NURSING

How do undergraduate nursing students learn about the fundamentals of care? A pilot cross-sectional attitudinal study

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Keywords

Undergraduate nursing education • Fundamentals of care • Pilot cross-sectional study • Questionnaire validation • Evaluation

Summary

Introduction. *Despite the growing importance of nursing fundamentals of care, nurses often overlook these aspects of care. In this study, we explored why this happens precisely where nursing education is initially provided. In fact, little is known about how undergraduate nursing students perceive the teaching of fundamentals of care and how they value them.*

Methods. *This pilot cross-sectional study used a questionnaire adapted and validated in Italian to assess the perceptions of first, second, and third-year undergraduate nursing students (n=150) in an Italian university about the teaching of fundamentals of care during theoretical lessons and clinical practice.*

Results. *In the first section of the tool, on general fundamentals of care (nutrition, hygiene, mobility, rest and sleep, the expression of sexuality, safety, etc), students reported high levels of agreement for all items: range between 61.2% (95% CI: 57.1-65.3) and 100%.*

In the section on nutrition, divided into nutrition, oral intake of fluids, and malnutrition high percentages of agreement from 53.1% (95% CI: 46.0-60.2) to 91.8% (95% CI: 87.9-95.7%) were obtained, but for questions regarding 'learning how to document food and fluid intake', first-year students reported low levels of agreement.

With regard to the 'Communication Section', the item about 'learning how to inform minor patients' presented low percentages of agreement throughout the three-year program. Of the first-year students, between 71.4% (95% CI: 64.9-77.9) and 77.6% (95% CI: 71.6-83.6) declared they had not received instructions about this.

Conclusions. *Understanding how nursing students perceive the importance of learning of fundamentals of care during their curriculum and how their multidimensional nature is highlighted by teachers and clinical supervisors, will enable educators to address the gaps in the way they taught and prioritized within the curriculum.*

Introduction

The fundamentals of care are a set of core nursing activities that underpin nurses' health care competencies. They include communication, nutrition, hygiene, mobility, rest and sleep, the expression of sexuality, safety (*e.g.,* prevention of infections and falls), general comfort (*e.g.,* maintenance of adequate temperature and pain control) and elimination [1]. The fundamentals of care are presented within a framework that consists of three domains: physical (patient's physiological needs), psychosocial (patient needs related to the context in which they live, in particular: the need to communicate, the need to be involved in the care process, privacy, dignity, psychological well-being, respect, being educated and informed about their health status and the need to see his beliefs and values respected) and relational (nurses' actions in their relationship with the patients such as: active listening, empathy, collaborating with the patient, being compassionate, supporting patients and their family members, and actively informing them on the progress made during the period of treatment and helping them maintain a state of psychological well-being) [2]. Work on an agreed definition of fundamental care is ongoing, in particular by International Learning Collaborative (2020) [3], who are concerned with best practice in relation to fundamental care and supporting and encouraging research in this regard. A current working definition [4] is as follows: *"Fundamental care involves actions on the part of the nurse that respect and focus on a person's essential needs to ensure their physical and psychosocial wellbeing. These needs are met by developing a positive and trusting relationship with the person being cared for as well as their family/carers"* [3].

Nutrition for instance has long been considered one of the basic needs that nurses are required to monitor, because it is one of the basic care activities provided to patients, and insufficient nutritional intake can compound or lead to health issues [5]. Adequate nutrition is a fundamental right of every human being and the basis for disease prevention and quality of life. However, in clinical practice nutrition is not always prioritized. [6].

Communication is another important aspect of care that should not be overlooked in the hospital setting, because it is vital to holistically address patients'

https://doi.org/10.15167/2421-4248/jpmh2022.63.3.2153

fundamental care needs [4, 5]. Yet patient education, giving information, and other aspects of communication are frequently overlooked [7]. Excellent communication with patients is an important contributor to positive healthcare outcomes and safety in healthcare practice. Patients who are fully informed about their procedures, for example, and have had the opportunity to express their doubts, fears and feelings will adhere more effectively to the proposed treatments and will feel more secure surrounded by professionals who build a relationship of trust with them [8].

