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Article

A CBT-informed self-care curriculum for sustainable teacher education: Effects on pre-service early childhood teachers' self-care, perceived health, self-efficacy, and goal commitment

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Abstract: This empirical study examines the potential of a CBT-informed self-care curriculum as an approach to sustainable teacher education in the preparation of pre-service early childhood teachers. Rather than treating self-care as a peripheral or purely personal issue, the study conceptualizes it as part of the developmental foundation that may support future teachers' health, professional efficacy, and long-term commitment to the profession. Within this framework, the study investigates the effects of a self-care curriculum on pre-service early childhood teachers' self-care, perceived health, self-efficacy, and goal commitment. Participants were 268 pre-service early childhood teachers who completed pre- and post-intervention surveys. The curriculum drew on principles of Cognitive Behavioral Therapy (CBT) and integrated self-care lectures, cognitive restructuring, reflective writing, class discussion, and health-related knowledge learning. The results showed significant pre-post improvements in self-care, perceived health, and self-efficacy. Path analysis further indicated that self-care was positively associated with perceived health, self-efficacy, and goal commitment, and indirectly related to goal commitment through perceived health and self-efficacy. By linking self-care with both well-being-related and professional-development outcomes, this study contributes to the literature on sustainable teacher education in three ways. It positions self-care as a meaningful curricular concern in pre-service teacher preparation, applies a CBT-informed framework to early childhood teacher education, and provides empirical evidence that strengthening pre-service teachers' internal resources may support more sustainable professional development before workforce entry. The findings suggest that structured self-care education may be a promising direction for fostering healthier, more efficacious, and more committed future teachers in early childhood education.

Keywords: self-care intervention, CBT principles, self-efficacy, goal commitment, pre-service early childhood teachers

1. Introduction

A growing body of international research has highlighted the importance of courses and programs designed to strengthen pre-service early childhood teachers' self-efficacy, resilience, and professional skills [1,2]. Teacher self-efficacy has been associated with work engagement, sense of community, and retention in the early childhood profession [3,4] Importantly, previous research has also shown that self-efficacy is not static, but can change over time in response to learning experiences,

contextual support, and professional environments. For example, positive pre-service experiential support has been shown to improve the self-efficacy of early childhood teachers [5], while leadership support also plays an important role in strengthening teachers' self-efficacy [6]. Morris et al. [7] further emphasized that past successes, vicarious experiences, and verbal persuasion are all meaningful sources of self-efficacy, especially for novice teachers. Likewise, Holzberger et al. [8] documented a reciprocal relationship between self-efficacy and behavior, suggesting that additional mastery experiences may foster stronger self-efficacy over time.

This dynamic understanding of self-efficacy is consistent with Bandura's social cognitive theory [9], which identifies mastery experience, vicarious experience, verbal persuasion, and physiological or emotional states as major sources of efficacy beliefs. From this perspective, self-efficacy develops through ongoing interactions between the individual and the learning environment. Such a perspective is especially relevant for pre-service early childhood teachers, whose efficacy beliefs are still being formed during teacher education. Epstein and Willhite [10] demonstrated through more than 100 hours of knowledge sharing and discussion with preschool pre-service early childhood teachers at different grade levels, that this approach helps increase their self-efficacy in teaching and management, while enhancing their initiative to improve their self-efficacy. Nuttall [11] clarifies that strong feedback is crucial in the self-efficacy of early childhood teachers' professional development. In a longitudinal study with early educators in Switzerland, it was shown that there was a significant correlation between early childhood educators' professional experience and hours worked per week and self-efficacy. Those who had educational experience and more hours worked had higher self-efficacy [12].

As for pre-service early childhood teachers, the educational experience they gain in the university curriculum system is a necessary prerequisite for self-efficacy and future professional career, but there is remain unsettled issues need to be dressed in China's early childhood teacher education curriculum, not only the curriculum structure is unreasonable, where a traditional closed curriculum model is still adopted [13]. The existing curriculum for early education students is set up only from the perspective of how to educate and care for young children, but devotes little attention to preparing future practitioners for their own self-care. Self-care practices have been linked to reducing stress and improving mental health among teachers, highlighting the importance of self-care interventions [14]. Cultural factors and societal expectations may influence teachers' attitudes towards self-care. In Chinese educational settings, there may be a strong emphasis on dedication to work, long hours, and prioritizing students' needs over personal well-being. This cultural norm of self-sacrifice for the greater good of students could lead to teachers neglecting their own self-care needs. Moreover, teaching is a demanding profession that can result in burnout and high turnover rates [15]. In such demanding environments, teachers may prioritize meeting job expectations over self-care practices, viewing self-care as a luxury rather than a necessity. To address the issue of teachers not valuing self-care in China, interventions should focus on promoting the importance of well-being, providing resources for stress management, and fostering a culture of self-care within educational institutions.

In terms of pedagogy, current curriculum pedagogy does little to integrate learners with their career goals, professional competencies, and self-care to facilitate a practice-based reflection cycle, especially hit by the COVID-19 epidemic, early childhood teachers are facing unprecedented professional development and psychological challenges, such as emotion labor, burnout and low retention rate [16–18]. The current state of the early childhood education sector and the nature of its work lead us to revisit the endogenous and exogenous factors of the process from professional initiation to professional competence formation for early childhood teachers in the context of a dynamic ecosystem that includes: self-efficacy, goal commitment, and self-care. As Philibert et al. [19] assert that self-care should be an integral component of a teacher's daily routine.

In view of the points raised above, the preceding discussion reveals a clear gap in the literature. Although self-efficacy has been widely recognized as central to early childhood teachers' professional development, prior studies have focused primarily on its correlates and general developmental significance, rather than on how it may be fostered through structured curriculum interventions in pre-service teacher education, especially in China. Similarly, while self-care has been linked to reduced stress and better well-being, it has rarely been positioned as an explicit curricular component in the preparation of future early childhood teachers. Moreover, the interrelationships among self-care, perceived health, self-efficacy, and goal commitment remain underexplored within one integrated empirical model. The present study addresses these gaps by examining a CBT-informed self-care curriculum for pre-service early childhood teachers in China. Its significance lies in extending the literature beyond the general recognition of teacher well-being toward a curriculum-based approach that connects self-care with self-efficacy and future professional commitment.

