

# The National Student Performance Exam: Teacher appreciation on the evaluation of graduating pharmacy students

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## Abstract

The National Student Performance Examination (ENADE) is part of the National System of Higher Education Assessment (SINAES) as a mandatory curricular component in Brazilian undergraduate courses. The objective of this study was to analyse, in a critical-reflexive way, the ENADE questions, applied to the academics of Pharmacy. Four questionnaires were developed, each containing ten questions originally transcribed from the ENADE 2010 proof. Through the Qualtrics Survey Software system, 131 professors, assigned to 18 Rio Grande do Sul Pharmacy courses, performed the analysis of the 40 questions. In their opinion, the Pharmacy ENADE 2010 proof addresses the principles set out in the National Curriculum Pharmacy Guidelines (DCNF). However, it presents an asymmetric distribution of the aspects required for the formation of a general pharmacist. Specific questions further assessed professional ability in managing drugs and medicines, required critical-reflexive ability and interdisciplinary performance. The questions on General Formation helped to understand the social, cultural and economic reality of the environment into which the professional was inserted and, to a lesser extent, evaluated the critical-reflexive, humanistic, and ethical character.

**Keywords:** *Pharmacy Education, Health, Professor, Teaching, Evaluation*

## Introduction

Brazilian Curriculum Guidelines are recommendations to be followed by Higher Education Institutions (IES - Instituições de Ensino Superior) that seek to ensure the flexibility, diversity and quality of education offered to students, and to stimulate the overcoming of traditional concepts of curricula grades, which are often mere instruments of knowledge transmission. In this sense, a new professional profile was required, particularly in the area of health: more critical, humanistic, reflective and ethical, in order to provide educational training linked to the social environment into which the professional will be placed (Brazil, 2001).

The pharmacist is expected to build their knowledge more broadly following the National Curriculum Pharmacy Guidelines (DCNF - Diretrizes Curriculares Nacionais do curso de Farmácia). Based on Resolution 2/2002 of the National Education Council (CNE - Conselho Nacional da Educação) and the Chamber of Higher Education (CES - Câmara da Educação Superior), the DCNF defined principles, foundations, conditions and professional training procedures, with implementation at a national level in the organisation, development and evaluation of educational projects of Pharmacy courses in Brazil (Brazil, 2002).

A decade on from the adoption of the Guidelines, the assessment is the primary organisation and implementation tool of the educational reforms (Dias Sobrinho, 2010). In Brazil, the National System of Higher Education Assessment (SINAES - Sistema Nacional de Avaliação da Educação Superior) emerged with the goal of ensuring the national process of evaluation of institutions, undergraduate courses and academic performance of its students. Considered an instrument under construction, SINAES, formally established by Law No.10.861/2004, aims to improve the quality of higher education, as well as the direction of the expansion it offers, the permanent increase of institutional effectiveness, academic and social effectiveness, and especially, promoting the deepening of social commitments and responsibilities of the IES (Brazil, 2004).

The National Student Performance Exam (ENADE - Exame Nacional de Desempenho de Estudantes) is one of the pillars that complements the SINAES proposal. It aims to assess student performance both in relation to the syllabus laid down in the Guidelines, as well the skills and abilities that students are able to demonstrate on issues linked to Brazilian and world reality and other

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areas of knowledge, even outside the specific scope of their profession (Brazil, 2004).

In this context, the ENADE exam presents issues of an objective and discursive nature and is divided into two parts: General and Specific (Brazil, 2007). General Education questions are common to the different areas. These are intended for all courses which participate in ENADE, and are aimed at investigating skills and abilities that students have already developed along their path, in order to facilitate a national and global understanding of issues outside the specific scope of their profession. The questions of the Specific Education component include the particular nature of each course, both in the field of knowledge, as well as skills expected for the professional profile. It investigates the course content through exploration of the varying levels of skills and knowledge of each issue (Polidori *et al.*, 2006; Polidori, 2009).

ENADE, as a mandatory curriculum component, is held every three years (Brazil, 2004). As such, it should be considered one of the components of the national assessment system, and not taken in isolation (Dias Sobrinho, 2010). Allied to the course and institution evaluation processes, the exam tends to act as an important tool for measuring and promoting quality for Brazilian higher education policies (Brazil, 2013).

Since its creation in 2004, ENADE has evaluated Pharmacy undergraduates on five occasions. The pharmacist professional profile as defined by the DCNF comprises of a generalist, humanist, critical-reflective training, able to act at all levels of healthcare based on scientific and intellectual accuracy. The pharmacist shall perform activities relating to drugs and medicinal products, clinical and toxicological analyses and control, production and food analysis. Continually guided by ethical principles, they aim to understand the social, cultural and economic reality of their environment, directing activities to transform reality for the benefit of society. Among the specific pharmaceutical abilities and skills evaluated in the ENADE, the multidisciplinary, interdisciplinary and transdisciplinary action is highlighted with extreme productivity in health promotion based on the scientific belief of citizenship and ethics (Brazil, 2002).

Recalling the review structure, some questions arise: can the ENADE exam evaluate the professional to be trained according to that required by Curriculum Guidelines? Are the questions appropriate for an evaluation of the Pharmacy graduate? What do the factual questions assess? How do teachers, the main actors of the academic learning process, assess the "ENADE" instrument?

The objective of this study was to analyse in a critical-reflective manner the ENADE questions conducted by Pharmacy scholars in 2010 in order to understand if the test profile and evaluation intent are, in the opinion of professors linked to public and private higher education institutions of the state of Rio Grande do Sul (RS), consistent with that advocated by the DCNF, in order to contribute to the evaluation and qualified education of the generalist professional.

