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Peer teaching and information retrieval: the role of the NICE Evidence search student champion scheme in enhancing students' confidence

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Abstract

Background: This research reports on the NICE Evidence search (ES) student champion scheme (SCS) first five years of activity (2011-2016) in terms of its impact on healthcare undergraduate students' information search skills and search confidence.

Objectives: a review of students' evaluation of the scheme was carried out to chart the changes in attitude towards NICE Evidence search as an online healthcare information source and to monitor students' approach to information seeking.

Methods: this study is based on the results of questionnaires distributed to students before and after attending a training session on NICE Evidence search delivered by their own peers. The exercise was implemented in health-related universities in England over a period of five consecutive academic years.

Results: (i) students' search confidence improved considerably after the training; (ii) ES was perceived as being an increasingly useful resource of evidence-based information for their studies; (iii) the training helped students develop discerning search skills and use evidence-based information sources more consistently and critically.

Conclusions: the NICE SCS improves confidence in approaching information tasks among healthcare undergraduate students. Future developments could involve offering the training at the onset of a course of study and adopting online delivery formats to expand its geographical reach.

Keywords

Teaching, Undergraduates, Evidence-based resources, Searching behaviour.

Key Messages

- The NICE ES SCS is a national programme launched in 2011 to promote the use of evidence-based resources among healthcare undergraduate students.
- The SCS has considerably improved information search confidence in healthcare students who participate to the scheme.
- The scheme can help develop critical appraisal of healthcare information and increase routine use of evidence-based resources.
- The peer teaching format adopted has contributed to the uptake of Evidence search and to the students' better reception of the scheme.

Introduction

A thorough scrutiny and evaluation of initiatives like the NICE Evidence search student champion scheme (SCS) involves the consideration of multiple aspects which help identify the correct positioning of this research in the literature. With this in mind, this research involves elements of three main areas of study: peer teaching in university settings, information literacy applied to higher education, and evidence-based practice (EBP) (including evidence-based medicine - EBM), predominantly as a formal and structured form of teaching.

Information Literacy (IL) has been defined by the American Library Association (1989) as "a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information", and has been the object of numerous research studies, attempting to interpret and standardise the information needs and skills of university students (Peter et al., 2015; Rosman, Mayer & Krampen, 2015; Boh Podgornik et al., 2016). Despite students, and young people in general, having often advanced online searching skills and easy access to information, they still lack the necessary ability to critically appraise what they have

retrieved (Leckie & Fullerton, 1999; Pinto, 2010). There have been many holistic approaches to evaluating the importance and impact of IL (Johnson & Webber, 2003; Moorey et al., 2014), but more recent trends involve the consideration of additional factors, such as game-based learning, which exploits young people's attraction to play and games (Walsh, 2015), or information problem solving classes, based on a "hands-on" approach to information seeking and appraisal (Wopereis, Frerejean & Brand-Gruwel, 2015).

Several scholars (Andretta, 2009; Badke, 2008; Whitworth, 2007) would argue that the concept of IL has evolved from the simplified concept of *finding* material and is now about the transferable ability to practise discernment on information in new and unfamiliar contexts.

The NICE SCS was originally conceived with the intention to promote the routine use of evidence-based information amongst healthcare students (i.e. from Medicine, Pharmacy, Dentistry and Nursing, Midwifery and Allied Health Professional courses), which would lead to a more consistent adoption of evidence-based practice across the new generations of healthcare professionals. The model draws heavily on the techniques learned from the Facilitating Information Literacy Education (FILE) course (Andretta, 2009).

There is a widespread understanding that the practicing of health should be grounded on the latest research and for which strict criteria of validity should be applied (Cullen, Clark & Esson, 2011). EBP consists in the research, appraisal and application of scientific evidence to the practice of healthcare; the development of digital technologies has contributed considerably to the increase of published research findings (Hamer & Collinson, 2014), so much so that some authors believe that nowadays EBP is a difficult standard to attain (Greenhalgh, Howick & Maskrey, 2014; Kang, 2016). Greenhalgh, Howick and Maskrey (2014) have argued in favour of the return of EBP's foundation principle, that is "to individualise evidence and share decisions through meaningful conversations in the context of a humanistic and professional clinician-patient relationship" (p. 5). The first step to achieve this is to promote communication and transparency among all stakeholders involved.

The context for this study is also that of peer teaching and peer evaluation. The NICE SCS format of delivery is based on students supporting and assisting each other's learning. Peer teaching has been successfully promoting students' learning in a multitude of areas, from physical education (Irvine, Williams & McKenna, 2016) to mathematics (Duah, Croft & Inglis, 2014), from science (Sullivan, Marshall & Tangney, 2015) to philosophy (Butchart, Handfield & Restall, 2009). However, it is in medicine and in other health-related sciences that peer teaching has been most productively applied (Hall et al., 2014; Rashid, Sobowale & Gore, 2011; van de Mortel et al., 2016).

The present study seeks to formulate an appropriate assessment of the impact that the NICE student champion scheme peer-led sessions have on undergraduate students' confidence in searching and retrieving significant healthcare information. Quantitative and qualitative data on students' perceptions collected by NICE since 2011 have been employed for this research to allow for the evaluation of the scheme over a five-year period.

