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Caring Education and Nursing Students' Perceptions of Becoming a Nurse, Professional Values, and Caring Behaviors: A Mixed-Methods Study

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Abstract

Background

Caring education may contribute to nursing students' professional development by strengthening their understanding of professional values, caring, and nursing roles. However, its influence on perceptions of becoming a nurse, professional values, and caring behaviors requires further investigation.

Methods

An explanatory sequential mixed-methods design (QUAN→qual) was employed, incorporating a nonrandomized controlled pretest–posttest quantitative phase followed by a qualitative phase. Second-year nursing students who enrolled in a seven-week, 28-hour Caring Behaviors Development course grounded in Watson's Human Caring Theory constituted the intervention group, whereas students who did not enroll constituted the control group. Seventy-four students completed the quantitative phase (intervention, n = 19; control, n = 55), and 16 students participated in qualitative interviews. Quantitative outcomes included perceptions of becoming a nurse, professional values, and caring behaviors. Qualitative data were analyzed using reflexive thematic analysis, and quantitative and qualitative findings were integrated using a joint display matrix.

Results

After adjustment for baseline scores and Holm–Bonferroni correction for multiple comparisons, no statistically significant between-group differences remained in total or subscale scores for perceptions of becoming a nurse, professional values, or caring behaviors. Qualitative analysis generated six themes. Students in the intervention group linked their professional development and caring experiences primarily to structured education, whereas students in the control group emphasized clinical experiences, role models, and personal experiences. Integration of the findings indicated that the groups differed more clearly in how students understood and attributed their professional development and caring experiences than in quantitative scale scores.

Conclusions

The Caring Behaviors Development course did not produce statistically significant short-term between-group differences in the measured quantitative outcomes after correction for multiple comparisons. However, qualitative findings suggest that structured caring education may contribute to how nursing students understand their professional development and caring experiences. These findings highlight the value of combining quantitative and qualitative approaches when evaluating caring-focused nursing education.

1. INTRODUCTION

Nursing is a scientific and professional discipline that addresses the health needs of individuals, families, and communities holistically [1]. At its core, caring integrates technical knowledge and skills with professional values, ethical sensitivity, and respect for human dignity, which are expressed in practice through effective communication, respect for patient autonomy, and humanistic caring behaviors [2]. Nursing education therefore plays a key role in fostering professional identity and understanding nursing as a caring profession [3]. In this context, perceptions of becoming a nurse reflect understanding of the profession and professional roles [4, 5], professional values encompass ethical and professional principles guiding practice [6, 7, 8], and caring behaviors represent caring in practice through respect, trust, empathy, communication, and individualized care [5, 7, 9, 10].

These attributes develop through the interplay of structured education, experiential learning, and clinical socialization. Professional values can be strengthened through structured and experiential education [11, 12, 13], while active pedagogies, including interactive learning and case-based simulation, can foster caring behaviors [14, 15, 16]. Clinical learning environments, supervision, and role models further contribute to professional development [17, 18, 19, 20]. Providing a theoretical foundation for this process, Watson's Human Caring Theory (HCT) conceptualizes nursing care as an interpersonal process that integrates scientific knowledge with human connection and emphasizes compassion, authentic relationships, and a healing environment [9, 10]. HCT-based education may strengthen students' understanding of caring values and behaviors and awareness of the humanistic dimensions of care [21, 22, 23, 24]. The multidimensional development of professional identity through learning, belonging, social context, and professional experiences also aligns with HCT principles [25].

Although HCT-based educational interventions and professional values, identity, and caring behaviors have been examined, evidence remains limited on integrating perceptions of becoming a nurse, professional values, and caring behaviors within a single intervention using mixed methods [6, 15, 26]. Accordingly, the HCT-based Caring Behaviors Development course incorporated reflective learning to enhance students' awareness of the relational and humanistic dimensions of caring beyond technical skills. This study examined changes in students' perceptions of becoming a nurse, professional values, and caring behaviors following the course compared with nonparticipants and integrated qualitative accounts of students' experiences to explain the quantitative findings.

Research question

After controlling for baseline scores, are there differences in perceptions of becoming a nurse, professional values, and caring behaviors between students who participated in the Caring Behaviors Development course and those who did not?

2. METHODS

2.1. Design

This study employed an explanatory sequential mixed-methods design (QUAN→qual). The quantitative phase used a nonrandomized controlled pretest–posttest design to evaluate the HCT-based Caring Behaviors Development course, followed by qualitative data collection to explain the quantitative findings. Integration occurred during the interpretation.

2.2. Setting and Participants

The study population comprised 89 second-year students enrolled in the Turkish Program of the Department of Nursing, Faculty of Health Sciences, University of Kyrenia, between September 2025 and February 2026. Students enrolled in the Fundamentals of Nursing course who consented to participate were initially included; successful course completion, assessed after the posttest, was required for the final quantitative analysis. As the entire accessible population was targeted, no a priori power analysis was conducted.

