

Patient safety in simulated practice during graduation in healthcare

RESUMO | Objetivo: identificar entre os alunos de graduação dos cursos Biomedicina, Enfermagem, Farmácia, Fisioterapia, Medicina e Nutrição, o reconhecimento da abordagem da Segurança do Paciente por meio da Simulação Realística durante sua formação acadêmica. Método: pesquisa quantitativa, exploratória e descritiva, realizada em março e abril de 2021, por meio de questionário eletrônico. Participaram 222 discentes de graduação dos cursos supracitados de uma Instituição de Ensino Superior de São Paulo. Resultados: percebeu-se que 81,9% dos discentes reconheceram a inclusão da segurança do paciente durante as práticas simuladas, entretanto 31,5% consideraram insuficiente a abordagem desta temática durante sua formação acadêmica, principalmente nos cursos de Biomedicina, Fisioterapia e Nutrição ($p < 0,001$). Conclusão: evidenciou-se a falta de uniformidade na abordagem da segurança do paciente entre os cursos de graduação, apontando a necessidade de revisão dos currículos para contemplar esta temática, por meio de práticas simuladas que colaboram significativamente para o aprendizado e desenvolvimento de competências

Descritores: Segurança do paciente; Simulação; Educação superior; Treinamento por simulação; Currículo.

ABSTRACT | Objective: identify among undergraduate students of Biomedicine, Nursing, Pharmacy, Physiotherapy, Medicine and Nutrition courses, the recognition of the Patient Safety approach through Realistic Simulation during their academic training. Method: quantitative, exploratory and descriptive research, carried out in March and April 2021, using an electronic questionnaire. 222 undergraduate students from the aforementioned courses at a Higher Education Institution in São Paulo participated. Results: it was noticed that 81.9% of students recognized the inclusion of patient safety during simulated practices, however 31.5% considered the approach to this topic insufficient during their academic training, especially in the courses of Biomedicine, Physiotherapy and Nutrition ($p < 0.001$). Conclusion: there was a lack of uniformity in the approach to patient safety among undergraduate courses, pointing out the need to revise the curricula to address this issue, through simulated practices that significantly contribute to the learning and development of skills.

Keywords: Patient Safety; Simulation; Education, Higher; Simulation Training; Curriculum.

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Palabras claves: Patient Safety; Simulation; Education, Higher; Simulation Training; Curriculum.

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INTRODUCTION

Patient safety must be prioritized in healthcare systems, as recent estimates suggest that unsafe care represents one of the ten leading causes of death and disability on the world stage. This is a systemic problem that does not only affect hospital organizations, since half of the damage to patients results from primary and outpatient care. 1,2

As future health professionals, undergraduate students in this area must be prepared for safe practices, with training and education in patient safety. The WHO suggests the inclusion of

the theme in the curricula of all courses in the health area, accommodating the most recent discoveries and new knowledge in clinical areas, through active teaching methodologies. 3

Realistic Simulation (RS) has been used by the health area and contributes to the development of skills and competencies needed in a controlled and protected environment, being presented a debriefing during the learning experience, allowing students to make mistakes and have professional growth, without risking patient safety. The scenarios created for the simulation are based on real-life cases to enable

the development and improvement of technical skills, attitudes and expected behaviors. 4

This methodology can be supported by the use of technologies to create scenarios that replicate experiences capable of developing and improving professionals with analytical, propositional and relational skills, based on qualified care practice, responsibility and ethics. Thus, forming professionals with excellent service to the user, family and community. 5

Given these considerations, simulated practice is relevant as a teaching method on patient safety in an interdisciplinary way in HEIs, aiming to promote effective communication, teamwork and quality in health care. In this sense, the following questions arose: "What is the perception of students in the health area regarding the influence of Realistic Simulation on learning about Patient Safety?" and "Is Patient Safety addressed in simulated practice during undergraduate health courses?".

Thus, the objective of this research was to identify among undergraduate students of Biomedicine, Nursing, Pharmacy, Physiotherapy, Medicine and Nutrition courses, the recognition of the Patient Safety approach through Realistic Simulation during their academic training.

METHOD

Article extracted from the Course Conclusion Paper (TCC - Trabalho de Conclusão de Curso) entitled: 'Approach to patient safety in simulated practice during undergraduate health', presented to the Department of Undergraduate Nursing at Centro Universitário São Camilo – CUSC, São Paulo, Brazil, 2021 .