Objectives

The overall aim of this research is to develop understanding of the influence that the NICE Evidence search SCS has had over the information seeking behaviour of healthcare undergraduate students. In particular, the research objectives are:

1. To evaluate the use and spread of NICE Evidence search as reported by peer taught students.
2. To determine the effectiveness of the structure and delivery of the scheme in increasing the use of evidence-based information by undergraduate students.
3. To assess the impact of the scheme on the information search confidence and appraisal skills of students.

Background

There is significant apprehension about Information Literacy skills of current higher education students (Bailey et al., 2007; Gray et al., 2005; Schroeder, 2010). A large body of research discusses the promotion of IL programmes in universities in an attempt to bridge this knowledge gap, however, the majority of the literature assessing college students' IL skills is on pre and/or post library

instructional session assessment (Dubicki, 2013). SCONUL (Society of College, National and University Libraries) developed the Seven Pillars of Information Literacy model (SCONUL, 2001) with the aim to help teachers and librarians disseminate information skills. With a similar purpose, ANZIIL (Australian and New Zealand Institute for Information Literacy) published the Australian and New Zealand Information Literacy Framework: Principles, Standards, and Practices (Bundy, 2004) suggesting a set of six standards to promote Information Literacy in all education sectors. In the United States, the National Forum on Information Literacy promotes regular initiatives to arise awareness on the importance of IL across working sectors and different demographics (Weiner & Jackman, 2015). At many universities, assessment tools for measuring students' skills in IL have been developed by both librarians and academic staff. For example, Gormally, Brickman and Lutz (2012) proposed the development of a test to measure undergraduates' evaluation of scientific information. A recent research conducted in Germany has led to the formulation of a test for academic information-seeking skills in psychology students that measures both procedural and appraisal aspects of the process Rosman, Mayer & Krampen, 2016). Other research conducted in the UK showed that, when some form of IL training is provided, either face-to-face or online, students tend to retain the skills acquired in the longer term (Brettle & Raynor, 2013). In the context of health disciplines, the generalised trend towards evidence-based practice is now inferring that healthcare professionals should have achieved a good level of IL to be able to access the best evidence in everyday practice to assist in clinical decision-making (Clarke et al., 2013). IL programmes involving the adoption of an evidence-based approach, and co-taught by librarians and medical faculty have demonstrated an improvement in students' EBP skills (Dorsch, Auyer & Meyer, 2004). However, although the body of evidence available on how the teaching of EBP to medical students is still small, recent research by Ilic and Maloney (2014) suggested that "any form of teaching EBM significantly increases learner competency in EBM knowledge, skills, attitudes and behaviour" (p. 124). The present research discusses aspects of IL, i.e. search confidence and critical skills, that can be directly evaluated through such a straightforward exercise of initial behaviour/attitude-training-perceived modified behaviour.

Peer teaching has been adopted with growing frequency and success within the healthcare education system over the last twenty years, particularly to promote students' understanding of research and its relevance to good practice (Buckley & Zamora, 2007; Thomson, Smith & Annesley, 2014; Topping, 1996). However, the past ten years have seen an increasing international interest in formally organised peer assisted learning (Burgess, McGregor & Mellis, 2014). A study conducted on neurosurgery scholars at the Australian School of Advanced Medicine (Simons, Morgan & Davidson, 2012) has highlighted how the application of evidence-based medicine is strictly connected to advanced levels of Information Literacy, to the extent that

> "to effectively practice evidence-based medicine and become lifelong learners, […] clinicians must learn how to independently search for and manage the literature in their patient-centred context. Without these skills, they will be unable to develop their core roles as 'medical experts'" (p. 291)

A review by Dorsch and Perry (2012) has revealed that EBM instructional initiatives have been discussed in both the library and medical education literature, therefore "reaching cross-disciplinary audiences concerned with improving education in the EBM process and lifelong learning" (p. 255). Rees et al. (2014) have discussed how peer teaching has proved beneficial for an effective delivery of evidence-based medicine in one UK medical school. Their study, together with Rowley et al. (2015) and Sbaffi et al. (2015) are the only literature available on peer teaching of evidence-based practice for undergraduate students and all of them report the NICE student champion scheme as key example, highlighting a gap in the knowledge. This is also in agreement with Maggio et al. (2013), who reported on a number of methodologies used in higher education to train students in EBP, including using physicians and librarians as instructors, or allied health professionals and faculty from different disciplines, but not peer teaching. This suggests that there is still scope to study how peer teaching can affect the advancement of evidence-based practice. This paper focuses on the promotion of an evidence-based information resource through a peer teaching approach, which could lead to a more systematic adoption of EBP.

