

The application of salutogenesis to teaching and learning – A systematic review

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ABSTRACT

Purpose: The inclusion of salutogenic principles in education deepens and broadens the understanding of the teaching and learning process in a healthy way and opens the potential to create a sound educational environment characterised by the prevention of burnout, improved physical and mental health, and higher levels of achievement. The aim of this review is to fill the lack of comprehensive information regarding the relationship of salutogenesis, sense of coherence, and the process of teaching and learning. **Materials/methods:** A literature search was carried out in Web of Science and Scopus electronic databases with the cutoff date of July 2020. Search words were sense of coherence, salutogenesis, education, school, academic performance, achievement, students, and their combinations. Altogether 62 articles were found on the relationship of salutogenesis, sense of coherence, and education but only 6 were related to salutogenic teaching/learning process. These were included in the present review. **Results:** The studies included in this review presented salutogenic models related to teaching literacy as a learning process through life, building sustainable relationship between supervisor and students, improving transcultural competence, and being able to solve conflicts across cultures. Practical implications were demonstrated such as the use of drawing as an integration tool to improve self-expression and emotional recognition, realisation of teaching practice as an exercise for self-consciousness, and introducing the concept of teacher as a source of emotional security for students. **Conclusions:** The models bring different but equally valuable contribution to the salutogenic teaching process which strengthens the educational environments resulting in better academic performance, as well as physical and mental health.

KEYWORDS

salutogenesis, sense of coherence, education, teaching, learning

INTRODUCTION

There is a lack of comprehensive information regarding the relationship of salutogenesis, sense of coherence (SOC), and education. The literature refers to education or health separately covering a wide range of concepts such as academic performance [1–3], coping [4–6], health assets [4], school performance [7], psychological strength [2], self-regulation [3], social support [8, 9], contextual factors, or burnout [10–12]. However, they explore specific and individual aspects of the students, the teachers, or the systems, thus lacking the comprehension of the whole picture. The present review aims to contribute to the literature by shedding light on health and education processes from a broader salutogenic perspective.

Political changes, high pressure, dissonance between the expectation and real experiences can be used to describe some educational contexts characterised by stress and burnout among academics [13] and students [10]. This calls for the concern of the physical and mental health of all participants in the educational system. The environment characterised by tension, stress, disorganisation of feelings, and opposition may affect crucial aspects of the teaching experience resulting in an unsound pedagogical context. The consequence is a protective

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withdrawal of teachers defined as pedagogic frailty [13]. Some countries recognised students' distress as a public health concern [14]. First year students are especially sensitive to high-risk behaviour such as addiction [15], eating disorders, or thoughts of suicide [16]. Both for new academics and for first year students, the hardship to adjust to academic life involves higher levels of stress and results in avoidance behaviour, loss of interest, or negative attitude. The set of features described above is known as academic burnout syndrome [10].

The most relevant contribution of salutogenesis to science was the commitment to find the origins of health. According to Antonovsky [17], health is not a permanent position but a continuum in which the individual moves towards the pole characterised by well-being. The way the individual reacts to stress determines the ability to manage tension and stay healthy. The definition of health in the salutogenic framework involves understanding life even in its chaotic manifestations and using the available resources. SOC is a construct created by Antonovsky [18, 19] related to the feeling that life will provide the resources to overcome adverse experiences. The ability to maintain well-being is related to the capacity to trust that there is a meaning in the circumstances and to keep faithfully in the direction to the positive pole of the continuum of health. The individual's ability to comprehend, manage, and give meaning to life is expressed by the components of the SOC which are comprehensibility, manageability, and meaningfulness. The ability to face challenges, recognise and use the resources is highly related to a sound SOC as well as to the Generalized Resistance Resources (GRR). The SOC involves values, behaviours, feelings, thoughts, and a full style of life that can improve as a result of overcoming stressful situations [20].

GRR refers to all resources that assist an individual, a group, a community, or a society to improve the way that stressors are handled, and in consequence the level of the SOC is enhanced [19]. They can be biological, material, or psychosocial factors. A material factor is, for example, money, non-material factors are personal characteristics, strategies, family and social support, religion, cultural background, health orientation, and genetic constitution [19]. Different characteristics of the individuals will result in different achievement of their SOC and distinct ability to notice and use GRR.