Of the 84 students who completed the pretest, 22 who enrolled in the elective Caring Behaviors Development course formed the intervention group and 62 who did not form the control group; thus, randomization was not feasible. After excluding 10 students during follow-up, 74 participants remained for the analysis (intervention, $n = 19$; control, $n = 55$; Fig. 1). Unequal group sizes reflected course capacity and student preferences, and baseline scores were included as covariates in the ANCOVA. Post hoc analysis indicated 62% power to detect a medium effect ($f = 0.25$, $\alpha = .05$, $N = 74$).

For the qualitative phase, maximum variation sampling was used to select 16 quantitative-phase completers (eight per group) across the Fundamentals of Nursing achievement levels (low: 60–69, moderate: 70–79, high: 80–100; Table 1). Eligible students were contacted through the class representative and invited by telephone; none declined or withdrew.

Table 1
Characteristics of Participants in the Qualitative Phase (n = 16)

Characteristics	Intervention Group (n = 8)	Control Group (n = 8)
Age, years, median (Q1–Q3)	20 (19–22)	20 (19–20)
Gender, n (%)		
Female	5 (62.5)	4 (50.0)
Male	3 (37.5)	4 (50.0)
Fundamentals of Nursing achievement, n (%)		
Low	2 (25.0)	2 (25.0)
Moderate	5 (62.5)	5 (62.5)
High	1 (12.5)	1 (12.5)
High school graduated from, n (%)		
Anatolian High School	6 (75.0)	7 (87.5)
Standard High School	2 (25.0)	1 (12.5)
Employment status, n (%)		
Working	1 (12.5)	1 (12.5)
Not working	7 (87.5)	7 (87.5)

Note. Participants were selected using maximum variation purposive sampling based on their academic achievement in the Fundamentals of Nursing course. Academic achievement was classified according to the Fundamentals of Nursing course grades as high (BB–BA–AA; 80–100), moderate (CC–CB; 70–79), and low/conditional (DC; 60–69).

2.3. Intervention and Control Condition

Students in the intervention group took a two-credit elective Caring Behaviors Development course, structured around HCT, in addition to the Fundamentals of Nursing course. The course was delivered face-to-face over seven weeks before clinical practice, for four hours per week (28 hours in total). The course incorporated theoretical instruction, group work, student-developed scenarios, role-playing, debriefing, and reflective and creative activities (Table 2). The students in the control group took the Fundamentals of Nursing course during the same semester. Both groups participated in clinical practice, and clinical placements were assigned independently of the group membership.

Table 2
Content and Delivery of the Caring Behaviors Course Based on Watson's Human Caring Theory

Component	Description
Theoretical framework	Watson's Human Caring Theory
Structure and duration of the course	A two-credit elective course for second-year nursing students; delivered face to face in an intensive format before clinical practice, with 4 hours per week over 7 weeks, totaling 28 hours
Aim of the course	To develop the students' knowledge and awareness of professional caring behaviors and to support them in making sense of the ethical, humanistic, and interpersonal dimensions of care
Core content	The concept of caring; Watson's Human Caring Theory; the development of caring knowledge; the place of caring behaviors in professional nursing practice
Caring behaviors	Greeting; being individual and family centered; presence; smiling and addressing the individual by name; acceptance; authentic listening; touch; being open and accessible; providing comfort
Learning organization	The students were divided into four groups, and the caring behaviors each group would work on were determined
Teaching–learning methods	Theoretical teaching, group work, student-developed scenarios, scenario enactment, instructor-guided debriefing, peer discussions, and creative–reflective activities
Implementation setting	Theoretical teaching was delivered in the classroom; scenario enactments were carried out in the nursing skills laboratory, using the patient bed and related care equipment
Creative–reflective activity	The students prepared poems related to the caring behaviors they addressed and shared them with their peers; one group performed its poem presentation accompanied by guitar
Control condition	The control group took the Fundamentals of Nursing course in the same academic semester but did not attend the elective Caring Behaviors course

2.4. Data Collection and Measures

Quantitative data were collected using the Demographic Information Form, Perceptions of Being a Registered Nurse (PRN), Nurses Professional Values Scale–Revised (NPVS-R), and Caring Behaviors Inventory–24 (CBI-24). Qualitative interviews were conducted after quantitative data collection.

Demographic Information Form

Developed by the researchers, this form collected information on students' sociodemographic, educational, and clinical characteristics.

Perceptions of Being a Registered Nurse (PRN) Scale: Originally developed by Allen et al. [27] and adapted and validated for use in Turkish by Yılmaz Coşkun et al. [28], the Turkish version consists of 24 items rated on a five-point Likert scale across four subscales: The total scores ranged from 24 to 120, with higher scores indicating more positive perceptions of becoming a nurse. Cronbach's α was .93 in the original study. In this study, Cronbach's α values at pretest/posttest were .85/.91 for the total scale and .93/.95, .65/.67, .41/.67, and .73/.82 for the four subscales. Given the low pretest internal consistency of the Nursing Professionalism subscale (α = .41), its findings were interpreted cautiously and examined in sensitivity analysis; the overall conclusions remained unchanged.