2. Literature review

2.1. Evolution of early childhood teacher education in China

Although early childhood education was valued in ancient China, the concept of modern socialized early childhood education, together with formal early childhood teacher education, originated mainly in Western countries. After the Opium War, Western early childhood education and early childhood teacher education were introduced into China through various channels under the influence of "the thought of western learning penetrates eastward," which promoted the emergence of early childhood teacher education in China. After the nineteenth century, early childhood institutions were gradually established in countries such as England, France, and Germany. However, at the initial stage, there were no specialized institutions for early childhood teacher education, and early childhood teachers were often recruited from non-specialized personnel engaged in child health, nursing, or administration.

Modern early childhood teacher education in China developed through a process of imitation, adaptation, and localization, shifting from early reliance on the Japanese model to later influence from the American one. In this process, Chinese educators did not merely copy foreign models, but gradually adjusted them to local educational needs. In the 1920s and 1930s, pioneers of Chinese early childhood education actively explored more localized approaches to teacher education. Among them, Chen [20] was

particularly representative. His ideas on early childhood teacher education were formed through long-term practice in teacher education. He emphasized that such teacher education should not simply depend on inherited Chinese traditions or imported European and American models, but should be based on experimental research and adapted to the present and future needs of Chinese society and education. In the 1940s, he established the Jiangxi Provincial Experimental Kindergarten Teacher Training School, the first public kindergarten teacher training school in China, and trained a large number of teachers and researchers. His efforts remain an important part of the history of teacher education in China.

At the curriculum level, early childhood teacher education in modern China moved gradually from an early focus shaped by female virtue and strong feudal ideology toward greater professionalization, including special courses related to the characteristics of early childhood education. With continuous curricular adjustment, early childhood teachers gradually shifted from being seen as babysitters to being expected to possess theoretical literacy and practical competence in early childhood education. This process suggests that the professional development of early childhood teachers has long depended on an appropriate curriculum. In recent years, curriculum reform in the Chinese context has continued in response to transformation and modernization. However, persistent problems remain in the current pre-service early childhood teacher education curriculum, including an outdated curriculum system and outdated content, partly due to insufficient macro-level coordination and limited theoretical guidance [13].

2.2. Early childhood teachers' self-efficacy

Self-efficacy is the self-confidence to accomplish specific tasks [21]. Bandura [9] proposes that self-efficacy is a dynamic process of change, and that learning experiences and knowledge play a moderating role. The efficacy of self-efficacy is said to increase if the new experience or knowledge incorporated matches the experience in the present reality, and decrease if it does not match the experience in the present. At the same time, he placed particular emphasis on the importance of mastery experience as a primary source of information that contributes to self-efficacy. Thus, from the perspective of the role of self-efficacy on behavior, self-efficacy is a key element of human motivation and an important basis for people's actions. Moreover, from the perspective of the mechanism of action of self-efficacy, it serves to mediate the relationship between the various forms of knowledge, skills, and experiences that humans have acquired and the subsequent behavior that results from this accumulation of knowledge and experience. Additionally, from the perspective of the temporal dimension between self-efficacy and behavior, self-efficacy is an expectation of whether one can achieve a behavior, and therefore precedes a behavior, rather than being a retrospective result of an activity. From the perspective of the essential properties, self-efficacy is subjective. It is not a manifestation of the individual's actual behavior. From the perspective of the perceived object of self-efficacy, people judge their self-efficacy for various activities, which can vary in the degree of self-efficacy. Furthermore, in terms of the developmental characteristics of self-efficacy, it is not a static and inherent attribute within an individual's personality,

but their self-judgment made through various sources of efficacy information while interacting with the environment, and is in a constant state of development.

Two major aspects of self-efficacy have been studied in the existing literature regarding early childhood teachers: One is that it affects early childhood teachers' work engagement, sense of community, and retention [3–4],and the other is that, during the research of preparing early childhood teachers, The study revealed that the efficacy of early childhood educators is not a fixed trait, but rather, it undergoes fluctuations in response to external environmental factors and the evolving needs of learners. For instance, Rushton's [5] research showed that positive pre-service experiential support is beneficial to improve the self-efficacy of early childhood teachers. Furthermore, the support of leaders also helps to improve early childhood teachers' self-efficacy [6]. Morris et al. [7] confirm the positive significance of knowledge of past successes as a source of self-efficacy. However, beyond that, it is crucial to acknowledge the influence of alternative experiences and verbal persuasion, in particular, for novice teachers with limited experience in the pre-professional period, the confidence of mentors can be enhanced or diminished when they work closely with them to provide new or authentic ideas about curriculum and teaching. This is also true when they receive positive or negative verbal comments from mentors [22]. Holzberger et al. [8] documented that self-efficacy and behavior are reciprocal and that the acquisition of more mastery experiences facilitates higher self-efficacy. Von et al. [6] demonstrated through their study of 341 U.S. preschool teachers, who participated in a professional development intervention, that the self-efficacy of early childhood educators evolved over time, and receiving a coaching intervention was beneficial in increasing the self-efficacy of prospective preschool teachers. The above studies confirm that self-efficacy is floating and changing based on specific settings or tasks in the experience or resources.

Nuttall [11] clarified that strong feedback is crucial in the self-efficacy of early childhood teachers' professional development. In a longitudinal study with early educators in Switzerland, it was found that there existed a notable correlation between early childhood educators' years of professional experience, as well as the number of hours worked per week, and their self-efficacy. Those who had educational experience and more hours worked had higher self-efficacy [12]. Perren et al. [23] demonstrated through a survey of 265 early childhood education practitioners from Switzerland that self-efficacy has a positive effect on educational practice while mediating between specific knowledge and educational practice, strongly highlights the crucial role of self-efficacy in enhancing pedagogical practices in education. Thus, practice in different national cultural contexts has confirmed that both direct and indirect experiences can have an impact on the self-efficacy of early childhood teachers. Despite various problems with the curriculum system in early childhood teacher education in Chinese context, there is still a considerable gap in research on how to promote the self-efficacy of relevant early childhood teachers, especially pre-service early childhood teachers in China. Therefore, this study aims to explore the pathways to enhance pre-service early childhood teachers' self-efficacy and professional development by attempting to change the specific curriculum base of pre-service early childhood teachers to provide an important basis for the overall curriculum reform for the advancement of early childhood teacher education in China. It will enhance the

professional development of early childhood teachers and improve the quality of early childhood education.