Therefore, the inclusion of the salutogenic principle in education deepens and broadens the understanding of the teaching and learning process in a healthy way and opens the potential to create a sound educational environment characterised by the prevention of burnout, improved physical and mental health, resilience, optimism, and higher levels of achievement.

This review addresses the following questions: What are possible connections between salutogenesis and education? How are current issues of teaching and learning process dealt with in the salutogenic approach? What are the contributions of the salutogenic approach to solve the contemporary problems faced by students, teachers, and educational staff in the educational environment? What are

the main challenges of researchers in applying salutogenesis to health and education?

MATERIALS AND METHODS

Search procedures

A literature search was carried out which included articles discussing the connection of education and SOC with the cutoff date of July 2020. The search procedures consisted of the following three steps: preliminary search, replication verification, and finalised search combining keywords in the electronic databases of Web of Science and Scopus. The preliminary search was performed by the authors, the second and third procedure was performed by the first author with the help of a professional librarian. The search words were the following: sense of coherence, salutogenesis, education, school, academic performance, achievement, students, and their combinations.

The preliminary search procedure included studies published in English or Portuguese and resulted in 833 articles. After duplicates were removed 638 articles remained. These were screened by reading the title and the abstract. Exclusion criteria were the following: no reference to education, conducted in non-educational environment, or did not include the salutogenic approach. Altogether 62 articles were chosen for full text review. The original theme for the literature review was the relationship of salutogenesis and educational performance, the latter operationalised through school grades. The next step involved grouping the articles in three themes: salutogenic teaching/learning process, academic performance, and subjective aspect of education. Out of the 62 articles, 56 were related to academic performance and subjective aspects of students. The final 6 articles related to salutogenic teaching/learning process were included in the present review (Fig. 1). A standardised data extraction sheet was developed. Data retrieved included author/year, country, aim, education level, main concept, core idea, educational outcome, and conclusion.

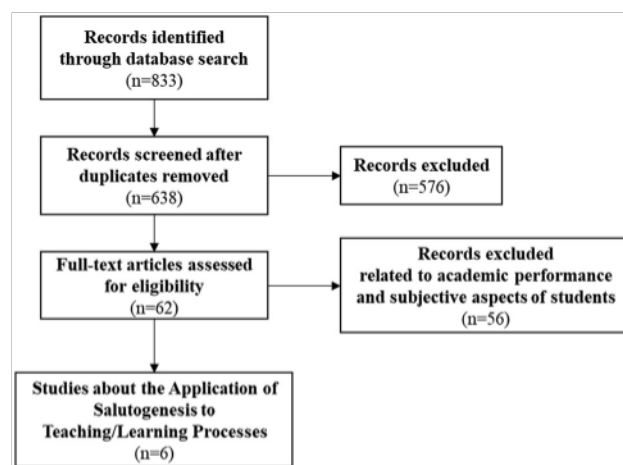


Fig. 1. Flow Diagram of data search



RESULTS

Education and health promotion

According to Antonovsky [19], SOC develops mainly during the first years of life as a result of the relationship between the child and the caregivers. During adolescence and adulthood, the relationship with friends, teachers, school, community, and work also become important. SOC might be the result of all life experiences, but three factors seem to be more important than others. These are consistency, balance between underload-overload, and participation in decision making [19]. In general, a healthy SOC will develop if the individuals experience meaning in their relationships and have ability to identify proper resources to handle life issues. Based on the above, health promoting schools (with students aged 5–18 years old) and teaching and learning processes rooted in salutogenesis may make a valuable contribution to the development of SOC by taking advantage of the crucial years that children and adolescents spend in school.

The concepts of health and education are intertwined and mutually subsidised [21]. It is valuable to interpret the concept of health as a result of a broader idea resulting from a continuous learning throughout life [19]. These complementary concepts are often found together inside the Health Promotion movement, which culminated with the creation of the schools committed to promote health. The Council, the Commission, and the European Regional Office of the World Health Organization (WHO) established the Network of Health Promoting Schools of Europe in 1991. The approach of Health Promotion directed to the educational context combines health education with teaching by actions committed to improve the well-being and health not only of students but of educational workers as well. It aims to transform the educational environments into a sound place to learn and work.