There is emerging evidence that when these fundamentals of care are not fully implemented or missed, they can have direct consequences for patient care outcomes and patient satisfaction [9]. Therefore, there is an increasing consensus that the conceptualization of fundamentals of care, clearly outlined by the International Learning Collaborative [3], should be thoroughly integrated within undergraduate nursing curricula [10] and form part of the core competency set of nurses [11]. However, as there are many items competing for attention, the multidimensional nature of fundamentals of care are not always explicit in undergraduate nursing curricula [10, 12].

Nursing students often favor the more technical aspects of care, but if health care becomes increasingly technical, there are serious safety concerns when fundamentals such as communication and nutrition are not prioritized [13]. Therefore, teachers and clinical mentors play a crucial role in guiding students' attention towards understanding the importance and the multidimensional complexity of fundamentals of care [2, 8, 10]. Therefore, it is crucial to expand and develop the evidence base not only for fundamental care delivery but also its pedagogy. One recent study that investigated this aspect in the Netherlands, across three universities developed a research project called "Basic Care Revisited" [14]. This initiative significantly contributed to evidence-based basic nursing care by raising awareness of the importance of essential nursing activities within the curriculum [14].-

Given the increasing agreement of the need for fundamentals of care to become imbedded within the curriculum [15], this study aimed to explore Italian nursing students' perceptions of their theoretical and practical teachings received on fundamental care, with a particular focus on communication and nutrition.

Methods

Study design

This is a pilot cross-sectional study that uses a questionnaire adapted and validated in Italian to explore the perceptions of undergraduate nursing students about the teaching of fundamentals of care during theoretical lessons and clinical practice.

Tool validation before the current pilot study

A specifically designed questionnaire was developed in the Netherlands to investigate how students perceived the teaching of fundamentals of care during their three-year program, with a particular focus on their learning about nutrition and communication [11, 14]. It was validated for use across 6 universities. The instrument design was based on the "fundamentals of care template," developed by Kitson in (2010) which identified 14 discrete elements of fundamentals of care [1].

Before conducting the current pilot study, the questionnaire [11] was adapted and translated into Italian for the purposes of this project. The tool validation process included the following steps: 1) analysis of the original tool [11] and development of new items; 2) analysis of content and face validity; 3) reliability analysis (stability and internal consistency). The questionnaire showed excellent validity and reliability. The Item Content Validity Index (I-CVI) ranged from 0.80 to 1.00 and the Scale Content Validity Index (S-CVI) was 0.98. The Interclass Correlation Coefficient (ICC) confirmed the stability of the tool, and Cronbach's alpha its internal consistency (0.92). The adaptation took into account the Italian Nursing Code of Ethics and national and local programme requirements regarding nutrition and communication within the bachelor's degree in nursing.

Sampling

After the adaptation and validation process, the questionnaire was administered to first, second and third-year undergraduate nursing students. Convenience sampling was used and included all the nursing students who were attending their first, second- or third year and were ready for their clinical placements (n = 191) in September 2019. A hard copy of the questionnaire was administered after students had read the information sheet and the informed consent; the questionnaire was administered for two weeks. Participation was voluntary and data were collected ensuring the respondents' privacy and anonymity.

Ethical approval was sought from the Liguria Regional Research Ethics Committee (Italy) and deemed as not required according to the Italian laws and regulations. Permission to access the nursing students was gained from the Faculty of Nursing.

The questionnaire

The original questionnaire [11] was in digital format and consisted of 3 sections. In the first section demographic data were requested. In the second part, the questions focused on students' knowledge of the 14 fundamental care activities. In the last section, the questions focused on specific knowledge about nutrition and communication. The response grid of sections 2 and 3 consisted of a 5-point Likert scale, from 'completely disagree' to 'completely agree'.