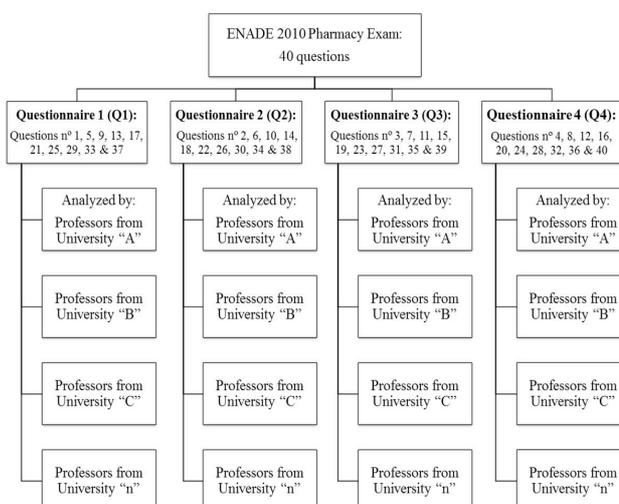
## Methods

A cross-sectional, exploratory and descriptive study was conducted of a qualitative and quantitative nature. This paper analyses the responses of professors allocated to different Pharmacy courses in the state of RS, participants of the study entitled "National Curriculum Guidelines of an undergraduate course in Pharmacy and the Higher Education Evaluation System: critical and reflective analysis of the 2010 ENADE exam", approved by the Research Ethics Committee (REC/PUCRS) through the Consolidated Opinion No. 149.133/2012.

Four different questionnaires (Q1, Q2, Q3 and Q4) were prepared by means of Qualtrics Survey Software, an organisation and data collection service for research via the internet. The first phase, common to all four questionnaires, aimed to portray the study population. Among the information requested such as age, gender, training course and highest qualification, the professors could also indicate if they had any additional training in teaching, describe it and, optionally, indicate the IES in which they performed teaching activities.

In the second phase, each questionnaire contained ten separate questions, originally transcribed by ENADE from the Pharmacy course conducted in 2010, to be analysed by teachers. ENADE questions were included, alternately, in ascending order, so that the four questionnaires had both multiple choice and discursive questions, such as those of General and Specific Education. Thus, the exam comprising of 40 questions (10 General and 30 Specific) was analysed in its entirety in that the questionnaire was randomly distributed to participants of the study, according to the illustration shown in Figure 1.

**Figure 1: Methodological design applied to the study showing the arrangement of the ENADE questions that constituted the Q1, Q2, Q3, and Q4 questionnaires**



Alternatives for analysis were established from a rigorous assessment of the DCNF. Propositions emerged from a qualitative analytical categorisation of this document and were transformed into single and/or multiple choice responses. The professors participating in the research analysed and scored each ENADE question in order to relate it to the characteristics of the pharmaceutical professional training required by the DCNF.

The methodology used to structure the questionnaire is presented in detail for a better understanding. Each ENADE exam question was analysed in three ways. The first, a multiple choice, required a review in relation to the generalist pharmacist professional profile, as established by the DCNF (Brazil, 2002: Art.3). In other words, it sought to know whether, in the opinion of the professor, the questions of ENADE 2010 evaluated: the "humanist" nature of training; the "critical-reflective" character; the "ethical principles" required; assisted the "understanding of social, cultural and economic reality of its environment"; or none of the previous answers (NPA). More than one valid alternative in response to the questions could be marked by the professors, however, when the NPA choice was checked it automatically cancelled out the others.

The second question concerned areas of expertise of the professional pharmacist (Brazil, 2002: Art.3). The opinion of the professors was used to verify if the ENADE question assessed the ability to exercise in relation to "drugs and medicines"; "clinical and toxicological analyses", "control, production and analysis of food", or NPA, whose alternative had only a single choice.

The third question was established based on Article 5, item III, of the DCNF (Brazil, 2002), also with a single choice. In this, the questions of ENADE were examined as to the "multi-professional", "interdisciplinary," or "transdisciplinary" action, or NPA, whose valid alternatives describe the abilities and skills of the pharmacist. It is noteworthy that in order to facilitate the response for this item, consideration of the terms used were presented in the initial message expressed in the opening page of the questionnaire (Qualtrics, 2013: p.1), as follows.

Considering the definition of multidisciplinary, there is an overlapping of disciplines with each one contributing its own knowledge to the study of a specific subject, without them being modified or enriched (Almeida Filho, 1997). Interdisciplinary establishes the interaction between two or more disciplines resulting in an intercommunication, mutual enhancement and, consequently, in a transformation of the research methods applied. The theoretical themes faced by students are organised in relation to more globalised aspects with concepts and methodologies shared by many different disciplines, which increases the learning process, (Santomé, 1998). Finally, transdisciplinary is the highest level of discipline integration in which there are no established borders. It culminates in a global system with

multiple levels and objectives, having a common purpose (Japiassu, 2006).

Besides these proposed questions, professors were encouraged to give a grade to each ENADE question evaluated, that is, a numerical value to express their opinion regarding the appropriateness of the exam question, with ten being the maximum mark. Finally, additional comments and considerations could be added spontaneously by professors for each analysis, in a free response field.

The questionnaires were sent digitally to professors from 18 Pharmacy courses from public and private IES in RS state. These institutions demonstrated their acceptance to participate in the study by returning an Authorisation Letter signed by the coordinator. The invitation was sent to 24 Pharmacy courses in the state, from 21 different IES. The inclusion criterion was recommended by the IES of the state of RS, with undergraduate degree courses in pharmacy authorised by the Ministry of Education (Brazil, 2012). Consequently, professors allocated to the participating Pharmacy courses were invited to contribute to the study, regardless of having pharmaceutical training.

The questionnaires were initially submitted in March 2013. On average, a new invitation was sent to the professors to remind them of the survey every 30 days. Responses were collected in September 2013.

Statistical data analysis was performed using the Statistical Package for Social Science software [SPSS] (Chicago, IL, USA) version 21.0. Categorical variables were compared with the *chi-square* ( $\chi^2$ ) test and the results presented as absolute and relative frequency. Continuous variables were expressed as mean  $\pm$  standard deviation ( $\pm$ SD) and analysed by ANOVA. Linear regression was applied to verify possible correlation between variables. All tests were applied using a confidence interval (CI) of 95%, considering  $p < 0.05$  as the minimum level of statistical significance.