2.3. Relationship between self-care and self-efficacy

As a physically and mentally demanding job, early childhood teachers not only have to be professionally literate in caring and educating children, but studies have also confirmed that they have to deal with many psychological stresses and mental burdens [24,25]. Thus, they need self-care to manage their health. The role of early childhood teachers involves significant emotional labor [26]. Therefore, self-care plays an essential role in the initial education of early childhood teachers, as well as in the in-service education of teachers on matters pertaining to physical and mental health.

A substantial body of research has demonstrated the significant relationship between self-care and self-efficacy. A study conducted by Coşkun and Yiğit [27] demonstrates a significant correlation between increased self-care agency and higher self-efficacy among Turkish adolescents aged 11–15 years. Furthermore, research on the relationship between self-care and self-efficacy has predominantly concentrated on the medical community, the study population mainly comprised older adults or patients. Delshad et al. [28] found a significant positive relationship between self-efficacy and self-care in adults in a COVID-19 context, and the study by Patel and Ghosh [29] shows that incorporating self-efficacy into self-care would have a positive impact on depression. Similarly, Sousa et al. [30] indicated that more self-efficacy leads to more self-care management. These studies strongly confirm the significant link between self-efficacy and self-care, and provide empirical support for further research on self-care and self-efficacy among early childhood teachers. However, there is still relatively little evidence for pre-service early childhood teachers. Therefore, it is necessary for this study to continue to broaden this target group to fill this gap. The existing related literature mainly examines the relationship between self-efficacy and self-care from a cross-sectional perspective, but self-efficacy is a dynamic process of change and may be influenced by different resources or specific environments. So, this study seeks to explore the connection between self-efficacy and self-care from the perspective of a follow-up study with pre-service early childhood teachers to identify whether self-care is an indicator factor affecting changes in self-efficacy, so that in the future early childhood teachers can take a more holistic perspective to develop their professional self-efficacy and improve the quality of care and education.

2.4. Relationship between self-care and perceived health

Nicholas [31] elucidated that self-care practices revealed a notable positive relation with perceived health in a random sample of 72 older adults from a town in the northeastern United States. A study by Feng et al. [32] demonstrated that students aged 18 years and older were able to achieve positive results in mediating perceived stress and mental health through better positive self-care. In addition, adolescents' self-efficacy significantly predicted healthy lifestyles, including nutrition, and health responsibilities [33]. Existing research has confirmed the relationship between

perceived health and self-care; however, there exists a noticeable research gap concerning the correlation between perceived health and self-care among pre-service teachers within a Chinese context. The objective of this study was to investigate the correlation between self-care levels, perceived health, self-efficacy, and goal commitment among pre-service teachers following participation in a self-care curriculum.

2.5. Goal commitment for early childhood teachers

commitment is considered as one of the learning themes concerning perseverance and goal attainment [34,35]. It is a state of mind of responsibility and persistence toward achieving a specific goal [36] and is a prerequisite for goal accomplishment [37]. Studies have confirmed that commitment has an important effect on motivation, which implies persistence and effort toward goal achievement [37]. It has been shown that educator commitment reflects educators' loyalty and attachment to the organization for which they work. Thus, it helps them become more focused on their work, and has been shown to be an important indicator of various learning and spiritual outcomes. It also is associated with burnout, and separation [38–40]. Vogel and Human-Vogel [41] emphasize that growth in commitment is a positive and bidirectional joint outcome between the individual and their various surrounding relationships, environmental elements and psychology. Thus, comprehensive evidence to support the study of prospective early childhood teachers' goal commitment can be found from prior studies, which implies that it will be possible to positively influence prospective early childhood teachers' goal commitment in the context of a self-care curriculum, as commitment is a cycle that frequent interactions between various elements of personal, professional, and academic structures [42].

2.6. Summary

Building on the literature reviewed above, the preceding discussion reveals a clear gap in the literature and a practical need for curriculum reform in early childhood teacher education. In the Chinese context, pre-service early childhood teacher education continues to focus primarily on how to educate and care for young children, while giving limited attention to future teachers' own self-care and well-being, despite the physical, emotional, and professional demands associated with the field. At the same time, although self-efficacy has been widely recognized as central to teachers' professional development, relatively little is known about how it may be strengthened through formal curriculum-based interventions for pre-service early childhood teachers, particularly in China. In addition, while self-care has been linked to stress reduction and improved mental health, and perceived health may reflect an important dimension of well-being, the interrelationships among self-care, perceived health, self-efficacy, and goal commitment have not been sufficiently examined within one integrated empirical framework.

Pre-service early childhood teachers are a particularly important group for such investigation because the pre-service stage is a formative period in which efficacy beliefs, health-related habits, and professional commitment are still being shaped through teacher education. As a result, the university curriculum provides a critical

context for developing these capacities before entry into the workforce. However, when self-care is not explicitly addressed during this stage, future teachers may enter a demanding profession without sufficient preparation to sustain their own well-being and professional engagement.

In the present study, well-being is treated as a broader conceptual background rather than as a single directly measured variable. More specifically, self-care is understood as a set of behavioral and cognitive practices that support individuals' physical and psychological functioning, while perceived health is treated as an empirical dimension reflecting an important aspect of well-being. From this perspective, self-care and perceived health are not identical to well-being itself, but are conceptually connected to it and help represent how well-being may be supported and experienced among pre-service early childhood teachers.

Accordingly, the objective of this study is to propose a vision for curriculum reform in early childhood teacher education in China through the implementation of a self-care curriculum grounded in Cognitive Behavioral Therapy (CBT) principles. Specifically, this study examines whether incorporating cognitive restructuring and other CBT-based self-care techniques into the educational experiences of pre-service early childhood teachers is associated with their self-care, perceived health, self-efficacy, and future career goal commitment.

