Educación Médica

REVIEW

Global perspectives and recommendations for curriculum design in academic programs in the health sciences

Diego A. Forero[a,b,*], Ana Adan[c,d], George Perry[e], Muhammad Hassan Majeed[f]

[a] Health and Sport Sciences Research Group, School of Health and Sport Sciences, Fundación Universitaria del Área Andina, Bogotá, Colombia
[b] Professional Program in Respiratory Therapy, School of Health and Sport Sciences, Fundación Universitaria del Área Andina, Bogotá, Colombia
[c] Department of Clinical Psychology and Psychobiology, School of Psychology, University of Barcelona, Barcelona, Spain
[d] Institute of Neurosciences, University of Barcelona, Barcelona, Spain
[e] Department of Biology and Neurosciences Institute, The University of Texas at San Antonio, San Antonio, TX, USA
[f] Department of Anesthesiology and Pain Medicine, Lehigh Valley Health Network, Allentown, PA, USA

Abstract   Universities around the world are constantly creating and upgrading undergraduate and postgraduate programs in the health sciences. Although curriculum design is a key element for the adequate functioning of academic programs, there are few articles in the scientific literature that provide recommendations and guidelines, from a global and interdisciplinary perspective, for the steps needed to create new academic programs that consider both current and future needs in the health sciences. In this manuscript, we provide several practical suggestions for the design of curricula for undergraduate and postgraduate programs in the health sciences. In addition, we identify several aspects that need further research.
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Perspectivas y Recomendaciones Globales para el Diseño Curricular en Programas Académicos en las Ciencias de la Salud

Resumen   Las universidades alrededor del mundo crean y actualizan constantemente programas de pregrado y posgrado en ciencias de la salud. Si bien el diseño curricular es un elemento clave para el adecuado funcionamiento de los programas académicos, existen pocos artículos en la literatura científica que brinden recomendaciones y lineamientos, desde una perspectiva global e interdisciplinaria, sobre los pasos necesarios para crear nuevos programas

* Corresponding author at: School of Health and Sport Sciences, Fundación Universitaria del Área Andina, Bogotá, Colombia.
 E-mail address: dforero41@areandina.edu.co (D.A. Forero).

Introduction

Universities around the world are constantly creating and updating[1] undergraduate and postgraduate programs in the health sciences.[2] Although curriculum design is a key element for the adequate functioning of academic programs, there are few articles in the scientific literature that provide recommendations and guidelines, from a global and interdisciplinary perspective, for the steps needed to create new academic programs that can meet both current and future needs in the health sciences.[3,4]

The authors of this paper have participated in the creation of multiple undergraduate and postgraduate programs, in different academic settings and in multiple countries.[5–7] In this manuscript, we provide several practical suggestions for the design of curricula for undergraduate and postgraduate programs in the health sciences. In addition, we identify several aspects that need further research.

Identify and follow the local and national regulatory processes

A key initial stage is to identify the specific regulatory aspects involved in the process of curriculum design, particularly those generated by the local or national institutions in charge of reviewing and authorizing the creation and/or accreditation of a new academic program.[2]

In multiple cases, those organizations have specific guidelines or recommendations, depending on whether the program is new or is a modified version of an existing one.

Start with a multidisciplinary team

The first steps in the design of curricula involves the creation of a multidisciplinary team that has a diversity of experiences and perspectives on academic undergraduate and postgraduate education and research.[8] Curriculum design is a time-consuming process. An inadequate process in the design of a curriculum may impact the quality of the program or lead to the possibility of challenges in its approval. The tasks of the team should include projecting the profiles of the required educators and designing strategies for mentoring of junior faculty members.[9] Interdisciplinary formation is a key aspect of the modern formation of personnel and, in this context, interprofessional education has attracted interest worldwide.[10]

Identify the needs in the profession

Depending on the level of the educational program (undergraduate or postgraduate), the needs of the profession determine the specificities of the focus and reach of the program. In this context, the subjects of the curriculum and their contents should be aligned with the multiple needs of the professional performance of the future graduate. A key reference for the creation of new programs is a comprehensive and detailed review of existing local programs, identifying their general structures and areas of strength and shortcomings. An active participation of major stakeholders, such as employers, is also helpful. Both general and specific competencies, associated with key learning outcomes, are needed for the integral training of students.[11,12]

Incorporate national standards and international trends

In addition to national or local legal regulations, there are multiple regional differences in the mechanisms for the approval or accreditation of academic programs.[2] A thorough knowledge of the national and local regulations for the approval and opening of academic programs in the health sciences (such as the ones from the Liaison Committee on Medical Education − LCME - in the USA) is essential.

It is important to review and to incorporate key elements from similar programs in other countries. These international perspectives can help facilitate international mobility of students and graduates[13] and ensure that the most up-to-date contents and approaches are included in the curriculum. It can also help to avoid perpetuation of inadequate local practices. The Harvard Macy Program, among other initiatives, provides important perspectives for education in the health sciences.[14] There is a growing international awareness of the importance of educating professionals in the key aspects of current societal concerns, such as increasing sensitivity towards social inequity and the impact of climate change, and promoting diversity.

Ask for opinions of national and international experts

As with many other important documents, it is advisable to ask for opinions and feedback from local and global experts, in both the content and the approaches of the curriculum design for a new academic program. Those critical reviews can help identify points that need clarification or further

elaboration, in addition to providing new perspectives. The external perspectives might be from experts in specific fields of education or from experts in particular areas of the health sciences.

