



Contents lists available at ScienceDirect

Teaching and Learning in Nursing

journal homepage: www.journals.elsevier.com/teaching-and-learning-in-nursing

Research

Effects on psychological well-being of a self-compassion training program in student nurses



Andrés Carmona-Gutiérrez, PhD, MPH, RN¹, María Dolores Ruiz-Fernández, PhD, MSN, RN^{2,3*},
 Ángela María Ortega-Galán, PhD, MSN, RN⁴, Diego Henríquez, PhD⁵,
 Daniela Castillo-Mansilla, PhD, MSN, RN⁶

¹ Department of Nursing, University of Antofagasta, Antofagasta, Chile

² Department of Nursing, Physiotherapy, and Medicine, University of Almería, Almería, Spain

³ Facultad de Ciencias de la Salud, Universidad Autónoma de Chile, Temuco, Chile

⁴ Department of Nursing, University of Huelva, Huelva, Spain

⁵ School of Psychology and Philosophy, University of Tarapacá, Arica, Chile

⁶ Department of Nursing, University of Chile, Santiago, Chile

ARTICLE INFO

Article History:

Accepted 28 April 2025

Keywords:

Compassion
 Nurses
 Self-compassion
 Students
 Training
 Well-being

ABSTRACT

Aims: The aim of this intervention was to evaluate the effect of a self-compassion training about the levels of self-compassion and psychological well-being of nursing students.

Background: Compassion is a psychological protective factor that promotes the well-being and mental health of health professionals.

Design: A pre-experimental, quantitative study was conducted with second-year nursing students from August to September 2023.

Methods: The 10-session intervention (135 minutes each) included self-directed exercises using compassion meditation, mindfulness, self-compassion exercises, guided imagery, gratitude journaling, and active listening. Self-compassion and psychological well-being were measured before and after the intervention. Two mediation models analyzed the relationship between practice time, self-compassion, and well-being.

Results: The intervention significantly improved psychological well-being, with the greatest increases in autonomy (+40.1%) and self-kindness (+51.3%) and the largest reductions in self-judgment (−39.1%) and over-identification (−40.1%). Mediation analysis showed that self-compassion plays a key role in the relationship between practice time and well-being.

Conclusions: Self-compassion training enhances nursing students' psychological well-being and the quality of care they provide. Including self-compassion training in nursing education is recommended.

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Introduction

In the nursing field, both students and professionals are frequently exposed to high-stress situations and serious emotional burden since the start of their training (Zhou et al., 2022). Literature describes nursing as a profession which continuously faces significant challenges, often in contexts of pain and human suffering (Wasson et al., 2020). This constant exposure to demanding environments has major repercussions on the psychological well-being of these professionals (Nageswaran & Apte, 2020).

Psychological well-being is related to the person's positive psychological functioning, which goes beyond the mere absence of psychological distress and encompasses their full development. In this context, psychological well-being is defined by 6 dimensions: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth (Ryff, 2023). These dimensions significantly influence the educational paths of nursing students (Zhou et al., 2022).

It has been reported that nursing students' psychological well-being has significantly deteriorated since COVID-19 (Zhou et al., 2022). This deterioration adds to the already intense demands of their training, which include rigorous lectures, laboratories, and clinical practice. During these practical experiences, students interact with terminally ill patients, work in intensive care units, face demanding shift systems and, in many cases, manage conflicts with patients, physicians, nurses,

*Corresponding author.

E-mail addresses: andres.gutierrez.carmona@uantof.cl (A. Carmona-Gutiérrez), mrf757@ual.es (M.D. Ruiz-Fernández).

and clinical tutors (Erkin & Şenuzun Aykar, 2021). Such combined factors significantly increase the risk of psychological well-being loss in these future healthcare professionals (Zhou et al., 2022).

From the formative stage, nursing students face significant challenges to their psychological well-being. Academic demands, such as rigorous lectures, laboratory work, and clinical practice, generate high levels of stress. Added to this is the need to adapt to departmental rotations, manage the pressure of exams and graduation theses, and handle interpersonal tensions with patients, professors, and peers. Additional factors, such as occupational exposure, patient safety, and financial concerns, further exacerbate their emotional pressure (Li et al., 2024). The intensity of these demands contributes to the deterioration of psychological well-being from the early years of training (Zhou et al., 2022).

This deterioration not only persists but intensifies as they transition to the professional stage. Nurses face multiple psychological challenges spanning individual, social, and organizational aspects. On a personal level, they must develop psycho-emotional competencies to adapt to the emotional demands of caring for patients in critical conditions. In the workplace, factors such as inadequate equipment and poor working conditions increase stress levels. Additionally, difficulties in balancing personal and professional life, along with a lack of social recognition, impact their psychosocial safety (Soheili et al., 2021).