The WHO described health promoting schools (with 5–18-year-old students) as ones that prioritise health and learning in all activities, provide a proper environment, focus on health-related behaviours, attitudes, skills, knowledge, beliefs, and values, and engage community leaders in this process. The need of individual participation, comprehension, and commitment are highlighted in the distinct models of health promotion [22].

Educational theories and salutogenesis combined created salutogenic schools characterised by meaningful learning, proper curriculum, and teachers encouraging students and their colleagues [23]. This rationale is the foundation for salutogenic schools, increasing the comprehensibility, manageability, and meaningfulness sub-components of the SOC [22, 24].

A healthy university develops health potentials in its particular context, promotes well-being and positive health, strengthens the resources available, and enables individuals to master their health determinants. This description characterises universities that create a supportive environment for students and teachers going through life experiences that

will result in independence and adequate life skills [25]. Healthy universities rely on a working environment that supports health potential, integrates health in culture, teaching, learning, research, and knowledge production [26].

The Healthy Universities movement, inspired by the Ottawa Charter for Health Promotion [27], understands health as a multidimensional and multi-layered concept composed of physical, mental, emotional, spiritual, and social dimensions that result from the interplay between people and their environment [25]. The well-being of students and educational workers in a healthy university can be enhanced, protected, and promoted through salutogenic policies and practices, thus increasing the health promotion of teaching and research [28]. Since health is not the main goal of the universities, it is crucial to guarantee that well-being will be embodied in their environments. A good example of a healthy university policy is to promote learning and education for global citizenship [25].

Salutogenic theory benefits to pedagogic health

The concept of health as a continuum and the resources that contribute to wellness are the focus of salutogenesis. The ‘salutogenic functioning’ means the successful way in which people adjust themselves to tension and stress in their daily lives [29]. Considering salutogenesis as a foundation for pedagogic health widens the understanding about the process of teaching and learning in a healthy way and requires attention to other concepts related to cultural, political, social, and individual dimensions that will create a sound educational environment.

The salutogenic approach improves resilience [13] in both individual and systemic dimensions and creates a base for researchers to help students, teachers, schools, and universities to reach optimal pedagogic health. The focus of many authors’ attention is resilience, as it relates to the well-being and academic success of students. Resilience is a highly debated concept, which is understood as a process of dynamic and positive adaptation to adverse life circumstances involving psychological, social, cultural, and environmental resources [30]. Occurring when individuals face adversity and it results in learning and improvement [31], resilience is deeply associated with the sense of coherence and highly relevant in the educational environment. Both resilience and sense of coherence bring the core idea of being strengthened throughout life [32].

The learning process in a salutogenic school or university can be understood as an endless reciprocal exchange among students and the educational context, in which meaningful standards surface and the students are supported to shape sound attitudes to a healthy life [33]. Sound physical and mental well-being and high enthusiasm in learning among Japanese students were predicted by a healthy SOC [34]. According to Shankland, Kotsou, Vallet, and colleagues [10], SOC presents a mediating role between university students’ mental health and symptoms of burnout related to daily hassles, emotional exhaustion, and cynicism. Therefore, it would be useful to help students focus on the positive



aspects of life in order to change what they consider as daily problems. Higher levels of well-being, optimism, and self-efficacy and lower levels of distress and burnout are associated with SOC of students in healthy universities environment [35, 36].

Six models can be found in the literature which provide specific examples of the inclusion of the salutogenic theory and health promotion in education. The models are summarized in Table 1.

1. Sense of coherence as a lifelong process of development [24]

Sense of coherence may be interpreted as a long-term process of development which does not end at young adulthood in contrast to the original idea of Antonovsky [19]. In the model of Lindström and Eriksson [24] health education is understood as a lifelong undertaking directed to individual transformation towards a healthy learning lifestyle. This process involves the change from traditional health education to health literacy which is related to awareness to promote health. In this regard, the physical, mental, social, in addition to the spiritual aspects should be considered when we refer to health [37].

The concept of health literacy involves participation, empowerment, and action competence. A sustainable transformation requires the active involvement of the students in creating ownership of their learning process about health. Empowerment should be understood as a condition in which the individuals understand that they are the authors of their story and can also alter the circumstances of their lives according to their decisions. Action competence is created by the learning process when the student is supported in achieving the ability to discern proper attitudes and values, being ready to act in order to achieve better outcomes.