Nurses Professional Values Scale–Revised (NPVS-R)

Developed by Weis and Schank [29] and validated in Turkish by Acaroğlu [30], this 26-item, five-point Likert scale assesses professional nursing values. The total scores ranged from 26 to 130, with higher scores indicating greater importance attributed to professional values. Cronbach's α was .96 in the Turkish validation study and .95/.96 in the pretest/posttest in the present study.

Caring Behaviors Inventory–24 (CBI-24): Developed by Wu et al. [31] and validated in Turkish by Kurşun and Kanan [32], this 24-item, six-point Likert scale comprises four subscales: assurance, knowledge and skill, respectfulness, and connectedness. Mean total and subscale scores ranged from 1 to 6, with higher scores indicating more positive perceptions of caring behaviors. Cronbach's α was .97 for the total scale in the Turkish validation study. In the present study, Cronbach's α values at pretest/posttest were .94/.94 for the total scale and .87/.84 for Assurance, .80/.84 for Knowledge and Skill, .76/.81 for Respectfulness, and .73/.77 for Connectedness.

Quantitative data were collected from both groups during the scheduled class hours. The pretest was administered during the first-class session, and the posttest was administered 14 weeks later, following the practical examinations. Given the nature of the educational intervention and the non-randomized group formation, blinding the participants and researchers to group membership was not feasible.

2.5. Qualitative Data Collection

Qualitative data were collected using a semi-structured interview guide comprising 11 open-ended questions based on the study's aim and primary outcomes. The questions explored students' perceptions of becoming nurses, professional values, caring behaviors, and educational and clinical experiences, including the relational and humanistic dimensions of caring emphasized in Watson's Human Caring Theory. The guide was assessed for clarity and feasibility, and no revisions were required.

Individual face-to-face interviews were conducted by the first and third authors, both women with doctoral-level qualitative research training, in a quiet, private laboratory with no other participants present. The interviews lasted 20–30 minutes, with no repeats, and the third author recorded field notes on participant behaviors, the setting, and noteworthy observations. The first and second authors have prior qualitative research experience. As the first author was the

course instructor and the third was involved in course coordination, interviews were conducted after all assessments and grades were finalized to minimize power imbalances and social desirability biases. Students were informed verbally and in writing that participation would not affect their academic performance. The interviews were audio-recorded, de-identified, and transcribed by the second author, who had no teaching relationship with the students. The transcripts were not returned for member checking.

2.6. Data Analysis

Quantitative analyses were performed using IBM SPSS Statistics (version 26.0). Continuous variables are summarized as mean ± standard deviation or median (Q1–Q3), as appropriate, and categorical variables as *n* (%). Baseline characteristics were compared using the Mann–Whitney U, Pearson's chi-square, or Fisher's exact test, as appropriate. Scale internal consistency was assessed at pre- and post-testing using Cronbach's alpha. Between-group differences were examined using ANCOVA with pretest scores as covariates, with effect sizes reported as partial eta squared (η_p^2). Holm–Bonferroni correction was applied separately to the three total scale and eight subscale outcomes. Sensitivity analyses were conducted for models with assumption violations or influential observation. All tests were two-sided, with $p < .05$ considered statistically significant. Missing post-test data were not imputed; analyses were restricted to complete cases.

Qualitative data were analyzed using Braun et al.'s [33] reflexive thematic analysis. Microsoft Word and Excel were used to support the data management, coding, and theme development. The analysis was iterative and reflexive, involving data familiarization, code generation and organization, candidate theme development, and theme review, definition, and naming. Consistent with this approach, data saturation was not used to determine when to cease data collection. The first and second authors coded the data, using reflexive discussions and peer debriefing to interrogate differing interpretations and enhance analytic reflexivity rather than establish inter-coder agreement. Analytic decisions and reflexive notes were documented, and findings were supported by participant quotations. Participant validation of the findings was not performed.

2.7. Mixed-Methods Integration

Consistent with the explanatory sequential mixed-methods design, quantitative results and qualitative themes were integrated during interpretation using a joint display matrix to examine convergence, divergence, and complementarity across the datasets [34] (Table 5). Reporting followed the Transparent Reporting of Evaluations with Nonrandomized Designs (TREND) guidelines for the non-randomized intervention component [35] (Additional file 1), Good Reporting of A Mixed Methods Study (GRAMMS) for the mixed-methods design [36], Template for Intervention Description and Replication (TIDieR) for the intervention [37] (Additional file 2), and Consolidated Criteria for Reporting Qualitative Research (COREQ) for the qualitative component [38].

2.8. Ethical Considerations

Ethical approval was obtained from the University of Kyrenia Ethics Committee for Social Sciences and Humanities (2025/FSBB-35), along with institutional permission from the Faculty of Health Sciences (GU.SBF.2025/0165), and permission to use the study's instruments. Participants were informed about the study's purpose and procedures and provided written and verbal informed consent, including consent for audio recording. They were assured that participation was voluntary, that their data would remain confidential, and that participation would not affect their academic evaluations. The study was conducted in accordance with the Declaration of Helsinki.

