Developing a nursing graduate follow-up methodology for a higher education institution

Desenvolvendo uma metodologia para acompanhamento do egresso de enfermagem de uma Instituição de Ensino Superior

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ABSTRACT

The purpose of this study was to describe the development and implementation of an online graduate follow-up method to keep an updated database of the institution's former students. It was a descriptive study of a population of nursing graduates from a higher education institution. This electronic instrument was available at the institution's website, where the graduates provide their data in a survey. The pilot method with graduates from 2011 was used for method validation. In total, 53.65% answered the questionnaire in a first approach through email in a six-month period. The preliminary results confirm that the platform can be applied to the proposed objective. The graduate follow-up method allows access to assessment tools for institutions to evaluate the impact of graduation on healthcare services.

Descriptors: Nursing Staff; Nurses, Male; Methodology; Information Systems.

RESUMO

Este estudo objetivou descrever a elaboração e implantação de metodologia on-line para acompanhamento dos egressos de um curso de graduação cuja finalidade é manter um banco de dados atualizado dos ex-alunos da instituição. É um estudo descritivo da população egressa de enfermagem de uma Instituição de Ensino Superior (IES). O instrumento eletrônico foi construído e está disponibilizado para acesso no site da IES onde os egressos informam seus dados por meio da participação em uma pesquisa. Para validação da metodologia, utilizou-se como piloto buscar os egressos do ano de 2011. 53,65% responderam ao questionário, a uma primeira abordagem por e-mail em um período de seis meses. Os resultados preliminares confirmam que a plataforma pode ser aplicada para a finalidade proposta. A metodologia de acompanhamento de egressos permite a disponibilização de ferramentas de avaliação aos centros formadores sobre o impacto da formação dos profissionais para os serviços de saúde.

Descritores: Recursos Humanos de Enfermagem; Enfermeiros; Metodologia; Sistemas de Informação.

INTRODUCTION

The political and pedagogical changes resulting from the Brazilian Sanitary Reform, along with the Brazilian Unified Health System (SUS), have created new healthcare scenarios that require specific characteristics of health professionals working in these scenarios and for those who want to remain competitive[1]. In the last decade, changes have been observed in higher education, due to the new challenges brought about by the internet and other information and communication technologies[2].

In Brazil, graduate health-related programs are officially based on training professionals for the National Health System. The implementation of the National Curriculum Guidelines (DCNs) that led to school curriculum restructuring was both a sign of progress and a challenge to higher education institutions and hence have guided training for qualified professionals to fulfill increasingly complex health service needs[3].

Although professionals are responsible for developing their identity, image, representation, appreciation, knowledge and visibility of their profession[4], higher education institutions with nursing training programs have attempted to fulfill the new requirements in graduate programs and to meet the demands in the labor market[5].

Nursing programs have been characterized by a constant discussion of pedagogical proposals and implementation of curricular changes. These programs should train professionals with the ability to change lessons into behaviors, reflect the competencies and skills of this occupation, consider the epidemiological situation of the country and region [6], and intervene in contexts of uncertainty and complexity.

Keeping in touch with graduates of higher education programs, especially in nursing, knowing their difficulties or possibilities regarding employment, areas of expertise and perspectives involving the labor market is relevant to proper professional training and also to meet the demands of the health system. In addition, such information allows for the understanding and questioning of issues related to higher education nursing programs, allowing for the implementation of strategic curricular and teaching changes to eliminate gaps between nursing programs and professional expectation and societal needs.

Nursing programs should use follow-up and assessment methodologies and criteria for the educational process and for the program itself, in compliance with the assessment system defined by the associated higher education institution. Graduate follow-up is an essential resource for the development of indicators and policies that will help improve institutional actions. The institutions should follow their graduates in order to improve their perspectives of the labor market [7], and to increase their graduates' employment rate.

However, the analysis of graduate follow-up and assessment process involves some challenges due to the natural demographic flow of graduates, who go far from the institutions to various places in search of job opportunities. Because of this, virtual social media is an option for research, following the technological dynamics of relationship and communication, an option that was used in this study.