At the organizational level, the absence of institutional support, conflicting relationships, perceptions of injustice, and shortages of human resources further exacerbate the emotional burdens of nursing professionals. These conditions not only hinder their ability to provide quality care but also pose a threat to their mental health (Soheili et al., 2021).

Extreme situations, such as the COVID-19 pandemic, have significantly amplified these challenges. Both nursing students and professionals have faced heightened emotional pressure, workload overload, and adverse conditions during this health crisis. These experiences have highlighted the urgent need to implement effective strategies to protect psychological well-being at all stages of education and professional practice (Zhou et al., 2022).

In response to these challenges, developing psycho-emotional skills is essential for nursing students and professionals. These skills enable them to regulate their emotional functions, manage the ethical and emotional complexities of their work, and safeguard their mental health. Along with adequate organizational support, these competencies are fundamental to ensuring a psychological balance that allows nurses to provide compassionate and human-centered care (Macfarlane, 2023; Sawyer et al., 2022; Zhou et al., 2022).

From the formative stage, nursing students face significant challenges to their psychological well-being such as academic demands, curricular clinical placements or the uncertain future after graduation (Li et al., 2024). The intensity of these demands contributes to the deterioration of psychological well-being from the early years of training (Zhou et al., 2022). The challenging nature of nursing, both at an intra- and interpersonal level, underscores the need to develop professional and personal skills that enable professionals to regulate their psycho-emotional functions, expand their awareness, and enhance their capacity to care for other human beings (Zhou et al., 2022). This training appears crucial for them to effectively manage the emotional and ethical complexities inherent to their profession (Macfarlane, 2023; Sawyer et al., 2022; Zhou et al., 2022).

In this context, self-compassion has lately been recognised as a psychological protective factor that promotes the well-being and mental health of healthcare professionals, including nurses (Chwyl et al., 2021; Macfarlane, 2023; Sawyer et al., 2022). This perspective highlights the importance of cultivating self-compassion within professional practice to improve resilience and psycho-emotional management in challenging healthcare environments. Furthermore, self-compassion can serve as a tool that equips future professionals to

reflect on the limits of resilience and tolerance to abuse. Depending on the context, self-compassion may encourage individuals to set boundaries, to learn to say "no," and to resist self-exploitation (Neff et al., 2020).

Compassion can be defined as a sensitivity to the suffering of oneself and others, coupled with the motivation to prevent and alleviate this suffering (Gilbert & Van Gordon, 2023; Jinpa, 2016). It is an innate ability, a mental state that can be enhanced through training (Gilbert & Van Gordon, 2023). When the flow of compassion is directed towards oneself, it is called self-compassion. Coined by Neff (2003), this concept contrasts its 3 aspects with 3 opposing mental states: a) self-kindness—the ability to treat oneself with care and understanding, rather than harsh criticism and self-judgment, b) common humanity—recognizing that imperfection is a shared aspect of the human experience rather than feeling isolated by one's failures, c) mindfulness—maintaining one's painful thoughts and feelings in a balanced perspective, instead of over-identifying with them.

A fundamental characteristic of self-compassion is its trainable nature, supported by the principle of neuroplasticity. This principle demonstrates the ability of the nervous system to adapt and change its structure and functioning over time as a result of repetitive activities (Neff et al., 2020). Thus, compassion can be cultivated by employing various techniques rooted both in ancient and contemporary psychology.

Along with the global validation of specific training techniques, the growing scientific recognition of compassion as a cultivable skill has encouraged the development of evidence-based programmes and standardized methods to promote compassionate practice. Notable initiatives include the Compassion Cultivation Training (CCT) by Jazaieri et al. (2013); Mindful Self-Compassion (MSC) by Neff and Germer; the Fierce Self-Compassion Course (Neff et al., 2020); the Self-Compassion for Healthcare Communities (SCHC) program by Neff and collaborators; among others (Alcaraz-Córdoba et al., 2024).

A meta-analysis of 27 randomized controlled trials of self-compassion interventions (Ferrari et al., 2019) demonstrated not only significant increases in self-compassion but also reductions in psychopathology, with medium to large effect sizes. Another meta-analysis (Alcaraz-Córdoba, 2024) found that self-compassion training programs produced, although with small effect sizes, significant changes in self-compassion. Furthermore, another study (Neff et al., 2020) showed that participation in self-compassion training programs substantially increased self-compassion levels, with moderate effect sizes. Additionally, it has been reported that increases in compassion levels may depend on the amount of time dedicated to the practice of self-compassion-generating exercises (Alcaraz-Córdoba et al., 2024).