The Italian version of questionnaire consisted of 3 sections and the responses to each item were based on a Likert scale (1-4) where students had to score their level

of agreement on learning a given aspect selected during their theoretical lessons and clinical internship.
Furthermore, unlike the original questionnaire, where the responses were based on a 5-point Likert scale, in the Italian version the responses were based on a 4-point Likert scale (from 'completely disagree' to 'completely agree'), because the intermediate response ('neither in agreement / nor in disagreement') of the original questionnaire was not relevant for the purpose of the present study. The responses of the 4-point Likert scale were dichotomized and attributed a score of 1 (disagree) for 'completely disagree' or 'disagree', and a score of 2 (agree) was attributed to the responses 'agree' and 'completely agree'. Section 1 deals with fundamentals of care, with 14 general questions regarding the elements of basic care: safety, communication, breathing, nutrition/hydration, elimination, hygiene, temperature, sleep and rest, comfort, mobility, dignity and privacy, and expression of sexuality. Section 2 focuses on some specific aspects of fundamentals of care: nutrition (divided into nutrition, hydration and malnutrition) (20 questions), and communication (11 questions), which were investigated through questions concerning all steps of the respective nursing process, from assessment to evaluation ["Where did you learn the identification of the right time to offer a food (e.g. diabetic patient, post-operative patient, healthy patient with the proposal of five daily meals)?]. Finally, Section 3 includes questions on respondents' demographics. The average length of time taken to complete the questionnaire was 20 minutes.

Data analysis

Microsoft Excel sheets and IBM SPSS Statistics 22 software were used to analyze the results. A descriptive analysis using central tendency indexes, mean and frequencies to describe the sample was performed. The differences between students attending different years refer to separate samples where a comparative analysis was conducted. This happens because the nursing curriculum has not been changed in the last years.
Pearson's chi-square correlation was conducted to examine correlations between levels of agreement and gender, and between agreement answers and age [16].

Results

The study sample consisted of all the 191 students enrolled in the undergraduate nursing three years degree program (Tab. I). The response rate was 78.0% (n = 149).

Participant demographic characteristics

The research team decided to perform a stratification of the answers per course year to highlight the critical issues in more detail and the students' answers from the three different years of the undergraduate course both in terms of learning during theoretical lessons and clinical practice.

Tab. I. Sample characteristics.

Gender	n	%
Male	34	22.8%
Female	115	77.2%
Mean age	22.62 yrs (Age range 19-40 yrs)	3.08 (SD)
Year of Programme		
First-year students	49	32.8%
Second-year students	55	36.9%
Third-year students	36	24.1%
Out of course students	8	5.3%
Total sample	149	100%

General questions on Fundamentals of Care

In the first section of the tool, concerning questions on general fundamentals of care, students reported high levels of agreement for all items: from 61.2% (95% CI: 57.1-65.3) to 100%. Regarding safety-related care, prevention and therapy administration, the majority of students across all three years of the program reported receiving instructions on this topic in both the classroom and clinical practice. While a large percentage of first-year students reported receiving tuition, almost 40% did not appear to receive instructions. The level of perceived instructions across both lessons and clinical practice rose incrementally according to seniority, with high percentages reporting receiving this instruction in the final year.
Concerning communication and education assistance, students' agreement was high and increased from first- to second-year students but showed a higher percentage of disagreement (almost 28%) about perceived instructions on this topic among senior students
We found that for providing care during elimination, controlling temperature and ensuring rest and sleep students showed very high percentages of agreement in all years, reaching a level of total agreement also in first-year students. With regard to comfort care and pain management, students showed high levels of perceived instruction, but still with up to 20% of disagreement among earlier students that decreases to 11.1% of disagreement about learning this topic in third-year students.
The item 'providing care to ensure the expression of sexuality' showed the lowest levels of agreement about its learning among students, with a maximum of 52.7% (95% CI: 46.0-59.4) of agreement among second year students (Tab. II). These results revealed that undergraduate students from the three different years declared they learnt during lessons or clinical practice or both about the majority of basic nursing care items explored by the questionnaire. Overall percentages of agreement were almost all higher among second- and third- year students, who appeared to have received specific education about these topics.