2.9. Use of Generative Artificial Intelligence

OpenAI ChatGPT and Paperpal were used during the manuscript preparation to assist with language editing, translation, paraphrasing, and improving the clarity and organization of the author-generated text. These tools were not used for the study design, data collection, statistical or qualitative data analysis, interpretation of the findings, or generation of research findings. All AI-assisted content was critically reviewed, verified and revised by the authors. The authors take full responsibility for the accuracy, integrity, and final content of this manuscript.

3. RESULTS

3.1. Participant Flow and Baseline Characteristics

Of the 89 students, 84 completed the pretest and were assigned to the intervention (n = 22) and control (n = 62) groups based on enrollment. Seventy-four completed the posttest (intervention, n = 19; control, n = 55; Fig. 1), with no baseline differences between the groups (all $p > .05$; Table 3). Posttest completers (n = 74) and non-completers (n = 10) differed only in terms of high school type (Fisher's exact p = .019), with more health vocational high school graduates among non-completers (20.0% vs. 1.4%). In the qualitative phase, 16 students (eight per group) were interviewed (Table 1).

Table 3
Baseline Characteristics of the Students in the Intervention and Control Groups

Characteristics	Intervention Group (n = 19)	Control Group (n = 55)	Test statistic	p	Effect size
Age, median (Q1–Q3), years	20 (19–22)	21 (20–21)	U = 411.00	.158	r = .16
Gender, n (%)			$\chi^2(1) = 2.154$	.142	ϕ = .17
Female	12 (63.2)	24 (43.6)			
Male	7 (36.8)	31 (56.4)			
Type of high school graduated from, n (%)			Fisher exact	.768	V = .08
Vocational health high school	0 (0.0)	1 (1.8)			
Anatolian high school	16 (84.2)	48 (87.3)			
Standard high school	3 (15.8)	6 (10.9)			
Employment status, n (%)			Fisher exact	1.000	ϕ = .03
Working	5 (26.3)	13 (23.6)			
Not working	14 (73.7)	42 (76.4)			
Perceived economic status, n (%)			Fisher exact	.789	V = .12
Low	2 (10.5)	9 (16.4)			
Moderate	17 (89.5)	45 (81.8)			
High	0 (0.0)	1 (1.8)			
Participation in voluntary health activities, n (%)					
Never	14 (73.7)	44 (80.0)	Fisher exact	.328	V = .18
Occasionally	4 (21.1)	11 (20.0)			
Frequently	1 (5.3)	0 (0.0)			

Note. Categorical data are presented as numbers and percentages [n (%)]; since the continuous variable (age) was not normally distributed, it is presented as median and interquartile range [Q1–Q3]. In between-group comparisons, the Mann–Whitney U test was used for age, and Pearson's chi-square or Fisher's exact test was used for categorical variables, according to expected cell frequencies. *r* = effect size for the Mann–Whitney U test; ϕ= *Phi* coefficient (for 2 × 2 tables); *V* = Cramer's V (for r × c tables).

3.2. Quantitative Outcomes

Baseline-adjusted ANCOVA showed no significant between-group differences in total PRN (F = 1.19, p = .279, η_p^2 = .016), NPVS-R (F = 0.97, p = .327, η_p^2 = .014), or CBI-24 scores (F = 0.25, p = .619, η_p^2 = .003). All remained nonsignificant after the Holm–Bonferroni correction (Table 4). Among the subscales, only PRN Factors Affecting Nurses' Well-Being showed a significant unadjusted between-group difference (F = 5.54, p = .021, η_p^2 = .072), which became nonsignificant after correction (adjusted p = .168). All other PRN and CBI-24 subscale differences were non-significant (Table 4), and sensitivity analyses excluding influential observations did not alter the findings (all p > .05).

Table 4

Comparison of the Posttest Scale and Subscale Scores of the Intervention and Control Groups Adjusted for Pretest Scores

Scale / Subscale	Intervention (n = 19)			Control (n = 55)			*Adjusted Mean Difference (95% CI)*	*F*	*Unadjusted p*	*Holm–Bonferroni adjusted p*	$\varvec{\eta}^{2}$
	Pretest *M ± SD*	**Posttest** *M ± SD*	**Adjusted Posttest** *EMM ± SE*	**Pretest** *M ± SD*	**Posttest** *M ± SD*	**Adjusted Posttest** EMM ± SE					
PRN	**96.68 ± 10.04**	**97.79 ± 15.34**	**98.76 ± 2.65**	**100.15 ± 8.46**	**102.45 ± 10.40**	**102.12 ± 1.55**	**−3.36 (−9.51, 2.79)**	**1.19**	**.279**	**.837**	**.016**
Qualities and characteristics of the nurse	38.84 ± 5.33	39.11 ± 8.07	39.57 ± 1.29	40.31 ± 4.19	39.89 ± 4.92	39.73 ± 0.76	−0.16 (−3.15, 2.84)	0.01	.917	1.000	< .001
Factors affecting the nurse's well-being	11.05 ± 2.25	11.21 ± 2.15	11.33 ± 0.47	11.75 ± 2.44	12.65 ± 2.07	12.61 ± 0.28	−1.29 (−2.38, −0.20)	5.54	.021	.168	.072
Nursing professionalism	16.11 ± 3.13	17.58 ± 3.39	17.72 ± 0.87	16.98 ± 2.64	18.53 ± 3.89	18.48 ± 0.51	−0.76 (−2.77, 1.25)	0.57	.454	1.000	.008
Role of the nurse	30.68 ± 3.15	29.89 ± 5.32	29.97 ± 0.87	31.11 ± 2.76	31.38 ± 3.15	31.36 ± 0.51	−1.39 (−3.40, 0.62)	1.90	.173	1.000	.026
NPVS-R	**114.79 ± 11.31**	**109.84 ± 17.22**	**109.86 ± 3.43**	**114.84 ± 14.05**	**113.78 ± 14.86**	**113.78 ± 2.02**	**−3.92 (−11.85, 4.00)**	**0.97**	**.327**	**.837**	**.014**
CBI-24	**5.79 ± 0.22**	**5.76 ± 0.30**	**5.74 ± 0.08**	**5.69 ± 0.47**	**5.69 ± 0.40**	**5.69 ± 0.05**	**0.05 (−0.15, 0.24)**	**0.25**	**.619**	**.837**	**.003**
Assurance	5.76 ± 0.27	5.76 ± 0.31	5.75 ± 0.09	5.68 ± 0.51	5.65 ± 0.47	5.66 ± 0.05	0.09 (−0.13, 0.31)	0.66	.421	1.000	.009
Knowledge and skills	5.88 ± 0.19	5.83 ± 0.29	5.79 ± 0.10	5.71 ± 0.52	5.68 ± 0.51	5.70 ± 0.06	0.09 (−0.15, 0.33)	0.55	.460	1.000	.008
Respectfulness	5.79 ± 0.29	5.76 ± 0.34	5.76 ± 0.09	5.73 ± 0.45	5.72 ± 0.41	5.72 ± 0.05	0.04 (−0.17, 0.25)	0.14	.712	1.000	.002
Connectedness	5.73 ± 0.28	5.67 ± 0.43	5.67 ± 0.10	5.66 ± 0.51	5.71 ± 0.42	5.72 ± 0.06	−0.05 (−0.27, 0.18)	0.18	.677	1.000	.002

Note. Pretest and posttest values are presented as raw mean ± standard deviation (M ± SD); adjusted posttest values are presented as estimated marginal means ± standard error (EMM ± SE), with the pretest score controlled as a covariate. The F, unadjusted p, and ηp^2 (partial eta squared) values represent the group main effect in the ANCOVA. The Holm–Bonferroni correction was applied to control the Type I error rate in multiple comparisons. Adjusted mean differences are presented as intervention minus control, with 95% confidence intervals. PRN = Perceptions of Being a Registered Nurse; NPVS-R = Nurses Professional Values Scale–Revised; CBI-24 = Caring Behaviors Inventory–24; M = mean; SD = standard deviation; EMM = estimated marginal mean; SE = standard error.

3.3. Qualitative Findings

Reflexive thematic analysis identified six themes: professional nursing identity, professional values, education and professional development, caring behaviors, clinical learning environment, and professional challenges and educational needs. Table 5 presents an integrated display of the quantitative and qualitative findings across the groups.

Table 5
Joint Display of Quantitative and Qualitative Findings

Domain / Theme	Quantitative finding	The Caring Behaviors Course		Integrated interpretation
		Intervention Group	Control Group	
Professional nurse identity	No adjusted group difference in the **PRN** total score	Professional identity was strengthened through education; adoption of the role, professional responsibility, and sense of belonging were emphasized	In identity development, clinical experience, personal experiences, and fit with the profession were more prominent	Although no group difference was observed quantitatively, the qualitative accounts regarding the *source* of identity development differed
Professional values	No adjusted group effect was detected in the NPVS-R total score	More conscious internalization of professional values through education; humanism, empathy, respect, and ethical sensitivity	Values were mostly associated with family, personal life, and clinical experiences	The groups expressed similar values, but the sources of development of these values differed
Education and professional development	No significant adjusted group effect was detected in the **PRN** subscales	The course was associated with re-evaluating the meaning of care, professional awareness, self-confidence, and personal growth	Professional development was mostly associated with clinical practice and direct patient experience	Although no quantitative difference was detected, the qualitative findings showed that professional development was experienced through different pathways
Caring behaviors	No significant adjusted group effect was detected in the CBI-24 total and subscale scores	Therapeutic communication and individualized, holistic care were associated with the course	The development of similar caring behaviors was mostly attributed to clinical experience	Although the content of caring behaviors was similar, students' explanations regarding the source of development of these behaviors differed
Clinical learning environment	No directly corresponding quantitative measurement	Integration of theoretical knowledge with clinical practice was at the forefront	Real patient experience, role models, and theory–practice gaps were more prominent	The qualitative findings provided complementary explanations regarding clinical learning processes not directly assessed by the quantitative instruments
Professional challenges and educational needs	No directly corresponding quantitative measurement	Along with professional burden, the need for more clinical practice/simulation was emphasized	In addition to professional burden, guidance, feedback, and more practice opportunities were more prominent	The qualitative findings revealed common challenges in both groups and educational needs that became particularly evident in the control group