Based on the literature reviewed above and the conceptual framework shown in **Figure 1**, this study proposes the following hypotheses:

H1: Following the implementation of the self-care curriculum, pre-service early childhood teachers will show significant changes in self-care, perceived health, self-efficacy, and goal commitment.

H2: Self-care, perceived health, self-efficacy, and goal commitment will be significantly interrelated among pre-service early childhood teachers.

H3: Changes in self-care associated with participation in the self-care curriculum will significantly predict pre-service early childhood teachers perceived health, self-efficacy, and goal commitment.

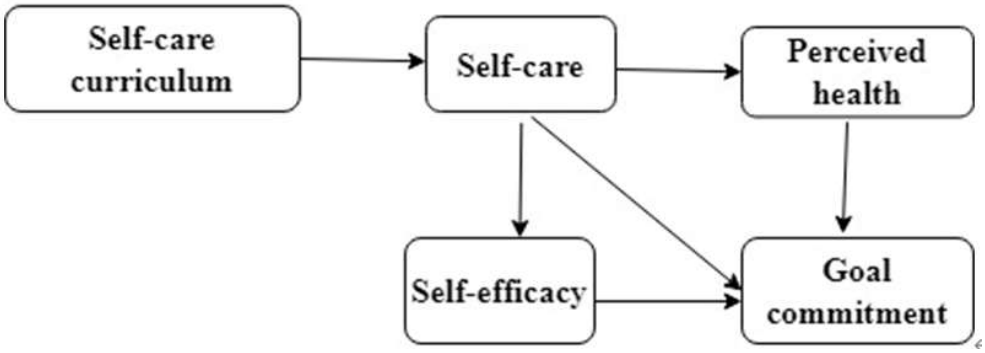

Figure 1. Self-care and self-efficacy and goal commitment pathway for pre-service early childhood teachers.

2.7. Purpose of the study

Despite the growing recognition of teacher well-being in international research, an important gap remains in the preparation of pre-service early childhood teachers in China. First, existing early childhood teacher education curricula continue to focus

primarily on children' s care and development, while giving insufficient attention to the self-care needs and well-being of future teachers themselves. Second, although self-efficacy and goal commitment are widely recognized as critical to teachers' professional development and long-term engagement, relatively little is known about how these capacities can be strengthened through curriculum-based interventions in the Chinese pre-service early childhood education context. Third, while self-care has been associated with improved mental health and reduced stress, the potential of a CBT-informed self-care curriculum to support pre-service early childhood teachers' self-efficacy and future career commitment has not yet been adequately examined. These gaps highlight the need for a more explicit curricular response within early childhood teacher education.

In response to this research gap, the objective of this study is to propose a vision for curriculum reform in early childhood teacher education in China through the implementation of a self-care curriculum grounded in Cognitive Behavioral Therapy (CBT) principles.

In the present study, these constructs are not treated as three fully parallel theoretical domains. Rather, they are examined within an integrated framework of sustainable teacher development. Self-efficacy is discussed in greater detail because it serves as a central psychological mechanism through which self-care experiences may influence future professional development. Well-being, by contrast, is represented primarily through perceived health and through its broader relevance to teachers' sustainable professional lives. Goal commitment is included as a future-oriented dimension of professional motivation, closely related to persistence, engagement, and the capacity to sustain oneself within the profession. From this perspective, the study focuses on the interrelationships among these constructs rather than on giving each an identical degree of theoretical elaboration.

The results of this study can be utilized to improve the effectiveness of professional development programs for pre-service early childhood educators. Furthermore, these findings can be utilized to enhance professional development services for in-service early childhood teachers. Furthermore, the study contributes to the growing body of research on the role of self-care programs in enhancing self-efficacy and goal commitment among pre-service early childhood teachers. Another potential application of the findings is to compare the self-care curriculum with similar studies on other related curricular learning, with the objective of identifying trends in early childhood teacher education. These trends can assist in the establishment of comprehensive standards and guidelines for future pre-service early childhood teachers, encompassing the entirety of their professional training and subsequent professional development.

3. Methods

In this section, authors are required to provide a detailed account of the procedure that was followed while conducting the research described in the report. This will help the readers to obtain a clear understanding of the research and also allow them to replicate the study in the future. Authors should ensure that every method used is described and include citations for the procedures that have been described previously.

Avoid any kind of discussion in this section regarding the methods or results of any kind. Research manuscripts reporting large datasets that are deposited in a publicly available database should specify where the data have been deposited and provide the relevant accession numbers. If the accession numbers have not yet been obtained at the time of submission, please state that they will be provided during review. They must be provided prior to publication.

Intervention Ary studies involving animals or humans, and other studies that require ethical approval, must list the authority that provided approval and the corresponding ethical approval code.

The study centered on the implementation of a self-care curriculum to identify whether it has a significant effect on the level of self-care, perceived health, self-efficacy and goal commitment. As shown in **Figure 2**, nutrition knowledge oriented lecture, evidence-based case class discussion and practice-based self-reflection report were performed to gain the awareness and ability of self-care for pre-service early childhood teachers.

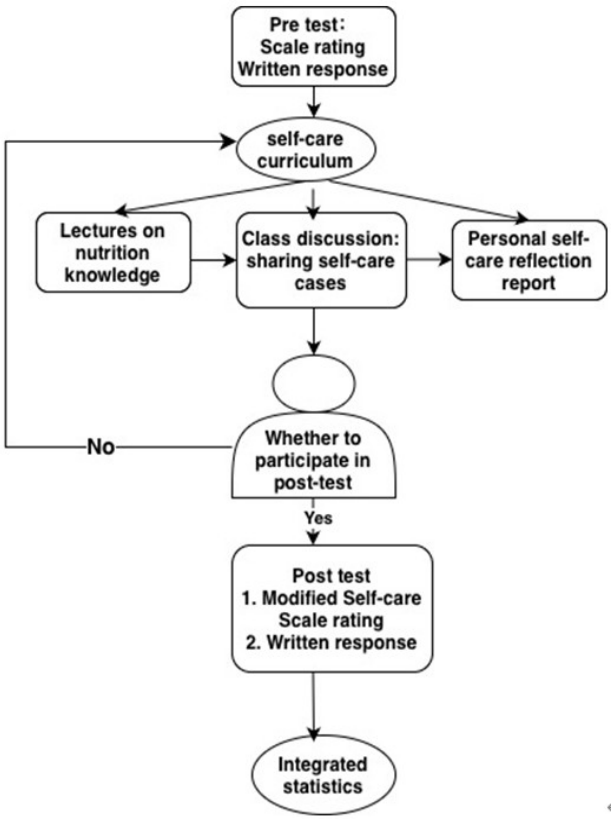

Figure 2. Design of the study implementation.

