



ELSEVIER

Journal of PHYSIOTHERAPY

journal homepage: www.elsevier.com/locate/jphys

Research

A massive open online course (MOOC) can be used to teach physiotherapy students about spinal cord injuries: a randomised trial

Mohammad S Hossain^{a,b}, Md. Shofiquel Islam^b, Joanne V Glinsky^c, Rachael Lowe^d,
Tony Lowe^d, Lisa A Harvey^c

^a Centre for the Rehabilitation of the Paralysed; ^b Bangladesh Health Professions Institute, the Academic Institute of the Centre for the Rehabilitation of the Paralysed, Savar, Bangladesh; ^c John Walsh Centre for Rehabilitation Research, Kolling Institute, Sydney Medical School/Northern, University of Sydney, Australia; ^d Physiopedia, London, UK

KEYWORDS

Rehabilitation
Spinal cord injury
Clinical trials
Methodology



CrossMark

ABSTRACT

Question: Does a massive open online course (MOOC) based around an online learning module about spinal cord injuries improve knowledge or confidence among physiotherapy students more than if physiotherapy students are left to work through the online learning module at their own pace. Which method of presenting the content leads to greater satisfaction among the students? **Study design:** Randomised controlled trial with concealed allocation and intention-to-treat analysis. **Participants:** Forty-eight physiotherapy students in Bangladesh. **Intervention:** Participants randomised to the control group were instructed to work at their own pace over a 5-week period through a physiotherapy-specific online learning module available at www.elearnSCI.org. Experimental participants were enrolled in a 5-week MOOC. The MOOC involved completing the same online learning module but experimental participants' progress through the module was guided each week and they were provided with the opportunity to engage in online discussion through Facebook. **Outcome measures:** The primary outcome was knowledge, and the secondary outcomes were perceived confidence to treat people with spinal cord injuries and satisfaction with the learning experience. **Results:** The mean between-group difference for knowledge was 0.7 points (95% CI –1.3 to 2.6) on a 0 to 20-point scale. The equivalent results for perceived confidence and satisfaction with the learning experience were 0.4 points (95% CI –1.0 to 1.8) and 0.0 points (95% CI –1.1 to 1.2) on a 0 to 10-point scale. **Conclusion:** The MOOC was no better for students than working at their own pace through an online learning module for increasing knowledge, confidence or satisfaction. However, students in the MOOC group highlighted positive aspects of the course that were unique to their group, such as interacting with students from other countries through the MOOC Facebook group. **Trial registration:** ACTRN12614000422628. [Hossain MS, Islam MS, Glinsky JV, Lowe R, Lowe T, Harvey LA (2015) A massive open online course (MOOC) can be used to teach physiotherapy students about spinal cord injuries: a randomised trial. *Journal of Physiotherapy* 61: 21–27]

© 2014 Published by Elsevier B.V. on behalf of Australian Physiotherapy Association. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

Introduction

Most countries around the world provide undergraduate or graduate training programs for physiotherapists. A challenge for all is to develop efficient ways of providing consistent high-quality education as part of these programs. This is particularly challenging for some of the specialty topics such as physiotherapy management of spinal cord injuries, where smaller universities and colleges often struggle to attract academic staff with appropriate expertise. These problems are greater in countries where physiotherapy is a young profession.

The International Spinal Society sought to overcome this problem by developing an online educational resource for the multidisciplinary team, which contains a module that is specific for physiotherapy students (and junior clinicians).¹ Senior physiotherapy academics and clinicians from 30 countries, including representatives from low-income and middle-income countries,

developed this physiotherapy-specific module. This module contains 14 lessons covering a range of topics including assessment, goal setting, treatments for impairments, and strategies to train motor skills. Each lesson contains a short didactic overview of the topic, interactive activities and a self-assessment quiz. The interactive activities are where most of the learning content is presented; they require students to regularly stop, think and perform a learning task in accordance with adult learning principles.

The online learning module provides an inexpensive way of delivering a consistent learning experience for all physiotherapy students at minimal cost. However, it is not clear whether students can be left to work their own way through the module or whether they need to be provided with a more structured and interactive online learning experience. Massive open online courses (MOOCs) provide a way of structuring students' online learning experience.^{2–5} They are 'massive' because they sometimes have

<http://dx.doi.org/10.1016/j.jphys.2014.09.008>

1836-9553/© 2014 Published by Elsevier B.V. on behalf of Australian Physiotherapy Association. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

thousands of students; they are 'open' because they are free; they are 'online' because the course is delivered by the Internet; and they are 'courses' because they have a curriculum and learning objectives.⁶ They have various formats, but most involve listening to online lectures, completing tasks, reading articles and completing self-assessments. Importantly, most have online forums that provide students with the opportunity to engage with fellow students and teachers from around the world. They are becoming increasingly popular because they are inexpensive to run and provide access for students from all countries to the same level of education.