Quantitative research with descriptive exploratory design, carried out on two campuses of a private HEI in the city of São Paulo, whose participants were undergraduate students, regularly



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enrolled in the courses of Biomedicine, Nursing, Pharmacy, Physiotherapy, Medicine and Nutrition, from the 4th semester. Those who did not attend all semesters at the HEI in the scenario of this study, due to transfer from another institution, were excluded.

After the consent of the research and research ethics committees of the IES (Opinion 4,357,825; CAAE 37858820.3.0000.0062), the participants were informed about the objectives, anonymity and freedom to accept to participate in the study, without coercion, as they would respond to an online questionnaire only if it was of their own free will.

Data collection took place in March and April 2021, using an electronic questionnaire consisting of two parts, the first for the collection of sociodemographic data and the second consisting of ten statements and a closed question, prepared from the literature on patient safety and realistic simulation. Assertions were elaborated in a Likert-type scale format, with five degrees of agreement: 'Totally Agree', 'Partially Agree', 'Neither Agree, Nor Disagree', 'Partially Disagree' and 'Strongly Disagree'.

The collected data were stored in an electronic spreadsheet for descriptive statistical analysis and relevant associations between categorical and numerical variables from Simulated Pearson's Chi-squared test and Pearson's Chi-squared test, considering a 95% confidence level.

The total number of students who answered the online questionnaire was 245, ten of which did not agree to participate in the survey and 13 informed that they had been transferred from another HEI. Therefore, the database consisted of the response of 222 students who agreed to participate in the research and were not transferred from another HEI.

RESULTS

Table 1 - Distribution of assertive response values in relation to the Course variable. São Paulo, 2021.

Assertive	Scale	Biomedicine		Nursing		Pharmacy		Physiotherapy		Medicine		Nutrition	
		N	%	N	%	N	%	N	%	N	%	N	%
1. I believe that, during my academic training, I had simulated practice	DT	1	7,7	1	1,2	2	13,3	1	4,5	0	0,0	0	0,0
	DP	2	15,4	1	1,2	0	0,0	4	18,2	4	5,7	4	9,5
	NCND	0	0,0	1	1,2	1	6,7	0	0,0	5	7,1	2	57,6
	CP	5	38,5	20	24,7	5	33,3	12	54,5	26	37,1	10	23,8
	CT	5	38,5	58	71,6	7	46,7	5	22,7	35	50,0	5	<0,001
2. Patient safety was addressed in the curriculum of my undergraduate course	DT	1	7,7	0	0,0	0	0,0	0	0,0	0	0,0	2	9,5
	DP	1	7,7	1	1,2	0	0,0	0	0,0	1	1,4	4	19,0
	NCND	0	0,0	0	0,0	0	0,0	1	4,5	4	5,7	2	9,5
	CP	2	15,4	11	13,6	3	20,0	6	27,3	17	24,3	4	19,0
	CT	9	69,2	69	85,2	12	80,0	15	68,2	48	68,6	9	42,9
3. All international patient safety goals were covered in my undergraduate course	DT	2	15,4	0	0,0	0	0,0	1	4,5	1	1,4	5	23,8
	DP	1	7,7	6	7,4	1	6,7	2	9,1	5	7,1	3	14,3
	NCND	2	15,4	2	2,5	2	13,3	2	9,1	13	18,6	6	18,6
	CP	6	46,2	16	19,8	6	40,0	7	31,8	28	40,0	1	4,8
	CT	2	15,4	57	70,4	6	40,0	10	45,5	23	32,9	6	28,6
3a. Goal 1: Identify patients correctly	Sim	1	7,7	0	0,0	5	33,3	1	4,5	2	2,9	6	28,6
	Não	12	92,3	81	100,0	10	66,7	21	95,5	68	97,1	15	81,4
3b. Goal 2: Improve Effective Communication	Sim	6	46,2	10	12,3	6	40,0	2	9,1	4	5,7	5	23,8
	Não	7	53,8	71	87,7	9	60,0	20	90,9	66	94,3	16	76,2
3c. Goal 3: Improve the Security of High-Surveillance Medicines	Sim	7	53,8	10	12,3	1	6,7	18	81,8	21	30,0	16	76,2
	Não	6	46,2	71	87,7	14	93,3	4	18,2	49	70,0	5	23,8
3d. Goal 4: Ensure Surgeries with Intervention Site Associated with Health Care.	Sim	11	84,6	15	18,5	10	66,7	16	72,7	13	18,6	18	85,7
	Não	2	15,4	66	81,5	5	33,3	6	27,3	57	81,4	3	14,3
3e. Goal 5: Reduce the Risk of Healthcare-Associated Infections	Sim	3	23,1	6	7,4	6	40,0	7	31,8	10	14,3	9	42,9
	Não	10	76,9	75	92,6	9	60,0	15	68,2	60	85,7	12	57,1
3f. Goal 6: Reduce the Risk of Injury to the Patient from Falls.	Sim	9	69,2	3	3,7	11	73,3	0	0,0	38	54,3	10	47,6
	Não	4	30,8	78	96,3	4	26,7	22	100,0	32	45,7	11	52,4