3.1. Participants

The participants were 268 first-year pre-service early childhood teachers enrolled in a preschool education program at a university in Zhejiang Province, China. The study was conducted within a semester-long self-care course, and all students enrolled in this course were invited to participate voluntarily. Therefore, the sample can be characterized as a convenience sample drawn from one intact cohort within a teacher education program. The sample size was determined by the total number of students

available and eligible to participate in the course during the study period. Because the study adopted a pre-post follow-up design, the same cohort was surveyed at both time points in order to ensure consistency and enable matched comparisons across the intervention period.

This study was based on the teaching practices of a course for pre-service early childhood teachers in higher teacher education, by using a full teaching semester (the course was implemented from February 2025 to June 2025, a total of 18 weeks, 40 minutes per week, and a total of 720 minutes) as the length of time to administer a questionnaire to students about perceptions of health, and self-care. A follow-up study was conducted to identify the effects of the implementation of self-care curriculum on the self-efficacy and goal commitment of the pre-service early childhood teachers by administering pre-test and post-test in four dimensions: self-care, perceived health, self-efficacy, and goal commitment.

All participants were briefed in advance about the purpose and contents of the survey. A total of 268 students took part in this study, with all participants providing verbal consent to participate. Participants were informed that their involvement was voluntary and that their data would be kept confidential. The study was approved by University Ethical Committee. The first trial with 268 participants was held from February 25 to March 4, 2025. The second trial was held from June 3 to June 10, 2025, with a 100% return rate and 100% valid questionnaires. The survey was conducted in the classroom anonymously with paper and pencil. In order to keep the consistency of the pre-test and post-test subjects, the questionnaires were numbered in the following manner: 1,2,3....268. When the follow-up survey was conducted at the end of the session, participants completed the questionnaire by filling in the number used for the first time to complete the answer sheet.

3.2. Instrumentation

Data were collected through four scales (self-care scale, a perceived health scale, a teacher self-efficacy scale, and a goal commitment scale) and written responses of pre-service early childhood teachers' interpretations of the changes in their self-care thinking and practice during the self-care course. The written response contains both objective test and subjective statement questions. The objective items covered nutritional knowledge. For example, one question asked which nutrient contained in flaxseed oil is beneficial to the human body. The subjective items asked participants to describe their self-care practices and perceptions. For example, one item asked: "When you go to the supermarket, do you habitually check the nutrition facts and ingredients list on food packages?"

3.3. The self-efficacy scale

This is a revised version of a teacher self-efficacy scale with 10-items based on the previous studies [43–45]. It comprises two dimensions: Teaching Efficacy (TE) and Personal Efficacy (PE), and calculated using a six-point Likert scale with scores ranging from 1 = strongly disagree to 6 = strongly agree. It included questions like: I am convinced that I can develop creative ways to cope with system constraints (such as budget cuts and other administrative problems) and continue to teach well. The

reliability coefficients α for the two times were .892 and .914.

3.4. The self-care scale

The self-care scale is conceptually and methodologically built upon the foundation of prior work by Khagram et al. [46] and La Greca [47], as well as based on the nature of the work of pre-service early childhood teachers and the current content they are learning in the classroom, such as self-management of physical nutrition, eating habits, and mental health management, among others. There are 10 questions on a five-point Likert scale, with 1 meaning Never and 5 meaning always. A representative item is: "I pay attention to my daily nutrition and eating habits". The reliability coefficient for 10 question items was 0.922 and .955, respectively.

3.5. Perceived health scale

This scale is a translated Chinese version that contains eight items [48], ranging from 1= strongly disagree to 6 = strongly agree, with higher scores indicating stronger health perceptions, with specific questions such as: I have difficulty finding effective solutions to my health problems; I am generally able to accomplish my health-related goals. The Cronbach alpha reported were .932 and .966 respectively.

3.6. Goal commitment scale

The Goal Commitment Scale is a modified version of the scale based on the participants' future career goals, scored on a five-point Likert scale, where 1= strongly disagree, 5 = strongly agree, with nine items [36]. For example: I am strongly committed to pursuing this goal /I think this is a good goal to shoot for. The internal consistency coefficient for this scale was .925.

3.7. Data collection

In this study, a follow-up survey was conducted on first-year preschool education students from a university in Zhejiang province in eastern China, who completed a total of two tests, divided into pre-test and post-test. The researcher was the instructor of this course, and the participation was voluntary. The first test was conducted from February 25 to March 4, 2025, with 268 participants. The second test was conducted from June 3 to June 10, 2025, with the same number of participants. The questionnaire return rate was 100%, and responses to all the questionnaires were valid.

3.8. Intervention procedure

The self-care curriculum was delivered as part of a regular semester-long course for pre-service early childhood teachers. The intervention lasted from February 2025 to June 2025 and consisted of 18 weekly sessions, each lasting 40 minutes, for a total instructional dosage of 720 minutes. The curriculum included three core components: (1) nutrition knowledge-oriented lectures, (2) evidence-based case-based class discussion, and (3) practice-based self-reflection reports. In addition to classroom participation, students were asked to complete reflective writing/report tasks related to the weekly self-care themes and to engage with course content concerning nutrition, mental health, and self-management. To maintain implementation consistency, the

curriculum was delivered within the same course structure across one intact cohort throughout the semester.