Methodology

The student champion scheme

NICE Evidence search is a web portal providing evidence-based resources launched by NICE (National Institute for Health and Care Excellence) in 2011. The NICE Evidence search student champion scheme (SCS) was introduced subsequently with the objective to increase the uptake and use of evidence-based resources through a programme of education and support. The SCS is based on a peer-based training system which: (i) helps to make healthcare students aware of NICE Evidence search, (ii) shows them how to search for and use evidence-based information effectively, and (iii) offers students an additional, easy-to-access information source for their study and practice. Undergraduate students who participate in the programme and volunteer to become 'student champions' attend an initial workshop designed to give them a good understanding of NICE Evidence search and help them to facilitate peer-group training. The champions are expected to promote and deliver at least one learning session on NICE Evidence search to a minimum of eight students or two smaller sessions. This is usually achieved with support from an academic or a librarian in their own university, and often working in pairs with another student champion.
The training/learning sessions are designed by the student champions to match closely the needs and levels of experience of the participating undergraduate students. Student champions are encouraged to cover when, how and why ES would be of benefit to their fellow students both in their studies and in their future practice.

Data collection

The SCS has been implemented for five consecutive academic years (cycles) since 2011. Student evaluation of the scheme has been conducted for each cycle via two separate surveys, with responses being first collected prior to the training sessions offered by the champions and 8-12 weeks after the delivery of the training.
The SCS evaluation surveys, both pre- and post-training (Appendix A) consist of a selection of open and closed questions regarding student peers' experience with the scheme and with ES, making them suitable for both quantitative and qualitative analysis. The surveys have been created by AW and EC and the responses have been processed by EC for each academic year. The response rate was consistently lower in post-training than in pre-training surveys (on average 50% less), with better rates attained in those Schools where the SCS was part of the curriculum of study. To maximise the significance of the findings, the following selection criteria were applied to identify the most appropriate sites/data sets to analyse:

- a minimum of 20 student questionnaires available for a site
- the availability of both pre- and post-training survey questionnaires from a site
- datasets available for several years of the scheme (where possible)

Ultimately, analyses were performed on 50 different data sets across England, for a total of over 8000 respondents selected (Table 1). The majority of the sites (84%) were Pharmacy Schools (20), Medical Schools (19) and a combination of both (3), with the remaining 16% being Dentistry (3) and Nursing, Midwifery and Allied Health Professionals (5).

[Insert Table 1 here]

The analyses were based on the following specific questions, which the researchers deemed useful in contributing to the aim and objectives of this study:

Q1. How confident are you in searching for health and social care information using NICE Evidence search? (Pre and Post)
Q2. How useful are you finding NICE Evidence search? (Post)
Q3. Which resources do you use to access health and social care information? (Pre and Post)
Q4. Have you previously heard of NICE Evidence search? (Pre)
Q5. Have you used NICE Evidence search since attending the SCS learning session? (Post)
Q6. Please provide any additional comments. (Pre and Post, but only Post reported here)

The wording “health and social care information” was selected in the surveys to encompass the varied topics of interest across the different disciplines participating to the scheme.

Results

The question “How confident are you in searching for health and social care information using NICE Evidence search?” (Q1) was asked on a Likert scale from 1 to 5, where 1 was ‘very unconfident’ and 5 was ‘very confident’. Q1 was selected to provide an indication of the impact of the SCS on competence with NICE ES. The analysis of the responses (Table 2) shows that the SCS has had a positive impact on confidence in each of the five cycles. The highest impact was recorded in 2012-13, when the confidence pre-training was only 2.80 (mean value) but raised to 3.70 (mean value) during the post-training survey, reflecting an increase of 0.90. The lowest impact was recorded for the subsequent cycle (2013-14, 0.58 mean difference), but the overall increase in confidence over the five-year running of the programme has been 0.66 (corresponding to 13.2%).

[Insert Table 2 here]

Question Q2 about the usefulness of NICE Evidence search was asked during the post-training survey with possible answers ranging from 1 (not at all useful) to 5 (very useful) as an indicator of potential use and impact on practice. Table 3 shows how ES has been perceived as increasingly useful throughout the years, moving up from a mean value of 4.14 in 2011-12 to a mean value of 4.30 in 2015-16. This result is in line with the increased use of Evidence search as the first source of health and social care information after undertaking the training by student champions (Table 4). With this ranking question, present in both surveys, the students were asked to indicate their favourite health information resource, to inform on the perception of NICE ES relative to other sources, and its change after training.

[Insert Table 3 here]

Table 4 shows that the SCS has contributed, over the years, to a reduction in the use of generic information resources as first port of call when looking for health-related information (Q3), specifically, Google and Google Scholar (overall decrease of 8% in five years). The use of Wikipedia has also been decreasing in time by 1.76%. NICE Evidence search has recorded an increase of almost 19% over five years in the extent to which it is used as first choice of information by healthcare students, together with an increase of 7% in the use of the NICE procured resource, Clinical Knowledge Summaries (CKS) and NICE Pathways/NICE Guidance.

[Insert Table 4 here]

The increased popularity of NICE resources appears to have come at the expenses of other bibliographic sources too, in particular PubMed and Medline, which reported a decreased use of respectively 4.66% and 1.92%. This suggests that once students are made aware of the existence of ES and are given the opportunity to familiarise with the types of evidence it links to, they tend to favour it over established resources.
The term “Other” (bottom entry in Table 4) refers, in the majority of cases, to university-related sources such as university libraries, databases and school-specific search engines and to course-specific textbooks which would be too numerous to list individually. The use of these resources has decreased by 5.22%.