Theme 1: Professional Nursing Identity

Both groups linked their professional nursing identity to their educational and clinical experiences. The intervention group emphasized professional roles, responsibilities, and belonging, whereas the control group emphasized clinical, personal, and family experiences.

"After clinical practice, I began to truly feel like a nurse. My approach to patients and my sense of responsibility changed." (I4)

"After starting clinical practice, I truly felt like a nurse. The patients' trust in me made me feel that I was part of the profession." (C7)

Theme 2: Professional Values

Both groups emphasized humanism, empathy, respect, ethical sensitivity, and non-judgmental acceptance. The intervention group linked value internalization to education, whereas the control group emphasized personal, family, and clinical experiences.

"I realized the importance of listening to patients without judgment. Because each person's experience is different, I try to empathize with them." (I1)

"Living through my grandmother's illness helped me understand how people feel during difficult times. This experience led me to approach patients differently." (C8)

Theme 3: Education and Professional Development

The intervention group attributed their development to the caring awareness and confidence gained through the Caring Behaviors course, whereas the control group linked it mainly to clinical practice.

"Following the Caring Behaviors course, I realized that nursing is not only about providing treatment but also about approaching individuals holistically." (I3)

"In clinical practice, I better understood that nursing extends beyond administering medications or IV fluids to supporting patients in all aspects of care." (C6)

Theme 4: Caring Behaviors

While both groups emphasized therapeutic communication, individualized care, holistic approaches, and emotional support, the intervention group linked these behaviors to coursework, whereas the control group linked them mainly to clinical practice.

"Sometimes, just a smile, a kind word, or listening attentively to the patient can be enough to provide comfort." (I3)

"Every patient has different expectations and experiences. Therefore, I don't think it is appropriate to approach everyone in the same way." (C8)

Theme 5: Clinical Learning Environment

While the intervention group emphasized integrating theory with actual patient care, the control group emphasized real patient experiences, theory–practice differences, and role models.

"Caring for a real patient for the first time made me realize how important what I had learned in theory was." (I5)

"During clinical practice, I observed some nurses being very patient and attentive toward patients. I tried to follow their example." (C8)

Theme 6: Professional Challenges and Educational Needs

Both groups emphasized the physical and psychological burdens, fear of making mistakes, and professional responsibility, and the need for more clinical practice. The control group also highlighted the need for guidance and feedback.

"Increasing clinical practice hours would give us more experience and help us feel better prepared when we graduate." (I4)

"Having nurses tell us what we did right or wrong during clinical practice made learning much easier. I would have liked more guidance." (C7)

3.4. Integration of Quantitative and Qualitative Findings

Although the total PRN, NPVS-R, and CBI-24 scores showed no significant between-group differences, qualitative findings indicated group differences in the learning sources associated with professional development and caring experiences (Table 5). The intervention group linked value internalization, therapeutic communication, individualized care, and theory–practice integration primarily to educational experiences, whereas the control group linked similar developments to clinical experiences, role models, and personal experiences. Complementing these findings, the clinical learning environment, role models, and need for guidance and feedback emerged as qualitative findings not directly captured by the quantitative measures.

4. DISCUSSION

After Holm–Bonferroni correction, no significant between-group differences remained in the total or subscale PRN, NPVS-R, or CBI-24 scores. However, qualitative findings showed that the intervention group linked professional development and caring experiences primarily to structured education, whereas the control group emphasized clinical experiences, role models, and personal experiences. This complementary pattern suggests that the course's potential short-term contribution may have been reflected more in how students understood their professional development and caring experiences than in the scale scores.

4.1. Professional Nursing Identity

Despite no significant difference in total PRN scores, qualitative findings indicated different sources of professional identity development: role adoption, professional responsibility, and belonging in the intervention group versus clinical, personal, and family experiences in the control group.

Professional identity is shaped by formal education and individual, social, and clinical experience [25]. Cornett et al.'s dimensions of learning, belonging, social context, and lived experience complement Watson's framework and help explain this group's pattern. Theoretical education and clinical socialization may thus represent complementary sources of professional identity development.

Educational interventions targeting professional identity have shown positive, but variable, outcomes [26]. Shared clinical exposure, the seven-week intervention, and the small intervention group (n = 19) may have limited the detectable quantitative differences in this study. Thus, the intervention group's stronger linkage between development and educational experiences should not be interpreted as an independent intervention effect.