4. Results and discussion

This section may be divided by subheadings. It should provide a concise and precise description of the experimental results, their interpretation, as well as the experimental conclusions that can be drawn.

The data for this study were analyzed using IBM SPSS 26 and IBM AMOS 26. The proposed research hypotheses were subjected to empirical testing.

H1: The implementation of a self-care curriculum can change the level and competence of pre-service early childhood teachers in self-care, perceived health, and self-efficacy (**Table 1**).

Table 1. Paired-samples t-test results for pre-post comparisons (N = 268).

Variable	Pre-test M	Post-test M	Mean difference	SD of difference	95% CI	T (df)	*p*	Cohen's d
Self-care	31.33	39.02	-7.69	6.93	[-8.53, -6.86]	-18.17 (267)	<.001	1.11
Perceived health	31.26	34.80	-3.54	5.53	[-4.21, -2.88]	-10.49 (267)	<.001	0.64
Self-efficacy	35.40	46.43	-11.04	2.24	[-11.31, -10.77]	-80.61 (267)	<.001	4.92

Note: Mean differences were calculated as pre-test minus post-test scores. Cohen's d values are reported for paired comparisons.

Table 1 presents the paired-samples *t*-test results for self-care, perceived health, and self-efficacy. Compared with pre-test scores, post-test scores were higher for all three variables. Self-care increased from 31.33 to 39.02, t (267) = -18.17, $p < .001$, Cohen's d = 1.11, 95% CI [-8.53, -6.86]. Perceived health increased from 31.26 to 34.80, t (267) = -10.49, $p < .001$, Cohen's d = 0.64, 95% CI [-4.21, -2.88]. Self-efficacy increased from 35.40 to 46.43, t (267) = -80.61, $p < .001$, Cohen's d = 4.92, 95% CI [-11.31, -10.77]. These results indicate statistically significant pre-post differences for all three variables, although the magnitude of the observed changes should be interpreted cautiously in light of the study design.

H2: There is a correlation between self-care, perceived health, self-efficacy, and goal commitment (**Table 2**).

Table 2. Correlation between the variables (N = 268).

Items	1	2	3	4	5	6	7
1. Perceived health (Pre)	1						
2. Perceived health (Post)	764**	1					
3. Self-care (Pre)	562**	446**	1				
4. Self-care (Post)	465**	610**	611**	1			
5. Self-efficacy (Pre)	542**	538**	485**	500**	1		
6. Self-efficacy (Post)	550**	546**	485**	506**	985**	1	
7. Goal commitment	475**	537**	401**	570**	547**	561**	1

Note: **. Correlation is significant at the 0.01 level (2-tailed).

Table 2 shows the interrelationships between the variables in this study. After the implementation of the self-care program, the self-care levels of pre-service early childhood teachers were found to have a significant and positive correlation with perceived health, self-efficacy, and goal commitment. The result provided the basis for the path analysis of Hypothesis 3.

H3: Changes in levels of self-care induced by the implementation of a self-care curriculum were identified to be significant predictors of perceived health, self-efficacy, and goal commitment of pre-service early childhood teachers.

As shown in **Table 3**, model fit was evaluated using commonly reported fit indices. In interpreting these indices, we referred to widely used methodological guidelines rather than rigid universal cutoffs [49–51].

The measurement model demonstrated acceptable fit to the data. The chi-square/df ratio was below 3, RMSEA was .062, and the reported fit indices were all above .90 (GFI = .904, AGFI = .912, NFI = .922, RFI = .905, IFI = .923, and TLI = .931). According to commonly used fit guidelines, these values indicate acceptable overall model fit.

Table 3. Summary of model fit indices.

Fit index	Cutoff criteria	Model value
χ^2/df	<3.00	<3.00
RMSEA	<.08	062
GFI	≥.90	904
AGFI	465**	912
NFI	≥.90	922
RFI	≥.90	905
IFI	≥.90	923
TLI	≥.90	931

Note: χ^2/df = chi-square divided by degrees of freedom; RMSEA = root mean square error of approximation; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; NFI = normed fit index; RFI = relative fit index; IFI = incremental fit index; TLI = Tucker–Lewis index.

As shown in **Figure 3** and **Table 4**, the proposed model demonstrated acceptable overall fit to the data. Self-care showed significant positive direct associations with perceived health ($\beta = 0.610$, SE = 0.049, $p < .001$), self-efficacy ($\beta = 0.506$, SE = 0.053, $p < .001$), and goal commitment ($\beta = 0.301$, SE = 0.060, $p < .001$). In addition, self-care was indirectly related to goal commitment through perceived health (indirect effect = 0.113, 95% bootstrap CI [0.035, 0.202]) and self-efficacy (indirect effect = 0.156, 95% bootstrap CI [0.088, 0.235]). The total indirect effect of self-care on goal commitment was 0.269, with a 95% bootstrap confidence interval of [0.182, 0.371]. The total effect of self-care on goal commitment was 0.570, 95% bootstrap CI [0.469, 0.657]. These findings suggest that self-care was linked not only directly to goal commitment, but also indirectly through perceived health and self-efficacy. Given the non-experimental design of the study, these relationships should be interpreted as associational rather than definitive causal effects.

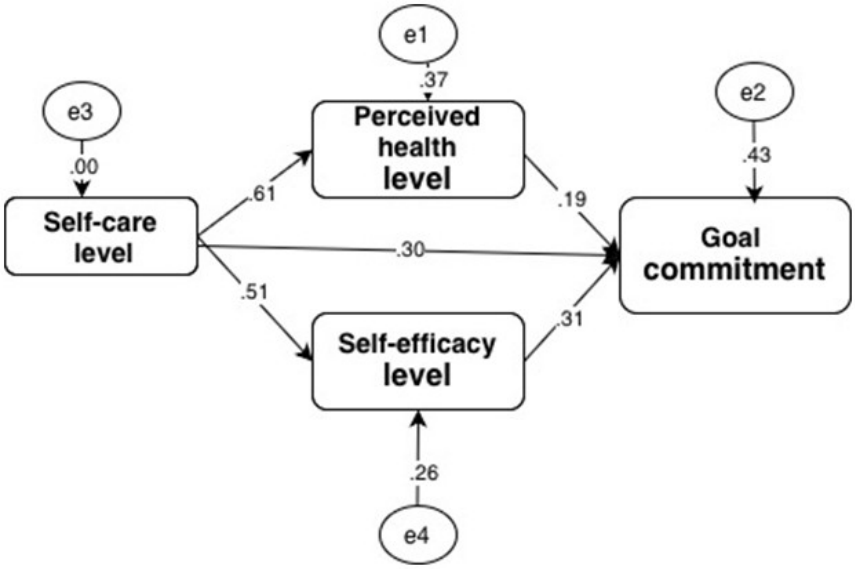

Figure 3. Model fitting and path analysis of variables.

