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The use of the evaluative portfolio in medicine: revisiting concepts and experiences

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El uso del portafolio evaluativo en medicina: revisitando conceptos y experiencias

RESUMO

Objetivo: o objetivo do presente estudo foi revisar como os portfólios são utilizados, uma vez que, pouco se sabe sobre a melhor forma de implementá-los na graduação, bem como fraquezas e potencialidades. Método: realizou-se uma revisão integrativa de artigos selecionados nas bases de dados da LILACS, MEDLINE e SciELO com os termos "portfólio" e "medicina" ligados pelo operador booleano "AND". Resultados: esta busca encontrou 55 artigos que após leitura de títulos e resumo foram excluídos 40. Conclusão: as referências elencadas reforçam que os portfólios são instrumentos que apoiam a educação médica baseada em competências desde que tenha objetivos claros e métodos eficazes de avaliação. São também indicados formatos digitais para estas ferramentas. Destarte, experiências locais com o uso de portfólios devem ser estimuladas.

DESCRIPTORIOS: Avaliação; Educação Médica; Avaliação Educacional.

ABSTRACT

Objective: The aim of this study was to review how portfolios are used since little is known about the best way to implement them at undergraduate level, weaknesses and strengths. Method: An integrative review of selected articles in the LILACS, MEDLINE e SciELO databases was carried out with the terms "portfolio" and "medicine" with the Boolean operator "AND". Results: This search found 55 articles that after reading the titles and abstract were excluded 40. Conclusions: The listed references reinforce that portfolios are instruments that support competency-based medical education as long as it has clear objectives and effective assessment methods. Digital formats for these tools are also indicated. Therefore, local experiences with the use of portfolios should be encouraged.

DESCRIPTORIOS: Assessment; Medical Education; Educational Assessment.

RESUMEN

Objetivo: El objetivo de este estudio fue revisar cómo se utilizan los portafolios ya que se sabe poco sobre la mejor manera de implementarlos a nivel de pregrado, así como debilidades y fortalezas. Método: Se realizó una revisión integradora de los artículos seleccionados en la base de datos de las bases LILACS, MEDLINE e SciELO con los términos "portafolio" y "medicina" con el operador booleano "Y". Resultados: Esta búsqueda encontró 55 artículos que luego de leer los títulos y el resumen fueron excluidos 40. Conclusiones: Las referencias enumeradas refuerzan que los portafolios son instrumentos que apoyan la educación médica basada en competencias siempre que tenga objetivos claros y métodos de evaluación efectivos. También se indican los formatos digitales para estas herramientas. Por lo tanto, deben fomentarse las experiencias locales con el uso de carteras.

DESCRIPTORIOS: Evaluación; Educación médica; Evaluación educativa.

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INTRODUCTION

The contemporary world is challenging the training of professionals in the health area as it demands, in addition to technical knowledge, conceptual deconstructions and confrontation of some knowledge established as “hegemonic” even though they lack current scientific validation. In view of this reality, the 2014 National Curriculum Guidelines for Medicine started to recommend the development of competences based on practical experiences. Such changes move away from the mechanical acquisition of knowledge and open space for a more current medical education, but with numerous challenges to adequate teaching and assessment. 1

Many educators believed that “field diaries” would fill this gap in evaluative devices, but these have been replaced by portfolios, due to the emphasis on critical reflection and the ability to direct learning in cyclical and self-regulated processes. 2 The purpose of the portfolio is to encourage experiential learning and improve the quality of care. Furthermore, new ways of learning invariably require different formats to assess, with broader and more dynamic premises, implying critical reflection on the practices experienced in order to visualize advances and resistances.3

When considering the training component in medicine, the portfolio reveals itself as an instrument capable of capturing such complexity, due to its dynamism and openness to the world, reflecting an integrated practice. It is an innovative assessment method, considering students as active sub-

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jects, highlighting their participation in the selection of content sought, providing reflection and criticism. 4 Thus, the portfolio intersects with other assessment formats managing to reflect various experiences such as the Mini Clinical Examination or clinical cases that may have been dramatized through the Objective Structured Clinical Examination with patient-actors. 5