Nutrition

The second section of the questionnaire, related to nutrition (divided into nutrition, oral intake of fluids,

Tab. II. Students' perceptions (stratified per year course) of receiving instruction regarding Fundamentals of Care across their nursing programmes.

	Level of Agreement (%)					
	(n = 49)		(n = 55)		(n = 36)	
	1st Year (L*) (95% CI)	1st Year (CP*) (95% CI)	2nd Year (L) (95% CI)	2nd Year (CP) (95% CI)	3rd Year (L) (95% CI)	3rd Year (CP) (95% CI)
GENERAL FUNDAMENTAL IDENTIFIED						
Safety-related care, prevention and therapy administration	61.2 (54.2-68.2)	73.5 (67.2-79.8)	90.9 (87.0-94.8)	98.2 (96.4-100)	100	97.2 (94.5-99.9)
Communication and education assistance***	85.7 (80.7-90.7)	91.8 (87.9-95.7)	94.5 (91.4-97.6)	96.4 (93.9-98.9)	72.2 (64.7-79.7)	89.9 (84.9-94.9)
Providing breathing assistance	83.7 (78.4-89.0)	81.6 (76.1-87.1)	78.2 (72.6-83.8)	89.1 (84.9-93.3)	88.9 (83.7-94.1)	91.7 (87.1-96.3)
Nutrition and hydration°	93.9 (90.5-97.3)	89.8 (85.5-94.1)	98.2 (96.4-100)	92.7 (89.2-96.2)	97.2 (94.5-99.9)	94.4 (90.6-98.2)
Providing care for elimination***	98.0 (96.0-100)	95.9 (93.1-98.7)	92.7 (89.2-96.2)	94.5 (91.4-97.6)	94.4 (90.6-98.2)	97.2 (94.5-99.9)
Providing care for personal hygiene and toileting***	93.9 (90.5-97.3)	95.9 (93.1-98.7)	85.5 (80.8-90.2)	90.9 (87.0-94.8)	91.7 (87.1-96.3)	88.9 (83.7-94.1)
Controlling temperature	93.9 (90.5-97.3)	98.0 (96.0-100)	89.1 (84.9-93.3)	96.4 (93.9-8.9)	94.4 (90.6-98.2)	100
Ensuring rest and sleep***	100	71.4 (64.9-77.9)	92.7 (89.2-96.2)	76.4 (70.7-82.1)	91.7 (87.1-96.3)	75.0 (67.8-82.2)
Comfort care (including pain management) **	79.6 (73.8-85.4)	81.6 (76.1-87.1)	92.7 (89.2-96.2)	89.1 (84.9-93.3)	91.7 (87.1-96.3)	88.9 (83.7-94.1)
Dignity care	87.8 (83.1-92.5)	75.5 (69.4-81.6)	83.6 (78.6-88.6)	76.4 (70.7-82.1)	80.6 (74.0-87.2)	83.3 (77.1-89.5)
Ensuring privacy**	91.8 (87.9-95.7)	73.5 (67.2-79.8)	94.5 (91.4-97.6)	80.0 (74.6-85.4)	94.4 (90.6-98.2)	83.3 ((77.1-89.5)
Respect the patient's choice	79.6 (73.8-85.4)	93.9 (90.5-97.3)	90.9 (87.0-94.8)	81.8 (76.6-87.0)	91.7 (87.1-96.3)	91.7 (87.1-96.3)
Ensuring mobility	93.9 (90.5-97.3)	93.9 (90.5-97.3)	98.2 (96-100)	85.5 (80.8-90.2)	94.4 (90.6-98.2)	91.7 (87.1-96.3)
Providing care to ensure the expression of sexuality**	46.9 (39.8-54.0)	44.9 (37.8-52.0)	45.5 (38.8-52.2)	52.7 (46.0-59.4)	50 (41.7-58.3)	50 (41.7-58.3)