When students were asked whether they had heard of ES before taking part to the training session to provide an appreciation of the spread of the NICE ES 'brand' (Q4), the answers they provided were mixed throughout the cycles (Figure 1). Almost 70% of the students knew about Evidence search in 2011, but this value dropped to an average of 47.4% for the following four years. Although there are no obvious explanations for this, the higher percentage observed in the first cycle might be due to the larger marketing campaign dedicated to the promotion of Evidence search which took place in early 2011 but was not repeated in subsequent years.

[Insert Figure 1 here]

The last closed question to be analysed was that regarding whether students had used NICE Evidence search since taking part to the training as an indicator of the impact of peer training (Q5, Figures 2 and 3). Students were given the opportunity to select more than one option for this question. At each site, over at least 80% of students confirmed using NICE Evidence search after the peer-taught session, which is a further indication of the positive impact attained by the programme (Figure 2).
Throughout the years, the main reason for students to use ES has been to assist them in their studies, with percentages ranging from 66.2% to 73.8%, as a confirmation of the newly acquired relevance of the resource once the students were made aware of its existence. The second main reason for accessing Evidence search, with percentages between 30.7% and 36.8%, was to perform general searches, not linked to the students' immediate topic of study, but more related to a need to broaden their health, medicines and social care knowledge. The third and final reason for using Evidence search was to familiarise themselves with the resource, particularly shortly after having participated to the training, to retain and reinforce the skills developed during the peer-taught session (values between 19.8% and 23.2%).
A minority of students, between 9-12% throughout the sites (Figure 3), did not access the resource after the training, mostly for lack of time or lack of opportunity, but virtually all of them were planning to use it at the first opportunity.

[Insert Figure 2 here]

[Insert Figure 3 here]

The analysis of the open-ended question, which was formulated as "Please provide any additional comments" (Q6), required coding of the main themes identified. The question was selected to emphasise the strengths/weaknesses of the SCS programme and highlight areas of further development. Overall, across the five years of the programme, the mean response rate to this question was around 14.6%. The comments provided revolved mainly around four clear aspects of both NICE Evidence search and the peer training. Some of the posts included more than one theme and were therefore coded more than once, hence the sum of the percentages greater than 100. The most relevant themes identified, in decreasing order of importance, are:

1. *Usefulness*. The term has been used by students to encompass two main concepts, the first one being the usefulness of ES as a newly found source of trustworthy and relevant clinical information (27.6% of the responses) and the second referring to the usefulness of the training received (19.1%). This was by far the most prominent theme identified, accounting for almost 50% of the responses. Here are some of the students' comments about this aspect:
"Useful at finding steps and treatments"
"I think the website is very useful in studies and general research"
"The training was incredibly useful; it has widened my awareness of just how much NICE search has to offer as well as guiding me in how to use it"
"Very useful workshop, learnt more about how to use the NICE website and features which I previously did not know about"

2. *Easy to access*. This term refers to the layout and accessibility of ES. Students consider the interface and visual aspects of the resource as particularly user-friendly, also when compared to other search engines with similar purposes (18.7%). Here are some of the comments about this point:
“Easy to navigate and quickly access key information along with treatment and management pathways”
“NICE Evidence search is an easy and well laid out website to use and to navigate around. It contains information that is clearly set out and it is user friendly. I find that NICE Evidence search is an all rounded website that has all the information I require. It can be used on its own or as a starting point to venture into other areas of literature and so on”
“This is not only a vital tool for healthcare workers and students, it is also clearly laid out and easy to access”
“The NICE website is extremely comprehensive and user friendly, making accessing healthcare information incredibly straightforward”

3. *Up-to-date*. A number of students commented on how ES offers current information which is also relevant to their study (8.8%). Below are a few significant comments about this theme:
“Excellent website, that I now use all the time for up to date evidence”
“Excellent tool with up to date information at your fingertips”
“Very useful search base for reliable up to date information”
“Useful tool - know that the information is reliable and up to date”

4. *Student champions*. This was the least numerous of the themes identified. Around 4.3% of the students made comments on the students delivering the training session. However, all comments regarding this theme were positive and supporting of further developments of the scheme. some examples of posts are:
“The students who presented the Evidence search website and how to use it were very good at describing what needed to be done and were enthusiastic”
“The peer led small group session was very informative and well delivered. It was practical and interactive”
“Very helpful and enthusiastic volunteer leading the session and a helpful recap. I didn't know about the NICE apps previously so that was very useful”
“…having other students deliver the training made it easier to engage with”
“The session was well laid out and taught well by peers”

The strongest criticism to the NICE SCS was documented about the timing of the training session. This issue was raised by more than 20% of the students who complained that the training would have been much more effective and relevant if delivered earlier in their course of study rather than in the last year:
“A very useful website that should be introduced early on in the medical school curriculum”
“Was aware before third year of this resource but would still have liked greater awareness of the potential uses of NICE Evidence at an earlier stage”
“Excellent session, really useful to know about and easy to use. I wish I'd known about it sooner!”
“I think medical students should be told about NICE evidence when they start medical school as I have found it a very useful source since my session”
“This was delivered at a point in the course when I had already had to teach myself to use the resources for my studies. Would be more useful in first or second year”

Other points of criticism, mentioned by less than 2% of the students, included the lack of a proper portable version of the resource for mobile phones and tablets and the incompleteness of information about specific rare conditions.