As a tool, it can archive work done by students with the aim of problematizing reality, envisioning the progress and quality of records, listing teaching-learning achievements in a specific or intersected area. It is a technique that informs about the skills that the student can demonstrate, highlighting the tasks performed. They are subject to self-assessment, but require guidance from a teacher who knows the instrument, understanding the role of the student and the development of writing for reflection and analysis. It is not about a new way of publishing notes and cataloging writings, but about participatory analysis in dialogue. 6

It is also supposed that portfolios contribute to self-regulated learning (SLR), in which students are metacognitive, motivational and behaviorally active participants. The literature reports the following SLR processes supported by portfolios: self-assessment, feedback, goal setting, planning, and monitoring. The SLR is an essential skill for medical students working and learning in community-clinical settings that can be unpredictable. It is valued by researchers, but ambivalent to students who report anything from meaningful learning to reflections of limited value. Such losses can be explained by the short time to

complete it, lack of purpose, focus on the teacher instead of the student in self-development.⁷

In this sense, the aim of this study is to integratively review how portfolios are used in the field of medical education, since little is known about the best way to implement portfolio-based learning in medical graduation. The research question is: what defines the evaluative portfolio in strengths and weaknesses and how it has been used in different experiences in teaching-learning processes.

METHOD

An Integrative Literature Review (IRL) of selected articles in the LILACS, MEDLINE and SciELO databases was carried out from October to November 2021. This method was chosen because it involves the organization and discussion of a research

topic in a vertical manner, dealing with different types of research dealing with the same topic.⁸

The following search descriptors were used: "Portfolio (Portfólio)" and "Medicine (Medicina)" with the Boolean operator "AND". This search was refined into main subjects - "educational assessment", "medical education" and "graduate education in medicine" - looking for publications from the last 5 years, in English, Portuguese and Spanish. A total of 55 articles were found, but after reading the titles and abstracts, 25 articles that did not deal with a portfolio within the context of medical evaluation were excluded, as well as 9 articles that used a portfolio to acquire postgraduate skills and not the graduation in medicine - motto of this review, 4 articles on portfolio in other health courses that are medicine and 2 duplicate articles. Thus, the inclusion criteria selected 15 articles that used portfo-

lios as an assessment tool in the undergraduate medical course.

RESULTS

After reading all abstracts, the exclusion criteria were applied. Fifteen articles were selected according to the following criteria: approach to the use of the portfolio during graduation in medicine, publications from the last five years and in Portuguese, English and Spanish. Selected articles were read in full and summarized. Below, a table with the articles listed and a summary of the main findings was organized.

DISCUSSION

The assessment portfolio is a response to changes in medical education, including the emphasis on professionalism and the need to give students more responsibility.

Table 1. Articles selected by IRL.

| Database | Title | Type of study | Authors/ Periodic | Main Findings |
|------------|---|-------------------------------|--|---|
| 1. LILACS | Assessment portfolio: a novel experience in the course Introduction to Comprehensive General Medicine | Experience Report | Rodriguez Cardenas et al. EDUMECENTRO vol.12 no.4 Santa Clara out.-dez. 2020 Epub 30 de dezembro de 2020 | Application of the portfolio of the Introduction to General Integral Medicine course in the first year of the course to assess educational activities at work. The portfolio represents a new assessment scenario, it is a technique that informs about the competences that the student can demonstrate, as well as the nature and use of the learning process, allows the accumulation of evidence and includes the assessment of educational aspects in an inseparable and instructive link. |
| 2. MEDLINE | How is self-regulated learning documented in e-portfolios of trainees? A content analysis. | Descriptive database analysis | VAN DER GULDEN et al. BMC Med Educ; 20(1): 205, 2020 Jun 26. | Vision on the documentation of self-regulated learning processes, within the content of the interns' electronic portfolio, comprising numerous processes of reflection and feedback, goal setting, planning and monitoring. The e-portfolio content showed limited documentation of self-regulated learning processes, but such documentation takes time and requires a high level of introspection and writing skills. |

