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Educational Perspective

Exploring the Role and Application of the Deliberate Practice Concept in Radiation Therapy

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ABSTRACT

The concept of deliberate practice (DP) has been extensively applied to the development of skill and expert performance in many domains of professional practice. Although it has been widely reviewed in other health professions, there is a lack of evidence on its application in radiation therapy practice. This article aims to explore the concept of DP and how it can be applied to radiation therapy practice. The authors define DP, why it is essential, and how it can be implemented in radiation therapy. Evidence from the DP literature in the health professions was used to clarify the guiding principles for successful DP implementation within both the clinical and educational contexts. While the authors encourage radiation therapy practitioners to engage in DP approaches, every profession utilizing DP will develop strategies unique to the individual discipline. Hence, rather than imitating other professions, it is essential that radiation therapists engage evidence-based approaches that will generate empirical evidence to model radiation therapy-specific DP approaches.

Keywords: Radiation therapy; deliberate practice; expertise; skill development

RÉSUMÉ

La notion de pratique délibérée a été appliquée à grande échelle au développement des compétences et de l'expertise dans plusieurs domaines de la pratique professionnelle. Bien qu'elle ait été largement examinée dans d'autres professions de la santé, il y a peu de données probantes sur son application dans la pratique de la radiographie. Cet article vient examiner le concept de la pratique délibérée et son application à la radiothérapie. Les auteurs définissent la pratique délibérée, son caractère essentiel et la façon dont elle pourrait être appliquée à la radiothérapie. Les données probantes sur la pratique délibérée dans la littérature scientifique sur les professions de la santé ont été utilisées pour clarifier les principes directeurs d'une mise en œuvre réussie de la pratique délibérée en radiothérapie dans le contexte clinique et pédagogique. Bien que les auteurs encouragent les praticiens en radiothérapie à adopter les approches de pratique délibérée, chaque profession utilisant la pratique délibérée développera des stratégies propres à sa discipline. Par conséquent, plutôt que d'imiter d'autres professions, il est essentiel que les radiothérapeutes s'engagent dans des approches fondées sur les éléments probants qui permettront de générer des données empiriques pour la modélisation d'approches de pratique délibérée spécifiques à la radiothérapie.

Introduction

Improving the safety and the quality of patient care remains a crucial priority in radiation therapy. As such, educators continue to address new ways to refocus teaching and learning strategies to ensure graduates attain the attributes and skills,

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which align best with competency standards or professional capabilities. Innovative pedagogical approaches aimed to enhance student engagement and retention have been applied and resulted in improved skills acquisition in radiation therapy. As King [1] postulates, experts learn experientially, through engagement, feedback, and reflection. It is, therefore, no surprise that reflection and feedback have become a powerful pedagogical tool that when applied correctly can enhance learning. Deliberate practice (DP) also appears to be an emerging concept, and many professions have utilized theoretical frameworks derived from the principles of DP.

However, there is a shortage of evidence to demonstrate its application in radiation therapy practice.

Recent efforts to improve attainment of skill in radiation therapy are evidenced by the emergence of technology such as the Virtual Environment for Radiotherapy Training [2]. The hands-on acquisition of psychomotor skills required to manoeuvre the radiation therapy machines using techniques such as skin apposition [3], has resulted in authentic experiences without the added risk to the patient. Coupled with role-play scenarios designed to simulate the clinical workflows, students develop the necessary skills to be better prepared to enter work-integrated learning environments. As radiation therapy research continues to focus on advancing skills and improving clinical workflows, there needs to be an equal emphasis on how radiation therapists acquire relevant skills. Furthermore, how these skills can be enhanced through theoretical concepts such as DP for effective application in practice.

Evidence from the literature shows DP has influenced the development of skill in various domains of practice [4–7]. The goal of DP is constant skill improvement, not just skill maintenance and has become a powerful tool in the nursing and medical professions [8]. Radiation therapists require an increasing range of well-developed skills to practice effectively. Practitioners need to combine an understanding of radiation and advanced computer-based technologies with complex clinical reasoning skills. Furthermore, the multidisciplinary nature of cancer management requires radiation therapists to develop decision-making and problem-solving skills unique to the profession to become competent. Therefore, to apply a DP model effectively, the lessons learnt from other professions can be utilized as motivation, although duplicating what has been found to be useful in these professions may not be the best approach.

This article aims to explore the concept of DP and how it can be applied to radiation therapy practice. The authors have provided a brief historical background to support the definition of DP. Evidence has been drawn from the DP literature to highlight some benefits and guiding principles that could support effective DP implementation in radiation therapy practice.

What is DP?

DP was first introduced by Anders Ericsson [9] in 1993, who proposed DP as a model to improve expert performance in any domain where it is applied. Since then, many definitions have emerged. In the nursing profession, McGaghie and Kristopaitis [10] defined DP as a concept where learners are “engaged in difficult, goal-orientated work, supervised by teachers, who provide feedback and correction, under conditions of high achievement expectations, with revision and improvement”. Most definitions appear to focus on “repetitive performance” of cognitive and motor skills and some form of formal “feedback” mechanism inherent in the DP concept, which allows for correction and scaffolding of learning the skill. In some instances, there is mention of

additional opportunities for practice until a satisfactory or expert level is attained [7,11,12]. While McGaghie et al’s [13] definition uses the term “learners”, the assumption in this article is learning applies across all levels of professional practice, from students to highly qualified professionals.

In this article, we have defined DP as, “*purposeful skill augmentation through a strategic repetition of an area of practice guided by feedback from a mentor throughout the process.*” The critical element of DP is strategic repetition, with the learning environment designed to focus on the learner absorbing the complexities of the skill being taught with a view to adapting the learning environment when each new skill level has been acquired. Many learning environments are inundated with multiple stimuli, such as, visual graphics, audio cues, and documented checklists, where the focus is on the task rather than the learner. Learning environments designed this way may overload the individual practitioner, impeding progression that is not consistent with a DP approach, where the focus must remain on the element of the skill being taught. Furthermore, each practice session must be targeted to a level just beyond the current level of the practitioner, forcing cognitive overload and a lasting adaptation.

Why Incorporate DP in Radiation Therapy?

A recent editorial by Palma [14] addresses the concept of DP in radiation oncology. While it does not explicitly discuss radiation therapy practice, Palma [14] mentions how the DP elements of feedback, time for problem-solving and evaluation, and the opportunity to refine behaviour, could be of value in radiation oncology. He adds, these DP elements can be integrated by “reviewing treatment and outcomes, undertaking a peer review of treatment plans, pursuing continuing medical education, and implementing new learnings in clinical practice.” The DP concept focuses on how the practitioner learns from experience and becomes a more efficient, effective, and skilled practitioner [5].

To learn more about the benefits of DP, we explored the science of expertise published from other fields in health care. The concept of DP practice appears to be an emerging concept whose adoption is facilitating skills acquisition in professions such as nursing [11,12,15–17], medicine [5,18], radiology [19,20], diagnostic radiography [21], and psychotherapy [22,23]. Several authors also explored how DP can be utilized in health care education, particularly in nursing sciences [4,11,12,17,18,24]. Pusic et al [21] incorporated DP in x-ray interpretation to allow medical educators to define point(s) at which practice is most efficient. This study generated learning curves that determined how much practice was required to achieve a set level of mastery. A review by Wang and Zorek [25], demonstrates how the defining characteristics of DP in the literature was used to develop a theoretical framework, which is expected to facilitate interprofessional experiential education in the pharmacy profession.

While the direct benefits of DP to clinical outcomes may be difficult to measure, the mere incorporation into other

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