													7,8
4. During my experiences in simulated practice, in the undergraduate course, I noticed the inclusion of topics related to patient safety	DT	2	15,4	0	0,0	2	13,3	0	0,0	2	2,9	1	28,6
	DP	0	0,0	4	4,9	1	6,7	2	9,1	6	8,6	6	9,5
	NCND	3	23,1	0	0,0	1	6,7	2	9,1	6	8,6	2	28,6
	CP	4	30,8	20	24,7	7	45,7	6	27,3	29	41,4	6	28,6
	CT	4	30,8	57	70,4	4	26,7	12	54,5	27	38,6	6	
p*													<0,001
5. I consider it essential to address patient safety during my academic training	NCND	1	7,7	0	0,0	0	0,0	0	0,0	0	0,0	1	4,8
	CP	1	7,7	1	1,2	2	13,3	0	0,0	1	1,4	1	4,8
	CT	11	84,6	80	98,8	13	86,7	22	100,0	69	98,6	19	90,5
	p**												<0,012
6. The simulated environment contributes to patient safety learning	DP	0	0,0	1	1,2	0	0,0	0	0,0	1	1,4	0	0,0
	NCND	0	0,0	1	1,2	1	6,7	1	4,5	3	4,3	2	9,5
	CP	2	15,4	7	8,6	3	13,3	1	4,5	13	18,6	3	14,3
	CT	11	84,6	72	88,9	11	80,0	20	90,9	53	75,7	16	76,2
	p*												0,733
7. I believe that realistic simulation is an opportunity for students to improve teamwork	NCND	0	0,0	0	0,0	2	6,7	0	0,0	2	2,9	0	0,0
	CP	1	7,7	10	12,3	3	20,0	1	4,5	12	17,1	2	9,5
	CT	12	92,3	71	87,7	11	73,3	21	95,5	56	80,0	19	90,5
	p**												0,438
8. I consider it relevant to address patient safety in simulated practice scenarios	DP	0	0,0	0	1,2	0	0,0	0	0,0	0	0,0	0	0,0
	NCND	0	0,0	1	0,0	1	6,7	0	0,0	0	0,0	0	0,0
	CP	0	0,0	3	3,7	2	13,3	0	0,0	4	5,7	2	9,5
	CT	13	100,0	77	95,1	12	80,0	22	100,0	66	94,3	19	90,5
	p**												0,250
9. I feel more prepared to care for the patient safely after the simulated care practice	DT	0	0,0	0	0,0	0	0,0	0	0,0	1	1,4	1	4,8
	DP	0	0,0	1	1,2	0	0,0	1	4,5	3	4,3	0	0,0
	NCND	2	15,4	2	2,5	2	13,3	1	4,5	6	8,6	3	14,3
	CP	1	7,7	29	35,8	4	26,7	3	13,6	30	42,9	7	47,6
	CT	10	76,9	49	60,5	9	60,0	17	77,3	30	42,9	10	33,3
p*												0,130	
10. I consider the content on patient safety covered in my undergraduate course to be sufficient	DT	2	15,4	2,5	2,5	0	0,0	3	13,6	2	2,9	5	23,8
	DP	2	15,4	9,9	9,9	2	13,3	3	13,6	8	11,4	7	33,3
	NCND	2	15,4	3,7	3,7	3	20,0	4	18,2	12	17,1	2	9,5
	CP	5	38,5	49,4	49,4	6	40,0	8	36,4	38	54,3	1	4,8
	CT	2	15,4	34,6	34,6	4	26,7	4	18,2	10	14,3	6	28,6
p*												<0,001	

p*Simulated Pearson's Chi-squared test; p** Fisher's Exact Test; p*** Pearson's Chi-squared test.