*(L)= Lessons; (CP)=Clinical Practice. ** Significant correlation for Gender; *** Significant Correlation for Age;° Significant Correlation for Age and Gender

and malnutrition), revealed answers with a prevalence of high percentages of agreement [from 53.1% (95% CI: 46.0-60.2) to 91.8% (95% CI: 87.9-95.7%) regarding learning these aspects of nursing care in the undergraduate nursing program. For questions regarding 'learning how to document food and fluid intake during the work shift', first-year students showed low levels of agreement about this during classroom lessons: 26.5% (95% CI: 20.7-33.3%) and 28.6% (95% CI: 22.1-35.1%) respectively. These agreement values were higher in second- and third-year students: 47.3% (95%CI: 40.6-54.0) and 61.1% (95% CI: 54.5-67.7) respectively and, for all the three-year course, there were high percentages of agreement about learning this during clinical practice: 53.1% (95% CI: 46.0-60.2), 81.8% (95% CI: 76.6-87.0), 69.4% (95% CI: 62-77) for recording food intake; 63.3% (95% CI: 56-70); 81.8% (95% CI: 77-87), 86.1% (95% CI: 80.3-91.9) for fluid intake].

Communication

With regard to the 'Communication Section', the item about 'learning how to inform minor patients' presented low percentages of agreement about receiving instructions on this across the entire three-year program. Of the first-year students, between 71.4% (95% CI: 64.9-77.9) and 77.6% (95% CI: 71.6-83.6) declared they had not received instructions about this. During their third-year clinical practice, almost 70% of students perceived to have received education on this aspect (Tab. III). As in the first section, it is possible to see average higher percentages of agreement among the more senior students, meaning that at the end of the bachelor program, they received and learnt almost all aspects about fundamentals of care.

Statistical analysis - correlations

The chi-square test was used to investigate correlations and significant differences between agreement level (dichotomized dependent variable), and respondents' gender and age. The items that revealed statistically significant chi-square values between level of agreement and gender were: nutrition and hydration (chi-square = 4.061, p = .044); comfort care (chi-square = 6.297, p = .012); ensuring privacy (chi-square = 4.192, p = .041); and providing care to

Tab. III. Question 10, Communication section.

	Level of Agreement					
	(n = 49)		(n = 55)		(n = 36)	
	1st Year (L*) (95% CI)	1st Year (CP*) (95% CI)	2nd Year (L) (95% CI)	2nd Year (CP) (95% CI)	3rd Year (L) (95% CI)	3rd Year (CP) (95% CI)
Learning how to inform pediatric patients	22.4% (16.4-28.4)	28.6% (22.1-35.1)	40.0% (33.4-46.6)	54.5% (47.8-61.2)	41.7% (33.5-49.9)	69.4% (61.7-77.1)

ensure expression of sexuality (chi-square = 4.232, $p = .040$) (Tab. II).

With regard to the correlation between level of agreement and age, the results revealed statistically significant values for the following items: assisting with communication and education (chi-square = 28.023, $p = .021$); nutrition and hydration (chi-square = 39.757, $p = .000$); providing care for elimination (chi-square = 29.980, $p = .016$); providing care for personal hygiene and toileting (chi-square = 27.976, $p = 0.022$); ensuring rest and sleep (chi-square = 28.305, $p = .020$); factors related to malnutrition (chi-square = 39.953, $p = .000$); listening effectively to a patient (chi-square = 37.573, $p = .001$); respecting patient's opinions and ideas (chi-square = 27.599, $p = .024$); promoting patient participation (chi-square = 28.612, $p = 0.18$); and relationship with patients with communication limits (chi-square = 26.078, p = .037) (Tab. II).

Discussion

Through this survey we took a snapshot of the current situation in one Italian university, highlighting strengths and shortcomings about learning fundamentals of care among undergraduate nursing students, both theoretically and practically. Overall findings showed on average a good level of learning about fundamentals of care in contrast with the findings of lower levels of attention to explicit fundamentals of care in some other countries [12].

