; Ensino Secundário ☐; Ensino Superior ☐

4. Grau de dependência: PPS ____

5. Qual a principal queixa? _____

6. Qual a intensidade da principal queixa (0-10)? _____

7. Tempo de seguimento em Cuidados Paliativos à data do inquérito?

__/__/____(data da primeira observação):

__/__/____(data do inquérito)

ANNEX 1 –Ethics Committee Approval

(Parecer da Comissão de Ética)

Identifying details of the participating institutions and individuals have been omitted for confidentiality purposes. Original documentation will be presented to the examination board during the public examination if requested.

REPÚBLICA PORTUGUESA
SAÚDE

40 ANOS | SNS SERVIÇO NACIONAL DE SAÚDE 1979-2019

[redacted]

Exma. Senhora
Dra. Cristina Pinto
Equipa de Suporte em Cuidados Paliativos do

[redacted]

SUA REFERÊNCIA	SUA COMUNICAÇÃO DE	NOSSA REFERÊNCIA	DATA:
		Nº: CA-191/2020-0t_MP/AC	13 de julho de 2020

ASSUNTO: Estudo - "Inteligência espiritual em cuidadores informais de doentes em cuidados paliativos: Desenvolvimento de uma intervenção complexa."

No seguimento da proposta apresentada por V. Exa., para a realização do estudo sob o tema identificado em epígrafe, informamos que o mesmo foi objeto de apreciação em reunião do Conselho de Administração de 10 de julho de 2020, tendo sido proferido o seguinte despacho:

"Deliberado autorizar."

Com os melhores cumprimentos,

O Presidente do Conselho de Administração

[redacted]

[redacted]

1/1

ANNEX 2 – Authors' Permission to Use SISRI-24

(Autorização de Utilização do SISRI-24 pelo Autor)

[redacted] dom., 3 de nov. de 2019, 19:36

Yes the scale is free to use for research or educational purposes.

Best,
David

David King, PhD
Instructor, Department of Psychology / Researcher, Centre for Health & Coping Studies
University of British Columbia - *located on the traditional, ancestral, and unceded territory of the Musqueam people.*
Visit my website: davidbking.net / Concerned about the state of things? Check out my blog: thestateofus.net

On Sat, 2 Nov 2019 at 04:53, Cristina Teixeira Pinto <cristinateixeirapinto@gmail.com> wrote:

> Dear Professor King,
>
> I am a portuguese Palliative Care medical doctor and doctoral student at Porto University Medical School and currently developing my research around spiritual intelligence of caregivers.
> I am writing you for permission to use your SISRI-24 instrument, in its portuguese version (I also have permission from Dr. Roque Antunes, who validated it).
>
> Thank you for your kind attention.
>
> Best regards
>
> Cristina Teixeira Pinto

ANNEX 3 – Authors' Permission to Use SISRI-24 – Portuguese Version

(Autorização de Utilização do SISRI-24 pelo Autor da Versão Portuguesa)

[redacted] sex., 1 de nov. de 2019, 14:40

Bom dia Dr.ª Cristina Teixeira Pinto,
espero que tudo esteja bem consigo e com os seus. Votos de uma investigação profícua quer para a comunidade científica quer para a comunidade em geral.
É com todo o prazer que disponibilizo essa escala de avaliação do nível de inteligência espiritual. A versão completa e explicativa do processo de validação dessa escala está disponível na minha tese de doutoramento que pode encontrar online no RECIL da Universidade Lusófona de Humanidades e Tecnologias (Digite num motor de busca Roque R. Antunes+Liderança Pegagógica+Bem-Estar Docente+Inteligência Espiritual). Para revisão da literatura sobre inteligência espiritual pode ler no livro recentemente publicado (ver anexo). Se necessitar de alguma ajuda não hesite em contactar.
Bom trabalho e deixe-me saber dos resultados conseguidos.

Roque R. Antunes
Doutor em Educação
Professor Certificado de Meditação Transcendental
96 943 30 50

Cristina Teixeira Pinto <cristinateixeirapinto@gmail.com> escreveu no dia domingo, 27/10/2019 à(s) 11:30:

> Exmo. Professor Roque Antunes,
>
> Sou aluna de doutoramento em Cuidados Paliativos da Faculdade de Medicina da Universidade do Porto e estou a elaborar o meu projecto de investigação na área da inteligência espiritual, sob orientação do Prof. Rui Nunes e da Prof. Sara Pinto.
>
> Para fins de investigação, solicito-lhe autorização para a utilização do instrumento SISRI-24 na versão portuguesa, por si validado, bem como acesso ao mesmo.
>
> Agradeço desde já a sua atenção.
>
> Os melhores cumprimentos
>
> Cristina Teixeira Pinto

ANNEX 4 – Authors' Permission to Use Zarit Burden Interview – Portuguese Version

(Autorização de Utilização da Escala de Sobrecarga do Cuidador pelo Autor da Versão Portuguesa)

Date: sábado, 2/11/2019, 23:09
Subject: Pedido de autorização para utilizar Escala de Sobrecarga do Cuidador (ESC)
To: Cristina Teixeira Pinto <cristinateixeirapinto@gmail.com>

Exma. Carla Pinto,

Informa-se que poderá utilizar a Escala designada por Escala de Sobrecarga do Cuidador (ESC), traduzida e validada para a população Portuguesa, no seu trabalho de investigação.