SOC can be developed by a learning process in which students interact with each other and the teacher and learn about life and health by the formal and informal experiences. Instead of health or risk determinants, Generalized Resistance Resources are used to improve the individuals' SOC. Salutogenic learning has a system approach in this model directed to the harmony between individuals, groups, and society aiming to reach well-being. Alongside the individual dimension there is also an emphasis on the culture and the context in which the health promotion is performed. The reduction of inequality is another concern of the health promotion in which the learning process is continuous and meaningfulness is highlighted.

Individuals who have opportunity to improve their SOC and organisations that include the concept of SOC in their work environment acquire better mental health and quality of life, thus helping individuals to live longer and more fruitfully [38]. The core idea is to approach life as a constant learner, a novice in order to learn more about oneself, others, and health. Better physical and mental health is achieved when the aim is to experience life as meaningful and rewarding in its core essence [24, 39]. The most relevant contribution of this model is the idea of processing life

circumstances in a thoughtful approach. A situation is analysed by resonating on former events and the experience then increases the behavioural repertoire of the individual to manage the stresses of life. Besides, it is a mutual learning process shared among humans in the society.

This process is assisted by the creation of a learning context with adequate support for empowering conditions where students become active participants in mutual synergy with others [24]. SOC can be a process of a lifelong development strongly connected to healthy learning by which individuals and institutions improve the management of their lives and boost health, well-being, and quality of life. Achieving a meaningful life in a socially and spiritually meaningful context is the ultimate goal of salutogenesis [19, 24].

2. The collegial model [40]

The Collegial model, presented by Eriksson [40], seeks to handle stress during research supervision through a sustainable working lifestyle. Salutogenic supervision is characterised by mutual learning, where the supervisor and the doctoral students are viewed as a team without level differences. Crucial characteristics are the strong foundation in ethical principles and strengthening SOC in the supervision relationship.

In traditional supervision there is an imbalance in power between the two parties. In the Collegial model the partners are working in collaboration to complete the doctoral thesis. The relationship between the doctoral student and the supervisor is characterized by mutual respect and trust. It offers a promising context in which the SOC can bloom and flourish. Good relationship, positive communication, and proper attitudes towards each other are crucial. Supervisors are understood as individuals with high levels of professional expertise and doctoral students are seen as individuals with abilities, resources, and specific knowledge who need to improve research skills. Due to the high pressure of the doctoral studies, the supervision process may have an impact on the doctoral student's mental health [40]. The Collegial model proposes a learning process in which supervisor and doctoral student work in an environment with a health promotion perspective rooted in the salutogenic theory.

The key concept for this model is sustainability. A sustainable relationship is one which does not threaten the personal resources of the partners but brings improvements for their identity as well as benefits from their experiences as human beings and enhances their senses of coherence. Ethics, mutual respect, fulfilment of needs, ability to listen, acceptance, respect, genuine care, confidence, dialogue, and support are all characteristics of sustainable relationships.

Within this model, the supervision requires a clear foundation on ethics and mutuality to produce a sound SOC for the participants that will lead to a better understanding of the learning process (comprehensibility), the acquisition of better research skills (manageability), and the creation of meaningful supervision meetings that will support a true work worth of investment and energy (meaningfulness) [40].



Table 1. Six models in the literature applying Salutogenesis to the practice of education (SOC: sense of coherence)