## Results

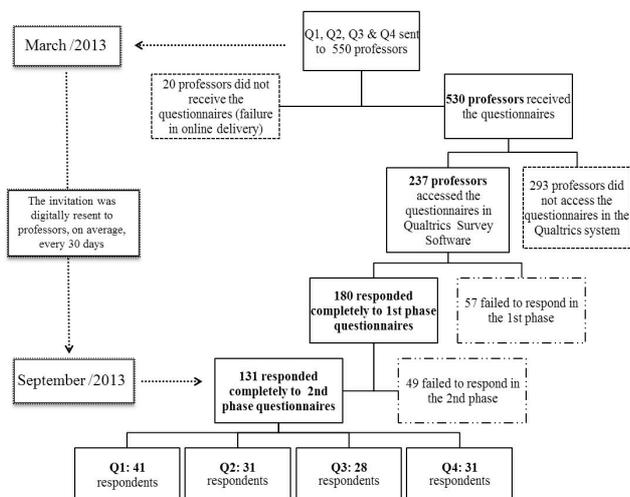
A total of 18 Pharmacy courses in RS (from 16 different IES) participated in the study, four public and 14 private, having 175 and 375 professors, respectively, allocated to the aforementioned graduation. The survey, sent by digital means, was received by 530 faculty professors.

The questionnaires were accessed by 237 professors via the Qualtrics system during the study period. A total of 75.9% (n=180) answered the first phase of questionnaires, and of these, 72.8% (n=131) advanced to the second phase. The final professor distribution per questionnaire was: Q1: 31.3% (41/131); Q2 and Q4: 23.7% (31/131); and Q3: 21.3% (28/131). Figure 2 outlines the distribution of participants in the study.

Table I features the participating professors in the research with respect to age, gender, undergraduate degree and additional training, as well as to which IES

they pertained. Statistical analysis found no difference between the groups of responders from different questionnaires with respect to sample characteristics. A prevalent involvement of pharmacy professors (67%), female (71%), with *stricto sensu* qualification (Master's/Ph.D. - 95%) and linked to private IES (66%) was observed in the four questionnaires. The age range of professors who responded in full to the research ranged from a minimum of 26 years to a maximum of 69 years.

**Figure 2: Distribution of professors participating in the research, represented by questionnaire: Q1, Q2, Q3 and Q4**



**Table I: Research sample characteristics regarding the questionnaires**

Variables	N-R n=106	R n=131	Questionnaire				P
			1 n=41	2 n=31	3 n=28	4 n=31	
Age: (years) mean±SD	n=51 42±10	n=125 42±10	n=39 41±10	n=31 42±10	n=25 43±10	n=30 42±9	0.72#
Female n (%)	n=51 34(67)	n=127 90(71)	n=39 32(82)	n=31 21(68)	n=26 14(54)	n=31 23(74)	0.097§
Pharmacist n (%)	n=50 35(70)	n=121 81(67)	n=38 27(71)	n=30 19(63)	n=23 14(61)	n=30 21(70)	0.81§
Qualification: M/D - n(%)	n=51 51(100)	n=128 122(95)	n=39 35(90)	n=31 31(100)	n=27 26(96)	n=31 30(97)	0.22§
AT: Has n(%)	n=49 14(29)	n=131 45(34)	n=41 14(34)	n=31 13(42)	n=28 9(32)	n=31 9(29)	0.74§
IES: Private n (%)	n=37 28(76)	n=128 85(66)	n=41 29(71)	n=29 18(62)	n=28 18(64)	n=30 20(67)	0.89§

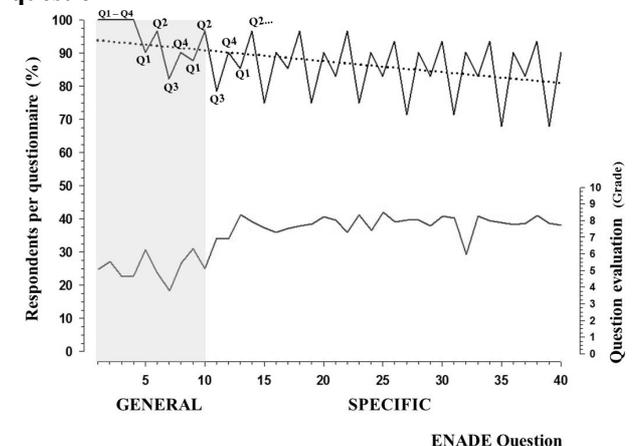
N-R [Non-respondents]: Professors who did not respond for completion of the questionnaire; R [Respondents]: Professors who completed the questionnaire analysis; n: number of professors; SD: Standard Deviation; F: Female; n: absolute frequency; %: relative frequency; M/P: Master's/PhD; AT: Additional Training; IES: Higher Education Institution; p: statistical significance  $p < 0.05$ ; # Anova; §Chi-square ( $\chi^2$ ).

Some professors failed to express an opinion as the survey progressed, that is, the number of questions answered continuously decreased over the course of the questionnaire. A linear regression model was applied to test the consistency of the data analysis of this study and to examine the possible influence of the loss of respondents.

No statistically significant correlation was shown in this instance between the scores given to the General Education questions and the number of respondent professors ( $r=0.15, p=0.69$ ), also the case for the Specific component and number of responders ( $r=0.21, p=0.26$ ). Data is plotted in the Figure 3 graph, whose trend line shows the fall in number of respondent professors as the questionnaires advance.

Considering the professor evaluation for each ENADE question shown in Figure 3 in degrees, the first ten questions relating to the General Education component, eight objective and two essay, received an average score of  $5.16 \pm 2.87$  in the opinion of respondent professors. In terms of the Specific section questions, 27 objective and three discursive, a mean score of  $7.78 \pm 2.22$  was given for the appropriateness of the evaluation method, according to participants.

**Figure 3: Analysis of the ENADE 2010 questions for the Pharmacy course regarding the number of respondent professors and grade assigned to each question**



After ensuring the consistency of results, maintained independently of the number of responders, examination of the ENADE questions proceeded with evaluation by faculty members in relation to the criteria determined by the DCNF. It is worth noting that regardless of the question being of a General or Specific nature, the analysis alternatives were identical, precisely so as to observe consistency in teacher interpretation. All questions were analysed as to the profile established for the generalist professional, the area of performance and the professional practice, whilst also the specific abilities and skills required of a pharmacist by the DCNF.