Discussion

This research aimed to progress understanding of the effects that the NICE student champion scheme has on the information search confidence of healthcare undergraduate students. The

present study is the first to report on the full-scale implementation of the scheme and to include qualitative data from students undertaking the training sessions with champions. The results indicated that, consistently with previous evaluations conducted on the programme (Rees et al., 2014; Rowley et al., 2015; Sbaffi et al., 2015), there are objective advantages from participating to the NICE SCS. The most significant result of this study is the consistent improvement in search confidence that students experience after attending the peer-taught training session. The total scores for confidence in search for health and social care information were on average 0.66 points higher after the training, measured on a scale from 1 to 5, translating in an overall increase in confidence of 13.2% between pre- and post-training. Rees et al. (2014) reported on the efficacy of the scheme at one individual institution where the majority of the students undertaking the peer training also expressed an increased confidence in performing information seeking tasks. In addition, Rowley et al. (2015) showed similar results by looking at the first two years of the scheme, but across a fairly limited number of institutions. The study by Sbaffi et al. (2015) also reported on benefits of the scheme, but from the viewpoint of the student champions only who, as a result of their tailored NICE training, developed a more critical approach to healthcare information searching. Hence, this research expands of the preceding ones and allows for a systematic generalisation of the findings. Increased search confidence is also in line with previous research reporting on the benefits of peer teaching on the self-reliance of medical resources' users in general (Simons, Morgan & Davidson, 2012; Thompson Smith & Annesley, 2014).

A second, equally relevant, result of this research is that undergraduate students, once completed the training on the use of NICE ES, not only start favouring this resource above bibliographic databases (e.g. PubMed), but decrease considerably their use of unqualified sources, such as Google and Wikipedia, displaying a development in their critical appraisal of the information and a shift towards evidence-based resources. This conclusion cannot be corroborated by the existing literature, as no previous study has taken into consideration the possible change in resource preferences due to some form of formal or informal training in universities.

The student learners have also expressed the view that ES is not only significantly useful for their course of study, but the relevance of the resource keeps growing with time, possibly due to the increased users' familiarity with it (Garcia-Marques, Prada & Mackie, 2016). This is in agreement with preliminary studies conducted on the impact of NICE Evidence search (Rowley et al., 2015; Sbaffi et al., 2015). This finding is also supported by the responses provided regarding the main reasons for using NICE ES. The descriptive analysis showed that the primary reason for accessing Evidence search is to assist students with their study (overall mean value of 69.24%). That NICE Evidence search is indeed a useful resource has further been confirmed by the thematic analysis of the open-ended question in the post-training survey, which showed that "usefulness" was the prominent characteristic of ES, mentioned at least by one every four participants to the training. The inclusion of trained students' views is a novel aspect of research conducted on the SCS as previous studies using qualitative data have discussed the benefits for student champions only (Rowley et al., 2015; Sbaffi et al., 2015).

Many of the students attending the peer-taught lesson indicated that the student champions were very clear and enthusiastic in their delivery, often providing summaries and practical examples, hence showing a deep understanding of the problems encountered by their peers while learning. This result is in agreement with findings from Glynn et al. (2006) and Thomson, Smith and Annesley (2014) and highlights and reinforces the importance of peer-led training education. The programme evaluated in this study aims to encourage the use of NICE Evidence search with the scope to promote evidence-based practice in young and future practitioners. Recent studies[51,52] have shown that the lack of adequate resources is the most common barrier to the implementation of EBP in healthcare, hence, the systematic training offered by NICE in the use of ES can lead to a widespread adoption of appropriate guidelines in newly trained healthcare professionals. Interestingly, the achievement of this objective produces greater information seeking confidence as side effect.

Finally, previous studies have shown inconsistencies and conflicting results about the validity of training in the form of one-off sessions, as long-lasting impact cannot be guaranteed after only one training (Carlock & Anderson, 2007; Farrell, Goosney & Hutchens, 2013; Ilic, Tepper & Misso, 2012). This study has demonstrated that the NICE SCS delivery format, over the course of five years, has indeed had an impact on improving information search skills in students, particularly by increasing self-confidence in information seeking and contributing to a wider use of specialised (i.e. evidence-

based) health resources. Existing research on the NICE SCS (Rees et al., 2014; Rowley et al., 2015; Sbaffi et al., 2015) has been unable to fully demonstrate this benefit due to limited data availability and the much shorter time frame involved.
This research has distilled the benefits of the NICE SCS on a mid-term scale as a nationwide programme aiming at improving confidence in information retrieval and promoting evidence-based practice (via the use of evidence-based resources) in undergraduate students from health-related disciplines. However, as a major point of criticism, many participating students have expressed disappointment at having been trained too late in their course of study, when both Evidence search (as an accredited resource) and the cascade session (as online search skills training) could have been much more impactful if implemented during the first year at university. This is a point that is worth considering before running future editions of the scheme.