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| 3. | LILACS | Undergraduate Medicine portfolio: educational impact 10 years after its implementation | Cohort | Reyes Diego, Isbej Lorena, Uribe Javier, Ruz Cristián, Pizarro Margarita, Walker Rosa et al. Rev. méd. Chile [Internet]. 2019 Jun [citado 2021 Out31];147(6):790-798. | The portfolio includes clinical cases, narrative medicine, palliative care and evidence-based medicine. The student's general perception was positive, highlighting the development of critical analysis, clinical reasoning and professionalism. The delivery of feedback and learning assessment allowed students to obtain excellent grades. There were only two reported cases of plagiarism. 15 articles and two books with 52 essays were published. |
| 4. | MEDLINE | Use of an e-portfolio mapping tool: connecting experiences, analysis and action by learners. Perspectives on Medical Education. | Methodological Research | Heeneman, Sylvia; Driessen, Erik; Durning, Steven J; Torre, Dario. Perspect Med Educ ; 8(3): 197-200, 2019 06. | Demonstrate how this tool could be used to support reflective practice activities. Following the typical stepwise approach to the reflective cycle, two types of maps were designed, a trigger map and a competency map. In a trigger map, the student reflects on a concrete learning or feedback experience. In a competency map, the student interprets and synthesizes several previous trigger maps that ultimately lead to the formulation of new learning objectives. |
| 5. | MEDLINE | Evaluation of a portfolio-based course on self-development for pre-medical students in Korea | Methodological Research | Yoo, Dong Mi; Cho, A Ra; Kim, Sun. J Educ Eval Health Prof ; 16: 38, 2019. | Portfolio-based course with the objective of strengthening medical students' capacities for self-management and self-improvement. The subjects of this study were 97 students from a pre-medical course. The learning experience was the teacher's assessment of the portfolios and the program was assessed based on 68 students' responses to a 32-item survey. |
| 6. | SciELO | Heterogeneity in the correction of portfolios in the Medicine course: student perception. Interface - Communication, Health, Education. | Descriptive study with a qualitative approach to data analysis | Nery NLM, Baracat ECE, e Bicudo AM. Interface - Comunicação, Saúde, Educação [online]. 2019, v. 23 [Acessado 31Outubro 2021], e170348. | At Unicamp, the portfolio was implemented in Medicine in 2001, – it is developed in the fourth year, when students work in Basic Health Units. Each portfolio is corrected by a professor, and, after the necessary considerations for each topic, it is attributed a grade. The aim of this study was to understand the perception of students about the correction of the portfolio by the group of teachers. Students considered that the assessment through the portfolio needs to be improved with a clear definition of correction criteria. In the student's perception, the heterogeneity and subjectivity of the professors in this correction is highlighted. |

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| 7. | MEDLINE | Assessing learning in the adaptive curriculum. Medical Teacher. | Methodological Research | Patricia A. Carney, George C. Mejicano, Tracy Bumsted & Mark Quirk (2018): DOI: 10.1080/0142159X.2018.1484083 | Adaptive assessments should measure a student's ability to observe changes in care delivery and how to implement them. Balancing formative and summative assessments will promote reflective learning for each student to reach their full potential. We describe how two medical schools are approaching adaptive assessment, including using portfolio systems that span teaching and learning experiences, offering real-time longitudinal tracking of digital data to enhance learning. |
| 8. | MEDLINE | Students' perception of portfolio as a learning tool at King Abdulaziz University Medical School. Medical Teacher | Qualitative Research | Fida, Nadia M., et al. Medical Teacher, 1–10. doi:10.1080/0142159X.2018.1466054 | Difference of focus between the basic years and clinical years in the basic years, the students' focus was on the acquisition of practical skills, but in the clinical years they focused more on the acquisition of complex skills, including problem identification and management. However, questionnaire responses revealed a positive trend in acceptance (belief in educational value) of portfolios among students and their mentors over the years of the program. |
| 9. | MEDLINE | Exploring the strategies for successfully building e-portfolios in medical schools | Methodological Research | Chae, Su Jin; Lee, Yong Won. Korean J Med Educ ; 33(2): 133-137, 2021 Jun. | Students realized that e-portfolios have a high degree of relative advantage, experimentability and complexity as characteristics of resistance to innovation. Regarding perceived risk, they did not want other people to see their information, but they had a high degree of demand for communication with their teachers. Successful use of portfolios can serve as a tool for student management and assessment that can reflect student introspection, personal development, and academic performance. |
| 10. | MEDLINE | Longitudinal evaluation of a pilot e-portfolio basesupervision programme for final year medical students: views of students, supervisors and new graduates | Qualitative Research | Vance, Gillian H S; Burford, Bryan; Shapiro, Ethan; Price, Richard. BMC Med Educ ; 17(1): 141, 2017 Aug 22. | We evaluated the introduction of a training e-portfolio-based supervision pilot for final-year medical students, seeking input from students, supervisors, and graduates on educational use and effects. Final year students have negative attitudes towards a formative e-portfolio, although the benefits to ease the educational transition are recognized by graduates. Time-optimizing measures can encourage its use. |