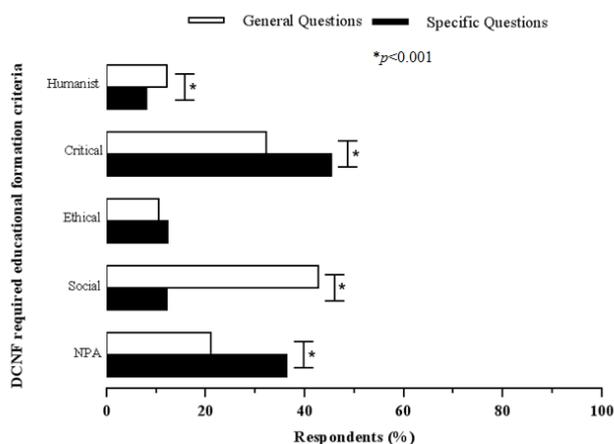
**Analysis of ENADE 2010 questions in relation to the professional profile of the generalist pharmacist**

Figure 4 expresses in percentage terms the mean response of professors to the General and Specific questions, examined in relation to the professional profile of the generalist pharmacist (Brazil, 2002: Art.3). It is noteworthy that more than one alternative could be indicated by the professor in this investigative criterion in order to distinguish the evaluative profile of each ENADE question.

In the opinion of professors, the General Education questions of ENADE 2010 helped the student to a greater awareness in understanding the social, cultural and economic reality of the environment into which they were placed and with the designated ability, according to an average of 42.8% of respondents. In the Specific component, on average, 45.5% of professors indicated the predominance of a critical-reflective capacity for resolving the questions.

It is observed that about 10% of teachers felt that both the General and Specific questions presented an ethical and humanistic focus.

**Figure 4: Analysis of the ENADE 2010 questions for the Pharmacy course according to the DCNF required criteria for generalist education**



Statistical analysis ( $\chi^2$ ) showed that the distribution of responses in the categories analysed of "humanist", "critical-reflective" and "understanding of social, cultural and economic reality of the environment" is not the same between the two sets of questions: General and Specific ( $p<0.001$ ). However, the category that addressed the "ethical" principles required was not statistically significant ( $p=0.245$ ) between groups of questions, demonstrated in Figure 4.

**Analysis of ENADE 2010 questions in relation to professional practice**

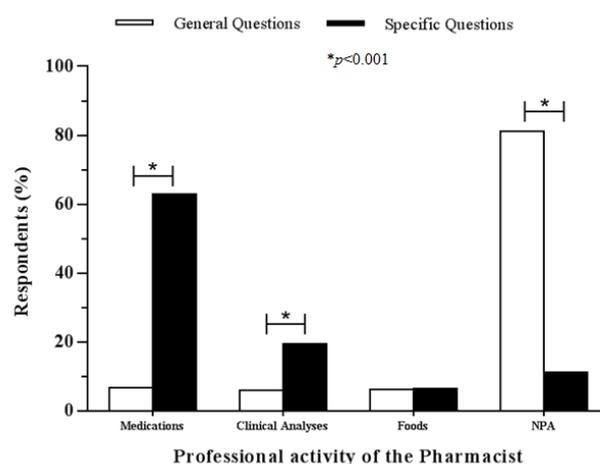
Large areas of pharmacist activity as expressed in the DCNF (Brazil, 2002: Art.3) and assessed by the ENADE

2010 questions are shown in Figure 5, according to the opinion of the respondent professors.

The  $\chi^2$  revealed an asymmetric distribution of responses in the proposed categories between the General and Specific ( $p<0.001$ ) questions, except in the area of practice of "control, production and analysis of food" ( $p=0.935$ ) that presented no statistically significant difference between the two groups of questions.

On average, the majority of teachers (81.1%) did not associate the performance areas that are characteristic of a pharmacist with the General Education questions. The teaching analysis indicated the capacity to exercise in "drugs and medicines" as the predominant form of action evaluated in the Specific component questions, a skill expressed by 63% of responding professors, followed by professional practice in clinical analyses (19.5%) and food analysis (6.5%).

**Figure 5: Analysis of ENADE 2010 questions for the Pharmacy course in relation to the professional profile of the generalist pharmacist, according to the DCNF**



**Analysis of ENADE 2010 questions for professional work**

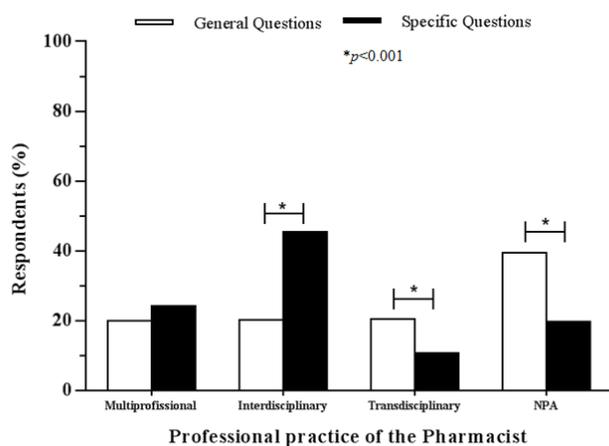
The question proposed in this case was the verification of each ENADE question as to the ability of multi-professional, interdisciplinary and transdisciplinary expertise, and competencies and skills specific to the pharmacist (Brazil, 2002: Art.5).

An imbalance was identified statistically ( $\chi^2$ ) in faculty responses to the analysis categories between the General and Specific ( $p<0.01$ ) questions. There was no difference between groups, except in the "multi-professional" activity ( $p=0.169$ ), shown in Figure 6.