Limitations and future directions

A disadvantage of any peer teaching approach is that it can be time consuming to organise; however, one of the strong points of the NICE student champion scheme lies precisely in its established routine of recruiting, training and supporting champions prior to the delivery of the peer cascade session. This programme has proven instrumental over time in reinforcing an evidence-based approach amongst the students taking part. Such a format could be deployed both in other countries to encourage EBP across health disciplines, and to support further peer teaching initiatives on a large scale.
NICE Evidence search focuses on resources for healthcare and, increasingly, on resources for social care. The initial target groups for the scheme were Medicine and Pharmacy students, but limited numbers from Social Care, Nursing, Midwifery and Allied Health Professional students are also taking part in the scheme. The greatest challenge is the capacity to deliver the scheme to a wider range of disciplines.
Although this research has analysed the performance of the programme since its inception, a longer observation period would be advisable to fully evaluate its impact on long-term use of evidence-based resources.
A further limitation of the present study is the discrepancy in response rates between pre- and post-training surveys. The decrease in response rate exposes the research to risks of bias, such as under-representation of “hidden” groups (Heckathorn, 1997). However, the analysis of the open question showed a fair range of opinions which suggests a limited effect on the overall results.
The adoption of further evaluation tools, such as focus groups or short interviews with selected student learners and student champions would help quantify the effective learning outcomes of the programme and a measurement instrument could be deployed to assess the use of EBP amongst the older generations of healthcare practitioners.
The introduction of questions in the post-training survey concerning the student learners’ evaluation of their peer teachers (i.e. student champions) could provide insights on the overall performance of the champions and bring to attention areas of deficit/excellence which could help apprise and tailor the initial training provided by NICE.
Exploring alternative means of delivery of the student champions training, in particular the development of an online format, might contribute to the further pervasion of the programme in England, Wales and Northern Ireland and maximise the dissemination of evidence-based practice principles.

Conclusion

This research has demonstrated how the NICE Evidence search student champion scheme is contributing to improving the critical appraisal of information and use of evidence-based resources in students from health-related disciplines. Over its five years of activity, the SCS has involved tens of Schools and Universities across England providing peer-taught training on the principles of evidence-based medicine and on the use of Evidence search as a source of qualified, evidence-based medicine, health and, recently, social care information. Confirmation has been provided that the scheme contributes to increasing confidence in healthcare information seeking in undergraduate

students and affects their choice of information source, steering them away from general search engines such as Google, Google Scholar and Wikipedia in favour of more certified resources. The increasing scale and popularity of the scheme suggest that these findings are a good indication of an overall improvement of information seeking behaviour among healthcare students in higher education. These benefits could be further enhanced by (a) providing training sessions to undergraduates at earlier stages of their academic studies, possibly during the first year of study, (b) exploring additional channels of delivery of the training (e.g. online distance training) and (c) expanding beyond the current geographical intake.

References

American Library Association (1989). Presidential Committee on Information Literacy. Final Report, Chicago: American Library Association. Accessible at: http://www.ala.org/acrl/publications/whitepapers/presidential [Accessed on 12 November 2017]

Andretta, S. Facilitating Information Literacy Education (FILE) (2009). In: Brine A (ed). *Handbook of Library Training Practice and Development: Volume Three*. Taylor and Frances: London and New York, pp. 49-78.

Badke, W. (2008). Information literacy and faculty. *Online*. 32(3):47-49. Available at: http://onlinemag.net

Bailey, P., Derbyshire, J., Harding, A., Rayson, K. and Syson, L. (2007). Assessing the impact of a study skills programme on the academic development of nursing diploma students at Northumbria University, UK. *Health Information and Libraries Journal*. 24(s1):77-85.

Boh Podgornik, B., Dolničar, D., Šorgo, A. and Bartol, T. (2016). Development, testing, and validation of an information literacy test (ILT) for higher education. *Journal of the Association for Information Science and Technology*. 67(10):2420-2436.

Brettle, A. and Raynor, M. (2013). Developing information literacy skills in pre-registration nurses: an experimental study of teaching methods. *Nurse Education Today*.33(2):103-109.

Buckley, S. and Zamora, J. (2007). Effects of participation in a cross year peer tutoring programme in clinical examination skills on volunteer tutors' skills and attitudes towards teachers and teaching. *BMC Medical Education*. 28:7-20.

Bundy, A. (2004). Australian and New Zealand Information Literacy Framework: principles, standards and practice. Australian and New Zealand Institute for Information Literacy, Adelaide. Available at: http://www.caul.edu.au/content/upload/files/info-literacy/InfoLiteracyFramework.pdf [Accessed on 12 November 2017]

Burgess, A., McGregor, D. and Mellis, C. (2014). Medical students as peer tutors: a systematic review. *BMC Medical Education*. 14:115.