A thought-provoking finding from this study was that specific learning about addressing patients' sexuality appeared to be lacking and unaddressed throughout the three years–curriculum. This may be linked to the students' cultural backgrounds and their geographical origins, whereby discussing sexuality may be perceived as a taboo. The current validated version of the questionnaire did not include items that explored students' cultural and geographical characteristics but would be worth exploring in the future. However, this finding is echoed in studies from other countries, such as the United States, where in one study only 16% of nursing educators believed that undergraduate students were prepared to manage the patient's needs in relation to sexuality and 27% reported that this aspect was not addressed in the curriculum [17]. These results highlight the need to strengthen and implement education in undergraduate nursing programs to ensure that future nurses learn and feel prepared to support patients' expression of sexuality, and healthcare related needs, to provide truly holistic care to patients effectively [18]. The introduction of a graduate-level course on sexual health and sexual health disparities effectively increased perceived preparedness, comfort and confidence among nursing students in delivering comprehensive and culturally informed care to diverse populations and suggested to reinforce these implementation courses [18].

From this study it was also clear that from most of the students' perspectives, while safety issues appeared to be addressed both in the classrooms and clinical practice, a large percentage of students did not perceive to have gained this kind of instruction in their first year. While high levels of agreement with this was clear in the final years, it is of concern that this important aspect of nursing could have been neglected in the earlier stages of the program. This finding is consistent with other studies whereby senior students and qualified nurses were found to have an increased interest and concern with patient safety [19].

Since the relevance of the concept of patient safety concept enables to provide high quality care [20, 21, 22], we need to use the findings of this study to stress the importance of safety as an explicit subject within the nursing curriculum, and one that should be taught consistently across the duration of the program and varying levels of complexity. However, it is interesting to note that the undergraduate nursing program, where this survey was conducted and also in other settings [23], there were no specific classes based on safety. Rather it is often taught implicitly during lessons and through observation in clinical practice. Thereby, more junior students, understandably reported little learning on this topic, possibly because at that point they had limited clinical exposure. This finding is linked to Cresswell' s findings, which revealed that concept of safety was not taught consistently or explicitly across programs [23]. This finding is surprising even though the World Health Organization have actively developed a patient safety curriculum for multiprofessional education [21], and healthcare safety movements are growing globally [20]. Students' responses about specific fundamentals of care, such as elimination, nutrition, rest and sleep, demonstrated high levels of agreement thus reflecting an overt focus on these subjects within the nursing curriculum.

Another finding of importance was the students' experiences of learning about comfort care and pain management, where high percentages of students reported to have received instruction on these topics. However, the views were inconsistent, both within

each cohort and across the years, indicating an inconsistency in approaches to the teaching of pain management. Similar and even more negative results appeared in other studies where nursing students showed suboptimal levels of knowledge and attitudes towards pain management [24, 25]. Similar trends appeared in relation to students' views about learning about privacy, with high percentages of agreement among students, but inconsistences across the years of the program. Some previous studies have revealed the need to improve educational contents on this topic with the use of appropriate training methods [26, 27].

Students also declared teaching gaps throughout their three-year program regarding related to communication with children. This deficit may be due to the fact that Italy has a separate curriculum and professional profile for pediatric nurses, who were not included in this study. However, at the same time, nursing care of children is supported only be a small number of specialist hospitals [28] and many large public hospitals would also have children's units. This means that both students and staff may have opportunity to nurse children without necessarily having the specialist skill set. Indeed, gaps in graduates' communication skills are widely reported in relation to communication with both patient and family but also in relation to other areas such as reporting poor practice, using technology and intercultural communication. At the same time there is also some concern that communication proficiency is often not included within programme learning outcomes [29]. This may be because undergraduate outcomes predominately focus on ability to describe and reflect on practice and often lack emphasis on attaining objectively measured proficiency in these particular skills [29]. Evidence suggests that experimental/active teaching models such as simulation and role-play are perceived by students to be the preferred methods of educational interventions tentatively indicating that these may be effective nurse educational methods [19, 30].