Moreover, self-compassion has been found to be positively related to—and can be a predictive variable for—the psychological well-being of nursing professionals and students (Zhou et al., 2022; Wilson et al., 2020). In this context, the study by Corrigan et al. (2024) suggests that the psychological well-being of nursing professionals increases depending on their previous levels of self-compassion, which may imply the potential mediating role of self-compassion in psychological well-being. Similarly, Chen et al. (2023) and Neff et al. (2020) identify self-compassion as an underlying mechanism in strengthening psychological well-being since it is a healthy way of connecting with oneself when facing difficulties, including feelings of inadequacy and life stressors.

Despite these promising findings, significant gaps persist both locally and internationally in incorporating compassion training into nursing curricula. To date, only 1 concrete example of its integration into a nursing curriculum has been identified (Gutiérrez-Carmona et al., 2024). This lack of inclusion represents a missed opportunity, as evidence suggests that such training could not only reduce stress and anxiety levels among nursing students but also enhance their

preparation to face the emotional demands inherent in professional practice (Gutiérrez-Carmona et al., 2024). Recent research findings, such as a pre-experimental study conducted with nursing students in Chile, underscore the urgent need to integrate this approach into curricula. Such integration would not only improve students' psychological well-being and emotional regulation but also contribute to more humanized care practices in healthcare settings (Gutiérrez-Carmona et al., 2024).

Given the challenging educational context nursing students face and the professional environment they will encounter in the future, it seems particularly relevant to incorporate and evaluate evidence-based professional courses. Such courses, then, should aim at maintaining psychological well-being as a foundation for helping effective relationships and humanised care. Hence, the following question arises: what is the effect of a course based on self-compassion training on nursing students' levels of self-compassion and psychological well-being at the University of Antofagasta? Also, considering the potential mediating role of self-compassion and the positive effect of practice time (time spent by the student to practice autonomously the meditations and exercises learned) on increasing self-compassion and well-being, another question appears pertinent: how do changes in self-compassion mediate the relationship between practice time and its effect on the psychological well-being of students?

Therefore, the objectives of this research are the following:

- a) To evaluate the effect of a module—based on self-compassion training—on the levels of self-compassion and psychological well-being of students in the Nursing Program at the University of Antofagasta (Chile), and
- b) To evaluate the mediation of changes in self-compassion, considering the relationship between practice time and its effect on psychological well-being.

Methodology

Design and participants

Using a quantitative research approach with a pre-experimental design, a module based on self-compassion training was evaluated. The study population consisted of 59 second-year nursing students enrolled in the 'Human Development' course at the University of Antofagasta. The exclusion criteria included students who decided not to participate in the study and thus did not sign the consent form, as well as those who did not complete the questionnaires correctly or forgot their registration codes. Out of the 59 students in the course, 53 agreed to participate in the first data collection. For the second data collection, participation decreased to 50 students.

The intervention for this study took place during the second semester of 2023, commencing in August and finishing in December 2023.

Intervention

The intervention was embedded within the "Human Development" course, which was restructured into 10 in-person sessions of approximately 135 minutes each, along with weekly autonomous nonattendance exercises.

The intervention included various techniques carefully selected based on existing literature and the teaching team's experience working with first-year nursing students. These techniques, recognized as fundamental in compassion and self-compassion training programs (Neff et al., 2020; Alcaraz-Córdoba et al., 2024), were specifically adapted for this group of participants:

- a) Compassion meditation (Metta Bhavana): This meditative technique focuses on cultivating feelings of kindness and love toward oneself and others, progressively extending this benevolence even to individuals with whom one may have disagreements.
- b) Mindfulness: Mindfulness training promotes present-moment awareness, helping students recognize and accept their own suffering to foster more compassionate attitudes.
- c) Self-compassion exercises: These exercises aim to establish a stance of kindness and understanding toward oneself during moments of adversity, as opposed to self-criticism.
- d) Guided imagery: This technique involves visualizing scenarios where compassion is given or received, reinforcing compassionate attitudes that can be applied to everyday situations.
- e) Gratitude journaling: Recording reflections and experiences related to acts of kindness and gratitude fosters greater appreciation for daily compassionate interactions.
- f) Active listening and empathy: This approach involves actively and empathetically listening, striving to deeply understand others' emotions and perspectives without judgment.