Confirming this fact, a study conducted with nursing students showed that most students used the internet and showed increasing participation in various social media platforms, which attests to the fact that cyberspace is a crucial factor in increasing the social and cultural capital currently available[8]. The virtual environment can be built as a relational space of energetic, material and informational exchanges [9].

The nursing institution is responsible for and committed to training professionals to fulfill the needs of the labor market and the health system. For this reason, nursing institutions should develop graduate follow-up studies to know the reality of these professionals and their employment context.

Graduate follow-up studies [10-11] have been conducted using the institution's self-assessment tools,

identifying nursing graduates' perceptions of their training process in the context of labor market conditions, and relating the relevance of graduate programs to the National Curriculum Guidelines (DCNs) for nursing programs.

The creation of a graduate follow-up method should allow for the evaluation of institutional performance through follow-up of the professional situation of former students; and build and keep a database of graduates, allowing permanent communication and strong institutional connection. It should also provide information about graduate insertion in the labor market; detect the areas of expertise and the remuneration levels of hired graduates; identify the aspects that limit the graduates' access to the labor market; identify the economic sectors that employ more nursing professionals and identify the degree of compatibility between nursing training programs and societal needs.

Researchers from a human resources observatory linked with a public university in the state of São Paulo developed an online method to follow up on graduates in the labor market, their functions, experiences and challenges, thus offering institutions tools to assess the impact of training programs, and develop training strategies, contributing to the provision of quality nursing care[1].

The purpose of this article is to describe the development and implementation of an online graduate follow-up method to keep an updated database with information on former students, such as demographic data, professional training and insertion in the labor market.

METHOD

This was a descriptive study whose purpose was to observe, describe and document the aspects of a specific situation[12]. This study intended to describe the creation and implementation of an electronic instrument to follow

up on graduates, through an online platform specifically built for nursing graduates from a higher education institution.

The system was implemented in a Brazilian public higher education nursing institution, whose program certifies general nurses to provide care to individuals, families and communities, promoting health, disease prevention and recovery, and following the DCNs for higher education nursing programs. In this study, the target audience are graduates from the institution mentioned above who concluded the Bachelor's degree in Nursing. To test the implemented method, graduates certified in 2011 were considered for this study, totaling 69 nurses.

The development of an online platform for graduates required the refining and testing of system requirements, based on Pressman's conception, considering that the development process involved a number of stages to reach the desired level of quality and control during the entire process[13].

Three stages were considered in this system development process: conceptualization, detailing and development itself. First, conceptualization involved the definition of elements to support data modeling and system structuring. Second, in system detailing, its interfaces and functionalities were described, based on the information collected previously. Finally, a functional prototype was developed, a preliminary version of the application, which was evaluated and implemented[14].

The prototyping paradigm involves interactive evolutionary process models, that is, it allows for the improvement of initial requirements to produce a more complete software version. It considers the needs and evaluations of all parties affected, through an interaction with the developer and technologies (methods and tools) as the project evolves[13].

At the same time, the researchers developed a questionnaire to be inserted in the online platform to

collect sociodemographic, training and employment information. This instrument was developed between August 2012 and February 2013.

To fulfill the purpose of the instrument inserted in the electronic platform, participants had to register online, and this registration created a database and a virtual communication channel between the institution and the graduates.

As the institution's website has a link for graduate access, the electronic instrument was inserted in it, to collect updated information from graduates. The decision to use this platform was based on the possibility of using the existing resources, aligned with the language currently used, for better database management.

To test system operability, the electronic questionnaire was available in the platform built for nursing graduates. Emails were sent to graduates using the registration data from the graduation system and from social media searches, especially on Facebook. The purpose was to send a message to graduates inviting them to access the institution's website, register and fill out the electronic questionnaire. Then, data generated by the platform for eight months was organized using descriptive statistical tools.