It can be seen from the professor responses that interdisciplinary practice is predominant among the Specific questions, cited on average by 45.3% of respondents, followed by multi professional (24.2%) and transdisciplinary (10.8%) aptitude. However, for some

professors, these aspects have not been evaluated by the ENADE 2010 exam questions. In the General Education items, 39.5% of respondents did not identify an evaluation of the student for the ability to act in a multi-professional, interdisciplinary or transdisciplinary manner, expressed through the NRA alternative.

**Figure 6: Analysis of the ENADE 2010 questions for the Pharmacy course regarding the professional performance of the generalist pharmacist, according to the DCNF**



#### **Analysis of the additional comments and considerations the professors**

Besides these proposed questions, professors were encouraged to make, spontaneously, additional comments and considerations to each ENADE question evaluated, in a free response field.

After analysing the descriptive answers, an important discrepancy among teachers' opinions, mainly in relation to General Formation questions, was identified. That is why, at the same time some teachers present a deprecatory speech, after having attributed a minimum grade to the question, other teachers valued the proposing question, punctuating it better.

As an example, Question 1 of the ENADE 2010 exam presents an illustration of a panel from the series "Retirantes" by Cândido Portinari and an excerpt from the poem "Morte e Vida Severina", by João Cabral de Melo Neto (Brazil, 2010). The arguments presented by the professors who assigned a minimum score to the question included:

a. Teachers Interpretations: *'The question proposed is completely unlinked to the education of a pharmacist. It is a good question for tests of Brazilian literature at a high school level'; 'Groundless question'; 'Difficult to relate to the profession of a pharmacist'; 'Totally unreasonable and without the capacity to evaluate the respondent'; 'A useless question for an exam of this kind'; 'Unreasonable, a question without any*

*connotation with the professional education, totally out of context'; 'Question extremely subjective'; 'A question that is not close to the daily activities of the students, without adding any description of the current social reality. Mainly, it refers to the difficult aspects of life that cannot be changed. To study the social context is excellent but it has to be allied to more objective texts that should contain transversal aspects and be less poetic'* (Qualtrics, 2013).

Intermediate scores between four and seven related to the mean grades expressed by faculty members to questions related to General Education, raised comments like:

b. Teachers Interpretations: *'The question itself makes an analogy with the social context of the northeastern man. With more emphasis on general knowledge than on the specifics of the generalist pharmacist (...), it does not relate to pharmaceutical attention and care. The question could explore problems of health secondary to the consequences of dry weather and to public health'; 'It is possible that the student has had difficulties to relate the text to the DCNF and his profession in general'; 'Independently of specific skills, comprehension of cultural, social realities etc. is needed for the development of citizens'; 'The question does not contribute to or evaluate technical knowledge of pharmacists. It assesses the capacity of interpretation, analysis and knowledge of the pharmacist citizen'; 'The question covers a more humanistic vision of the pharmacist, the perception of reality of his country and general knowledge related to Brazilian history'* (Qualtrics, 2013).

On the other hand, the same general questions motivated some faculty members to give higher grades between eight and nine, or even maximum grades, as expressed in the following justifications:

c. Teachers Interpretations: *'General knowledge is fundamental for any course'; 'It is essential for the pharmacy student to comprehend the elements related to the sociocultural context of those that will be their patients. Education cannot only be technical'; 'Interesting question that can stimulate the need to have and to be more culturally aware, independently of the area of activity, since it crosses areas of knowledge and qualifies the citizen'; 'The student (of Pharmacy or any other course) should pay attention to current affairs. There is no competent professional without having a good knowledge of the socio-political environmental realities of his own country and of the world. The professional that just understand his own area of activity is the type of professional that the market lets goes at the first opportunity'; 'The question evaluates the insertion of a pharmacist as an individual in his own society. I believe that it is a way to assess the thinking capacity of an individual in relation to adverse situations'. 'The question calls the attention for the importance of educating committed professionals with social and ethical principles that allow them to perform their professional activities in a*

*contemporary society with a critical, reflective and humanistic character. Only in this way will they contribute to the changes that will see a better society'* (Qualtrics, 2013).

## Discussion

This research was conducted in order to verify the applicability of the DCNF definitions in the evaluative questions of the undergraduate student performances in Pharmacy. Not least because the proposals established in the DCNF brought about significant discussions and change involving, among other things, the humanistic and critical component of the profession (Furtado, 2008). To a large extent, this was due to a lack of clarity in the Guidelines in relation to the meaning of generalist training and education in Pharmacy, and principally, how such professionals were being evaluated and inserted into the employment market (Cecy, 2011; Boff, 2012).

For this reason, the critical-reflective analysis of the ENADE tool performed in this study was carried out through the interpretation of the DCNF assumptions, which were investigated in the questions of the exam with the intention of verifying the coherence of the evaluation method applied in relation to the education of the generalist professionals. For this reason, the perceptions of those faculty members continuously inserted in the research were sought, for it is they who experienced on a daily basis the adaptations to the DCNF, whilst acting as facilitators and mediators of the teaching-learning process. Such observation justifies the methods adopted and motivates the beginning of the discussions related to the results obtained in this study.

The findings of the present study cannot be generalised, since the results are specifically related to the opinions of the ENADE 2010 respondent professors. However, data consistency was supported independently of the use of four research questionnaires, allowing the assessment of 40 ENADE questions, and was not even affected by the reduction in the number of the responding professors (Figure 2). The homogeneity of the responding professors among the questionnaires, who were predominantly pharmacists with a Master's or Ph.D. degree (Table I), allowed a unified and in-depth analysis of the responses that attempted to clarify the uncertainties found initially in the study.

Although the number of questions answered decreased (Figure 3), probably due to the length of the questionnaires themselves, there was no negative impact on the interpretation given by the professors to their perception of the adequacy of the ENADE questions. Two aspects contextualise this statement. The first is represented by the mark attributed by professors to each question (from the General to the Specific) that shows an increasing trend, confirming the cohesion of the responses between the participants and the acuity employed in each analysis.

