

Research Article

A Qualitative Comparison to Understand the Differences between Perceptions and Reality of Errors in Radiation Therapy: An Understanding Based on Principles of Perception Psychology

Salman Arif, MRT(T), BMRSc, HBSc^{a*}, Marcia Smoke, MRT(T), RTT, ACT, MSc^a and Tom Farrell, PhD, FCCPM^b

^a Department of Radiation Therapy, Juravinski Cancer Centre, Hamilton, Ontario, Canada

^b Department of Medical Physics, Juravinski Cancer Centre, Hamilton, Ontario, Canada

ABSTRACT

Purpose: The purpose of this study was to qualitatively, compare, and understand why perceptions of errors in radiation therapy differ from actual reported errors.

Methods: The qualitative study consisted of one-on-one semi-structured interviews that were conducted with three radiation therapists and two medical physicists. Eight interview questions were based on the discrepancies that existed between perceptions and actual error reports from a survey administered in 2010. Interviews were voice recorded and transcribed followed by three independent thematic analyses. Saturated themes were those that were shared across all respondents. Interpretation of these results was based on the literature of perception psychology in an attempt to understand why such perceptions existed or differed from actual reports.

Results: The thematic analyses revealed that workload, documentation, motives, continuing education, and expectations were recurring themes. The effects of workload were attributed to the psychology of attention and an overburdened filtration process. It is common to find irrelevant distracters or stressors functioning as noise, which make it more difficult to identify and attend to important information. Many forms of stress such as workload, personal, or environmental can function as noise hindering the filtration process, which has been positively associated with therapist burnout. Respondents shared views on redundancy and consistency of documentation. In the literature, adaptation has been shown to play a major role in the formation and alteration of perceptions. Habituation is a form of adaptation that refers to a lessened degree of sensitivity to any one continuous stimulus. Adapting to an environment with a persistent stimulus can result in a passive frame of mind effectively dismissing the redundant stimulus. It is apparent that with redundant documentation, staff members may find themselves habituated with the process of continually transcribing from one document to the next and therefore, making documentation more prone to error. Motives were found

as a common theme when respondents were asked to explain why treatment delivery was the area perceived to be where most errors occur, when in reality this was not true. Respondents expressed the onus of responsibility on therapists at the treatment delivery level. The driving force for this perception is the psychological effect of an individual's motives and the physical consequences of errors at the treatment delivery level. Bolus was perceived to be a greater error than it actually is. From the perspective of the "self-fulfilling prophecy" theory by Robert K. Merton, it would state that radiation therapy staff perceived bolus to be a common error because they expected it to be a common error. Expectations of bolus indicated were its subjectivity of placement, the uncertainty of its error, and its lack of an active interlock system.

Conclusions: Emergent themes from this study have shown the implications and value of a qualitative approach in providing detail rich information and insight for further research of radiation therapy error analysis. Specifically, referencing the literature of perception psychology, we were able to theorize why therapists perceive certain errors to be more common than others and what factors may influence these perceptions. Future large scale studies in radiation therapy of this nature would benefit the field in helping to create reflective policies and procedures to ultimately minimize human errors and broaden our approach to error analysis.

RÉSUMÉ

But : Cette étude vise à effectuer une comparaison qualitative dans le but de comprendre pourquoi la perception des erreurs en radiothérapie diffère des erreurs effectivement rapportées.

Méthodologie : L'étude qualitative a pris la forme d'entrevues individuelles semi-structurées avec trois radiothérapeutes et deux physiciens médicaux. Huit questions étaient basées sur les différences entre les perceptions et les erreurs réelles rapportées dans un sondage

The author(s) have no financial disclosures or conflicts of interest to declare.

* Corresponding author: Salman Arif, MRT(T), BMRSc, HBSc, Juravinski Cancer Centre, Hamilton L8V-5C2, ON.

E-mail address: salman.arif@jcc.hhsc.ca (S. Arif).

réalisé en 2010. Les entrevues ont été enregistrées et transcrites avant de faire l'objet de trois analyses thématiques indépendantes. Les thèmes saturés étaient ceux qui se retrouvaient chez tous les répondants. L'interprétation des résultats a été faite à partir de la documentation de la psychologie de la perception, dans une tentative de comprendre pourquoi ces perceptions existent ou diffèrent des observations rapportées.