DT: Strongly Disagree; DP: Partially Disagree; NCND: Neither Agree nor Disagree; CP: Partially agree; CT: Tottaly Agree

The undergraduate course with the highest number of participants was Nursing, with 81 responses, 36.4% of the total, followed by the Medicine course, with 70 responses, 31.5%. The course with the lowest number of participants was Biomedicine, with a

response from 13 students (5.8%). There was a greater number of responses to the questionnaire by students from campus A (86.0%) and the morning shift (61.2%), followed by the full shift (31.0%).

Table 1 shows the responses of the

participants considering the categorical variable course, in which it is possible to observe that there was a statistically significant difference, especially with regard to assertions 1 'I consider that, during my academic training, I had simulated practice'; 2 'Patient safety was

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Table 1 shows the responses of the participants considering the categorical variable course, in which it is possible to observe that there was a statistically significant difference, especially with regard to assertions 1 'I consider that, during my academic training, I had simulated practice'; 2 'Patient safety was addressed in the curriculum of my undergraduate course'; 3 'All international patient safety goals were covered in my undergraduate course'; 4 'During my experiences in simulated practice, in the undergraduate course, I noticed the inclusion of topics related to patient safety' and; 10 'I consider the content on patient safety covered in my undergraduate course to be sufficient' as well as regarding the approach of the International Patient Safety Goals in the different undergraduate courses.

In assertion 1, 193 students (86.9%) fully or partially agreed on the application of the simulated practice during their academic training. According to the answers to statement 2, 205 participants (92.3%) agreed, in whole or in part, that patient safety was addressed in the undergraduate course.

It was observed in assertion 3, regarding the approach to the international goals of patient safety during graduation, that most participants fully or partially agreed with the assertion, 104 (46.8%) and 64 (28.8%), respectively.

It was also found that Goal 1 of Patient Safety, regarding the correct identification of the patient, was the



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most selected by students from all undergraduate courses, with 207 (93.2%) responses. Goal 4, which deals with Safe Surgery, was the least recognized, with the majority of students in Biomedicine (84.6%), Pharmacy (66.7%), Physiotherapy (72.7%) and Nutrition (85.7%) responded that this goal was not addressed during graduation, with a statistically significant difference, as the representativeness of p was <0.001.

Assertion 4 allowed us to verify that 182 students (81.9%) agreed in whole or in part with the assertion about the perception of inclusion of topics related to patient safety in the simulated practice experiences during their training, 110 (49.5%) with total agreement and 72 (32.4%).

Regarding assertion 10, 68 (84%) nursing students considered the content on patient safety addressed in the undergraduate course to be sufficient, as they fully or partially agreed with the proposition, followed by the agreement of the medical students (68.9%), Pharmacy (66.7%), Physiotherapy (54.6%), Biomedicine (53.8%). However, the majority of Nutrition students, 12 (57.1%), totally or partially disagreed with the statement.

DISCUSSION

In the healthcare area, realistic simulation has been widely used, as it favors the development of necessary skills and competences in a controlled and protected environment. During this experience, students are allowed to make mistakes, reflect and learn from the debriefing and, thus, develop without risking patient safety. The scenarios created for the simulation are based on real-life cases, in order to improve clinical and critical reasoning, technical and attitudinal skills. 4

Low and high fidelity simulators, standardized patients and virtual simulation are technological resources capable of contributing to the gain of

essential knowledge, skills and attitudes for patient safety. It is noteworthy, then, that an important component of realistic simulation is the physical structure. 6 The HEI, which is the setting for this study, has laboratories that allow advanced practices to be carried out, through the simulation of clinical cases for the different levels of care and specialties in the health area. Therefore, with this physical and technological structure, according to assertion 1, simulated practices are carried out in the perception of most undergraduate students.

The use of realistic simulation is being strongly associated with the prevention of adverse events, as patient safety is not an easy topic to be addressed in educational activities. However, the possibility of simulating the daily life experienced by health professionals allows for a more in-depth discussion on patient safety linked to clinical scenarios and the reality of health services. 7

Most of all health course students agreed that patient safety was addressed, as well as that the topic was included during the simulated practices, according to the results of assertions 2 and 4, respectively. However, it was possible to observe that the nutrition course students had greater disagreement in both statements, which allows us to infer that the approach to patient safety is not equally perceived by the students of this course.

For future health professionals to provide care safely, it is necessary that academic training includes the concepts of quality and patient safety, in an interdisciplinary way, so that they recognize the individual and collective responsibility of each team member and favor collaborative practice and better care results. 8

Interprofessional practice is an important attribute for communication in healthcare environments. Communication failures can cause embarrassing

situations, especially if associated with errors and damage that compromise health safety. Strategies to improve communication between the healthcare team can prepare students for safer, more comprehensive and complex care in work environments. 9



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In order to guide the good practices of professionals, as well as reduce risks and adverse events in health services, international patient safety goals were created. 10 Patient safety Goal 2, which deals with Effective Communication, was recognized by most students in all courses. However, 40% of the students in the Pharmacy course and 46.1% in Biomedicine did not recognize the

approach to this goal in their training.

Although the result regarding the approach of each of the international goals presents a statistically significant difference when considering the course variable, it is understandable that some of them are more discussed in certain undergraduate courses due to the specificity of the theme addressed in the goal and the undergraduate course in question. For example, Goal 3, referring to the Safety of High-Surveillance Medicines, was recognized by 93.3% of Pharmacy, 87.7% of Nursing and 70% of Medicine students, since such professions are intrinsically related to the drug chain, from prescription, passing through the dispensing, preparation and administration of drugs in the healthcare environment.

Patient safety related to the drug chain has been the focus of attention by the WHO, which in 2017 launched the Third Global Challenge for Patient Safety as the theme "Medication without harm", with the objective of reducing 50% of severe damage resulting from medication errors at all levels of health care. 1

With regard to Goal 4, which deals with patient safety in the surgical procedure, more than 81% of students from undergraduate courses in nursing and medicine recognized the approach to the topic during their training, while most students from other courses reported that this target was not addressed. This result reflects, in fact, what happens in health services, with greater involvement of doctors and nurses in the safety of patient care in the perioperative period. Surgical patient safety has also been the focus of WHO attention in the Second Global Patient Safety Challenge, launched in 2007 and entitled "Safe surgery saves lives". 1

However, some themes addressed in the international goals should be widely disseminated to all professionals who work in patient care, such as Goal 1, patient identification, which must

be carried out before any procedure or intervention by the entire health team and, according to 207 (93.2%) students, was approached during academic training.

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The approach to Goal 6, which portrays the reduction of the Risk of Injuries to the Patient resulting from Falls, was recognized by 100% of Physical Therapy students, 96.3% in Nursing and 52.4% in Nutrition. However, for most students of Biomedicine (69.2%), Pharmacy (73.3%) and Medicine (54.3%) courses, this theme was not discussed.

Falls are a multifactorial event, determined by medication and non-pharmacological risk factors such as age, cognitive and motor function, among others. It occurs in the home environment and at different levels of health care, especially in the hospital. Strategies for identifying patients at increased risk of falling should be discussed and implemented, in conjunction with the multidisciplinary team, for a holistic approach, with the objective of carrying out intervention measures to prevent falls and their consequences. 11

Regarding Assertive 10, although 152 students (68.4%) considered the content on patient safety addressed in the undergraduate course to be sufficient, it is possible to infer that there is an approach that falls short of the need, according to 66.7% of the Nutrition, 46.2% of Biomedicine and 45.5% of Physiotherapy students who disagreed or were in doubt about the answer to this proposition.

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Patient safety is a complex phenomenon that involves the entire health system and requires an interdisciplinary and interprofessional approach, with the collaboration of professionals involved in care, so that they share and aggregate the specific knowledge of their area of expertise, in the search for better outcomes at different levels of health care



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From this perspective, it is essential that future professionals learn about patient safety, through modern teaching methodologies that help them to develop psychomotor and attitudinal skills, such as decision-making and collaborative practice, for the development of strategies to prevent errors and harm to patients.

CONCLUSION

The study allowed us to assess the perception of undergraduate students in Biomedicine, Nursing, Pharmacy, Physiotherapy, Medicine and Nutrition courses regarding the approach to patient safety through realistic simulation during their professional training.

Although realistic simulation brings several benefits, such as: professional development, empathy, improved communication and analysis of conflict situations, decision-making and improvement of teamwork, which are considered relevant behaviors and skills for safe care in health services, its use as a teaching methodology does not occur in an equitable way in the undergraduate courses of the HEI, which is the scenario of this study.

Furthermore, it was possible to infer that the approach to patient safety and the use of realistic simulation in the academic environment was not considered sufficient in the training of future professionals, in the perception of part of the students. Thus, the lack of uniformity of this content in the different undergraduate courses was evidenced, as some students perceive the theme more than others, which points to the need to revise the curricula to effectively address patient safety, through simulated practices that contribute significantly to the learning and development of skills.

The main limitation is the low participation of students from some undergraduate courses, which implies the

difficulty of generalizing the results, considering the HEI as the scenario of this study. However, the development

of this research contributes to the dissemination of patient safety and realistic simulation with students from different

undergraduate courses in health, which may instigate them to seek more knowledge about these issues.

References

1. World Health Organization (2021). Global Patient Safety Action Plan 2021–2030: Towards eliminating avoidable harm in health care. [citado 2021 ago 20] Disponível em: <https://www.who.int/teams/integrated-health-services/patient-safety/policy/global-patient-safety-action-plan>
2. Wu, Albert W, Isolde M Busch. Patient safety: a new basic science for professional education. *GMS journal for medical education* vol. 36,2 Doc21. 15 Mar. 2019, DOI:10.3205/zma001229
3. Guia curricular de segurança do paciente da Organização Mundial da Saúde: edição multiprofissional [internet] / Coordenação de Vera Neves Marra, Maria de Lourdes Sette. - Rio de Janeiro: Autografia, 2016. 270 p. [citado 2020 ago 07].
4. Ferreira RP, Guedes HM, Oliveira DWD, et al. Simulação Realística como Estratégia de Ensino no Aprendizado de Estudantes da Área da Saúde. *Revista de Enfermagem do Centro-Oeste Mineiro*. 2018;8:e2508. [citado 2021 ago 09]; DOI: <http://dx.doi.org/10.19175/recom.v7i0.2508>
5. Scalabrini Neto A; Fonseca AS; Brandão CFS. Simulação clínica e habilidades na saúde / 2. ed. – Rio de Janeiro: Atheneu, 2020. 284p.
6. Pazin-Filho A, Carlotti AP de CP, Scarpelini S. Implantação e desenvolvimento do Laboratório de Simulação (LabSim) da Faculdade de Medicina de Ribeirão Preto da Universidade de São Paulo (FMRP-USP). *Medicina (Ribeirão Preto)* [Internet]. 9 de agosto de 2017 [citado 2021 ago 14];50(4):272-83. Disponível em: <https://www.revistas.usp.br/rmrp/article/view/140492>
7. Cogo ALP, Lopes EFS, Perdomini FRI, Flores GE, Santos MRR. Construção e desenvolvimento de cenários de simulação realística sobre a administração segura de medicamentos. *Rev Gaúcha Enferm*. 2019;40(esp):e20180175. DOI: <https://doi.org/10.1590/1983-1447.2019.20180175>.
8. Garzin ACA; Melleiro MM. Segurança do paciente na formação dos profissionais de saúde / Safety in the training of health professional. *Cienc. Cuid. Saúde* 18(4). [Internet]. 12º de agosto de 2019 18(4). [citado 2021 ago 18]. DOI: <https://doi.org/10.4025/cienccuidsaude.v18i4.45780>
9. Boeira ER, Souza ACS, Pereira MS, Vila VSC, Tipple AFV. Infection control and patient safety measures addressed in nursing pedagogical projects. *Rev Esc Enferm USP*. 2019;53:e03420. DOI: <http://dx.doi.org/10.1590/S1980-220X2017042303420>
10. Agência Nacional de Vigilância Sanitária (Brasil). Assistência Segura: Uma Reflexão Teórica Aplicada à Prática Agência Nacional de Vigilância Sanitária [internet] - Brasília: Anvisa, 2017. [citado 2020 ago 07].
11. Silva AK, Costa DC, Reis AM. Fatores de risco associados às quedas intra-hospitalares notificadas ao Núcleo de Segurança do Paciente de um hospital de ensino. *einstein (São Paulo)*. 2019;17(1):eAO4432. http://dx.doi.org/10.31744/einstein_journal/2019AO443