The second observation assumes that, independently of the ENADE question being General or Specific, the analysis alternatives were identical. Hence, even presenting an asymmetric distribution in relation to the professional activities of the pharmacist (Figure 5) in the opinion of the professors, the questions related to General Education failed to properly evaluate the aspects of this topic, since more than 80% of the professors did not associate specific activities of the pharmacists to issues related to general knowledge. This finding is in agreement with the objectives as the answers to the questions of the General component do not require any pharmaceutical expertise. On the contrary, the general questions are answered by all students from the different courses that participate in each edition of the ENADE.

It was verified from the answers given by professors that the characteristics defining the generalist profile are evaluated distinctively among ENADE questions, with a predominance of skills and expertise that cannot give the required meaning for evaluation. This is emphasised in the evaluation of the pharmacist professional activities (Figure 5) in which a predominance of questions related to drugs and medicines was observed. This was pointed out by more than 60% of professors, which is far below the 6.5% reported in relation to questions concerning the analysis of food, an area that the professional must be equally capable of performing.

In the same way, an imbalance was seen between the required educational characteristics (Figure 4) and the professional performance capacity (Figure 6), in both General and Specific questions. According to the respondent professors, there was a predominance of questions that allowed an understanding of the social, cultural and economic realities in the General Education. In the Specific section, the predominance was for critical-reflective questions with interdisciplinary characteristics.

Based on the principles of the DCNF, it was expected that the General questions would have more humanistic and ethical characteristics than were pointed out by the professors. The Guidelines that should be followed by the IES designed new paths for Brazilian education, in which the professional education should complement the current health system (Ceccim & Feuerwerker, 2004). In this sense, it is the humanistic, ethical and social characteristics of education that gives context to the compassionate side of the professional with the patient, an expected emotional capacity of healthcare workers.

However, it does not mean that the graduate professional is not humanistic and/or ethical. Such observation indicates that the ENADE, in the opinion of the respondent professors, is not evaluating these specific characteristics. It is to say that the DCNF points out important aspects of the professional education that ENADE is evaluating without regard to the proposed balance.

It is believed that the evaluative intention of this exam is not sufficiently clear in light of the generalist education profile required by the Guidelines. This is supported by

the fact that 20% of professors in the General Education section and more than 35% in the Specific section indicated that none of the characteristics of a generalist in training were being evaluated. The questions were not related to the humanistic character, critical-reflective capacity or the ethical principles required, nor did they help shed light on the social, cultural and economic realities of the professionals.

Would the answers in this case be the result of a lack of perception of the professor in relation to the required principles of educational training and evaluation? Or would it be a way to protest against the non-compliance with the implementation of educational reforms and/or the evaluation methods used?

It is common knowledge that all change finds resistance, stimulates discontent and generates debate. This is especially so with more radical changes, such as creating generalist education or establishing new evaluative methods on a large scale. In addition to the objectives of this exam, the ENADE provokes much debate in the academic world, especially among those in favour of and against its structure, as well as those opposed to the way in which it is currently applied.

This was evident from the opinions of the respondent professors through analysis of the questions concerning the principles of the DCNF and the grades relating to the adequacy of the General and Specific questions of the exam evaluated. The average of the grades for the questions related to General Education was visibly lower than that of the Specific section of the exam, demonstrating the insecurity of the professors in relation to the knowledge assessed of the professionals still in training.

Additional remarks noted in the comments section after each question reinforced these opinions even more, at times in an extreme manner, especially related to the General questions. Some comments were grouped and reproduced in accordance with the grades of the General Education section, and can be used to demonstrate this point (Teachers Interpretations).

In this context, it is noticed that the main discussion refers to the applicability of the General Education questions in the exam, which is questioned by a group of the participant professors in relation to the assessment of the pharmacist in question. It is believed that the intention to evaluate the general knowledge of the student is clear and legitimate as, independently of the higher education achieved, it is inadmissible to have professionals that are alienated from the environmental, political and social realities of their country and the world. However, it is understood that some questioning takes place due to a lack of relationship between the context presented and the professional activity itself, mainly regarding the health care professionals such as the pharmacist, who is a key player in the quality of health service provided.

The fact that the ENADE exam contains questions used to assess the general knowledge of student is in full accordance with the educational principles of the

generalist professional. The DCNF recommends the contents considered essential for a pharmacy course that contemplates the areas of the exact sciences, biology and health, as well as theoretical and practical aspects of pharmaceutical, human and social science (Brazil, 2002). According to discussions motivated by professor opinions, the contents proposed for the student evaluation should be in association with the dimensions of the relationship between the individual and society, contributing to a comprehension of social, cultural, behavioural, psychological, ecological, ethical, and legal determinant aspects, among others, but having the pharmaceutical activity as its main support. It means they should be related to the process of health and disease of the citizen, family and community integrated into epidemiological and social reality.

Therefore, it is believed that the ENADE exam covers the principles defined by the DCNF in relation to the generalist pharmacist education, but it presents some limitations. These findings are in accordance with the discussions of Rothen & Nasciutti (2008) and Verhine & Dantas (2005), whose research demonstrated that the exam presents constraints that might interfere in the performance of the undergraduate students by evaluating only the competencies and cognitive skills needed to carry out an exam, leaving out other assessments such as the abilities necessary for procedures taking place in laboratories, indispensable activities of a pharmacist.

As a suggestion, the results of ENADE should be analysed taking into account the limitations that are a part of this evaluation tool. It is believed that this exam has standards that are not well related to the reality of the majority of IES, as shown by the results of research conducted by Rodrigues & Peixoto (2009). In interviews with undergraduate course coordinators of a Federal University, the authors reported that ENADE does not present in practice effective contributions to the enhancement and improvement of the undergraduate courses evaluated (Rodrigues & Peixoto, 2009).

At this point it is emphasised one of the fundamental objectives of the ENADE: to give to the course and the IES through the findings of the evaluation performed, more than just a stimulus but a process of reflection and debate about the results achieved, helping to establish improvements that might be needed. Such a diagnosis and principally, the enhancement of teaching quality, is what we aim to identify based on discussions and analyses such as this.