A recent systematic review of MOOCs identified 17 quantitative studies on this style of learning.⁵ Most of the 17 studies were case studies and the review did not include the only randomised controlled trial (unpublished) we have identified.⁷ There are, however, a lot of publications written about the underlying learning theories of MOOCs and online education.⁸⁻¹¹ Educational academics have expanded the older behaviourism, cognitivist and constructivism theories of learning to include theories of connectivism. 'Connectivism provides insight into learning skills and tasks needed for learners to flourish in a digital era.'⁹ Connectivism captures an important aspect of MOOCs – the sense of community that they create and the opportunity that they provide for participants to engage online in order to learn from each other.

While MOOCs are increasingly popular, it is not known whether they are any better than leaving students to work at their own pace through online educational material. Therefore, the purpose of the present trial was to compare two ways of providing online education about spinal cord injuries to physiotherapy undergraduate students in Bangladesh. Both ways were based on the physiotherapy-specific module of www.elearnSCI.org. However, one way required students to work at their own pace over a 5-week period through the online module and the other way required students to enroll in a MOOC titled *Physiotherapy Management of Spinal Cord Injuries* (details can be found at: http://www.physio-pedia.com/Physiotherapy_Management_of_Spinal_Cord_Injuries). It was hypothesised that MOOCs provide physiotherapy students with greater knowledge about physiotherapy management of spinal cord injuries, greater confidence in managing people with spinal cord injuries and a more satisfying learning experience than access to an online learning module alone.

Therefore, the specific research questions for the present study were:

Does a MOOC that is based around an online learning module about spinal cord injuries improve knowledge or confidence among physiotherapy students more than working through the online learning module at their own pace?

Which method of presenting the content leads to greater satisfaction among the students?

Method

Design

A 5-week randomised parallel controlled trial with a 1:1 allocation was undertaken through the Bangladesh Health Professions Institute, Bangladesh. Undergraduate physiotherapy students from Bangladesh were randomised to a control or experimental condition. The control participants were instructed to move at their own pace through the physiotherapy-specific module that forms part of www.elearnSCI.org. The experimental participants were enrolled into a MOOC. Participants started the 5 weeks of study on 28 April 2014 and finished 5 weeks later. Everything related to the trial, including its content, was conducted in English.

Participants and centre

Second-year and third-year undergraduate physiotherapy students from the Bangladesh Health Professions Institute were

screened by their teachers for inclusion and invited to participate. This Institute has been providing undergraduate physiotherapy training for 15 years. The Bangladesh Health Professions Institute has approximately 40 students in each year, and is located at the Centre for Rehabilitation of the Paralysed: a 120-bed spinal cord injury centre.

Physiotherapy students were included if they were over 16 years of age, willing to participate and had regular Internet access. Potential students were excluded if they had insufficient English to provide consent, and complete the online modules and assessments. One teacher who was well acquainted with the students and was fluent in English rated the English skills of all students. He was asked to rate each student's English on a 0 to 10-point scale, where 0 represented 'very poor' and 10 represented 'very good'. The students were also asked to rate their own English skills on the same scale.

Once the final number of students willing to participate was known, a randomised allocation schedule was computer generated by an independent person in Australia. The schedule was blocked and stratified by year of study (second-year student versus third-year student). The Bangladeshi site emailed the participants' details and year of study to Australia, where an independent person provided each participant's allocation according to the random schedule. Each participant was individually emailed to reveal group allocation and to provide instructions about what they were expected to do. The participants were deemed to have entered the study at this point.

Intervention

Participants allocated to the experimental group were enrolled in a 5-week MOOC titled *Physiotherapy Management of Spinal Cord Injuries* (http://www.physio-pedia.com/Physiotherapy_Management_of_Spinal_Cord_Injuries). The MOOC was run through Physio-pedia in collaboration with the International Spinal Cord Society and was not solely for the participants of the trial; it was open to physiotherapy students or physiotherapists from any country. It was widely advertised and ultimately attracted 3523 registrants from 108 countries. The MOOC required the experimental participants to devote 3 hours per week to study. It provided these participants with a course curriculum, objectives and a weekly study plan. In addition, these participants were invited to complete a pre-course and post-course quiz; this was different to the knowledge assessment used as part of the trial. At the beginning of each week, these participants were emailed three to six tasks to complete. The tasks included completing lessons from the physiotherapy-specific module of www.elearnSCI.org. By the end of the course, the experimental participants moved through the 14 physiotherapy-specific lessons. The experimental participants were also required to do some additional reading and engage in an online Facebook discussion for all MOOC registrants. Checks were made to ensure that all of the experimental participants joined the Facebook group. There were two designated teachers of the MOOC; both had extensive clinical and academic experience in the physiotherapy management of spinal cord injuries. The MOOC did not involve listening to either of the teachers (or anyone else) talk with electronic slide presentations, although it did involve viewing short videos from the two teachers at the beginning of the course and then from one teacher each week. The videos outlined the content of the course and learning material for each week. The learning objectives and weekly plan of the MOOC were freely available through the Physio-pedia website, although the details of each week were only released at the beginning of each week of the course. The experimental participants were emailed prior to the course, upon completion of the course and each week throughout the course to provide them with instructions. These emails were generic emails sent to all registrants of the MOOC. The Bangladeshi students who were part of this study were not provided with any special attention during the MOOC, but they were provided with assistance to register, and in some cases, assistance to set up email accounts. One

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات