Research

The Clinical Learning Environment Experience of the Student Nurse of the Generation Z: a Convergent Parallel Mixed Method Study

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Abstract

Background. The internship represents an experience that incorporates numerous meanings and values that involve nursing students globally, particularly for those belonging to Generation Z.

Aims: 1) to assess the students' perceptions of the clinical learning environments, 2) to identify the elements that contribute to determining the clinical learning environment, and 3) to compare quantitative and qualitative results to highlight key elements that can support the development of targeted educational strategies for nursing students.

Design. Convergent parallel mixed-method study

Participants. Students attending the first, second and third years of the bachelor degree in nursing.

Methods. Quantitative and socio-demographic data were collected with a questionnaire that included the Clinical Learning Environment and Supervision plus Nurse Teacher (CLES-T) scale. Qualitative data were collected with the internship diaries. The qualitative data transformed into dummy variables were finally correlated with the quantitative data using a biserial point correlation to explore their relationships.

Results. We received answers from 63 students, half of them females, who reported experiencing a positive clinical learning environment. Simple linear regressions showed that the variables age, course year, being a student worker or with health care work experience, previous volunteering are all positively correlated with the total scale and with each dimension of the CLES-T. The content analysis of the internship

diaries revealed 7 main categories describing the experience of the clinical learning environment of nursing students of Generation Z. Finally, it was possible to outline a summary scheme that describes the key elements that contribute to the success of the internship and the learning experience.
Conclusions: The key success factors emerging from the study include meaningful relationships with tutors, staff, and peers, effective management of emotional aspects, development of professional identity, intrinsic motivation, and the acquisition of practical skills through feedback and support. A positive and well-organized clinical learning environment facilitates these outcomes, promoting role awareness and responsibility. These findings can be applied to nursing education by developing targeted educational strategies such as structured mentoring programs, emotional training, and practical simulations. Integrating these elements enables educators and institutions to overcome challenges in clinical internships, enhancing students' preparation and fostering the development of competent and confident nurses.

Keywords: Clinical Learning Environment, Nursing Students, Generation Z, Internship Experience, Mixed Method Study, CLES-T Scale, Educational Strategies.

Introduction

In Bachelor of Science in Nursing programs worldwide, regardless of the length of the courses, internships are a fundamental component for the acquisition of technical-gestural skills, clinical reasoning, and interpersonal abilities[1,2]. Universities aim to facilitate students' knowledge-building processes through internships, recognizing that this practice is not an end in itself but encompasses numerous meanings and values. These experiences engage students on a global level, contributing to greater self-awareness and professional identity[3]. During their academic journey, nursing students are typically supported by an academic tutor—a professional with advanced pedagogical and professional expertise—and a clinical tutor, who is generally a nurse on the ward. The clinical tutor is selected by the head nurse based on their teaching and interpersonal skills, availability, and expertise[4,5].

According to Dewey's Learning by Doing theory, knowledge is best achieved through concrete experiences where learners can actively engage and participate[6]. Tutors, therefore, play a facilitating role, encouraging learners to interact with the world in meaningful ways and acquire experiences that enhance understanding and interactions[6].

For decades, the literature has been studying the associations between student satisfaction and clinical learning outcomes. Student opinion is important and is one of the elements to be taken into account in order to identify situations that favour or hinder learning; in fact, it is considered an indicator of the achievement of learning outcomes[4,5,7]. Currently, there have been no mixed method studies analyzing the phenomenon of clinical learning in nursing students in its entirety, exploring internship experiences and the educational, social and cultural factors that frame the same. Over the years, multiple instruments have been developed to assess nursing students' perceptions of their clinical learning experience. In a recent systematic review of the literature analyzing instruments that assess the learning environment of nursing students, the Clinical Learning Environment and Supervision plus Nurse Teacher (CLES-T) scale was the most recommended for use compared with six other instruments[8].

In recent years, learner reflection during learning has become highly relevant, which promotes the integration of information as well as deeper understanding and stimulates satisfaction and motivation for learning itself[4,5,6,7]. This has led to the introduction of the autobiographical training method in the field

of training and adult education, which is based on the principle of 'telling one's story in order to understand oneself', to construct meaning and attribute meaning to personal experiences[9], allowing for an introspective review that gives meaning to a 'personal journey'[10]. Studies have been conducted on the use of the diary in nursing students, to analyse specific topics[11], in specific clinical settings[12] and historical contexts with an impact on health[13]. Understanding the clinical internship experiences of Generation Z nursing students is particularly crucial, as their perceptions and experiences appear to differ from those of previous generations. Generation Z, born and raised in a digitally dominated era, approaches clinical internships with unique expectations, learning preferences, and relational strategies. Numerous studies highlight the importance of investigating the distinct characteristics of new generations to enhance academic programs and develop more effective educational models.

For instance, recent research indicates that Generation Z values interactive and experience-based learning, prefers immediate feedback, and relies heavily on technology to support their education[14,15]. Additionally, both internal and external motivations for enrolling in nursing programs have evolved[16]. This generation also prioritizes a greater balance between personal and professional life, which can shape how they perceive and engage with clinical internships. Studies by Turner suggest that university curricula need to be adapted to address the specific challenges and needs of Generation Z[17]. These adaptations should include resources that foster reflection, resilience, and deeper emotional connections with clinical contexts.

Therefore, the general objective of our mixed-method study was to describe the nursing students' experience of the clinical education in internship during the three years of the Bachelor of Science in Nursing, with a particular focus on the dynamics related to Generation Z.

The specific objectives were: 1) to assess the students' perceptions of the clinical learning environments, 2) to identify the elements that contribute to determining the clinical learning environment, and 3) to compare quantitative and qualitative results to highlight key elements that can support the development of targeted educational strategies for nursing students

Method

Design

The study used a convergent parallel mixed-method study design. Quantitative and qualitative approaches were used simultaneously given the same priority, data analysis was separate, and joint interpretations complemented the results (enrichment)[18]. The EQUATOR guideline for Mixed Methods Article Reporting Standards was used to guide the study[19].

Sampling and procedures

The target population for this study consisted of first-, second- and third-year students on the Bachelor degree in Nursing at a public university in Italy. The convenience sample consisted of nursing students from two university sites willing to participate in the study who met the following inclusion criteria: a) nursing students that have attended at least six months of clinical internship, and b) students who speak and understand the Italian language. The exclusion criteria were: a) students who had not completed or had interrupted the clinical internship, b) students who don't speak and understand Italian. The data were collected from July 2022 to May 2023. after the students had completed their first internship period. The instruments (questionnaires and diaries) were delivered in class to the students, who had one week to fill them out and turn them in, time that was deemed sufficient for them to reflect critically on their newly lived experiences

Ethical considerations

The study was conducted in accordance with the standards and ethical principles of in the Declaration of Helsinki[20]. The research, being conducted among students of the Bachelor's Degree Program, received approval through a resolution by the Directors of the participating Bachelor's Degree sites. Before participating in the study, all participants received information about the research and signed an informed consent form. Access to the data was restricted to the research team only.

Measurements

A paper questionnaire was used for data collection. The first section collected socio-demographic data: gender, age, year of course, working status, internship settings, any volunteer or work experience in healthcare.

The second section included the CLES-T instrument. This tool was previously validated in different languages including Italian[21,22]. It

consists of 34 items and a response option of 5-point Likert (from 1 "strongly disagree" to 5 "strongly agree"). The scale score is calculated by summing the item response for single dimension and for the total scale. The dimensions are: pedagogical atmosphere in the ward dimension (9 items), leadership style of the ward management (4 items), nursing care in the ward (4 items), supervisory relationship with clinic tutor (8 items), and role of academic tutor (9 items). High scores indicate that the learning environment is good. In the study by Tomietto and colleagues (2012), the Cronbach's alpha was 0.95, indicating high reliability[22].

The third section contained the diary, a structured diary to collect the students' internship experiences, based on literature review[23-25]. This tool consisted of 11 open-ended items, designed to guide, stimulate and facilitate the memories, recollections and experiences of the events that accompanied the student during their training (see supplementary table A). The items explored in the diary, acted on the cognitive, affective and emotional spheres and oriented the students towards reflective practice.

Supplementary table A: Structured questions in the internship diary

1.	Attribute a colour to your internship experience, describing the meaning, emotion and memories it evokes
2.	Attribute an odour to your internship experience, describing the meaning, emotion, and memories it evokes
3.	Describe your first few days of internship, what happened, how and the emotions you felt
4.	With which professional or auxiliary figures did you integrate during this internship year and how? With which professional figures or auxiliaries did you fail to integrate and why?
5.	What positive event do you remember personally involved you in this internship year and what emotions did you feel? What negative event do you remember personally involved you and what emotions did you feel?
6.	What event were you able to handle during this internship year and what emotions did you feel? What event were you unable to handle and what emotions did you feel?
7.	During the internship experience how did you come into contact with the patient's body and what emotions did you feel?
8.	During the internship experience what tool or object used was significant to you and why? Also describe the emotion you felt
9.	During your internship experience, were you involved in a specific clinical procedure? Tell us about it and describe the emotion you felt
10.	During the internship experience, did you receive recognition or gratification on a personal level for your work and from whom? What did you feel?
11.	During the internship experience, what difficulties did you encounter and what emotions did you feel? If you were able to overcome them? In what ways did you do so?

Data analysis

Descriptive and correlational analysis were launched to describe variables and determine relationships. Linear regressions were performed to identify associations between explanatory factors and the CLES-T. A step-wise regression method was employed, considering the removal criteria based on significance levels. The Pearson correlation coefficients were calculated to assess the strength and direction of relationships between the variables included in the regression model (sex, age, years of course, working student, previous volunteer experience, work experience in health care). Inductive content analysis with the methodology of Elo, & Kyngäs was used to analyze the qualitative data[26]. Two researchers (M.L. and G.C.) coded and categorized the data separately. A third researcher (G.P.) independently checked the consistency of the open coding, subcategories, specific and main categories with the original transcripts. Any divergence in coding was discussed by the research team and resolved.

Based on the quantitative and qualitative results, a triangulation was carried out to understand essential elements of the students' placement environment evaluation and to have a positive clinical placement experience. A biserial point correlation was used to explore relationships between qualitative and quantitative data. To do this, the qualitative data were transformed into dummy variables, assigning each qualitative variable of interest a dichotomous score ("1" if present, "0" if absent) based on its citation in the respondents' narratives.

Quantitative analyses were performed with SPSS version 27[27] and qualitative analyses with NVivo version 10[28].

Results

Overall, 63 students, mostly female (69.8%) and

of a mean age 27 years and standard deviation 7.48, participated in this research. Clinical placements in the first year were prevalently in the medical area (66.6%), while those in the second year were mostly in the specialty area (e.g. intensive care, operative room, dialysis). The total scores obtained for the CLES-T scale were fair (M 141.11, SD 26.76). Further aspects of the sample are shown in table 1.

Table 1: Sample (N = 63)

Variable	f (%)
Gender	
Male	19 (30.2)
Female	44 (69.8)
Year of course	
I°	23 (36.5)
II°	23 (36.5)
III°	17 (27.0)
Working student	
Yes	14 (22.2)
No	49 (77.8)
Work experience in health care	
Yes	8 (12.7)
No	55 (87.3)
Previous volunteer experience	
Yes	9 (14.3)
No	54 (85.7)
Internship setting 1st year	
Medicine	18 (66.6)
Surgery	5 (18.6)
Oncology	1 (3.7)
Orthopaedics	2 (7.4)
Community	1 (3.7)
Internship setting 2nd year	
Cardiology	3 (9.7)
Surgery	7 (22.6)
Haemodialysis	6 (19.4)
Gastroenterology	1 (3.2)
Oncology	1 (3.2)
Orthopaedics	1 (3.2)
Operating Room	9 (29.0)
Community	3 (9.7)
Internship setting 3rd year	
Cardiology	11 (50.0)
Haemodialysis	1 (4.6)
Oncology	1 (4.6)
Paediatrics	1 (4.6)
Intensive care	3 (13.6)
Operating Room	5 (22.6)
Variable	**Mean (SD)**
Age Range (20-46 yy)	26.97 ± 7.48
Total CLES+T scale score	141.11 ± 26.76
Pedagogical Atmosphere (PA)	36.03 ± 8.02
Leadership style in ward management (LSWM)	16.33 ± 3.44
Nursing care (NC)	16.62 ± 3.27
Supervisory Relationship (SR)	33.70 ± 6.54
Role of nurse teacher (RNT)	38.43 ± 6.31

Note: f= frequency; % = percentage; M = mean; SD = standard deviation

Quantitative results

To assess which characteristics of the respondents are related to the CLES-T scale and subscales scores, a Pearson's correlation analysis was launched (see table 2).

Table 2: Correlation between independent variables and CLES+T scale scores

Variable	PA	LSWM	NC	SR	RNT	CLES+T Total scale
Gender	-0.249*	-0.240	-0.248	-0.217	-0.204	-0.237
Age	0.453**	0.366**	0.407**	0.426**	0.417**	0.435**
Years of course	0.401**	0.341**	0.308*	0.307*	0.358**	0.361**
Internship wards	0.051	0.068	0.028	0.080	0.064	0.062
Working student	0.463**	0.429**	0.451**	0.431**	0.464**	0.464**
Previous volunteer experience	0.392**	0.439**	0.370**	0.347**	0.385**	0.395**
Work experience in health care	0.382**	0.410**	0.398**	0.341**	0.370**	0.386**

Note: PA = Pedagogical Atmosphere; LSWM = Leadership style in ward management; NC = Nursing care; SR = Supervisory Relationship; RNT = Role of nurse teacher; * = p <0.05; **= p <0.01

All the factors explored were positively correlated with the CLES-T scale and subscale scores. Being a working student had the greatest significant correlation (r= 0.429 to 0.464, p<0.05), followed by age (r= 0.366 to 0.453, p<0.05), previous volunteering experience (r= 0.347 to 0.439, p<0.05) and year of course (r= 0.307 to 0.401, p<0.05). To explore associations among student variables and the CLES-T scale and subscales, simple linear regressions were conducted. The variables age, year of course, working student, previous volunteering experience and work experience in health care were all positively associated with each dimension of the CLES-T and the total scale (see table 3).

Table 3: Linear regression of significant variables

CLES-T	Gender			Age			Years of course			Working student			Previous volunteer experience			Work experience in health care		
	β	IC 95%	R^2	β	IC 95%	R^2	β	IC 95%	R^2	β	IC 95%	R^2	β	IC 95%	R^2	β	IC 95%	R^2
PA	-0.249*	-8.626 -0.025	0.047	0.453***	0.241 0.731	0.192	0.401**	1.678 6.397	0.147	0.463***	4.523 13.212	0.202	0.392**	3.548 14.266	0.139	0.382**	3.470 14.785	0.132
LSWM	-0.240	-3.629 0.062	0.042	0.366**	0.059 0.278	0.120	0.341**	0.434 2.508	0.102	0.429***	1.625 5.416	0.171	0.439***	2.037 6.518	0.180	0.410**	1.810 6.590	0.155
NC	-0.248	-3.504 0.002	0.046	0.407**	0.076 0.280	0.152	0.308*	0.262 2.260	0.080	0.451***	1.738 5.303	0.191	0.370**	1.221 5.631	0.122	0.398**	1.584 6.161	0.144
SR	-0.217	-6.603 0.465	0.031	0.426***	0.170 0.576	0.168	0.307*	0.517 4.515	0.079	0.431***	3.118 10.331	0.172	0.347**	1.992 10.897	0.106	0.341**	1.954 11.337	0.102
RNT	-0.204	-6.196 0.640	0.026	0.417**	0.155 0.548	0.160	0.358**	0.938 4.721	0.114	0.464***	3.565 10.394	0.202	0.385**	2.663 11.114	0.134	0.370**	2.484 11.425	0.123
Total	-0.237	-28.096	0.682	0.435***	0.731 2.382	0.176	0.361**	4.102 20.127	0.116	0.464***	15.126 44.098	0.202	0.395**	12.097 47.792	0.142	0.386**	11.969 49.631	0.135

Note: PA = Pedagogical Atmosphere; LSWM = Leadership style in ward management; NC = Nursing care; SR = Supervisory Relationship; RNT = Role of nurse teacher * = p <0.05; **= p <0.01; ***= p <0.001

Qualitative results

The inductive analysis of the diaries regarding the clinical learning environment experience of the nurse students revealed 101 codes, 25 specific categories and 7 main categories (see table 4).

Awareness and responsibility during internship

In this category, students expressed their reflections and awareness of the study path, the responsibilities they took as a student, and the concerns and difficulties of the transition from theoretical preparation at university to practical application during the placement.

"For me, the internship in general was difficult. I didn't feel ready. Yes, in the classroom they explain to you what you have to do but then doing it in the real world is a whole other thing. There is an ocean between saying and doing." (male, 1st year)

"The sense of responsibility in this last year I feel it more and more strongly ... in the very near future I will be directly responsible for what I do ... it's normal that my sense of responsibility increases then." (male, 3rd year).

Clinical learning environment atmosphere

In this category, students expressed feelings, emotions and perceptions related to the internship environment. Students stated that they felt anxiety and fear in facing an unfamiliar world, the first internship (first-year students), a new ward and a critical ward (post-first-year students).

"Every placement generates anxiety before you start, because you don't know how it's organised, how you're going to be during the placement in that department... it's an anxiety that I think never goes away." (female, 2nd year).

Nevertheless, the ward was intended as a safe environment for some students, because the internship was carried out in a protected environment (supported by staff and clinical tutor) and the environments were subject to strict hygiene and disinfection procedures.

"During the pandemic, we were allowed to do our internship in the vaccine hubs. Paradoxically, my companions and I, at that particular time when everyone was trying to defend themselves against the virus, felt safer in the hospital where the virus was circulating. This was because everyone was adopting procedures to fight it, from the doctor to the ward cleaners." (male, 2nd year).

The ward can influence the placement experience because it represents a *"sad place"* (medical and oncology wards are mostly referred to in this way by the students), *"hectic", "with an excessive workload", "disorientating"* and *"frustrating because of the predominantly hotel business".*

Expectations and motivation of the internship

This category included the student's motivations for embarking on the degree pathway, but also the disappointed expectations during the placement. Students stated that they embarked on the degree programme for: *"[...] curiosity about the activities to be performed", "[...] passion for the profession", "[...] desire to do good", "[...] desire to try new experiences".*

Sometimes, however, they were disappointed in their expectations of the internship and the difficulty they did not think they would have in reconciling work and internship.

"Of course I didn't expect it to be so hard to reconcile work and training!" (male, 1st year).

Managing the emotional aspects of the profession

This category reported the emotions, feelings and attitudes assumed by students when dealing with the most delicate and emotional aspects of the profession.

One of these aspects is the contact with the patient's body during intimate and delicate procedures.

"[...] discomfort that is overcome as one gains experience with the placement",

For delicate procedures, on the other hand, students reported feeling inadequate in invading the patient's intimacy.

"[...] to touch a part of the body that is very important for the dialysis patient to be able to take care of himself. A part that you have to have his permission to touch because it is very delicate and not for everyone to touch: the arteriovenous fistula." (female, 2nd year).

Students experienced anxiety and fear, related to not feeling able to manage an emergency situation.

"It happened one afternoon when I was starting my internship... I went to greet the patients like I usually do, but as I walked into Mr. G's room, I knew something was wrong... He was barely breathing! I stuck to the doorbell to call someone. There was not a minute to lose. S. and M. arrived and realized and asked me to call the doctor while S. assisted the patient and M. took the emergency trolley. Fortunately, all together we managed to manage the situation" (female, 2nd year).

Learning procedures

In this category, the students described all the activities carried out to acquire skills and knowledge, the feelings of success or failures in the procedures and attitudes adopted to succeed. Students claim to be enthusiastic about learning procedures but they report a fear of failure in the execution of procedures, a sense of impotence, inexperience, and performance anxiety. Some students stated that "*experiencing*" it, however, increased self-confidence, self-control, and made them more autonomous in performing procedures. Staying focused while performing difficult procedures helped them overcome that sense of inadequacy or unpreparedness to the patient's suffering.

"I was afraid to hurt him ... but I had to do the dressing otherwise it would be worse. My tutor always says "pity makes purulent sores" (male, 3th year)

Significant relationship

In this category, students identified all the

meaningful relationships in the internship experience: peer group, healthcare staff, clinical tutors and patients and their family members. They described feelings of being behind others or competing, or feel understood and supported.

"I always felt behind the others. They jumped, they did. I always there, on the sidelines like Calimero" (female, 1st year).

As for the relationship with the health and support staff, the students find kindness and availability from medical staff to nursing staff, which allows them to integrate into the team. Others, however, describe difficulties encountered in integrating due to inexperience, insecurity and shyness.

"It was a little more difficult to genuinely integrate with the nurses, especially in the surgical department. They were always running, I couldn't ask questions a little bit, maybe because I'm shy. I've often felt like a hindrance. In the operating room and cardiology went better because everyone was available and ready to explain to me what I did not understand" (female, 2nd year).

With regard to the relationship with the clinical tutor, the students declare to be successful in the execution of the procedures thanks to the guidance, encouragement and help of their tutor and appreciate feeedbacks by the tutor.

"Luckily the tutor made sure I got over my insecurities. He showed me where I was wrong, he showed me how to do it, but he wasn't bad! He was serious! When I was good, he told me, and that made me proud of myself." (female, 2nd year)

The relationship with patients and their families, finally, is significant for the internship experience, because it allows students to feel satisfied by the recognition made by patients and family members. For students, for an internship experience to be meaningful, it is essential to feel useful and close to patients and relatives and win their trust.

"It was difficult to assist P. He was grumpy, not interested in what was around him. Nobody could find a way to talk to him. …I was sorry I couldn't find a way, however hard I tried, to communicate with him. It is important for me to build a good relationship with all patients, to empathize with them. But with P. it was not possible" (female, 3th year).

Self-identification

In this category, through a sensory stimulus (visual, auditory and olfactory), the student connects the internship experience to the environment, the current role (student), the future role (nurse) and the care provided to patients.

"The white color … reminds me of the color of clean sheets and medicine walls" (female, 1st year)

"If I have to think about a noise this year… I think about the sound of the dialysis machine that the patients were attached to. It stuck with me. For days I could hear it outside the ward. Hearing that sound made me more attentive and meticulous. It's a major noise that." (male, 3th year).

Table 4: Main and specific categories of clinical internship experiences of nursing students

Main categories	General categories	Code	*f*
Awareness and responsibility during internship	Path' awareness	1. Reflection during the course of study	13
		2. Fear of making a wrong choice or 'after' graduation	12
		3. Understanding the future path	10
		4. Awareness and happiness for one's work	10
		5. Personal growth	4
	Take responsibility	6. Feeling responsible while performing procedures (emergency, therapy)	41
		7. Taking responsibility for the direct care of all patients	34
		8. Taking responsibility for dependent or most needy patients	28
	Transition from theory to practice	9. Disoriented by the transition from theory to practice	22
		10. Mentally review procedure steps and tools before performing a procedure	14
		11. Finding correspondence between theory and practice by implementing what has been studied	9
		12. Becoming more autonomous and prepared by increasing knowledge	2
		13. Encountering difficulties in putting all the knowledge learned into practice	2
Clinical learning environment atmosphere	Internship environment	14. Anxiety and fear about the internship (unknown world, first ward, new ward, critical wards)	19
		15. Being satisfied with clinical positioning	17
		16. Desire for more specialised experiences	15
		17. Feeling safe in the ward (supervised training and ward hygiene)	10
		18. Enthusiastic about going on internship	9
		19. Sadness due to the type of ward (medicine, oncology)	4
		20. Perception of a hectic departmental climate or excessive workload	3
		21. Disorientation due to unknown departmental organisation	2
		22. Frustration with predominantly hotel department activities	2
		23. Feeling stuck in the internship	2
		24. Overcoming internship fears	2
Expectations and motivation of the internship	Expectations	25. Disappointed in expectations for the profession from social media	8
		26. Disappointed in the expectation of being able to reconcile work and training	4
	Motivation	27. Willingness to gain new experiences and get involved	41
		28. Curiosity and passion for the profession	40
		29. Desire to do good	15

Managing emotional aspects of the profession	Body contact	30. Overcoming the discomfort of contact with the traineeship experience	52
		31. Feeling uneasy and shy about invading the patient's intimacy	35
		32. Normal contact for previous work or volunteer experience	12
		33. Natural contact without embarrassment	10
		34. Respect for the patient during intimate procedures	10
		35. Showing confidence in contact with the patient's body	10
	Patient's dead	36. Suffering and inadequacy due to the death of a patient	25
		37. Anxiety and fear of death	5
		38. Lack of privacy and religious respect for the body	3
		39. Difficulties in talking to a relative about the death of a family member	2
		40. Empathy in talking about the death of a patient to a relative	2
		41. Being involved in the communication of a patient's death	1
	Ward's emergency	42. Feeling inadequate during emergencies	11
		43. Anxiety and fear in taking action	10
		44. Acting fast without thinking	6
		45. Knowing how to recognise an emergency situation	6
		46. Being involved by the team during emergency manoeuvres	4
Learning procedures	Acquiring skills	47. Staying focused during difficult procedures	13
		48. Acquiring manual dexterity in the use of devices and appliances	11
		49. Knowing how to explain procedures to patients	2
	Acquiring knowledge	50. Witnessing new procedures (stealing with the eyes)	8
	Enthusiasm and satisfaction	51. Enthusiasm in learning procedures or using tools	59
		52. Satisfaction with the correct execution of a procedure	33
	Feedback	53. Feeling encouraged to learn procedures	4
	Insecurity	54. Fear and discomfort of getting procedures wrong and harming the patient	52
		55. Feeling powerless or inexperienced in performing procedures	48
		56. Feeling inadequate or unprepared for patient suffering during procedures	23
		57. Performance anxiety	20
		58. Feeling discouraged and incapacitated by the failure of a procedure	9
		59. Fear of asking for information needed to perform procedures	7
	Self-confidence	60. Self-confidence in performing procedures	34
	Self-control	61. Self-control while performing procedures	7
	Confidence and autonomy	62. Becoming confident and autonomous in performing procedures	29
		63. Becoming more autonomous in ward activities (documentation management, making rounds, administering therapy)	3

Significant relationship	Clinical tutor	64. Successful execution of procedures with the help of the tutor	21
		65. Feeling followed and encouraged by the tutor	17
		66. Happy with the tutors' teachings	13
	Group of peers	67. Feeling behind your peers	13
		68. Feeling understood by peers	12
		69. Feeling in competition with peers	12
		70. Feeling supported by peers	9
	Healthcare staff	71. Winning and being proud of the trust of the staff (doctors, nurses, social and health workers)	63
		72. Kind and helpful staff (doctors, nurses, social and health workers)	48
		73. Difficulties in integrating with staff and presence of conflicts (nurses and socio-medical staff)	27
		74. Being recognised for commitment by staff (doctors, nurses, social and health workers)	22
		75. Not feeling cared for or considered by staff (nurses)	18
		76. Being recognised for commitment by the ward manager	14
		77. Finding availability and collaborating with medical staff	12
		78. Overcoming difficulties with the help of staff	9
		79. Feeling part of the staff	8
		80. Feeling in the way or a burden to staff (nurses)	5
		81. Being willing to perform given tasks	4
		82. Difficulties in communicating and expressing opinions with staff	3
		83. Collaborating with social and health personnel	2
		84. Mutual respect with staff (doctors, nurses, social and health workers)	2
	Patients and relatives	85. Receiving recognition and gratification from patients and relatives	38
		86. Being gentle with patients	37
		87. Satisfied and flattered by the recognition received from patients and relatives	32
		88. Being empathetic with patients	25
		89. Feeling useful and close to patients and relatives	25
		90. Winning the trust of patients and relatives	17
		91. Difficulties in dealing with difficult patients	16
		92. Reassuring the patient during emergency and care procedures	7
		93. Overcoming language barriers and learning to interact with the patient	7
		94. Fear of not knowing how to manage the patient's suffering (oncology)	4
		95. Being welcoming with patients	3
		96. Not getting involved with patients and relatives	3
		97. Understanding the patient's degree of autonomy	1

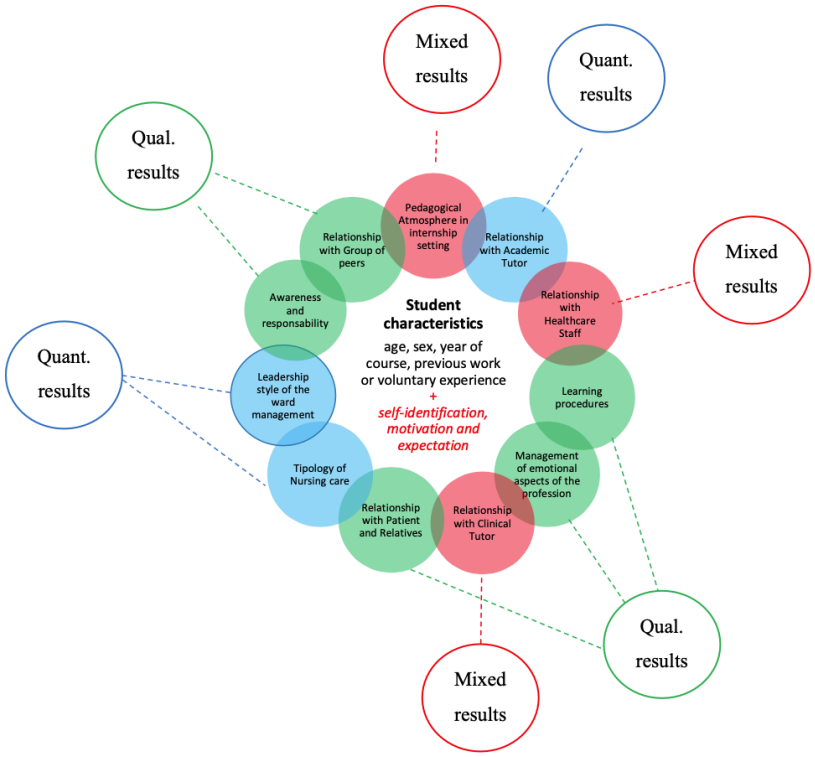
Self-identification	Environment	98. Identification with the ward (colour of the walls, smell of disinfectant, smell of sick and closed, smell of clean sheets, noise of the dialysis machine, smell of coffee)	75
	Future role	99. Identification with nursing status (phonendoscope, smell of gloves, smell of medication. smell of sterilised equipment)	37
	Current role	100. Identification with student status (colour of university badge, uniform and thesis cover)	35
	Assistance	101. Identification with the patient (smell of the viscera in the operating room, smell of the skin burnt by the electric scalpel, smell of blood, smell of decubitus lesions, smell of toilet wipes)	18

Note: f = frequency

Triangulation

The integration between the quantitative and qualitative data of the study, has brought out the elements that influence the internship experience in clinical learning environments. In fact, the use of CLES-T allowed evaluating the elements to be taken into account when talking about successful clinical learning in the path of Bachelor in Nursing. Qualitative data have both explained these results, and added other elements of reference. A synthesis scheme that describes the key elements that contribute to determine the success of the internship experience and learning was hypothesized (see figure 1). In this scheme are presented the dimensions of the CLES-T (blue color) returned by the quantitative data, the elements (green color) from qualitative results, the mixed method results (red color) and the characteristics of the sample that affect the internship experience (central gray circle).