The selection of these techniques was based on both their theoretical validity and their practical suitability for first-year students. These methods align closely with nursing education, as they promote essential skills such as emotional regulation, empathy, and self-awareness—competencies critical for providing compassionate and patient-centered care. By fostering these abilities, the intervention prepares students to navigate the emotional demands of clinical practice while maintaining their own well-being. The teaching team, with extensive experience in training this group, identified these techniques as the most appropriate to meet the specific needs of the participants, fostering a safe and progressive learning environment that supports the development of both professional and interpersonal skills foundational to nursing practice.

At the end of each session, students were assigned autonomous exercises to be, ideally, performed daily. These exercises required a minimum commitment of 15 to 30 minutes per day though they could be performed multiple times a day, depending on the specific needs of each student. It is important to point out that the completion of these autonomous exercises was considered desirable but not mandatory, as no coercive strategies were implemented to ensure daily practice.

Instruments

Self-compassion was measured using the Self-Compassion Scale (SCS-26), a self-report instrument originally developed by Neff (2003). The version used in the present study was validated in Chile by Araya et al. in 2017. This scale consists of 26 items rated on a 5-point Likert scale, ranging from 1 (Almost never) to 5 (Almost always) and covering 6 subscales: self-kindness, self-judgement, common humanity, isolation, mindfulness, and over-identification, with representative items for each. The reliability of these subscales has been reported to range from 0.66 to 0.78.

To assess psychological well-being, the Riff Scale was used. This scale—developed in 1989 and later adapted by van Dierendonck in 2004—underwent psychometric evaluation in Chile by Véliz-Burgos in 2012. It consists of 39 items distributed across 6 dimensions (self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth) scored on a 6-point Likert scale, ranging from 1 (Strongly disagree) to 6 (Strongly agree). The scale has evidenced good reliability and validity in a range of cultural contexts, including its Spanish version and its adaptation in the Chilean general and university populations (Chitgian-Urzuá & Vera-Villarroel, 2013).

Ethical considerations

This study received approval from the Ethics and Scientific Research Committee of the University of Antofagasta, under record number 402/2022, following the principles established by the Declaration of Helsinki. Students were informed of the voluntary nature of the study and of the right to withdraw at any time. Informed consent was obtained during the first session. Furthermore, confidentiality and anonymity were guaranteed in compliance with national data protection regulations. To ensure the anonymity of participants, the data were anonymized using a unique code created by each participant when completing the survey, replacing any personally identifiable information in the databases and guaranteeing anonymity from the moment of data collection. This system facilitated the anonymous tracking of information throughout the study and preserved the confidentiality of the participants. The surveys were designed to avoid collecting sensitive data, such as names or email addresses. The anonymized data were stored exclusively on the principal investigator's computer, which was protected by a robust password with single-user access. Additionally, periodic backups were made to prevent accidental data loss, while maintaining the confidentiality of the information at all times. To ethically manage the conflict of interest arising from the dual role of professor and researcher, several key measures were implemented. The surveys were administered exclusively by instructors not involved in the research, ensuring a neutral environment and minimizing any perception of coercion or undue influence. Additionally, participants were provided with a clear informed consent document, explaining that their participation was voluntary, confidential, and had no impact on their academic performance.

Data collection

Data collection was conducted in person through paper-based surveys, 1 week before the intervention (T1) and 1 week after the intervention had finished. During these sessions, the questionnaires completed by students included sociodemographic data as well as the previously described scales to measure the study's variables of interest.

Data analysis

The change in psychological well-being was assessed before (T1) and after (T3) the intervention (first analysis), and 2 path analysis models were tested (second analysis) to examine the level of association between the variables (minutes of autonomous practice, self-compassion, and psychological well-being).

For the first analysis, the data are presented as means and standard deviations. Statistical methods to assess normality were employed to estimate the distribution of the variables. This analysis showed the non-normal distribution of all the scale variables. Consequently, the Wilcoxon signed-rank test was used to evaluate pre- and postintervention changes. Results were considered statistically significant with a p -value less than 0.05. Additionally, the G*Power software was used to estimate effect size (Cohen's d) and the statistical power of the median differences.