The search for excellence and quality in higher education is not only a concern restricted to the Brazilian educational system, where studies have emerged in the state of RS (Santana *et al.*, 2010) and like this present research. Recent international papers report the same concern in relation to the guarantee of educational quality (Varela-Petito, 2011; Zou *et al.*, 2012; Lee *et al.*, 2013; Lu & Lemonde, 2013). With distinct evaluation systems, methodologies and deadlines, the IES seeks to manage the education of the undergraduate student and future professional, with an emphasis on the results of learning and continuous improvement.

In the Brazilian educational system, the ENADE became a tool that affected the credibility of SINAES, especially for being considered a composing mechanism for the principle indicators of course and institution quality. The exam has been questioned as to its validity, since it was more related to the performance of the students and some aspects that were not initially a part of the structure of SINAES, consolidating itself as the principle driving force behind actions of the institutions and regulating organs through its influence on the composition of educational course and institution quality indicators (Francisco *et al.*, 2012).

By knowing that ENADE is one of the evaluation and information tools of SINAES, one understands that it is part, therefore, of a system that seeks to evaluate courses and institutions and that to do so, they also use but not only, the information generated by the students. Therefore, the exam measures not the quality of the course itself but the performance of the students in each course in relation to National Curriculum Guidelines (Diretrizes Curriculares Nacionais) (Ristoff & Giolo, 2006).

In the opinion of Dias & Sobrinho (2010), there is no doubt that large-scale exams are useful to subsidise the actions of the education state players. However, it is doubtful that they could give significant pedagogical effects if they do not contemplate the adherence of professors and students.

In this way, without counting on the obligation of student participation as a requirement of the curriculum, the fundamental difference lies with the commitment of the professor and students to this new paradigm, be it the form of how the course contents are given or how the evaluative process is faced. Taking into account that we are living in a transition phase, an evaluation as an instrument that will allow the realisation of educational reforms should be related to the desirable transformation of not only higher education, but also of present and future society.

Expectations related to health professional education, among them pharmacists, include the development of attitudes and processes that define the profile of a generalist professional beyond the content of the area itself. Together with these concepts, the DCNF chose the development of specific and general competencies as the main objective in academic education, without losing the link with the knowledge and specific practical activities of the professional. Consequently, the SINAES evaluation of student performance, especially the ENADE exam, reflects this tendency by prioritising the development of certain abilities among the aspects to be evaluated, focusing on both the process of which they are a part and the learning context that shapes them.

Although it was believed that the current higher education evaluation system can in fact contribute to a better quality in the education and development of a professional, the ENADE exam shows limitations in the assessment of the students. These limitations were highlighted by the opinions of the professors, which showed an imbalance in the evaluative nature of the

ENADE 2010 regarding the important characteristics expected by the DCNF in the education of a generalist pharmacist.

The critical-reflective analysis of the questions of the ENADE 2010 Pharmacy Exam based on the opinions of professors from public and private institutions in RS showed an asymmetric distribution of the educational aspects required by the DCNF in the ENADE exam analysed. The questions of the Specific section received a mean grade of  $7.78 \pm 2.22$  for the perception of professors regarding the appropriateness of the exam. These questions evaluated more specifically the capability of the student to deal with drugs and medicines, as well as having the required critical-reflective ability and interdisciplinary attitude. In the opinion of the professors, the questions of the General Education section received a mean grade of  $5.16 \pm 2.87$ . These questions helped to form a better comprehension related to the social, cultural and economic realities in which the professionals are inserted. They also concerned critical-reflective, humanistic and ethical aspects required by the DCNF, however, with less acuity.

## Conclusion

This research might contribute both to the IES and general communities in having a better understanding of the exam and, thus, allow its evaluation in the context of national educational policies that are constantly trying to improve teaching quality. In the quest for continuous improvement, incentives for researches like this motivate the construction of an evaluative process that is able to determine the education quality of the professionals that are being inserted into society. It is important to know if the general education offered will effectively meet social needs at all levels of health care attention.

## References

- Almeida Filho, N. (1997). Transdisciplinarity and Collective Health. *Science & Collective Health*. II (1-2).
- Brazil. (2001). Ministry of Education. National Council of Education. Higher Education Chamber. Opinion CNE/CES 1.300/2001. Order of the Minister on 4<sup>th</sup> December, 2001. *Official Journal of the Union, Brasília, DF*. 07 Dec. 2001, **Section 1**, p.25.
- Brazil. (2002). Ministry of Education. National Council of Education. Higher Education Chamber. Resolution CNE/CES 2/2002. *Official Journal of the Union, Brasília, DF*. 4<sup>th</sup> March. 2002, **Section 1**, p.9.
- Brazil. (2004). Civil House. Law No. 10,861, of April 14, 2004. *Official Journal of the Union, Brasília, DF*. 15<sup>th</sup> April, 2004, **Section 1**, p.3-4.
- Brazil. (2007). Ministry of Education. Ordinance Normative nº 40, of December 12, 2007. *Official Journal of the Union, Brasília, DF*. 13<sup>th</sup> December, 2007, **Section 1**, p.39-43.