Design for the future, not only for the present

A new curriculum may stay in use for many years or even decades. Future graduates will be exposed to different situations and challenges in the coming years. In this context, it is prudent to anticipate future needs and standards in the area of training, such as novel approaches for diagnosis or management. Appropriate incorporation of independent learning experiences will provide graduates with the skills to constantly update their knowledge of novel topics, such as emerging diseases or new treatments.[15]

Incorporate modern adult learning theories and elements of evidence-based education

Research and innovation in education in recent decades have led to important advances in the consolidation of adult learning theories, which put the active participation of the learner at the center of the process.[16,17] It is time to go beyond older visions that put a special emphasis on the transmission of information from the teacher to the student. In addition, recent perspectives in curriculum design in the health sciences involve a deeper integration between basic and clinical disciplines, such as in the integrated curriculum.[18]

Research in education in the health sciences has provided a wealth of articles about the efficacy of different educational approaches, such as learning and evaluation methods.[19–23] As in other areas of health sciences, evidence-based approaches are fundamental to support decision-making in the design and implementation of academic programs.[24,25] Continuous education to keep academic staff updated about recent or novel approaches to evidence-based education is essential for a successful program.

Learn from other programs

The implementation and development of academic programs generate an important number of lessons to be learned, particularly in terms of opportunities for future improvements. Experiences from other programs (from the same university or from other institutions) are quite helpful in the creation of a new curriculum. Examples of these aspects include admission criteria, length of the program, assignment requirements, areas of emphasis, and requirements for graduating, among others.

Include flexible components

Current perspectives in education are less focused on the previous vision of "generalist" professionals and are more oriented toward the current reality of the ever-growing complexity of specialized knowledge and competencies. This complexity requires a strong focus in undergraduate programs and postgraduate training in specialized areas of health care. Elective subjects can facilitate student training in specific topics. Flexible components, among other subjects, will benefit from modern strategies such as computer-based platforms. Computer-based teaching activities were extremely useful for distant learning during the COVID-19 pandemic lockdowns. In postgraduate programs, subjects focused on advanced levels of research, innovation and knowledge transfer will facilitate the ability to respond to the changing needs of communities.

Incorporate practical components and the possibilities of interdisciplinary learning

Training in the health sciences involves a significant amount of time in practical activities and in the development of the associated competencies, such as clinical skills.[26] In addition to education in the clinical environment,[27] it is important to design learning experiences in practical aspects of basic sciences and in work with the community, in addition to participation in clinical experiences during research exercises.[28,29] Collaborations with clinical institutions can provide opportunities for the development of clinical research projects.[30] In addition, simulation (for basic and clinical aspects) is an important aspect of modern education in the health sciences, providing training in controlled environments similar to real-life situations.[31]

Be ready for multiple rounds of revision and refinement

The time needed to develop an excellent curriculum takes time and involves multiple rounds of revision (both internal and external) and a continuous process of refinement. This multi-step approach facilitates the inclusion of key aspects and the consolidation of a curriculum of high quality. It is advisable to spend time in correcting issues in the design of a novel curriculum, so time and resources are not wasted in an inadequate implementation of a new program. In addition, the program should design strategies for the long-term evaluation of results and the performance of their academic and administrative members.

Be ready for future implementation and renewal

The school or institution should be prepared for the needs associated with the implementation of the new program, such as availability of educators[32] with the adequate training and experience in teaching, research and/or public outreach, as well as the availability of laboratories and collaborations with clinical institutions and communities. As the curriculum is a living document and is in constant evolution, the leaders of the program should be also prepared for constant self-assessment and identification of small adjustments or major changes in the curriculum.[1] It is important to take into account the potentially positive or negative effects of the associated hidden curriculum.[33]

Share your experiences

The process of creating and implementing new academic programs might be valuable for other professionals and institutions. There are multiple opportunities for sharing these experiences, such as posters and talks at national and international scientific meetings, in addition to publication in indexed journals.[34-36] The experience gained might also provide useful guidance to other departments or schools that are designing new programs.

Conclusion

As curriculum design is a frequent and key activity in universities around the world, there is the need for more training in this area of education of health sciences and currently, there is a broad interest in reimagining education in an rapidly evolving world.[37] There is a need for further research and cumulative evidence in the efficacy of the implementation of next-generation technologies in simulation, such as those using advanced levels of virtual reality,[31] and the evaluation of current options in the advanced use of technological platforms[38,39] in basic and clinical sciences. We need to assess the feasibility of mobility of students and graduates, a deeper implementation of interdisciplinary perspectives in education with the help of better and newer curricula.[10] It is also important to anticipate the needs of the future and the feasibility of novel academic programs and approaches in curriculum design.[3,40] Finally, an analysis of the factors influencing the appearance of hidden curricula[33] would be quite useful. This exercise aimed to building a better curriculum will help to improve the education and training standards in the health sciences.

Author Contributions

Study design: Diego A. Forero

Data analysis: Diego A. Forero, Ana Adan, George Perry, Muhammad Hassan Majeed

Manuscript writing: Diego A. Forero, Ana Adan, George Perry, Muhammad Hassan Majeed

Declaration of Conflict of Interest

All authors declare that they have no conflicts of interest.

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