Furthermore, this study found some correlations between being female and ensuring comfort care, dignity, and expression of sexuality. This can be linked to female students' vision of their professional role of altruism and caring by being a nurse [31], while male students focus on strengthening management, leadership, and technical aspects of nursing [31]. We should also point out that correlations between some general fundamentals of care (e.g., communication and education; nutrition and hydration; providing care for elimination; providing care for personal hygiene and toileting; ensuring rest and sleep; listening effectively to a patient; respecting patient's opinions and ideas, etc.) and students' age can be explained with the more senior and experienced students within the nursing program.

There is the need to consider the multifaceted reality of teaching and learning about fundamentals of care, as well as an approach that is more explicit. Conceptualizing the fundamentals of care within the curriculum according to the fundamentals of care framework would serve this purpose [10]. An additional benefit of this is that these fundamentals are interconnected and inter-reliant [10]. Thus, learning about one or two in isolation is not sufficient. Nursing students' learning about these must be in a holistic manner [10].

Consensus is also needed about the depth and necessity of learning across the stages of the program. Certainly, the early exposure without revisiting the topics again has limitations, and at the same time some topics might be best suited to the more advanced learner. Mapping the learning across the duration of the nursing program, using the fundamentals framework, and making teaching explicit, is one method so that the learning, regardless of its position within the curriculum, could be understood as important and reinforced [10]. Consideration also needs to be given to the best methods for teaching these fundamentals, particularly communication and nutrition, with additional research needed to explore the benefits of high-fidelity teaching and learning.

Of particular importance is the need to begin to consider these fundamentals as dynamic and interactive, and not static skills to be learnt in isolation and as a once off. Both high and low fidelity scenarios need to be developed that address the complexity of fundamentals of care and test the students' knowledge, skills and reactions to a combination of needs in these areas, rather than simply learning skills as standalone entities [10].

Nurse educators can use the findings of this study to tailor nursing programs so that they may emphasize the importance of teaching and learning fundamentals of care. Undergraduate education is a strategic time to start implementing a process of change in the way nurses perceive fundamentals of care, and to encourage students' awareness of the importance of this approach through consistent collaboration between the academic faculty and clinical mentors.

Limitations

This study has some limitations because it was conducted only in one academic setting, as well as being descriptive and cross sectional. Convenience sampling can determine another limitation for highly vulnerable selection bias and high level of sampling error. In addition, it is based on information reported by the students, without conducting a comparison with their learning outcomes or analyzing the contents of the undergraduate program.

Conclusions

This is the first study that attempts to investigate the learning of fundamentals of care in an Italian university. The results obtained through this pilot study are consistent with findings in the literature and reveal that interventions are needed to make the teaching and learning of fundamentals of care more explicit and structured. Also, more in-depth studies are needed, to expand the knowledge about the multifaceted approach of both teaching and learning fundamentals of care and enable students to develop the required skills to uphold safety standards and support excellence in practice.

Financial Competing Interests

None.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Acknowledgements

We wish to thank Prof. Alison Kitson, Vice President and Executive Dean of the College of Nursing and Health Sciences, Dr. Rebecca Feo, Research Fellow, and Dr. Tiffany Conroy, Senior Lecturer both from the College of Nursing and Health Sciences, Flinders University South Australia, who provided precious advice on the final version of this manuscript.

Conflict of interest

None.

Authors' contributions

M.Z., S.L., A.B., G.C., and L.S. contributed to the conception and the design of this study. S.R., N.D., G.O., G.C., and M.H. contributed to data collection, analysis, and interpretation. F.T., M.Z., G.C., G.A., S.L., G.O., N.D. and L.S. have been involved in drafting, editing and revising critically this manuscript.
All authors have read and approved the final manuscript.

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Received on May 14, 2021. Accepted on September 01, 2022.

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How to cite this article: Bagnasco A, Rossi S, Lanna S, Dasso N, Ottonello G, Catania G, Zanini M, Aleo G, Timmins F, Sasso L. How do undergraduate nursing students learn about the fundamentals of care? A pilot cross-sectional attitudinal study. J Prev Med Hyg 2022;63:E448-E455. https://doi.org/10.15167/2421-4248/jpmh2022.63.3.2153