This study observed national and international standards of human research ethics, and it was approved by the Research Ethics Committee of the higher education institution, where the study was conducted, under CAAE Protocol 02556512.3.0000.5393.

RESULTS

Developing an electronic graduate follow-up instrument

The higher education nursing institution where the electronic instrument was developed has a website with unpaid access that has information about its graduate and postgraduate programs, hours, study groups, and events, including a portal for graduates. Concerned about expanding the institution's channel of communication with former students, an electronic instrument was developed and implemented in this portal to follow up on these professionals and collect updated information.

In the first stage of this activity, an instrument to collect information about the graduates was developed, with multiple-choice questions and three blocks:

- **Block 1.** Data about the nursing graduate identity: age, gender, nationality, address, city, state, email address, year of nursing program conclusion.

- **Block 2.** Data about the graduate's nursing program, containing two items: graduate and postgraduate programs. The graduate program item collects data about program duration, extracurricular training programs during the period, technical courses, and other graduate programs. The postgraduate program item is divided in two parts. The first is about the postgraduate programs (specialization, residency, master's degree, and doctoral degree), year of conclusion, area, and institution. The second part has questions about the graduate's challenges related to professional improvement.

- **Block 3.** This block has questions about the labor market, and it is divided in six parts. The first has questions about the current employment situation (employed, retired, unemployed, in license or in another profession). The second part has questions about the first job, length of service, activities performed as a nurse. The third has questions about payment, main revenue, types and number of employment bonds. The fourth has questions about participation in private health plans. The fifth is about unemployment conditions in recent years and the sixth is about challenges in finding a job, turnover, length of service in each job.

After this instrument development stage, it was validated using the apparent and content validation technique. Content experts are frequently requested to analyze the ability of an item to represent the hypothetical universe of content in correct proportions [12]. In this case, the instrument was validated by six judges who were nursing professors from public universities and

who work in this research field. The judges are experts in assessment tool development and studies on human resources in nursing. After the validation process, the instrument was inserted into the institution's website to follow up on former students of this institution and is currently in operation.

Electronic access to the graduate follow-up instrument

The strategy adopted in this study includes the initial contact with the study subjects through an email invitation in the user access to the institution's website homepage, link "Alunos Egressos" (former students) (Figure 1), or via telephone contact (when available).

After filling out a brief form of personal identification and agreeing to participate, screens were displayed with instructions for access and how to fill out the data collection instrument (Figure 2).

Of particular note, the instrument allows graduates to conclude or update their identification or professional data during any future access when entering their personal access password. The electronic presentation of the instrument on the institution's website was developed by the institution's software development professionals (Figure 3).

Figure 1: Screen with the access for graduates' registration at the institution's website. Ribeirão Preto, São Paulo, Brazil, 2013.
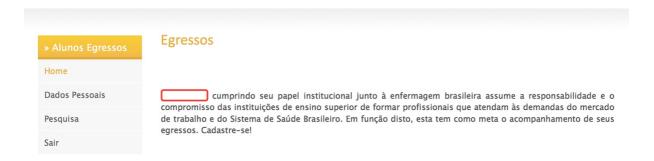

Figure 2: Screen showing the invitation to former students for registration. Ribeirão Preto, São Paulo, Brazil, 2013.

Figure 3: Screen showing questions of Part 1, Labor Market, of the research instrument included in the institution's website. Ribeirão Preto, São Paulo, Brazil, 2013.

The inclusion of this application, named "Alunos Egressos" (former students), required additional configuration in Framework Modular (Django), used in institutional website management. Of 69 former students, 37 (53.65%) answered the questionnaire in this first approach in a period of eight months.

The preliminary and pertinent results presented below are based on data from the instrument inserted in the platform:

The former students who answered the questionnaire are between 24 and 33 years old, eight (21.62%) attended a nursing technician or assistant program, and of these, five (13.51%) practiced the profession. Regarding postgraduate program data, 14 (37.83%) said they concluded or were attending a postgraduate program, three (8.1%) mentioned residency, nine (24.32%) answered that they were pursuing specialization and two were pursuing (5.4%) master's degrees. Regarding professional improvement, the main challenges mentioned by former students were: lack of time and the high cost of scientific events, 13 (35.13%) and 11 (29.72%), respectively.