Butchart, S., Handfield, T. and Restall, G. (2009). Using Peer Instruction to Teach Philosophy, Logic and Critical Thinking. *Teaching Philosophy*. 32(1):1-40.

Carlock, D. and Anderson, J. (2007). Teaching and assessing the database searching skills of student nurses. *Nurse Education*. 36(6):251-255.

Clarke, M. A., Belden, J. L., Koopman, R. J., Steege, L. M., Moore, J. L., Canfield, S. M. and Kim, M. S. (2013). Information needs and information-seeking behaviour analysis of primary care physicians and nurses: a literature review. *Health Information and Libraries Journal*. 30(3):178-190.

Cullen, R., Clark, M. and Esson, R. (2011). Evidence-based information-seeking skills of junior doctors entering the workforce: an evaluation of the impact of information literacy training during preclinical years. *Health Information and Libraries Journal*. 28(2):119-129.

Dorsch, J. L. and Perry, G. (2012). Evidence-based medicine at the intersection of research interests between academic health sciences librarians and medical educators: a review of the literature. *Journal of the Medical Library Association*. 100(4):251-257.

Dorsch, J. L., Auyer, M. K. and Meyer, L. E. (2004). Impact of an evidence-based medicine curricula on medical students' attitudes and skills. *Journal of the Medical Library Association*. 92(4):397-406.

Duah, F., Croft, T. and Inglis, M. (2014). Can peer assisted learning be effective in undergraduate mathematics? *International Journal of Mathematical Education in Science and Technology*. 45(4):552-565.

Dubicki, E. (2013). Faculty perceptions of students' information literacy skills competencies. *Journal of Information Literacy*. 7(2):97-125.

Farrell, A., Goosney, J. and Hutchens, K. (2013). Evaluation of the effectiveness of course integrated library instruction in an undergraduate nursing program. *Journal of the Canadian Health Libraries Association*. 34:164-175.

Garcia-Marques, T., Prada, M. and Mackie, D.M. (2016). Familiarity increases subjective positive affect even in non-affective and non-evaluative contexts. *Motivation and Emotion*. 40:638.

Glynn, L. G., MacFarlane, A., Kelly, M., Cantillon, P. and Murphy, A. W. (2006). Helping each other to learn-a process evaluation of peer assisted learning. *BMC Medical Education*. 8(6):18.

Gormally, C., Brickman, P. and Lutz, M. (2012). Developing a test of scientific literacy skills (TOSLS): measuring undergraduates' evaluation of scientific information and arguments. *CBE Life Sciences Education*.11(4):364-377.

Gray, N. J., Klein, J. D., Noyce, P. R., Sesselberh, T. S. and Cantrill, J. A. (2005). Health information-seeking behaviour in adolescence: the place of the internet. *Social Science and Medicine*. 60(7):1467-1678.

Greenhalgh, T., Howick, J. and Maskrey, N. (2014). Evidence based medicine: a movement in crisis? *British Medical Journal*. 348:7.

Hall, S., Stephens, J., Andrade, T., Davids, J., Powell, M. and Border, S. (2014). Perceptions of junior doctors and undergraduate medical students as anatomy teachers: investigating distance along the near-peer teaching spectrum. *Anatomical Sciences Education*. 7(3):242-247.

Hamer, S. and Collinson, G. (2014). Achieving evidence-based practice: A handbook for practitioners. Elsevier Health Sciences.

Heckathorn, D. D. (1997). Respondent-driven sampling: a new approach to the study of hidden populations. *Social problems*. 44(2):174-199.

Ilic, D. and Maloney, S. (2014). Methods of teaching medical trainees evidence-based medicine: a systematic review. *Medical Education*. 48(2):124-135.

Ilic, D., Tepper, K. and Misso, M. (2012). Teaching evidence-based medicine literature searching skills to medical students during the clinical years: a randomized control trial. *Journal of the Medical Library Association*. 100(3):190-196.

Irvine, S., Williams, B. and McKenna, L. (2016). How are we assessing near-peer teaching in undergraduate health professional education? A systematic review. *Nurse Education Today*. 50:42-50.

Johnston, B. and Webber, S. (2003). Information literacy in higher education: a review and case study. *Studies in Higher Education*. 28(3):335-352.

Kang, H. (2016). How to understand and conduct evidence-based medicine. *Korean Journal of Anesthesiology*. 69(5):435-445.

Leckie, G. J. and Fullerton, A. (1999). Information literacy in science and engineering undergraduate education: faculty attitudes and pedagogical practices. *College and Research Libraries*. 60(1):9-29.

Maggio, L. A., Tannery, N. H., Che, C., Cate, O. T. and O'Brien, B. (2013). Evidence-based medicine training in undergraduate medical education: a review and critique of the literature published 2006-2011. *Academic Medicine*. 88(7):1022-1028.

Mooney, H., Collie, W. A., Nicholson, S. and Sosulski, M. R. (2014). Collaborative approaches to undergraduate research training: Information literacy and data management. *Advances in Social Work*. 15(2):368-389.