Authors (Year)	Country	Aim	Education Level	Main Concept	Core Idea	Educational Outcome	Conclusion
Lindstrom & Eriksson (2011) [24]	Sweden	Extends the concept of health education and health literacy toward a lifelong healthy learning concept	not specified	Literacy	Approach life as a novice in order to learn more about oneself, others and life as a whole	Health literacy involves participation, empowerment, and action competence	Systems that develop a strong SOC seem to make people live longer and more inclined to healthier behaviours
Eriksson (2019) [37]	Sweden	Application of salutogenic theory and model of health to research supervision of postgraduate students	University post-graduate	Sustainability	Investment in sustainable relationship between teachers and students	Doctoral supervision involves mutual learning processes between supervisor and doctoral student	Better understanding of the learning process (comprehensibility), better research skills (manageability), and the creation of meaningful supervision meetings (meaningfulness)
Mayer & Boness (2011) [38]	South Africa	Presents a didactic intervention in educational systems to promote SOC and transcultural competence	Elementary and high school	Citizenship	Raise the desire in children to understand and defend the rights and obligations that they have toward each other	A strong SOC is associated with positive school performance, achievement, ability to manage conflicts, transcultural competences, well-being	Increases transcultural competences and improves comprehensibility, manageability, and meaningfulness within students
Garista, Pocetta & Lindstrom (2019) [20]	Italy	Discusses the use of drawings in the framework of salutogenic and health promotion applied to the learning processes in higher education	University post-graduate	Integration	Promote self-expression and improve emotional recognition of experiences which might be difficult to express verbally	Drawings support teaching, health promotion, cope, integrate new knowledge and help students to express latent aspects of reality	Drawings favour salutogenesis and an environment which enhances salutogenic learning.
Kinchin (2019) [13]	United Kingdom	Use of pedagogic frailty and salutogenesis to analyse issues in higher education academics and improve the health of the system	University	Resilience	Uses teaching practice as an opportunity for self-awareness and reflection, bringing the possibility to prevent weakness	Salutogenesis works by creating resilience and a timely potential to add clarity and a sense of coherence to the teaching labour	The contribution of salutogenesis to pedagogic frailty makes the model more responsive to university managers as a developmental tool and (continued)

Table 1. Continued

Authors (Year)	Country	Aim	Education Level	Main Concept	Core Idea	Educational Outcome	Conclusion
Garcia da Costa (2017) [21]	Brazil	Presents and compares Waldorf method to Salutogenesis	ElementarySchool	Healing	Educates to assist personal transformation, boost personal growth and to be a source of emotional security supporting the pupil's transformation to reach the highest version	Salutogenesis and Waldorf pedagogy help students in integral development, a meaningful view of the world, identification of skills and recognition of life purpose	helps to treat the mental health concern of students and teachers Waldorf pedagogy has a healing characteristic, the activities of Thinking, Feeling and Wanting, develop a strong sense of coherence in the students

3. The team Ombuds model [41]

Inspired by the idea of Ombudsman – who defends the law and the interest of the citizens and promotes citizenship – Mayer and Boness [41] proposed a didactic model designed to help the formal educational system to enhance integration, autonomy, quality of teaching, the health of students and improve leadership skills. The concept of health is composed of the ability of performance, self-realisation, and meaningfulness, as well as psychological and physical well-being [41]. The model aimed to support students at the crucial time of the development of SOC [19] with specific interventions to help them to overcome critical situations during elementary and high school education. Characterised as a long-term intervention throughout all school years, the model promotes SOC as a permanent educational objective.

The educational environment in this model should be characterised by consistency, safety, and social support. The central idea of the tOmbuds model is citizenship because it raises the desire in children to understand and defend the rights and obligations that they all have in relation to each other. Since responsibility, independence, and respect for others comprise the SOC in relationships [41], SOC can greatly benefit from comprehension, encouragement, acceptance, collaborative learning, and acknowledgement among teachers, students, and peers. The emphasis is on transcultural competence operationalised through appreciation of cultural differences and the ability to solve conflicts across cultures as well as to decode verbal and non-verbal communication. The model aims to enhance comprehensibility, manageability, and meaningfulness in the relationship of students and educational professionals.

The tOmbuds model focuses on the activation of the GRR of teachers and students working in social units organised in horizontal and vertical hierarchy. The Ombuds are students who work in close cooperation with teachers taking responsibility for team processes. A credit point system is used, the study topics are relatively freely chosen, and the teams work towards a common goal. Students are also trained to be able to change perspective and increase empathy, which provides the background for the meaningfulness of the individual learning curve. Group processes include learning input such as understanding the contents in-depth (comprehensibility), working independently and accountably, and managing time effectively (manageability), and learning emotional intelligence to comprehend oneself, peers, and the teachers concerning mental states and communication processes (meaningfulness); all together promoting the SOC [41].

4. Picturing academic learning [20]

Garista, Pocetta and Lindström [20] presented the potential use of drawings in higher education when applying salutogenic and health promotion theories. The main ideas were the integration of the invisible features of communication that improve the teaching-learning process and the ability to assimilate previous life experiences in order to enhance SOC and psychological health.