- Brazil. (2010). Ministry of Education. INEP. SINAES. ENADE 2010 (online). Available at: <http://portal.inep.gov.br/provas-e-gabaritos>. *Proof of Pharmacy*, 5<sup>th</sup> November, 2010, p.24. Accessed 24<sup>th</sup> August, 2013.
- Brazil. (2012). Ministry of Education. IES. e-MEC (online). Available at: <http://emec.mec.gov.br/>. *Higher Education Institutions and Registered Courses*. Accessed 24<sup>th</sup> August, 2013.
- Brazil. (2013). Ministry of Education. INEP. SINAES. ENADE. Manual of the ENADE 2013. Brasília, DF (online). Available at: <http://portal.inep.gov.br/manual-do-enade>. 31<sup>st</sup> May, 2013, p.117. Accessed 24<sup>th</sup> August, 2013.
- Boff, P.R. (2012). Pharmaceutical guidelines and practice. *Pharmacia Brasileira*, **84**, 50-55.
- Ceccim, R.B. & Feuerwerker, L.C.M. (2004). Change in the graduation of the health professions under the axis of integrality. *Cadernos Saúde Pública, Rio de Janeiro*, **20**(5), 1400-1410.
- Cecy, C. (2011). Curriculum Guidelines - Ten Years. *Abenfarbio's Newsletter: Pharmacia Brasileira Magazine*, **80**, 53-60.
- Dias Sobrinho, J. (2010). Evaluation and transformations of Brazilian higher education (1995-2009): from Provão to SINAES. *Evaluation, Campinas*, **15**(1), 195-224.
- Francisco, T.H.A. et al. (2012). Theoretical constructions on the SINAES: Inferences on the main challenges of the National System of Evaluation of the Brazilian Higher Education. In: XII International Colloquium on University Management in the Americas. Institute for Research and Studies in University Administration (INPEAU). Federal University of Santa Catarina (UFSC), Florianópolis. Available At: <http://repositorio.ufsc.br/xmlui/handle/123456789/97622>.
- Furtado, V.S. (2008). 'Analysis of the implementation process of the National Curricular Guidelines of the Graduation Course in Pharmacy in the State of Rio de Janeiro: an exploratory study'. Dissertation presented: Post-Graduate Program in Collective Health of the Institute of Social Medicine of the State University of Rio de Janeiro, 2008.
- Japiassu, H. (2006). *The Transdisciplinary Dream and the Reasons of Philosophy*. RJ: Imago.
- Lee, L.S., Wei, Y.-S. & Wang, L.-Y. (2013). Higher Education Institutional and Program Evaluations in Taiwan and the Emerging Roles of Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT), . Paper presented: International Network for Quality Assurance Agencies in Higher Education (INQAAHE) Conference (Taipei, Taiwan: 8-11<sup>th</sup> April, 2013). Available at: <http://eric.ed.gov/?q=evaluation+system+of+higher+education&id=ED541269>
- Lu, F. & Lemonde, M. (2013). A comparison of online versus face-to-face teaching delivery in statistics instruction for undergraduate health science students. *Advances in Health Sciences Education*, **18**(5), 963-973.
- Polidori, M.M., Marinho-Araujo, C.M. & Barreyro, G.B. (2006). SINAES: Perspectives and challenges in the evaluation of Brazilian higher education. *Evaluation Public Policies of Education, Rio de Janeiro*, **14**(53), 425-436.
- Polidori, M.M. (2009). Evaluation Policies of Higher Education in Brazil: Provão, SINAES, IDD, CPC, IGC and ... other indexes. *Evaluation, Campinas; Sorocaba, SP*, **14**(2), 267-290.
- Qualtrics. (2013). Questionnaires prepared for the PPGMCS/PUCRS Master's research. Porto Alegre, Available at: [https://pucrs.qualtrics.com/SE/?SID=SV\\_6SiSs3p4ATrHrhj&Preview=Survey&BrandID=pucrs; https://pucrs.qualtrics.com/SE/?SID=SV\\_7Qbkd3TNiDc8nxr&Preview=Survey&BrandID=pucrs; https://pucrs.qualtrics.com/SE/?SID=SV\\_3r6dZXUNdg9O9tH&Preview=Survey&BrandID=pucrs; https://pucrs.qualtrics.com/SE/?SID=SV\\_6mQ0xL62ZaUBHFz&Preview=Survey&BrandID=pucrs](https://pucrs.qualtrics.com/SE/?SID=SV_6SiSs3p4ATrHrhj&Preview=Survey&BrandID=pucrs; https://pucrs.qualtrics.com/SE/?SID=SV_7Qbkd3TNiDc8nxr&Preview=Survey&BrandID=pucrs; https://pucrs.qualtrics.com/SE/?SID=SV_3r6dZXUNdg9O9tH&Preview=Survey&BrandID=pucrs; https://pucrs.qualtrics.com/SE/?SID=SV_6mQ0xL62ZaUBHFz&Preview=Survey&BrandID=pucrs).
- Ristoff, D & Giolo, J. (2006). The Sinaes as System. *Brazilian Journal of Graduate Studies*, **3**(6), 193-213.
- Rodrigues, V.A & Peixoto, M.C.L. (2009). Unraveling the black box of ENADE: considerations about the evaluation process. *Revista Trabalho & Educação, Minas Gerais: School of Education, Federal University of Minas Gerais; Pampulha: FAE/UFMG*, **18**(2).
- Rothen, J.C & Nasciutti, F. (2008). Higher education in evidence: the profile of higher education presented by the results of ENADE 2005 and 2006. In: 31<sup>st</sup> ANPED Meeting, GT-11, Caxambu (online). Available at: [http://www.anped.org.br/reunioes/31ra/trabalhos\\_gt.htm](http://www.anped.org.br/reunioes/31ra/trabalhos_gt.htm). Accessed 17<sup>th</sup> November, 2013.
- Santana, S., Moreira, C., Roberto, T. & Azambuja, F. (2010). Fighting for excellence: the case of the Federal University of Pelotas. *High Education*, **60**, 321-341. Available at: <https://link.springer.com/content/pdf/10.1007%2Fs10734-009-9302-1.pdf>.
- Santomé, J.T. (1998). *Globalization and interdisciplinarity the integrated curriculum*. Porto Alegre: Artmed.
- Varela-Petito, G. (2011). Evaluating Public Higher Education in Mexico. *Higher Education Management and Policy*, **23**(2), Art.10. Available at: <http://eric.ed.gov/?q=evaluation+system+of+higher+education&id=EJ946471>.
- Verhine, R.E. & Dantas, L.M.V. (2005). Evaluation of Higher Education in Brazil: from Provão to ENADE. Paper prepared for the World Bank. Available in: <http://www.isp.ufba.br/avalia%C3%A7%C3%A3o%20da%20Ed%20Superior%20do%20Provao%20ao%20ENADE.pdf>.
- Zou, Y. et al. (2012). Quality of Higher Education: Organizational or Educational? A Content Analysis of Chinese University Self-Evaluation Reports. *Quality in Higher Education*, **18**(2), 169-184. Available at: <http://eric.ed.gov/?q=evaluation+system+of+higher+education&id=EJ978514>.