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Does a 3-week critical research appraisal course affect how students perceive their appraisal skills and the relevance of research for clinical practice? A repeated cross-sectional survey☆,☆☆

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SUMMARY

Background: Research utilisation is essential in developing evidence-based practices; although many students may be generally able to adopt such skills, there are reports of barriers related to critical appraisal skills.
Objectives: To explore how students perceive the relevance of research to future clinical practice and patients, and to what extent they read research (including reading pattern). Additionally, the objective was to explore whether a three-week intensive course in critical appraisal of research could affect these variables.
Design: A cross-sectional survey design, with a pre- and post-test.
Settings: One large university college in Southeastern Norway.
Participants: 196 multidisciplinary healthcare students at baseline and 147 after three weeks.
Methods: A purposely-designed 21 item questionnaire was used to quantify students' attitudes towards using research and critical thinking. The questionnaire was based on themes emerging from prior focus group interviews with 10 nursing and social educator students as well as from the existing literature.
Results: At baseline, 6.1% and 7.1% of respondents perceived the research to be of little or very little importance for their future work and patients, respectively. Furthermore, 83.2% reported that they seldom or very seldom read scientific papers. At baseline, 40 different patterns of reading a scientific paper were identified. Additionally, 7.1% of respondents reported to read the introduction, methods and conclusion in combination. Significantly improved scores were found after completing the three-week course related to a) relevance of research for future work ($p < 0.01$), b) self-perceived skills in critical appraisal ($p < 0.001$), c) ability to find scientific papers ($p \leq 0.01$), and d) relevance of research for patients and users ($p \leq 0.001$).
Conclusions: Teaching students' practical critical appraisal skills improved their view of the relevance of research for patients, future work as well as their own critical appraisal skills. Prospective studies are warranted to explore the effects of such teaching modules in the long-term.

Introduction

Healthcare personnel are increasingly faced with the importance of using research in clinical practice to improve the quality of both treatment and care. However, because there has been a rapid increase in the number of published papers in recent years, merely reading papers is not enough (Greenhalgh, 2010). The ability to critically appraise content before deciding whether the evidence is sound or not and should impact daily practice is stressed as important (Greenhalgh, 2010). Evidence-based practice (EBP) is usually defined as the integration of best research evidence with clinical expertise and patient values to facilitate clinical decision making (Greenhalgh, 2010; Melnyk and Fineout-Overholt, 2014; Polit and Beck, 2012). Sackett and Rosenberg (1995) defined the essential steps in evidence-based medicine: a) to convert our information needs into answerable questions (i.e., to formulate the problem), b) to track down the best evidence with which to answer these questions, c) to appraise the evidence critically (i.e., weigh it) to assess its validity (closeness to the truth) and usefulness (clinical applicability), d) to implement the results of this appraisal in clinical practice and e) to evaluate our performance (Greenhalgh, 2010; Sackett and Rosenberg, 1995).

In nursing, critical thinking skills are viewed as important and paramount to support EBP (Profetto-McGrath, 2005). However, previous research has shown that although nurses may be generally positive in adopting EBP skills, they tend to consult colleagues or peers rather

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than academic journals if in need of information (Majid et al., 2011; Thiel and Ghosh, 2008). According to Majid et al. (2011), there are several barriers that may prevent nurses from adopting such skills in clinical practice (i.e., lack of time, mentoring, education and low self-efficacy). Similar results have also been reported in studies among other healthcare professions (Aarons et al., 2012; Mullen, 2014). Kajermo et al. (2000) also reported that physicians, to a lesser extent than nurse clinicians, experience such barriers. Having a milieu that is open and positive, particularly related to a positive leadership, organisational culture is essential for the implementation of EBP (Sandstrom et al., 2011). Consequently, a positive milieu may promote individual support in professional development (Kajermo et al., 2008). Because lack of mentoring and education are viewed as potential barriers to implementing EBP (Sandstrom et al., 2011), increased partnerships and collaboration between health and social care settings and universities may potentially enhance professional development and bridge the gap between theory and practice (Duchscher, 2009; Gerrish, 2000). Developing students' reflective skills and critical thinking have also been viewed as essential to increase coherence between theory and practice (Hatlevik, 2012).