For the second analysis, 2 models were considered. In the first model (M1), the effect of minutes of autonomous practice (T2) was estimated (T3) on each dimension of psychological well-being (self-acceptance, positive relations, autonomy, environmental mastery, purpose in life, and personal growth; T3), controlling for the effect of the same dimensions and self-compassion before the intervention (T1). In the second model (M2), a mediation model was applied to estimate the indirect effect of self-compassion postintervention (T3) in terms of the relationship between autonomous practice (T2) and

each dimension of psychological well-being (self-acceptance, positive relations, autonomy, environmental mastery, purpose in life, and personal growth; T3), controlling again for the effect of these psychological well-being dimensions and self-compassion (T1). The goodness of fit was calculated using Chi-square (χ^2) values, root mean square error of approximation (RMSEA), comparative fit index (CFI), and Tucker-Lewis index (TLI). According to the recommended standards (e.g. Schreiber, 2017), $RMSEA \leq 0.08$, $CFI \geq 0.95$ y $TLI \geq 0.95$ are considered indicative of good fit. For path analysis, robust maximum likelihood (MLR) was used, suitable in cases of nonmultivariate normality (Muthén & Muthén 2017). Lastly, the Wilcoxon signed-rank test was used to evaluate changes in psychological well-being before (T1) and after (T3) the intervention. Statistical analyses were performed using SPSS version 25 and Mplus version 8.2.

Results

Prepost intervention analysis

The final study sample consisted of 45 nursing students, following the exclusion of 5 participants due to forgetting their identification codes during the post-test. The majority were female (82.2%) with ages ranging from 18 to 27, with a mean age of 19.3 years.

Analysis of the program's impact revealed statistically significant improvements across all examined dimensions of psychological well-being. Self-acceptance increased from a mean of 4.19 to 5.66, with a large effect size. The dimension of positive relations with others also showed an increase from 4.71 to 6.15, with a large effect size. Similarly, autonomy experienced a significant increase from a mean of 3.94 to 5.52, also reflecting a large effect size. Environmental mastery improved from 4.78 to 6.13, again with a large effect size. Personal growth, however, saw a mean increase from 5.41 to 6.32 with a moderate effect size. Finally, purpose in life increased from 4.70 to 6.10, with a large effect size. In all cases, the changes can be considered significant ($p < 0.001$). Moreover, statistical power ($1-\beta$) in all cases exceeded 0.95, indicating the robustness of the study in detecting pre- and postchanges (see Table 1).

In the case of compassion and its subdimensions, significant changes were observed. Substantial improvements were noted in self-kindness, with a mean increasing from 2.71 to 4.10 and a large effect size. Common humanity also experienced a significant increase, rising from 2.94 to 3.96, with an effect size of 0.81, categorized as large according to Cohen's conventions. Mindfulness showed considerable improvement, with the mean increasing from 3.11 to 4.16, also reflecting a large effect size.

On the other hand, notable decreases were reported in dimensions where a reduction in scores was indicative of improvement. Self-judgment decreased from 3.68 to 2.24, with a large effect size. Isolation dropped from 3.36 to 2.17, with a moderate effect size of 0.78. Lastly, over-identification also decreased from 3.67 to 2.20, with a large effect size (see Table 1). Furthermore, the total self-compassion score showed an increase from 2.66 to 3.93, with a large effect size (see Table 1). In all cases, the statistical power ($1-\beta$) was equal to or greater than 0.99, indicating a very high probability that the detected effects are true and not due to chance.

The following figure shows a comparison of the scores obtained before and after the intervention program on the dimensions of psychological well-being and self-compassion (Fig. 1).

Mediation model

Two path analysis models were conducted to analyse the level of association between minutes of autonomous practice (T2), self-compassion (T3), and the dimensions of psychological well-being (T3). In the first model (M1), the effect of minutes of autonomous practice

Table 1

Prepost comparison of various dimensions of psychological well-being and total self-compassion, including their respective subdimensions.

	Pretest (n = 45)		Pretest (n = 45)		Z	p	Cohen's d	1 – β
	M	SD	M	SD				
Self-acceptance	4.19	1.38	5.66	1.58	–4.976	0.000*	0.98	0.99
Positive relations with others	4.71	1.06	6.15	1.38	–5.046	0.000*	1.10	1
Autonomy	3.94	1.05	5.52	1.46	–4.839	0.000*	1	0.99
Environmental mastery	4.78	0.99	6.13	1.28	–4.947	0.000*	1	1
Personal growth	5.41	1.14	6.32	1.12	–3.788	0.000*	0.68	0.95
Purpose in life	4.70	1.19	6.10	1.42	–4.758	0.000*	0.95	0.99
Self-kindness	2.71	0.96	4.10	0.93	–5.176	0.000*	1	1
Common humanity	2.94	0.81	3.96	1.05	–4.262	0.000*	0.81	0.99
Mindfulness	3.11	0.76	4.16	0.89	–4.96	0.000*	1	1
Self-judgement	3.68	0.87	2.24	1.26	–4.747	0.000*	0.96	0.99
Isolation	3.36	0.95	2.17	1.30	–3.861	0.000*	0.78	0.99
Over-identification	3.67	0.83	2.20	1.22	–4.862	0.000*	1	1
Total Self-compassion	2.66	0.63	3.93	1.03	–5.153	0.000*	1	1

Note: *p<0.001.