Table 4. Direct, indirect, and total effects in the proposed path model.

Path	Effect type	Standardized effect (*β*)	SE	*p* value	Bootstrap 95% CI
Self-care → Perceived health	Direct	0.610	0.049	<.001	[0.517, 0.690]
Self-care → Self-efficacy	Direct	0.506	0.053	<.001	[0.397, 0.607]
Self-care → Goal commitment	Direct	0.301	0.060	<.001	[0.163, 0.426]
Self-care → Goal commitment via Perceived health	Indirect	0.113	—	—	[0.035, 0.202]
Self-care → Goal commitment via Self-efficacy	Indirect	0.156	—	—	[0.088, 0.235]
Self-care → Goal commitment	Total indirect	0.269	—	—	[0.182, 0.371]
Self-care → Goal commitment	Total effect	0.570	—	—	[0.469, 0.657]

Note: Indirect and total effects were estimated using bootstrap procedures with 5,000 resamples. Standard errors and p values are reported for the direct paths. Bootstrap confidence intervals are reported for all direct, indirect, and total effects.

4.1. Discussion and implication

This study showed that the implementation of a self-care curriculum was associated with increases in pre-service early childhood teachers' self-care, perceived health, and self-efficacy. In addition, self-care significantly predicted perceived health, self-efficacy, and goal commitment. These findings support the importance of addressing self-care within early childhood teacher education.

The findings also offer an important perspective for curriculum reform in the Chinese context. Although considerable attention has been paid to strengthening professional skills among pre-service early childhood teachers, the curriculum has traditionally focused more on children's development than on teachers' own well-being and self-care capacity. Our findings suggest that this imbalance should be reconsidered, particularly given the emotional and physical demands of early childhood education [52]. The quality of interactions they have with children directly

impacts both the overall quality of early education and the development of children [53].

In China as well as worldwide, the professional skills like early childhood observation, early childhood care and teacher-child interaction are indeed highly valued [54]. Although China is constantly improving the professional skills of pre-service early childhood teachers, the courses of study are almost exclusively geared toward young children, with very few series of courses aimed toward the teachers. For example, they may know how to give effective advice on facing various nutritional deficiencies in children, but are unable to prepare a well-rounded breakfast for themselves to ensure energy for the day. A CBT-informed self-care curriculum may help address this gap by combining theoretical knowledge with practical strategies. In the present study, the curriculum included lectures, reflective writing, class discussion, and health-related knowledge assessment. Together, these components may have supported participants in rethinking their self-care beliefs and developing more sustainable habits related to their own well-being.

Overall, this study challenges contemporary indicators of curriculum systems related to teacher education for early childhood teachers. It informs about the exploration of new directions and pathways for a new curriculum for early childhood teacher education. In addition to broadens and deepens the existing curriculum for early childhood teacher education, the practice of self-care programs provides important empirical evidence for the current focus on the physical and mental health and well-being of early childhood teachers in different cultural contexts [55–57]. During the implementation of the self-care program, different teaching strategies such as lectures on self-care, students' reflective reports on self-care, class discussion and tests on nutrition and psychology related to self-care were adopted to enhance the self-care awareness and competence of pre-service early childhood teachers. Since early childhood teachers are service-oriented professionals [58], they often advise others to prioritize their health, yet they may neglect their own well-being [59]. The implementation of a self-care program can therefore gradually build awareness for pre-service early childhood teachers to pay attention to their mental and physical health, which can help reduce stress in the workplace [60,61]. The present findings suggest that self-care should be understood as part of the developmental foundation that enables future teachers to maintain professional engagement and long-term commitment. In this respect, the study broadens the conceptual discussion of teacher development by connecting health-related capacities with future professional sustainability.

The findings may also be interpreted in relation to the CBT-informed nature of the intervention. The curriculum was not limited to delivering health-related information. Rather, it involved cognitive restructuring, self-reflection, class discussion, and practical engagement with self-care-related knowledge and habits. Through these processes, participants may have begun to reinterpret self-care not as an optional or secondary matter, but as part of responsible professional preparation. In this sense, the study suggests that CBT-informed approaches may offer a useful educational framework for helping pre-service teachers recognize the relationship between their thoughts, behaviors, health perceptions, and future professional commitment.

From a methodological perspective, the present study also provides several useful implications. One strength of the research lies in the fact that the self-care curriculum was embedded within a naturally occurring semester-long course, rather than being implemented in an artificial or isolated experimental context. This increases the ecological relevance of the findings and offers insight into how a self-care-related intervention may function within actual teacher education practice. In addition, the pre-post design made it possible to examine changes over time within the same cohort, thereby providing preliminary evidence for the developmental relevance of the curriculum.

At the same time, the study also highlights several methodological considerations. As noted in the revised manuscript, the present research relied on adapted instruments and observed composite scores within an applied educational design. Therefore, the findings should be interpreted as evidence of meaningful associations and curriculum-related changes rather than as a full latent-variable validation model. The acceptable model fit supports the overall plausibility of the proposed structural relationships, although model fit should not be taken as a substitute for more comprehensive construct validation. In addition, because the original item-level validation outputs were no longer available, the study does not provide a full set of validity indices such as composite reliability, convergent validity, or discriminant validity. These limitations should be addressed in future research through more extensive psychometric validation, confirmatory factor analysis, and formal discriminant validity testing.