Drawings were used beyond psychological interpretation as instruments for understanding human experiences of health and sickness that cannot be expressed verbally. Drawings assisted students to express, cope, assimilate, and integrate knowledge and skills by understanding feelings and thoughts such as pain, loss, frustration, and joy. The crucial contribution of this proposal was to highlight that the shift towards health and better quality of life is possible by methods such as drawings. Nonverbal techniques help to integrate emotional learning in life trajectories which might improve SOC.

The proposed model characterised by salutogenic learning may offer and support health promotion, problem solving, lifelong learning, guidance, self-knowledge, self-assessment, and self-expression – improving all skills that enhance meaningful experiences such as emotional recognition and reflection [22]. Drawings help the previous achievements by disclosing hidden aspects of inner or outer reality and expressing the conscious and unconscious dimensions of human experience, which might be difficult to express verbally. Drawings can act as metaphors integrating psychological and social perspectives in a salutogenic learning design [20].

5. Teaching as management of weakness [13]

Conflicting discourses, opposing ideas, burnout, and frustration describe the atmosphere of some contemporary higher education institutions. The consequence of such environment characterised by ineffective tensions and stressors in the workplace cause disorganisation and foggy thinking. Different teaching tasks might be conflicting, which results in pedagogic frailty [13]. Criticising the neoliberal university, the dominant narratives characterise higher education as an unconcerned and unhealthy professional environment. Using a Deleuzian gaze, Kinchin [42] identified care, pedagogic health, and salutogenesis as cornerstones in developing a more productive state of healthy learning adding relevant contribution to pedagogic frailty.

In this model pedagogic frailty is understood as a proper time for reflection about the teaching process and self-awareness which can be enhanced and supported by the salutogenic framework [13]. The main concept of this model is resilience because working on pedagogic frailty brings the possibility of increasing consciousness among professors and managers of universities and preventing weakness.

Four essential focus points are targeted by the pedagogic frailty model proposed by Kinchin [13]. These are the dialogue between teaching and learning, the relationship between pedagogical theory and practice, the relationship of research and teaching in pedagogy, and the evaluation and appreciation of teaching in higher education and the decision-making processes of the universities. The model is concerned with some elements of the academic context that produce obstacles for the improvement of the professional practice of teaching and with academics who are identified with frailty. Comprehending frailty and resilience as two poles of an axis and adopting the salutogenic model of Antonovsky to reinterpret the teacher's pedagogic frailty,

Kinchin [13] introduced the approach of mental health literacy across university campuses.

Helping academics and universities to move towards optimal pedagogical health, salutogenesis works by creating a SOC and an accurate timely potential to the labour of teachers. SOC in the educational environment helps to treat the mental health concern of students and teachers and gives direction in the contemporary unpredictable political and economic circumstances [43].

The concept of pedagogic health is extended by the inclusion of the salutogenic theory. Meaningfulness, collaboration, and high standard are reached when the teaching/learning environments are treated in a salutogenic way. The contribution of salutogenesis to pedagogic frailty makes the model more responsive to university managers as a developmental tool [13].

6. Teaching as a Source of Health [21]

Garcia da Costa [21] presented the intercession between salutogenesis and Waldorf theory, demonstrating the healing nature of the latter. The phenomenological basis of Waldorf pedagogy stems from the principle of the subject's cognitive, affective, and volitional forces, comparable to the three sub-compounds of SOC, working together for the integration of human experience [21].

Derived from anthroposophy, Waldorf pedagogy supports and promotes students in the intellectual, artistic, and practical skills. According to Steiner [44], education can only be properly practised if it is understood as a remedy and if the teachers are aware of their double function as a teacher and as a healer. Education is an assistance to personal transformation with the aim of developing high qualities, boosting personal and social growth, and helping improve critical awareness [21]. In order to satisfy these goals, the Waldorf method is systematised to develop the integrative characteristics of the human soul.

Teacher-student relationship is highly emphasised in Waldorf pedagogy; therefore, children have the same teacher during the first eight years of the school, which gives the teacher the opportunity to get to know the student's strengths and weaknesses more thoroughly. This close relationship naturally makes the teachers a source of emotional security, a mentor, and a reference person exercising its eventual role as a healer, supporting the pupil's transformation to reach the highest version of themselves. Concerned with education of the whole student and integrating emotional, spiritual, physical, and academic growth, this pedagogy is often referred to as the head, heart, and hands pedagogy expressing that children learn with their bodies, feelings, and mind [45].