In teaching and supervising future healthcare students, professionals are surprised about how many students seem to lack basic skills in reading and discussing scientific papers. A plausible explanation may be that the parts of the curriculum that focus on research are primarily aimed at students conducting small research projects themselves. Because education is viewed as critical to increase knowledge of research and to develop critical appraisal skills, a process to develop and nourish such skills should start at an early stage (Kajermo et al., 2000). In the general plan for all health and social care education, The Norwegian Association of Higher Education Institutions emphasised that critical appraisal skills need to be included at the pre-licencing level.

The primary aim of the current study was to establish a three-week course in critical appraisal of research and to investigate if this education could affect how healthcare students' viewed the relevance of research to their future clinical practices and their self-perceived skills in critical research appraisal.

Ethics

Participation in the current study was based on the principles of the Helsinki Declaration (2013). All participants were explained that the purpose of completing the questionnaire (pre- and post-course) was to gather information about the use of research, its relevance and self-perceived appraisal skills. Necessary approval was sought from the Regional Committee of Medical and Health Research Ethics (REK) and the Norwegian Data Protection Agency (NSD). However, they both classified the project as health service research, and because no personal health information was to be obtained, no formal approval was necessary to conduct the study, according to Norwegian laws and regulations.

Methods

All final year Bachelor degree (pre-licensed) candidates in nursing, social work, child welfare, biochemistry, social education, work and welfare were invited to participate in this study. All participants were recruited from Østfold University College Fredrikstad during August 2013–September 2013. Because interdisciplinary cooperation is required to solve the complex problems in health and social services, the college offers a module that is common for all healthcare students, and the students enrolled in this study were recruited from that setting. The students were informed both written and orally about the aim of the study and that participation was voluntary.

Students reported their attitudes towards research and their own knowledge of various aspects of research on a self-reported questionnaire. Additionally, data regarding age and gender were collected. The following procedure for data collection was used: at baseline, all students were given the questionnaire at the end of a session consisting of information about the three-week course in aspects related to research. Questionnaires were then returned prior to the next lecture on the same day (questionnaires were completed in 20 min). The latter was based on the assumption that this procedure would allow students to be intervention naïve. Allowing them to complete the questionnaire at home could lead to the use of various information sources and consequently increase the risk of bias (e.g., in question 10, see next section). At the end of the three-week course, all students were invited to complete the questionnaire a second time. All students were instructed to complete the questionnaire in a quiet environment.

Development and Content of the Three-week Critical Appraisal Course

As part of the mandatory curriculum, students previously had to complete their own research project. Because the ethics committee did not allow students at a bachelor student level to conduct projects on patients and users, students gathered their results from other students (e.g., number of students who smoke). Both students and members of the faculty had, over time, been dissatisfied with this course and its associated learning outcome. Consequently, the course was altered to focus specifically on why research is important to clinical practice, how to read a paper and how to critically appraise research. The content covered in the three-week course is presented in Fig. 1, and a critical appraisal of research papers was performed using the critical appraisal tools developed by the Norwegian Knowledge Centre for the Health Services (Norwegian-Knowledge-Center, 2014a).

Questionnaire

A purposely-designed 21 item questionnaire was used to quantify students' attitudes towards using research and critical thinking in clinical practice. The questionnaire was developed based on themes emerging from prior focus group interviews with 10 nursing and social educator students and was supported by the existing literature (Ax and Kincade, 2001; Bjorkstrom and Hamrin, 2001; Bjorkstrom et al., 2003; Edmond et al., 2006). Central themes that emerged from focus group interviews were as follows: ability to critically appraise existing scientific literature, ability to find scientific literature, relevance to practice and relevance to patients and users. The response alternatives for questions one through eight were based on a 5-point Likert scale and rated 1–5, where 1 represents the lowest possible scale score and 5 represents the highest possible scale score. One question (question nine) was divided into seven subparts, in which each part was based on nominal values (either agreement or no agreement). The purpose of question nine was to investigate the pattern in which students self-reported that they read scientific papers. The students were asked to choose which part of a scientific paper they usually read: a) all parts, b) abstract, c) introduction, d) materials and methods, e) results, f) analysis, g) discussion and h) conclusion. Question 10 was based on core scientific questions and the ability of students to correctly identify the study design of six core statements (e.g., research question one: How is it experienced or perceived, have qualitative study as the corresponding design, and research question two: How many have a particular problem (prevalence), have cross-sectional surveys as the corresponding design). All response alternatives on this question were nominal, either agreement or no agreement. The core statements were derived from The Norwegian Knowledge Centre for the Health Services (NOKC) (Norwegian-Knowledge-Center, 2014b). The original questionnaire, as well as core scientific questions, is available from the corresponding author upon request.