(T2) was estimated on each dimension of psychological well-being (T3). The analysis controlled for the effects of psychological well-being dimensions and self-compassion prior to the intervention (T1).

The first model (M1) showed goodness-of-fit indicators (CFI= 1.000; TLI= 1.000; RMSEA= 0.000) in line with the criteria recommended by the literature (Schreiber, 2017). As shown in Fig. 2 (M1), minutes of autonomous practice were significantly, positively, and modestly related ($\beta > 0.20$; Cohen, 1983) to positive relationships, autonomy, environmental mastery, and purpose of life, and modestly related ($\beta > 0.30$; Cohen, 1983) to self-acceptance. No

statistically significant relationships were observed between minutes of autonomous practice and personal growth.

Having estimated the relationship between minutes of autonomous practice (T2) and psychological well-being dimensions (T3; M1), a mediation analysis (M2) was performed. Self-compassion (T3) was introduced as a mediating variable between minutes of autonomous practice (T2) and psychological well-being dimensions (T3). The analysis controlled for the effects of psychological well-being dimensions and self-compassion prior to the intervention (T1).

The mediation model (M2) showed adequate goodness-of-fit indicators (CFI=1.000; TLI=1.000; RMSEA=.000; Schreiber, 2017) and therefore represents the relationships observed. As shown in Fig. 3, self-compassion fully mediated the relationship between minutes of autonomous practice and self-acceptance (indirect effect = 0.347, $p = 0.012$), autonomy (indirect effect = 0.278, $p = 0.033$), environmental mastery (indirect effect = 0.284, $p = 0.020$), purpose in life (indirect effect = 0.292, $p = 0.029$), and personal growth (indirect effect = 0.275, $p = 0.021$).

The findings from the mediation analysis suggest that self-compassion serves as a mediator in the relationship between minutes of autonomous practice and most dimensions of psychological well-being (self-acceptance, autonomy, environmental mastery, purpose in life, and personal growth). In other words, after the intervention, the more minutes of autonomous practice, the higher levels of self-compassion shown. This increase in self-compassion can be associated with greater levels of self-acceptance, autonomy, environmental mastery, purpose in life, and personal growth after the intervention, even when controlling for the effects of psychological well-being dimensions and self-compassion prior to the intervention.

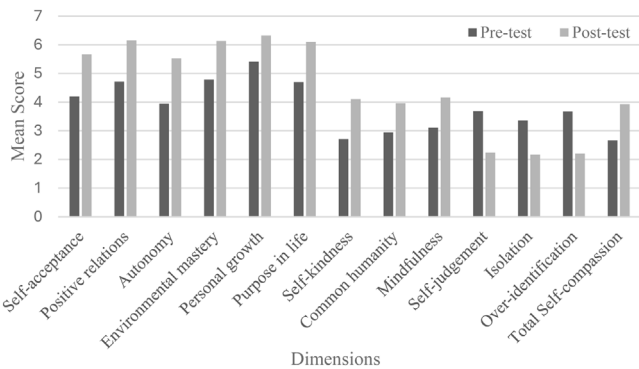


Fig. 1. Comparison of pre- and post-test scores in psychological well-being and self-compassion dimensions. Note: The figure presents the mean scores obtained in the pretest and post-test for each evaluated dimension. Scores were measured on a Likert scale, where higher scores indicate a greater level in the corresponding dimension. Significant changes are observed following the intervention.

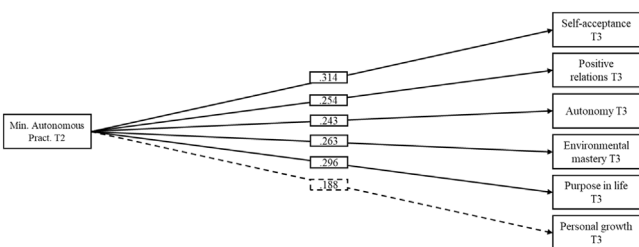


Fig. 2. Relationship between minutes of autonomous practice and dimensions of psychological well-being. Note: Analysis controlled for the effects of psychological well-being dimensions and self-compassion before the intervention (T1). Solid lines indicate significant effects in the relationships ($p < 0.05$) while dashed lines represent nonsignificant paths.