Figure 1: Key elements in the successful clinical learning experience



The correlation between the qualitative dummy variables with the quantitative findings (see table 5) showed that the anxiety experienced at internship ($r = -0.386$, $p < 0.01$) and hectic environments or excessive workload ($r = -0.404$, $p < 0.01$) correlates with the total scale and subscales of the CLES-T. Succeeding in a procedure with the help of the tutor not only correlates with RNT ($r = 0.457$, $p < 0.01$) but also with other subscales and the total scale. Additional significant correlations are presented in Table 5. These results not only confirm and add value to mixed-method finding, but also affect different factors of CLES-T.

Table 5: Point Biserial Correlation of quantitative and qualitative mixed-method results

	PA	LSWM	NC	SR	RNT	Total scale
Clinical learning environment atmosphere: Internship environment						
14. Anxiety and fear about the traineeship	-0.386**	-0.361**	-0.382**	-0.370**	-0.419**	-0.398**
15. Being satisfied with clinical positioning	0.227	0.140	0.182	0.188	0.204	0.202
16. Desire for more specialised experiences	-0.260*	-0.317*	-0.245	-0.175	-0.175	-0.233
17. Feeling safe in the ward (supervised training and ward hygiene)	0.058	0.034	-0.070	-0.060	-0.037	-0.010
18. Enthusiastic about going on placement	-0.019	0.027	0.146	0.054	0.037	0.038
19. Sadness due to the type of ward (medicine and oncology)	-0.148	-0.159	-0.070	-0.088	-0.049	-0.107
20. Perception of a hectic departmental climate or excessive workload	-0.404**	-0.394**	-0.364**	-0.392**	-0.289*	-0.380**
21. Disorientation due to unknown departmental organisation	-0.023	-0.071	-0.035	0.008	-0.143	-0.052
22. Frustration with predominantly hotel department activities	-0.183	-0.257*	-0.146	-0.187	-0.287*	-0.219
23. Feeling stuck in the internship	-0.183	-0.257*	-0.146	-0.187	-0.287*	-0.219
24. Overcoming internship fears	0.079	0.035	0.077	0.120	-0.012	0.064
Significant relationship: Clinical tutor						
64. Successful execution of procedures with the help of the tutor	0.455**	0.435**	0.436**	0.444**	0.457**	0.462**
65. Feeling followed and encouraged by the tutor	-0.133	-0.154	-0.138	-0.132	-0.196	-0.155
66. Happy with the tutors' teachings	-0.101	-0.096	-0.037	-0.073	-0.060	-0.079
Significant relationship: Healthcare staff						
71. Winning and being proud of the trust of the staff (doctors. nurses, social and health workers)	0.880**	0.885**	0.873**	0-840**	0.086**	0.830**
72. Kind and helpful staff (doctors, nurses, social and health workers)	-0.208	-0.175	-0.181	-0.152	-0.224	-0.197
73. Difficulties in integrating with staff and presence of conflicts (nurses and socio-medical staff)	0.077	0.028	0.121	0.100	0.079	0.085
74. Being recognised for commitment by staff (doctors, nurses, social and health workers)	0.189	0.124	0.117	0.121	0.109	0.142
75. Not feeling cared for or considered by staff (nurses)	-0.100	-0.124	-0.099	-0.073	-0.111	-0.102
76. Being recognised for commitment by the ward manager	-0.276*	-0.231	-0.208	-0.240	-0.165	-0.235
77. Finding availability and collaborating with medical staff	-0.149	-0.202	-0.130	-0.133	-0.091	-0.141
78. Overcoming difficulties with the help of staff	-0.247	-0.120	-0.176	-0.114	-0.245	-0.196
79. Feeling part of the staff	-0.079	-0.065	-0.058	-0.048	-0.064	-0.066
80. Feeling in the way or a burden to staff (nurses)	0.124	0.075	0.107	0.068	0.083	0.096
81. Being willing to perform given tasks	-0.083	-0.045	-0.030	0.002	-0.070	-0.050
82. Difficulties in communicating and expressing opinions with staff	0.027	0.044	0.026	-0.024	-0.075	-0.007
83. Collaborating with social and health personnel	-0.080	-0.124	-0.035	0.008	-0.143	-0.076
84. Respecting each other with staff (doctors. nurses. social and health workers)	-0.080	-0.151	-0.035	0.008	-0.143	-0.079

Note: PA = Pedagogical Atmosphere; LSWM = Leadership style in ward management; NC = Nursing care; SR = Supervisory Relationship; RNT = Role of nurse teacher; * = p <0.05; **= p <0.01.

Discussion

This study aimed to assess the students' perceptions of the educational environments in the practical traineeship; to identify the elements that contribute to determining the clinical learning environment and to synthesize the results to make them available to clinical tutors and educators in order to improve the educational-training processes of nursing students, particularly for Generation Z.