Peter, J., Leichner, N., Mayer, A.-K. and Krampen, G. (2015). Making information literacy instruction more efficient by providing individual feedback. *Studies in Higher Education*. 10:1-16.

Pinto, M. (2010). Design of the IL-HUMASS survey on information literacy in higher education: a self-assessment approach. *Journal of Information Science*. 36(1):86-103.

Rashid, M. S., Sobowale, O. and Gore, D. (2011). A near-peer teaching program designed, developed and delivered exclusively by recent medical graduates for final year medical students sitting the final objective structured clinical examination (OSCE). *BMC Medical Education*. 11(1).

Rees, E. L., Sinha, Y., Chitnis, A. R., Archer, J. E., Fotheringham, V. and Renwick, S. (2014). Peer-teaching of evidence based medicine. *The Clinical Teacher*. 11(4):259-263.

Rosman, T., Mayer, A. K. and Krampen, G. (2015). Combining self-assessments and achievement tests in information literacy assessment: empirical results and recommendations for practice. *Assessment and Evaluation in Higher Education*. 40(5):740-754.

Rosman, T., Mayer, A. K. and Krampen, G. (2016). Measuring Psychology students' information-seeking skills in a situational judgment test format. *European Journal of Psychological Assessment*. 32(3):220-229.

Rowley, J., Johnson, F., Sbaffi, L. and Weist, A. (2015). Peer-based information literacy training: insights from the NICE Evidence Search Student Champion Scheme. *Library and Information Science Research*. 37:338-345.

Sadeghi-Bazargani, H., Tabrizi, J. S. and Azami-Aghdash, S. (2014). Barriers to evidence-based medicine: a systematic review. *Journal of Evaluation in Clinical Practice*. 20:793-802.

Sbaffi, L., Johnson, F., Griffith, J., Rowley, J. and Weist, A. (2015). NICE Evidence Search: student peers' views on their involvement as trainers in peer-based information literacy training. *Journal of Academic Library*. 41(2):201-206.

Schroeder, H. (2010). Creating library tutorials for nursing students. *Medical Reference Services Quarterly*. 29(2):109-120.

SCONUL (2001). The SCONUL even pillars of Information Literacy: Core model for higher education. Society of College, National and University Libraries. Accessible at: http://www.sconul.ac.uk/sites/default/files/documents/coremodel.pdf [Accessed on 13 November 2017]

Simons, M. R., Morgan, M. K. and Davidson, A. S. (2012). Time to rethink the role of the library in educating doctors: driving information literacy in the clinical environment. *Journal of the Medical Library Association*. 100(4):291-296.

Sullivan, K., Marshall, K. and Tangney, B. (2015). Learning circles: A collaborative technology-mediated peer-teaching workshop. *Journal of Information Technology Education: Innovations in Practice*. 14:63-83.

Tang, T. S., Hernandez, E. J. and Adams, B. S. (2004). Learning by teaching": A peer-teaching model for diversity training in medical school. *Teaching and Learning in Medicine*. 16(1):60-63.

Thomson, P., Smith, A. and Annesley, S. (2014). Exploration of the effects of peer teaching of research on students in an undergraduate nursing programme. *Journal of Research in Nursing*. 19(5):415-430.

Topping, K. J. (1996). The effectiveness of peer tutoring in further and higher education: A typology and review of the literature. *Higher Education*. 32(3):321-345.

van de Mortel, T. F., Silberberg, P. L., Ahern, C. M. and Pit, S. W. (2016). Supporting near-peer teaching in general practice: a national survey. *BMC Medical Education*. 16(1).

Veeramah, V. (2016). The use of evidenced-based information by nurses and midwives to inform practice. *Journal of Clinical Nursing*. 25:340-350.

Walsh, A. (2015). Playful Information Literacy: play and Information Literacy in higher education. *Nordic Journal of Information Literacy in Higher Education*. 7(1):80-94.

Weiner, S. A. and Jackman, L. W. (2015). Final report on the National Forum on Information Literacy (NFIL). *Journal of Information Literacy*. 9(2):129-130.

Whitworth, A. (2007). Communicative competence in the information age: towards a critical theory of information literacy education. In: Andretta S (ed). *Change and challenge information literacy for the 21st century*. Adelaide: Auslib Press, pp. 85-114.

Wopereis, I., Frerejean, J. and Brand-Gruwel, S. (2015). Information problem solving instruction in higher education: a case study on instructional design. *Information Literacy: Moving Toward Sustainability*. 552:293-302.

Legend for Tables and Figures:

Table 1 Summary of respondents selected for this study for each year of the programme

Table 2 Mean and sd values of changes in confidence in searching for healthcare information pre- and post-training

Table 3 How useful are you finding NICE Evidence search? (Only post-training)

Table 4 Differences, in %, in the use of first choice healthcare information sources between pre- and post-training

Figure 1 Percentages of respondents who have heard of NICE Evidence search before taking part to the peer-taught training session

Figure 2 Percentages of respondents who have used NICE Evidence search since attending the SCS learning session and key reasons

Figure 3 Percentages of respondents who have not used NICE Evidence search since attending the SCS learning session and key reasons