4.2. Professional Values

Despite no significant difference in total NPVS-R scores, qualitative findings indicated different sources of professional values: educational experiences in the intervention group and personal, family, and clinical experiences in the control group.

Professional values develop over time through interactions among personal, educational, and contextual influences and can be supported by structured, student-centered, and experiential learning [6, 11–13]. The absence of a between-group difference in NPVS-R scores may reflect the multidimensional and longitudinal development of professional values and the pedagogical context. Qualitative findings complemented these results by showing that students associated this development with different educational, clinical, and personal experiences.

4.3. Education and Professional Development

The intervention group linked caring awareness, holistic practice, and self-confidence primarily to educational experiences, whereas the control group emphasized clinical practice and direct patient care experiences. Structured and experiential learning can support professional development alongside clinical experience [12, 13], suggesting that formal education and clinical exposure may provide complementary pathways for professional growth. However, without a measurable between-group difference, these findings should not be interpreted as independent course effects.

4.4. Caring Behaviors

After correction for multiple comparisons, no significant between-group differences remained in total or subscale scores for the CBI-24, PRN, or NPVS-R. Nevertheless, both groups identified therapeutic communication, individualized care, holistic approaches, and emotional support as core components of

caring. While students in the intervention group primarily attributed these caring components to their course experiences, those in the control group more often associated them with their clinical experiences.

The findings of educational interventions targeting caring behaviors have varied. Ayik and Gürol Arslan [14] reported a significant time × group interaction following a 14-week interactive Caring Behaviors course delivered two hours weekly (28 hours total), whereas Yao et al. [16] found significant improvements in caring ability and behaviors with case-based simulation integrated into clinical practice. In the present study, the same total duration (28 h) delivered intensively over seven weeks yielded no significant between-group differences. This suggests that, beyond total educational exposure, its temporal distribution, pedagogical approach, and integration with clinical experience may influence outcomes; however, these factors were not directly compared.

The intervention was delivered as planned; however individual participation and exposure were not assessed using fidelity measures; thus, the influence of individual fidelity variations on the findings could not be evaluated.

Integrated quantitative and qualitative findings suggest that structured education and clinical socialization may contribute to students' understanding of caring through distinct but complementary, pathways. Experiential learning may strengthen the links between theory and clinical practice [39], while Watson's framework and recent theoretical synthesis emphasize the relational, holistic, and interpersonal nature of caring [9, 10, 23]. Thus, the absence of quantitative between-group differences does not preclude qualitative differences in the learning processes students associate with their caring experiences.

4.5. Clinical Learning Environment

The clinical learning environment was important in both groups, with the intervention group emphasizing theory–practice integration and the control group emphasizing real patient experiences, theory–practice differences, and clinical role models.

Clinical learning is shaped by environmental quality, supervision, role models and clinical interactions [17–19]. Galletta et al. [18] found no association between role modeling and professional identity among second-year students, suggesting that the educational level may be relevant to this relationship. In the present study, clinical experience was a shared learning source across groups, whereas role models were more prominent in the control group, highlighting the contextual nature of clinical learning. As the clinical learning environment was not quantitatively assessed, qualitative findings provided complementary insights into theory–practice integration and role modeling.

4.6. Professional Challenges and Educational Needs

Both groups identified physical and psychological burden, fear of mistakes, and professional responsibility as challenges and called for more clinical practice; guidance, feedback, and active practice opportunities were emphasized more by the control group.

Fear of making mistakes is a recognized source of anxiety in clinical practice, and limited clinical experience and supervision have been associated with student anxiety and stress [20, 40]. These findings highlight the importance of clinical education that combines active participation with structured guidance, feedback, and supportive learning environments that foster students' emotional and professional preparedness.

5. LIMITATIONS

This study had several limitations. Its single-center design and non-randomized allocation due to elective course enrollment increase the risk of self-selection bias and limit generalizability. Although ANCOVA adjusted for baseline scores, unmeasured confounding cannot be excluded. Differences in high school type between posttest completers and non-completers also indicate potential attrition bias. The small intervention group (n = 19), unequal group sizes, and 62% achieved power increased the risk of Type II error; thus, non-significant findings should not be interpreted as definitive evidence of no intervention effect.

Although the intervention comprised 28 hours, delivery over seven weeks may have limited opportunities to reinforce caring behaviors and integrate them with clinical experiences. However, different intervention durations were not directly compared. Self-reported measures may not reflect actual clinical performance. The low baseline internal consistency of the PRN Nursing Professionalism subscale (α = .41) is another limitation; however, the sensitivity analysis excluding this subscale did not alter the overall conclusions. The qualitative findings were also context-specific and interpretive. Future multicenter, randomized, adequately powered longitudinal studies should compare intervention durations and include direct measures of clinical performance to address this issue.