The foundation of Waldorf pedagogy resonates well with salutogenesis theory, as evidenced by the similarity in the three compounds of the SOC (comprehensibility, manageability, and manageability) and the three guiding activities of the Waldorf pedagogical method (thinking, willing, and feeling). Comprehensibility is comparable to the Thinking dimension, manageability to the Willing dimension, and meaningfulness to the Feeling dimension. Antonovsky's



model of salutogenesis and Steiner's model of Waldorf pedagogy both propose to help students in an integral development that results in a meaningful view of the world, the identification of skills, and the recognition of a life purpose, which support the maintenance and promotion of health. The holistic understanding of these theories allows inter- and trans-disciplinary explorations of the individual in the world and in society, covering health and education.

DISCUSSION

The present article reviewed possible connections between salutogenesis and education in theory and in practice. Salutogenesis means health; health and education are intertwined and mutually subsidiary concepts [21]. In education, the salutogenic way can be understood as a permanent learning process throughout life [19] to improve the SOC, resulting in proper academic performance, as well as better physical and mental health. The salutogenic approach improves resilience [13] individually and systematically, creating a base for researchers to help students, teachers, schools, and universities to reach optimal pedagogic health. Salutogenesis adds guidance, coherence, and transparency to the labour of teachers [13]. SOC helps to treat the mental health of students and teachers giving direction in the current unpredictable political and economic circumstances.

The general contribution of salutogenesis is operationalised through healthy universities and salutogenic schools. SOC presents a mediating role for students, teachers, and educational staff between their mental health, burnout, daily hassles, and emotional exhaustion experienced in some current educational environments [10].

The six salutogenic models of education found in the literature showed different aspects and functions of the teaching and learning process – similarly to a kaleidoscope that presents distinct combinations of colours and figures at each movement. All models had a main concept which illustrated its core contribution to education. Lindström and Eriksson [24] introduced teaching literacy as a broader learning process through life experiences, creating the ability to discern the proper values to achieve better outcomes. According to them, all of us should approach life as a novice in order to learn more about oneself, others, and life as a whole. In the Collegial model of Eriksson [40], the investment in a sustainable relationship between supervisor and student would bring improvements in their identity, mutual respect, fulfilment of needs, ability to listen, acceptance, and support necessary in educational environments nowadays. Mayer and Boness [41] incorporated the idea of citizenship into education. Their aim was to raise children's motivation to defend the rights and obligations that humans have in relation to each other and improve the ability to solve conflicts across cultures. Garista, Pocetta and Lindström [20] emphasised the role of integrational tools, such as drawings, in education. By paying attention to the subtle dimensions of communication, the teachers could help students to enhance self-expression and promote emotional recognition of

experiences difficult to express verbally. The main concept for the pedagogic frailty model proposed by Kinchin [13] was resilience. The main contribution is the idea of understanding teaching practice as an exercise for self-consciousness and self-observation which brings the possibility of preventing weakness. Garcia da Costa [21] introduced the idea of the teacher as a healer who is a source of emotional security. As a healer, the teacher assists personal transformation for the development of high qualities and boosts students' personal growth.

All of the models are based on the assumption that salutogenesis should be established as a permanent educational goal, increasing the sense of coherence, which will result in improved mental health. All of them propose that the educational environment should be characterised by consistency, safety, and social support. They have similarities and differences, yet they complement each other.

The first model, Sense of Coherence as a Lifelong Process [24] addresses both individual and systemic levels of transformation. The individual level aims for improvement based on health literacy, while the systemic approach is directed to reach harmony among individuals, groups, and society, with an emphasis on the reduction of inequalities in the cultural context in which the teaching-learning process is performed. This model has a broad philosophical foundation associated with the understanding of life as an opportunity to learn. The model of Lindström and Eriksson [24] raises the idea of health literacy in general, while the model of Kinchin [13] goes further by introducing the approach of limited mental health literacy across university campuses. The concept of sustainability introduced by the first model [24] was applied to the process of individual transformation in order to increase awareness, while Eriksson [40] in the second model applied the concept of sustainability to interpersonal relationships, especially between supervisors and doctoral students.