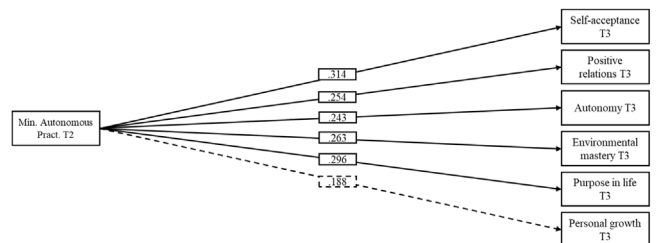


Fig. 3. Mediation analysis of self-compassion levels in the relationship between autonomous compassion-generating practices and psychological well-being levels in nursing students. Note: Analysis controlled for the effects of psychological well-being dimensions and self-compassion prior to the intervention (T1). Solid lines indicate significant effects in the relationships ($p < 0.05$) while dashed lines represent nonsignificant paths.

Discussion

This pre-experimental study on self-compassion training among nursing students at the University of Antofagasta provides robust empirical evidence on the effectiveness of interventions aimed at enhancing self-compassion and psychological well-being (Kotera & Van Gordon, 2021). In the context of the high levels of stress and anxiety reported among nursing students, these findings appear particularly relevant as to the importance of fostering self-compassion skills in both educational and challenging professional environments.

Having been measured through validated and recognised scales, the significant increases in the subdimensions of self-compassion and the dimensions of psychological well-being indicate that self-compassion is not only an intrinsic disposition but also a skill that can be cultivated through specific training. These results are consistent with previous research identifying self-compassion as an effective psychological buffer against stress (Alcaraz-Córdoba et al., 2024; Neff et al., 2020).

Building on previous research (Pyszkowska & Rönnlund, 2021; Yela et al., 2022), this study also found that self-compassion is a necessary mediator for psychological well-being, and can be a valuable addition to interventions aimed at mitigating stress and improving student well-being (Tran et al., 2024). Thus, self-compassion can offer emotional benefits by weakening the relationship between stress and negative outcomes (Lee, 2022).

Concerning the role of practice, the present study indicates that, rather than the direct effect of practice time on the different dimensions of psychological well-being, it is the increase in self-compassion levels what elevates well-being as a result of practice. These findings are in line with those suggesting that the effects of meditative practice appear to be dose-dependent (Alcaráz-Córdoba et al., 2024; Smith et al., 2021), with a significant dose-response relationship in the benefits obtained. In this respect, a positive relationship between practice quantity and psychological well-being has been observed (Kriakous et al., 2021).

As indicated by the large effect sizes and high statistical power, the effectiveness of the intervention underscores its potential to enhance key aspects of self-concept—such as reducing self-criticism and isolation—which are crucial for resilience in nursing. Self-criticism has been identified as a significant risk factor for various forms of psychopathology (Wakelin et al., 2022). Similarly, reducing self-criticism and isolation may decrease burnout and secondary traumatic stress, as these can negatively impact resilience and well-being in the nursing work environment (Bian et al., 2025). Additionally, it is noteworthy that the personal growth dimension showed a moderate effect size. Thus, this dimension may be less susceptible to change through short-term interventions and may require more prolonged approaches tailored to participants' specific needs to achieve a significant impact (Kraft, 2020).

Nevertheless, the positive influence on the well-being of 85% of the participants remains relevant. Furthermore, since a considerable number of students participated and reported substantial improvements, the validity of the intervention as a useful tool in academic training strengthens. Future studies could benefit from strategies aimed at increasing student participation, allowing for a more comprehensive evaluation and avoiding such biases.

The results of this study can be applied in practice by integrating compassion training programs into nursing curricula worldwide. This can be achieved through specific courses that include structured in-person sessions and autonomous practices, utilizing techniques such as compassion meditation, mindfulness, and self-compassion exercises. These interventions have proven effective in reducing stress and anxiety, as well as enhancing students' psychological well-being and self-compassion (Gutiérrez-Carmona et al., 2024).