Concerning labor market insertion, 22 (60%) are practicing the profession, 10 (20%) are unemployed and the others refer to professionals who changed profession, are not working or did not answer to the item. The first job in this area was reported as nurse at public facilities by 16 (43.24%), self-employed by 12 (32.43%), job at private facilities by five (13.51%) and four (10.82%) did not answer the question. Among those who are practicing the profession, 15 (40.54%) work more than six hours a week, with an average salary of between one and four times the minimum wage. Among former students, 19 (51.35%) said they had problems finding a job in the last three years, mainly due to the absence of professional experience.

DISCUSSION

Today, higher education institutions are acquiring or developing sophisticated administrative computer systems to manage functions such as admissions and registration processes, management of concessions and classroom schedules. Although the institution manages large amounts of data, some automated systems should be developed to help educational activities manage information related to every student, the curriculum, and program evaluation.

Building and implementing an electronic instrument to follow up on nursing graduates was conducted from references from studies on professional profiles conducted by the Ministry of Health, the Federal Nursing Council, and scientific evidence found in the literature [10-11, 15]. The instrument questions attempted to address relevant aspects related to graduate profile, evaluation of the nursing program, and how this professional is placed in the labor market, allowing for the identification of the positive aspects and possible gaps in nursing programs offered by the institution.

Former students of higher education programs are specifically interested in helping the understanding of how these programs interact with society. They are a special source of information that allows understanding of the reach, effects and consequences of an educational action [16]. The use of emerging tools, such as the insertion of instruments in online platforms to investigate or to fill possible gaps between nursing programs and the education of the new generation of future nurses, have also been discussed worldwide [2,17].

The use of the internet for questionnaire application offers advantages such as: convenience (the respondent can access the questionnaire anywhere, as long as they have a computer with internet connection), cost (virtual access has become cheaper), scale (it is possible to handle large samples), speed (answers are received faster), and aesthetics and attractiveness (the use of images, sounds and hypertext when designing questionnaires) [18-20].

However, web-based surveys also involve some disadvantages. One of the main limitations refers to sample definition, in terms of representativeness or allowing for generalization [18, 20]. In addition, email lists

usually have alterations, and although the internet is more and more popular, many people still have no email address or regular access. The level of computer knowledge and computer resources for using the tool should also be considered, as well as the provision of instructions about essential aspects to be observed while filling out the questionnaire. However, the utilization of this web-based survey was efficient and friendly, confirming the results of surveys conducted internationally.[18-20].

This fact concurs with a study conducted with nursing students from a university in Sydney that analyzed the access and use of a web-based instrument to support the learning process . The results indicated 85% of students accessed the institution's website and 22% answered the survey, reporting web benefits, such as knowledge acquisition, the ability to study at home, interventions via internet complementing in-person activities with interactive and engaged learning [21]. Nationally a web-based instrument was also used by a university, asking former students to answer an online questionnaire [22].

This instrument inserted in the institution's website was developed using Framework Modular (Django), which is a modern framework, focused on convenient development, simplifying complex parts of web-based development, with no concern about database details, creation of cookies or management of sessions. In addition, the administration system was already in the framework [23]. It was originally created as a system to manage a newspaper website in the city of Lawrence, in Kansas. It became an open source project and it was published with a BSD license in 2005[24].

The versatility of this framework is due to its simple language and several advanced resources, as well as its powerful standard library, allowing utilization in complex applications for smartphones and other mobile devices [23]. In Django, it is possible to automatically generate an administration interface for models created through Object-Relational Mapping (ORM). However, this

framework offers limitations for the creation of elegant and simple URLs[24].