artigo

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| 11 | SciELO | Reflective Portfolio: philosophical subsidies for a narrative praxis in medical education | Qualitative Research | Stelet, Bruno Pereira et al. Interface - Comunicação, Saúde, Educação [online] 2017, v. 21, n. 60 [Acessado 1 Novembro 2021] , pp. 165-176 | Analyze the Reflective Portfolio as a pedagogical device for the exercise of narrativity in medicine. By producing a theoretical analysis about the portfolio, we built an epistemological dialogue between Public Health, Education and Philosophy, in the sense of offering elements to think about the exercise of relational technologies that are fundamental to health care. |
| 12. | MEDLINE | Evaluation of the free, open source software WordPress as electronic portfolio system in undergraduate medical education. | Methodological Research | Avila, J., Sostmann, K., Breckwoldt, J. et al.. BMC Med Educ 16, 157 (2016). https://doi.org/10.1186/s12909-016-0678-1 | The WordPress ePortfolio environment allowed students a wide spectrum of activities - often documented by mobile phones - such as multimedia evidence gathering, posting reflections, messaging, web publishing, collaborative learning, and knowledge management in a content management system. |
| 13. | MEDLINE | Feasibility and Outcomes of Implementing a Portfolio Assessment System Alongside a Traditional Grading System. Academic Medicine. | Methodological Research | O'Brien, Celia Laird; Sanguino, Sandra M; Thomas, John X; Green, Marianne M. Acad Med ; 91(11): 1554-1560, 2016 11. | Development and implementation of an electronic portfolio system based on longitudinal competencies alongside a US medical school graduate curriculum. In 2009, the authors developed a portfolio system that served as a repository for all student assessments organized by competency domain. Five competencies were selected for a summary review of the pre-course portfolio. Students sent reflections on their performance. |
| 14. | MEDLINE | Content validity of workplace-based portfolios: A multi-centre study | Multicenter qualitative study | Michels, Nele R M., et al. Med Teach; 38(9): 936-45, 2016 Sep. | Portfolios are used as tools to train and assess students in boarding school by medical students during their internship. To validate your content, we have developed an inventory. Two evaluators assessed each portfolio and indicated for each item whether the portfolio provided sufficient information to allow a satisfactory assessment of the item. This study lends further credence to the evidence that portfolios can indeed assess adequately during internship. |

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| 15. MEDLINE | Status of portfolios in undergraduate medical education in the LCME accredited US medical school | Methodological study | Chertoff, Jason; et al. Medical Teacher,(2015), 1–11. | US medical schools using portfolios and their ability to engage faculty and students. Survey sent to 141 US medical schools accredited by. Forty-five percent reported using the portfolio for formative assessment only; 48% for formative and summative assessment and 3% for isolated summative assessment. Although there is significant variation in purpose and structure, most medical schools surveyed using portfolios reported a high level of engagement with students and faculty. |
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Source: elaborated by the authors (2021).

This assessment format is used during all graduation periods because it provides a means to assess self-learning. 3 Meanwhile, articles 1, 2, 3 and 4 describe the new training scenarios and dialogue with the teaching responsibility of motivating students to build significant-symbolic elements of learning. 5,6,7,8,9,10,11

With regard to student perception, article 2 reports an ambivalent view of students about the tool, but this view is not supported by article 3, a more robust study as it is a ten-year cohort that monitors the implementation of the portfolios. The fourth article demonstrates and describes that the ambivalent perception of students about the portfolio leveraged the design of an online tool capable of helping more structured constructions. Although schools are developing modern systems and encouraging students to use them, articles 5, 6, 7, 8, and 9 describe that medical students seem dissatisfied and suggest that it is necessary to consider student complaints in order to overcome the reasons for its resistance. 12,13,14,15