6. IMPLICATIONS FOR NURSING EDUCATION

These findings highlight the value of extending caring education beyond didactic instruction through reflective and experiential learning that integrates theory and clinical practice. Despite no significant quantitative between-group differences, the intervention group more strongly linked professional values, holistic and individualized care, therapeutic communication, and theory–practice integration to educational experiences.

The emphasis on clinical role models, guidance, feedback, and active patient care further supports the integration of academic and clinical learning. Caring and professional values education may be reinforced longitudinally through reflection, simulations, structured debriefings, feedback, and supportive clinical guidance. These implications should not be interpreted as established intervention effects but as areas for educational development, as suggested by the integrated quantitative and qualitative findings.

7. CONCLUSION

While scale scores showed no statistically significant between-group differences following the Caring Behaviors course, qualitative findings indicated that students linked their professional development and understanding of caring to different learning sources. These findings suggest that formal education, clinical socialization, and personal experiences may provide complementary pathways for professional development. Future research should include larger, longitudinal studies with direct measures of clinical performance.

ABBREVIATIONS

ANCOVA
Analysis of covariance
CBI-24
Caring Behaviors Inventory–24
COREQ
Consolidated Criteria for Reporting Qualitative Research
GRAMMS
Good Reporting of A Mixed Methods Study
HCT
Human Caring Theory
NPVS-R
Nurses Professional Values Scale–Revised
PRN
Perceptions of Being a Registered Nurse
TIDieR
Template for Intervention Description and Replication
TREND
Transparent Reporting of Evaluations with Nonrandomized Designs

DECLARATIONS

Ethics approval and consent to participate

Ethical approval was obtained from the University of Kyrenia Ethics Committee for Social Sciences and Humanities (2025/FSBB-35), along with institutional permission from the Faculty of Health Sciences (GU.SBF.2025/0165). All participants were informed about the purpose and procedures of the study and provided written and verbal informed consent prior to participation, including consent for audio recording. Participation was voluntary, and participants were assured that their data would remain confidential and that participation would not affect their academic evaluation.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Author Contribution

S.-İ.: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Writing – Original Draft, Visualization, Review and Editing, Supervision. Y.-Ö.G.: Formal Analysis, Writing – Original Draft, Visualization, Review and Editing. M.-Ö.: Investigation, Data Curation. B.-Ç.: Investigation, Data Curation. All authors approved the final manuscript.

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Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request. Access to these data is restricted due to ethical and privacy considerations.

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Figures

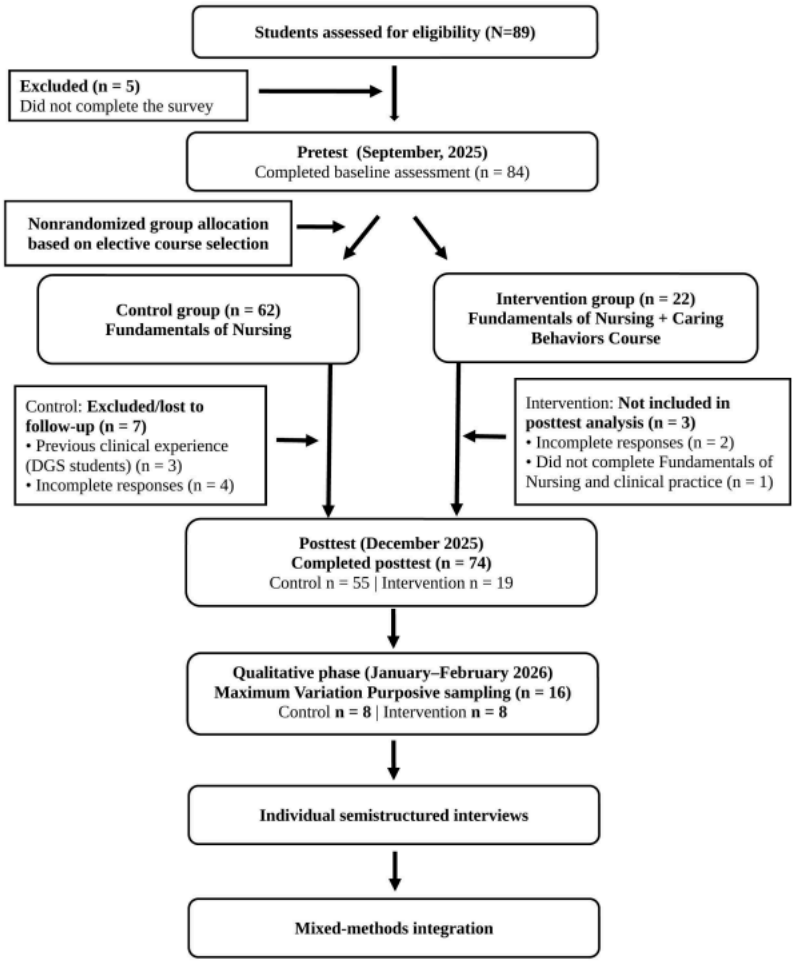


Figure 1

Participant flow through the quantitative and qualitative phases of the study.