The quantitative results of this study showed that Italian Gen Z students perceive the clinical learning environment in a positive way. This is in line with previous Italian studies conducted on nursing students[29-31] and also with some studies conducted in European and Asian countries[32-36]. In our study, we focus on Generation Z, which has distinctive characteristics as well as a greater attention to balancing professional and private life, show a generally positive perception of the clinical learning environment. In addition, our study recognizes the influence of some socio-demographic characteristics of students (as age, year of course, being student worker, and having experience in volunteering or healthcare) on the perception of clinical environments of the internship (CLES-T scores). Previous literature recognized associations between the year of course and age[36]. In this study, we add information to present literature identifying gender effects, not confirmed in Italian and foreign literature[31,36]. In agreement with the literature, no associations between the internship department and perception of the clinical learning environment were evidenced[31,36].

Our study highlighted that a successful internship experience is influenced by several key factors. These include students' awareness of their professional role and responsibilities during the internship, the overall atmosphere of the clinical learning environment, effective management of the emotional demands inherent to the profession, the implementation of structured learning procedures, and the development of meaningful interpersonal relationships. Given that the students belong to Generation Z, it is essential to integrate innovative and interactive educational approaches that value immediate feedback, technological support, and practical learning experiences. Addressing these dimensions can enhance students' learning experiences and support their professional development.

The literature also affirms the importance of good relations with significant people, for an internship experience and successful learning. These relationships are with nursing staff[37], nursing coordinator[38], clinical tutors[39], patients and relatives, and peer group[40]; this is also clearly evident in Generation Z. For example, while for the previous generation, clinical tutors and medical staff were seen as primary sources of support, in Generation Z there is an increasing expectation for direct dialogue with these professionals and a greater value attributed to interpersonal relationships in the professional setting. In our study, while for the clinical tutor and medical staff only positive aspects of the relationship are highlighted, for the peer group and nursing staff are also added negative aspects such as, for example, feeling competitive with peers and being ignored and not considered by nursing staff.

Qualitative outcomes also add other characteristics of students that can influence their experience and learning, such as self-identification and expectations and motivation of the internship. Professional identity is considered a component of the concept of individual self[41-44] and literature demonstrates its direct effect on the rate of loyalty and access to university[41], on the student's stay during the degree course and on the outcomes of positive experiences and successful learning[45-49]. In addition to being able to influence the internship and learning experience, self-identification can in turn transform during the student's career[47]. Students, Gen Z ones too, often choose the profession driven by motivations and expectations arising from the consideration of the profession by society and the mass media; in fact, they are not really aware of the path they are about to take[19,50] and this can affect the internship experience and their learning process. Therefore, offering broad access to programs and knowledge about the profession, can be a training strategy to help them establish and understand the feasibility of their career goals and long-term and feasible pathways to achieve them[51,52].

Data triangulation has added other important elements in determining a successful clinical learning environment such as, for example, the student's learning of procedures, influenced by the ability to acquire knowledge and skills, the feedback received, self-confidence and self-control in performing them and the degree of security and autonomy perceived.

In the literature self-efficacy is related to successful performance and this improves the motivation and confidence of the individual in providing nursing practice in a complex situation[53,54]. Although we cannot regard self-efficacy and self-confidence as synonymous, both of these qualities highlight the individual's belief in his own ability to accomplish a task[55,56]. Nursing students, especially those in Gen Z considered a fragile and insecure generation[57], need enough confidence to learn and do clinical operations for which they are not qualified. Therefore, nursing educators have a responsibility to provide information and support nursing students to improve their confidence[58].

Limitations

There are some limitations to this study. First, only two universities and 63 nursing students participated in this study. This may have created biases in the results by not capturing some aspects present in a larger sample. The selection variables of our sample were gender, age, year of course, employment and previous work or voluntary experience; however, not having considered other confounding variables such as the culture and nationality of the student, family conditions that could make the journey complicated (presence of young children in the family, new mothers, etc.), may have created biases in the interpretation of the results. In addition, some limits of the biserial point correlation must be considered: possibility of non-linear relationships in which the coefficient may not accurately reflect the nature of the association; strong imbalances of one dummy category with respect to the other that could affect the correlation measurement; analysis results specific to the sample under study but with possible limitations of generalization. Despite these limitations, the results identify key elements that impact the positive experience and successful learning of Italian nursing students. The potential of these results, Moreover, it is stimulating in the field of research to conduct further research for the development of a single tool that can capture all the factors that contribute to the clinical learning environment and to further deepen the phenomenon by conducting other studies on a more other selection or confounding variables of the sample.

Conclusions

The clinical learning environment (CLE), characterised by positive relationships with staff, effective management of the profession's emotional demands, role self-awareness, responsibility-taking, and structured learning procedures, plays a critical role in enhancing students' experiences and supporting successful learning outcomes. Recognising these key elements specific to Generation Z nursing students allows educators, tutors, academic institutions, and clinical settings to design targeted interventions. These can include tailored mentoring programmes, enhanced emotional support systems, and experiential learning opportunities that reflect students' preferences for interactive and technology-supported learning. Institutions can also implement policies promoting constructive feedback, role modelling, and structured reflection sessions. Such measures can help address identified challenges, reduce barriers to clinical internship success, and foster a trusting, competent, and resilient path toward professional nursing development.

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