Finally, a virtual method to collect information from graduates was also used in other national and international studies. [21, 25] The preliminary results obtained from graduates in the first approach in the implementation of our electronic instrument, with the participation of over 50% of graduates of the pilot plan, shows this is a fast and efficient way to collect and disseminate information. This data collection system is also low cost, offering respondents' flexibility to answer the questions.

After concluding the collection and analysis of data from the implemented instrument, it will be possible to characterize the social and professional profile of graduates, as well as aspects of their insertion in the labor market and their current situation, besides indicating trends of this market. This market, due to high number of professionals, tends to select increasingly qualified professionals, with more experience and better training. Thus, a systematized follow-up of these professionals is recommended.

CONCLUSION

Nursing has faced challenges with the emergence of internet and other information and communication technologies. Nursing programs, considered by many people to be one of the first to use educational technologies, still has obstacles with the utilization of some new instruments, such as web-based tools, which could help professors eliminate training-related gaps for future professionals.

However, nursing education has brought learning opportunities to many people by offering web-based programs. This type of program could expand its reach, extending it to different populations of students, going beyond traditional obstacles of time, geography and physical space. The stage of tool building and insertion in the institution's website involves great effort but it teaches lessons to the groups of researchers.

The quick technological progress has shown nursing professors new interaction and learning tools that can involve both students and professors. This study suggests that a new web-based intervention with interactive activities is a good way to define the profile of nursing graduates of a higher education institution.

The participation of graduates using the website to answer the questionnaire indicates that they were able to quickly and effectively use web-based tools. The use of the internet also allows remote access, from outside the university, which is one of the benefits of this methodology.

With increased complexity of current web-based systems and safety and scalability issues, proper technologies are required to fulfill new development needs. With modern technologies of information and communication, a graduate follow-up program is an application that can be updated online. It can also contribute to facilitating routine professional issues, such as inquiries to professors from nursing courses and other areas of the institution.

Following up on nursing graduates in the labor market will allow for the creation of assessment tools for the institutions to analyze the impact of nursing programs on health services These tools can also help develop strategies for better quality in the training process, contributing to the provision of quality nursing services. In this proposal of a graduate follow-up methodology, it should be noted that, regarding the labor market, one of the points of focus was to evaluate graduate integrations in their occupations, helping develop goals of curricular grids for institutions.

A systematic and continuous evaluation using information from graduates can be a critical instrument to generate better results, providing social policy makers and program managers with important data to develop more consistent curricula to fulfill labor market needs.

REFERENCES

1. Branquinho NCSS. Satisfação dos egressos do curso de graduação em enfermagem de uma universidade pública [Dissertação] Goiânia: Faculdade de Enfermagem/UFG; 2012. 108 p.

2. Skiba DJ, Connors HR, Jeffries PR. Information technologies and the transformation of nursing education. Nurs Outlook. 2008; 56(5): 225-30.

3. Ramos FRS, Bertoncini JH, Machado RR, Flor RC, Pires DEP, Gelbcke FL. Trabalho, educação e política em seus nexos na produção bibliográfica sobre o cuidado. Texto e Contexto Enferm. 2009;18(2):361-8.

4. Baggio MA, Erdmann AL. (In)Visibilidade do cuidado e da profissão de enfermagem no espaço de relações. Acta Paul enferm. 2010; 23(6):745-50.

5. Lucchese R, Vera I, Pereira WR. As políticas públicas de saúde – SUS – como referência para o processo ensino-aprendizagem do enfermeiro. Rev. Eletr. Enf. [Internet]. 2010 [Acesso em: 12 Fev 2015]; 12(3):562-6. Disponível em: http://dx.doi.org/10.5216/ree.v12i3.11144.

6. Faulk D, Parker F, Morris A. Reforming Perspectives: MSN Graduates' Knowledge, Attitudes and Awareness of Self-Transformation. International Journal of Nursing Education Scholarship. 2010;7(1):1-15.

7. Manarin AP, Bortoleto CB, Ferreria-Sae MCS. Perspectivas do egresso de enfermagem frente ao mercado de trabalho. Ensaios e Ciência: Ciências Biológicas, Agrárias e da Saúde. 2009; 13(1):93-105.