It is important to note that the absence of a control group limits the interpretation of the results, as the observed improvements could be attributed to external factors, such as natural maturation or the placebo effect, rather than being exclusively attributable to the intervention. While this study demonstrates the short-term benefits of self-compassion training on nursing students' psychological well-being, it is essential to investigate its long-term impacts, particularly in high-stress situations inherent to professional practice. The findings of El-Ashry et al. (2023) highlight that cardiopulmonary resuscitation experiences, considered highly stressful, are significantly associated with burnout, secondary traumatic stress, and compassion fatigue in critical care nurses. This underscores the need to explore how self-compassion skills developed during training might serve as a buffer against these adverse effects in challenging clinical scenarios. Additionally, it would be relevant to assess whether longer or more targeted training programs for emotionally demanding situations, such as cardiopulmonary resuscitation, can mitigate levels of compassion fatigue and enhance professional resilience. These research avenues would contribute to generating evidence to design educational strategies that not only optimize nursing students' psychological well-being but also enhance their ability to address the emotional challenges inherent in their future clinical practice.

Limitations

In this study, several methodological limitations were identified that are important to consider when interpreting the results. One of the main limitations is selection bias, as participation in the study was voluntary. This resulted in the exclusion of 15% of the students, potentially introducing a bias toward participants who were more predisposed to self-compassion or who had a more favorable perception of the intervention. Consequently, the findings may not fully represent the entire population of nursing students, limiting their generalizability. Another significant limitation is the absence of a control group in the pre-experimental design used. This design limits the ability to establish robust causal relationships, as the observed changes could be influenced by external factors, such as the passage of time, academic dynamics, or individual variables of the participants. Without a comparison group, it is challenging to confidently attribute the effects solely to the self-compassion intervention. To address these limitations in future studies, several methodological strategies are proposed. First, the implementation of randomized controlled trials (RCTs) would improve the internal validity of the design. Random assignment of participants to an intervention group and a control group would ensure that the observed differences are exclusively attributable to the intervention, controlling for the influence of external variables.

Additionally, it is essential to work on achieving a more representative sample of the student population, which could be achieved through techniques such as stratified sampling or strategies that promote greater participation, such as flexibility in scheduling study activities. Furthermore, the use of active control groups is recommended, where participants engage in structured activities unrelated to self-compassion. This would allow an evaluation of whether the observed effects are specific to the intervention or reflect the impact of participating in any structured program. Moreover, extending the duration of interventions could provide more robust information on the evolution and sustainability of the effects. Longer interventions would facilitate the assessment of the long-term impact on psychological well-being and self-compassion. Complementarily, the inclusion of longitudinal measurements, with follow-up points after the intervention, would help determine the sustainability of the observed effects and the need for periodic reinforcements. Adopting these

strategies in future studies will help overcome the limitations of the current design, strengthen the validity of the results, and broaden the applicability of self-compassion training in educational and clinical contexts. This would significantly contribute to the development of evidence-based interventions to promote the psychological well-being of nursing students.

Conclusion

Incorporating self-compassion training into the nursing curriculum emerges as a promising strategy for strengthening the psychological well-being of future healthcare professionals. This study not only contributes to the methodology in the field of self-compassion training but also holds significant practical implications for nursing education. Moreover, the findings support the integration of self-compassion training as an essential component in undergraduate programs, which fosters students' well-being and enhances the quality of care they will provide as future professionals.

This study highlights the need to implement educational strategies that can equip nursing students with appropriate psychological tools to healthily manage the inherent challenges of their professional path. Apart from strengthening students' personal and professional skills, self-compassion-based interventions are also crucial for maintaining their psychological well-being in a highly-emotionally demanding career.

Compassion training, proven effective in nursing students, can also benefit other healthcare professionals by improving their psychological well-being and reducing stress. It is recommended to include compassion training modules in the curricula of all healthcare programs, ensuring continuous training and evaluation tools to adjust content according to specific needs.

At the policy level, it is essential to establish educational policies that prioritize psychological well-being as a mandatory component in healthcare training, train educators in these techniques, and promote longitudinal research to assess their impact. Additionally, implementing scalable pilot programs is proposed to validate these initiatives before expanding them nationally, thus contributing to the sustainability and quality of healthcare systems.

Funding

This project was funded by the "Fondecyt initiation preparation program of the University of Antofagasta" DE.564 of July 14, 2023.

Declaration of competing interest

The authors declare that they have no known competing personal relationships or financial interests that may have influenced the study reported in this paper.

CRediT authorship contribution statement

Andrés Carmona-Gutiérrez: Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **María Dolores Ruiz-Fernández:** Writing – review & editing, Writing – original draft, Supervision, Software, Conceptualization. **Ángela María Ortega-Galán:** Writing – original draft, Supervision, Resources, Conceptualization. **Diego Henríquez:** Writing – original draft, Investigation, Formal analysis, Data curation, Conceptualization. **Daniela Castillo-Mansilla:** Writing – original draft, Validation, Supervision, Investigation.

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