The Collegial Model proposed by Eriksson [40] has a strong theoretical, empirical, and ethical foundation but is specific to the relationship of supervisors and doctoral students as equals complementing each other to improve their sense of coherence. Similarly, to the Teaching as a Source of Health model [21], the teacher-student relationship is highly emphasised, although here the focus is on mutual adult relationships, while the model of Garcia da Costa [21] addresses the first eight years of school in which the teacher functions as a source of emotional security in an adult-child non-equal relationship.

The Team Ombuds Model by Mayer & Boness [38] assists the formal educational system inspired by the idea to combine citizenship, education, and intercultural competence. As a didactic model, it proposes specific interventions to overcome critical situations during elementary and high school. This model is especially altruistic when it turns to the work of cultivating the desire to defend the rights and obligations that youth have in relation to each other.

Based on the understanding that human beings have an emotional dimension that interferes with the assimilation of knowledge and acquisition of skills, Picturing Academic



Learning [20] by Garista, Pocetta and Lindström [20], is applied to higher education focusing on the invisible and eventually unconscious human experience to solve emotional obstacles that could hinder the learning process. The model advocates the integration of non-verbal and invisible communication, which improves the teaching-learning process by enhancing psychological health and without neglecting the social and contextual aspects of the process.

The Teaching as a Source of Health by Garcia da Costa [21] is the most holistic and caring of the models. It takes advantage of the subject's cognitive, affective volitional, and even spiritual forces to achieve educational goals. However, understanding education as a remedy and the teacher as a healer brings the risk of being criticised as a naïve and unrealistic model. The models of Lindström and Eriksson [24], Eriksson [40], Kinchin [13], Mayer and Bones [41], Garista, Pocetta and Lindström [20], and Garcia da Costa [21] aim to improve critical awareness, ethic, and social growth, although Garcia da Costa [21] additionally considers the improvement of high qualities associated with the purpose of life. Similarly, to the Collegial model [40], the Teaching as a Source of Health emphasises the teacher-student relationship, although the focus here is on the first eight years of school, while Eriksson's [40] model addresses later supervisor-doctoral student relationships.

Different from the previous ones, which are directed more often to the students, the model by Kinchin [13] focuses on the experience of teachers/academics and addresses the weakness of pedagogy, considering the dark side of some current educational environments characterised by conflicts, frustration, and uncertainty. Teaching as Management of Weakness [13] also presents an individual and social concern, however, it addresses negative aspects of higher education systems. The author is concerned with the adverse consequences of the current educational environment that can be harmful and detrimental to students and professors. It also aims to trigger self-awareness among managers of universities, which is a distinct relevant characteristic. This model could be compared to a large beam of light emitted from a lighthouse guiding teachers and educators towards greater resilience in the seas the university sails along in these current uncertain days.

Limitations

Since characterised as a systematic review, this study has some weaknesses related to restricting studies for inclusion, narrow focus, and exhaustive search applying inclusion and exclusion criteria addressing only a fraction of the relevant questions [46] in salutogenesis and teaching and learning. This characteristic limits the probability to provide wider insight about the broader process of education and to answer other complex questions about education. The next step should involve a qualitative review adopting a wider focus expanding and diversifying other dimensions in order to produce a meaningful synthesis and a multi-level interpretation [47].

CONCLUSIONS

The six models summarised in the systematic review brought different but equally valuable contributions to the salutogenic teaching process through the comprehensibility, manageability, and meaningfulness components of the SOC, which strengthen the educational environments and result in better academic performance, as well as better physical and mental health.

Valuable understanding has been reached about the factors that affect and increase SOC, however, further investigations are necessary to improve the teaching-learning processes. The majority of the studies in the literature involve students and their psychological characteristics in high schools and at the university level. However, only a few studies were found about younger students at elementary level of education. More research studies were conducted to identify the salutogenic factors related to the academic performance of students and only few were found about the teaching process. Research about the sense of coherence of teachers is scarce. There is an inevitable need to study this topic more deeply and increase our understanding of the role of salutogenesis in the process of teaching and learning in order to prevent current problems of education more effectively.

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