8. Costa PB, Prado C, Oliveira LFT, Peres HHC, Massarollos MCKB, Fernandes MFP, Leite, MMJ, Freitas JF. Fluência digital e uso de ambientes virtuais: caracterização de alunos de enfermagem. Rev Esc enferm USP. 2011; 45(n esp):1589-94.

9. Valentini CB, Soares SEM, editores. Aprendizagem em ambientes virtuais [recurso eletrônico]: compartilhando ideias e construindo cenários. 2ed. Revista e Atualizada. Caxias do Sul, RS: EDUCS,2010.

10. Colenci R, Berti HW. Formação profissional e inserção no mercado de trabalho: percepções de egressos de graduação em enfermagem. Rev Esc Enferm USP [Internet]. 2012 [acesso em: 30 jun 2015];46(1):158-166. Disponível em: http://www.scielo.br/scielo.php?pid=S0080-62342012000100022&script=sci_arttext.

11. Meira MD, Kurcgant P. O ensino de administração na graduação: percepção de enfermeiros egressos. Texto & Contexto Enferm. 2009; 18(4):670-679.

12. Polit DF, Beck CT. Fundamentos de pesquisa em enfermagem: métodos, avaliação e utilização. 7a ed. Porto Alegre: Artmed; 2011. p.670.

13. Pressman RS. Engenharia de Software. 7ª ed. Porto Alegre: AMGH, 2011.

14. Curry J. Definindo os requisitos do gerenciamento de informação. In: Hannah KJ, Ball MJ, Edwards MJA. Introdução à informática em enfermagem. Porto Alegre: Artmed; 2009. p.209-19.

15. Machado MH, Oliveira ES, Moyses NMN. Tendências do mercado de trabalho em saúde no Brasil. In: Conferência Internacional sobre Pesquisas em recursos Humanos em Saúde. Rio de Janeiro, 9 a 11 de junho de 2010.

16. Dazzani MVM, Lordelo JAC. A importância dos estudos com egressos na avaliação de programas. In: Dazzani MVM, Lordelo JAC. (org). Estudos com estudantes egressos: concepções e possibilidades metodológicas na avaliação de programas. Salvador: EDUFBA; 2012. p.15-21.

17. Hart C. Technology and nursing education: an online toolkit for educators. J Contin Educ Nurs. 2012; 43(9):393-4.

18. Alessi EJ, Martin JI. Conducting an Internet-based Survey: Benefits, Pitfalls, and Lessons Learned. Social Work Research. 2010;34(2):122-8.

19. Gill FJ, Leslie GD, Grech C, Latour JM. Using a web-based survey tool to undertake a Delphi study: application for nurse education research. Nurse Educ Today. 2013;33(11):1322-8.

20. Hunter L. Challenging the reported disadvantages of e-questionnaires and addressing methodological issues of online data collection. Nurse Researcher. 2012;20(1):11-20.

21. Koch J, Andrew S, Salamonson Y, Everett B, Davidson PM. Nursing Students' perception of a Web-based intervention to support learning. Nurse Educ Today. 2010; 30(6):584-90.

22. Lousada ACZ, Martins GA. Egressos como fonte de informação à gestão dos cursos de ciências contábeis. R Cont Fin USP. 2005; jan/abr; 16(37):73-84.

23. Santana NO, Galesi T. Phyton e Django: Desenvolvimento ágil de aplicação Web. São Paulo: Novatec editora. 2010; p.180.

24. Pluriverso. Inteligência em tecnologia. Desenvolvimento de Software. Django. [Internet]. 2009 [citado 2012 dez 21]. Disponível em: http://www.pluriverso.com.br/software/blog/pagina-2.

25. Gomes, MHA, Goldenberg, P. Retrato quase sem retoques dos egressos dos programas de pós-graduação em saúde coletiva 1998-2007. Ciência & Saúde Coletiva. 2010; 15(4):1989-2005.