Mais se informa que o instrumento deve ser utilizado na integra, podendo apenas ser alterado na forma de apresentação e não pode ser utilizado para fins comerciais.

Envio um documento em anexo que deverá preencher e devolver.

Trata-se de um documento de monitorização da utilização da Escala.

As regras de cotação estão publicadas no livro Cuidar de idosos com dependência física e Mental, editado pela LIDEL, em 2010/2018.

https://www.bertrand.pt/livro/cuidar-de-idosos-com-dependencia-fisica-e-mental-carlos-sequeira/21325567

https://www.fnac.pt/Cuidar-de-Idosos-com-Dependencia-Fisica-e-Mental-Carlos-Sequeira/a1440821

No entanto se persistir qualquer dúvida não hesitem em contactar-me.

Seguem em anexo o instrumento.

Com os melhores cumprimentos e ao dispor,

Carlos Sequeira

Carlos Sequeira, PhD, MSc, RN
Prof. Coordenador - Escola Superior de Enfermagem do Porto
Coordenador do Grupo de Investigação - NurID: Inovação e Desenvolvimento em Enfermagem – cintesis - center for health technology and services research - FMUP
Presidente da Sociedade Portuguesa de Enfermagem de Saúde Mental
https://www.researchgate.net/profile/Carlos_Sequeira2

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ANNEX 5 – Authors' Permission to Use Resilience Scale for Adults – Portuguese Version

(Autorização de Utilização da Escala de Resiliência para Adultos pelo Autor da Versão Portuguesa)

[redacted] 5 de nov. de 2019, 10:41

Cara Dra. Cristina Teixeira Pinto

Obrigado pelo seu interesse na ERA. Tendo em conta a sua área de formação, eu poderei disponibilizar a escala para uso em investigação, mas ressalvo a importância do cuidado na sua administração. De momento, existe algum controlo por parte da Ordem dos Psicólogos na aplicação de medidas psicológicas por não psicólogos, mas estou certo que no meio académico e em investigação esse cuidado e cumprimento dos aspetos éticos será sempre considerado.

Assim, em anexo envio uma pasta com o material relativo à ERA, nomeadamente: o questionário, o capítulo dos estudos de validação e a sintaxe de cálculo para SPSS (envio também um documento breve com informação de cotação mais detalhada).

Com os meus melhores cumprimentos e votos de bom trabalho,
Marco Pereira

De: Cristina Teixeira Pinto <cristinateixeirapinto@gmail.com>
Enviado: sábado, 2 de novembro de 2019 12:22
[redacted]
Assunto: Permissão de uso de Escala de Resiliência para Adultos

Exmos. Sr(a)s.,

Sou aluna de doutoramento em Cuidados Paliativos da Faculdade de Medicina da Universidade do Porto e estou a elaborar o meu projecto de investigação na área da inteligência espiritual, sob orientação do Prof. Rui Nunes e da Prof. Sara Pinto.

Para fins de investigação, solicito-lhe autorização para a utilização do instrumento Escala de Resiliência para Adultos na versão portuguesa, por Vós validado, bem como acesso ao mesmo.

Agradeço desde já a Vossa atenção.

Os melhores cumprimentos

Cristina Teixeira Pinto

ANNEX 6 – Editor's Permission to Reproduce Articles Published in *Nurse Education in Practice* Journal

(Autorização do Editor para Reprodução de Artigos Publicados na Revista *Nurse Education in Practice*)

Permission to use articles in PhD thesis

Inbox ×

Cristina Silva <cristinapintophd@gmail.com> Sun, Jan 4, 2:25 PM

to nepeditor

Dear Professor Roger Watson, Editor-in-Chief of Nurse Education in Practice,

I hope this message finds you well. I am writing to request permission to include material from two articles published in *Nurse Education in Practice* in my PhD thesis.

The articles are:

- *From Spiritual Intelligence to Spiritual Care: a transformative approach to holistic practice (doi: 10.1016/j.nepr.2020.102823)*
- *Models of spiritual intelligence interventions: A scoping review (doi: 10.1016/j.nepr.2023.103829)*

My thesis is an academic, non-commercial work submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy. The articles would be used in accordance with scholarly practice, with full acknowledgment and citation of the original publications and the journal.

I would be grateful if you could confirm whether permission is granted to reproduce these articles within my thesis, which may be made available in print and electronic form through my university repository.

Thank you very much for your time and consideration. Please let me know if you require any further information.

Kind regards,

Cristina Teixeira Pinto

Roger Watson Mon, Jan 5, 10:44 AM

to me

Dear Cristina

Thanks for your patience and I hope you received my out of office message.

This is not a problem, feel free to use the articles in this way and to refer to this email as permission if necessary.

_____

Roger Watson FRCN FAAN
Editor-in-Chief
Nurse Education in Practice

FACULDADE DE **MEDICINA**