Article 10 also brings complaints from students, pointing out the activity as a "load" not aligned with the learning processes. To achieve best results, spending time explaining and checking understanding of the concepts underlying a portfolio was a strategy used by the group in the fifth article in this review. It is a tool that contributes to the assessment of student attitudes and professionalism, providing standard

samples and enabling training workshops with feedback. 10 Another possibility is to set aside more time for the creation of the portfolio or even consider a workshop to develop it within the regular classes in small groups or individuals, lessening the load of post-class activities for the students.

Despite the need for adjustments, the portfolio has several potentials: they help the examiner to make a comprehensive and reliable interpretation of the student's performance in a personalized way. Such examples refer to the curriculum centered on the student while making them responsible for their own learning. Article 6 describes the portfolio experience at the University of Campinas, in which the portfolio is used in the fourth year of the medical course, in the "Comprehensive Health Care" module, when the student works at the UBS. The skills to be developed at this stage include the development of clinical reasoning, the care process, the doctor-patient relationship, accountability and experience in the extra-hospital environment. 12,22

Possible disparities in the correction of the evaluators may arise, so it is necessary to understand the steps for implementing the portfolios. To alleviate such inconsistencies, the implementation of the portfolio as an evaluative tool dispenses with a clear definition of the purpose and content, as long as space is kept for the student to describe the meetings with patients, the self-assessment checklist, skills to be evaluated with a marking system for each one of the learning

outcomes, trained examiners and planning the implementation process with timeline, student guidance and decision guidelines - if used for pass/fail then standards need to be specified so there is no doubt. 10,12

In this sense, the portfolio is predominantly about content and the articulation of digital storage systems can generate powerful data structures for educational groups in which several medical schools collaborate. Article 7 examines the characteristics of an adaptable curriculum and the use of different types of student assessment and program assessment in two medical schools, describing the fair development of portfolio systems to provide access to data and how they can be used to continuously improve educational programs and individual academic results. They incorporate frequent assessments, progress monitoring through the electronic portfolio and customization of curricular elements for each university. 13

The electronic portfolio system for tracking students thus generates research and assessment data for educational improvement. Usually, they are implemented with software developed in-house, tailored to the institution's needs. Article 12 stresses the cost and difficulties of adjusting to the institution's specific requirements, thus suggesting free software that consumes less resources, allowing adjustments and that have already been successfully implemented for the construction of low-cost platforms for e-learning activities. 14

Article 13 narrated the experience of customizing the platform to control in a personalized way the skills that the collegiate group intended to enhance in students and report that such construction enabled their understanding and performance in behavior-oriented skills in a way that was not possible before its development. 15

Only article 14 discusses the use of the tool in the internship and reports that it is valid, as long as the content has clearly determined objectives and appropriately selects assessment instruments suitable for the intended skills. 16

Revisiting conceptual terms of the portfolio as a device, the authors of article 11 produce an essay rich in contributions from Philosophy capable of producing conceptual nexuses to defend the portfolio as a powerful pedagogical device for

narrative production in medical practice, guiding pedagogical methodologies. 17,18 It allows the development of ethical values and social awareness of learners when using the meeting with the patient to justify such activity. Furthermore, it recruits cognitive and communicational dimensions, producing knowledge through this recognition. Article 15 describes how most American schools have used portfolios to some extent in their practices. 19,20

This review dialogues with the IRL made by Garcia e Nascimento, which mixed articles and pedagogical political projects, demonstrating that the application of the portfolio highlights difficulties related to the maintenance of the biomedical model and the lack of motivation for teachers to train with institutional support. 21

CONCLUSION

Portfolios are powerful tools for the acquisition of professionalism in medicine, and should be encouraged for use by educational groups concerned with the social engagement of students. There are still many gaps in the literature and spaces for longitudinal research on the subject. This review integrated application aspects of the method and suggested, based on the experiences collected, ways to enhance it. Custom electronic devices can be a way forward, but costs are often deterring. Thus, more experiences in creating and applying portfolios integrating students and teachers can enrich the field of medical education as they mobilize the use of the tool. ■

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