Nevertheless, the methodological design still offers an important contribution. In applied educational research, it is valuable to examine whether an intervention can be meaningfully implemented within the ordinary structure of teacher education rather than only under tightly controlled research conditions. In this regard, the present study provides an initial model for investigating self-care as a curricular issue in pre-service early childhood teacher education. Future research could build on this foundation by including comparison groups, conducting longer-term follow-up after entry into the teaching profession, and examining whether similar curricular effects emerge in other cultural or institutional contexts.

From a practical perspective, the findings have direct implications for curriculum reform, teacher education, and institutional support. In many teacher education settings, future teachers are systematically trained to support children's growth and development, yet they receive limited preparation for sustaining their own physical and psychological well-being. The present findings suggest that this imbalance should be reconsidered. If pre-service teachers enter the profession without sufficient self-care awareness or strategies, they may be more vulnerable to stress, burnout, and weakened commitment in the future.

In this regard, a CBT-informed self-care curriculum may offer a feasible and educationally meaningful response. By combining reflective practice, cognitive restructuring, class discussion, health-related learning, and practical self-care strategies, such a curriculum may help pre-service early childhood teachers develop healthier routines, stronger self-awareness, and a more sustainable sense of professional preparation. This matters not only for their personal functioning, but also for the quality and continuity of their future work in early childhood settings, where

emotional availability, stability, and long-term engagement are especially important.

The present findings also suggest that curriculum reform in China may benefit from incorporating self-care into the core structure of pre-service early childhood teacher education, rather than treating it as an optional supplement or an informal personal matter. Universities and teacher educators may consider designing more explicit opportunities for students to learn about health, stress regulation, reflective thinking, and sustainable professional habits. More broadly, the study supports the view that effective teacher education should include not only pedagogical knowledge and teaching skills, but also the cultivation of capacities that enable future teachers to remain healthy, engaged, and committed over time [3].

Overall, the present study suggests that self-care should be recognized as an important dimension of sustainable teacher education. For pre-service early childhood teachers, learning how to care for themselves may be closely connected to how they perceive their health, how they develop self-efficacy [62], and how they sustain commitment to their future profession. In this sense, the contribution of the study lies not only in demonstrating curriculum-related change, but also in proposing a broader educational perspective: Preparing teachers for the profession should involve preparing them not only to care for children, but also to sustain themselves as professionals.

4.2. Limitation and future direction

The findings of this study should be interpreted with caution in light of several limitations in the research design. The study relied on a pre-post within-subject design without a control or comparison group, which limits the strength of causal inference. Although meaningful changes were observed over time, alternative explanations cannot be fully excluded, including maturation, repeated testing effects, and socially desirable responding. The results are therefore better understood as preliminary and associational rather than as definitive evidence that the self-care curriculum itself produced the observed improvements.

Some caution is also needed in relation to measurement. All focal variables were assessed through self-report measures collected within the same overall design framework, which raises the possibility of common method variance and may have inflated some of the observed associations among self-care, perceived health, self-efficacy, and goal commitment. In addition, while internal consistency reliability was reported, a more comprehensive assessment of construct validity could not be provided because the original item-level validation outputs were no longer available. The study was also conducted with one cohort of pre-service early childhood teachers in a specific institutional context in China, which may limit the transferability of the findings to other settings. Future research would benefit from more specific and rigorous designs. For example, waitlist-control designs could help retain ecological feasibility while allowing stronger comparison across groups; class-level quasi-experiments could be used when random assignment is not institutionally practical; and multi-site samples drawn from different teacher education programs would help test the robustness of the findings across institutional and regional contexts. In addition, follow-up assessments conducted after the completion of the course, and ideally after

entry into professional practice, would make it possible to examine whether the observed changes are sustained over time.

5. Conclusion

The findings of this study suggest that, after participating in the self-care curriculum, pre-service early childhood teachers showed higher levels of self-care, perceived health, and self-efficacy than they had before the course. The results further indicate that self-care was positively associated with perceived health, self-efficacy, and goal commitment, and that stronger self-efficacy was linked to stronger commitment to future professional goals. Viewed together, these findings point to self-care as a potentially meaningful part of pre-service teacher development, with relevance not only for personal well-being-related functioning but also for professional motivation.

The study also offers preliminary support for the educational value of a CBT-informed self-care curriculum. Through lectures, reflective writing, class discussion, and learning related to nutrition and psychology, participants may have gained more than isolated knowledge about self-care. They may also have developed a clearer awareness of their own habits, beliefs, and daily practices, and begun to see self-care as something that can be intentionally learned, reflected on, and sustained. In this sense, the curriculum appears to have created space for pre-service teachers to connect personal well-being with their future professional lives.

These findings may carry particular significance for early childhood teacher education in China. Teacher preparation has often focused, understandably, on how future teachers should understand and support children, yet much less attention has been given to how they themselves can be supported in developing sustainable habits of care, reflection, and self-management. The present study suggests that this area deserves more attention. At the same time, the findings should be interpreted cautiously. Because the study relied on a pre-post within-subject design without a control group, it cannot establish definitive causal effects. Rather, it offers preliminary evidence that a self-care curriculum may be a promising direction for supporting pre-service early childhood teachers' development.

Overall, this study points to the possible value of bringing self-care more explicitly into early childhood initial teacher education. Doing so may help future teachers not only build healthier and more reflective ways of caring for themselves, but also strengthen their sense of efficacy and commitment as they prepare to enter the profession. Further research using more rigorous comparative or longitudinal designs would help clarify the extent and durability of these relationships in the Chinese context.

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Ethical approval: This study did not require formal ethics approval, as it involved low-risk, classroom-embedded survey research in a Chinese university where such pedagogical activities are exempt from review. All students provided written informed consent before and after data collection. Participation was voluntary, with no academic penalty for withdrawal. Data were collected as part of a course assignment; no personally identifiable or additional private information was gathered. All responses were anonymized and used solely for research and educational purposes. The study adhered to the Declaration of Helsinki.

Informed consent statement: Informed consent was obtained from all subjects involved in the study.

Conflict of interest: The authors declare no conflict of interest.

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