Résultats : Les analyses thématiques ont révélé que la charge de travail, la documentation, les motivations, la formation continue et les attentes sont des thèmes récurrents. Les effets de la charge de travail ont été attribués à la psychologie de l'attention et à un processus de filtrage surchargé. Il est courant de voir des facteurs de distraction ou de stress non pertinents fonctionnant comme des bruits nuisant au processus de filtrage et qui ont été associés de façon positive avec l'épuisement professionnel chez les thérapeutes. Les répondants partagent des vues communes sur la redondance et la régularité de la documentation. Dans la documentation scientifique, il est démontré que l'adaptation joue un rôle majeur dans la formation et l'altération des perceptions. L'accoutumance est une forme d'adaptation qui renvoie à une baisse du degré de sensibilité à un stimulus continu. L'adaptation à un environnement comportant un stimulus persistant peut entraîner la passivité de l'esprit, qui fait abstraction du stimulus redondant. Il semble que la redondance de la documentation peut amener les membres du personnel à s'habituer au processus de transcription continue d'un document au suivant, ce qui fait en sorte que la documentation peut devenir propice à l'erreur. Les motivations apparaissent comme un thème commun

Introduction

Over the past 10 years, the advent of technology has revolutionized radiation therapy. Technologies such as intensity-modulated radiation therapy, image-guided radiation therapy, stereotactic radiosurgery, stereotactic body radiation therapy, volumetric-modulated arc therapy, and digital imaging have all been implemented to improve patient outcomes. Although new technology has reduced the probability of many types of medical incidents, new types of errors caused by improper use of new technology, communication failures between computers, corrupted or erroneous computer data files, and "software bugs" are now being seen [1].

As technology continues to develop, the nature and perceptions of errors will continue to change. In 2010, a survey was administered to measure the perceptions of errors of the staff of the Juravinski Cancer Centre (JCC). The JCC is a large academic cancer centre with approximately 100 radiation therapists and 17 medical physicists. The JCC treats more than 5,000 radiation patients per year and has research affiliations with McMaster University. The 2010 survey was an internal, unpublished survey that was conducted by a radiation therapy student. The survey results were used to form the question of this study, that is, why perceptions of errors differ from actual reported errors. The initial survey revealed data on specific errors that differed from staff perceptions but did not explore why such a difference existed. It was determined from this survey that the perceived top errors were documentation, bolus, and source-to-skin distance. However,

lorsqu'on demande aux répondants d'expliquer pourquoi l'application du traitement est perçue comme l'étape où se produisent le plus d'erreurs alors que ce n'est pas le cas en réalité. Les répondants mentionnent la responsabilité qui incombe aux thérapeutes à l'étape de l'application du traitement. Le moteur de cette perception réside dans l'effet psychologique des motivations de l'individu et dans les conséquences physiques des erreurs à l'étape de l'application du traitement. Dans les perceptions, le bolus est vu comme une erreur plus répandue qu'elle ne l'est dans la réalité. Du point de vue de la théorie de « la prophétie qui s'exauce » de Robert K. Merton, on dirait que le personnel de radiothérapie perçoit le bolus comme une erreur courante parce qu'il s'attend à ce que ce soit une erreur courante. Les attentes indiquées à l'égard du bolus sont la subjectivité du positionnement, l'incertitude de l'erreur et l'absence d'un système d'interverrouillage actif.

Conclusion : Les thèmes qui ressortent de cette étude ont montré les répercussions et la valeur d'une approche qualitative de la fourniture d'une information détaillée pour la poursuite de la recherche en matière d'analyse des erreurs en radiothérapie. Plus précisément, en nous référant à la littérature de la psychologie des perceptions, nous avons été en mesure d'établir de façon théorique pourquoi les thérapeutes perçoivent que certaines erreurs sont plus fréquentes que d'autres ainsi que les facteurs qui peuvent influencer ces perceptions. D'autres études de cette nature, à plus grande échelle, seraient bénéfiques pour la discipline de la radiothérapie en contribuant à la mise en place de politiques et de procédures réflexives visant à minimiser les erreurs humaines et à élargir notre approche de l'analyse des erreurs.

the actual top errors were documentation, calculations, and geographic miss. Documentation errors were defined by variances in transcription, omission, and conflicting, incomplete, illegible, or incorrect documentation. Calculation errors were variances that occurred in the treatment planning process, manual calculation, or verification process. Geographic misses were defined as any instance where the isocentre at treatment is different from that planned, beyond normal setup uncertainty. Most of these perceptions demonstrated an apparent mismatch with actual errors reported with the only exception being documentation [2]. As an explorative and hypothesis-generating study based on theories of perception psychology, this study will build a theoretical understanding as to how perceptions influence views on errors and why our perceptions of errors in radiation therapy differ from actual reported errors.

Methods

Semi-structured interviews of three radiation therapists and two medical physicists were conducted. The study was introduced at a monthly staff forum, which included an invitation for volunteers. Participants were randomly selected based on the willingness to volunteer and years of clinical experience. A cover letter was distributed by e-mail to the selected radiation therapists and medical physicists outlining the study objectives. A consent form was signed for the interviews. A research ethics board application was completed and approved before the interviews were conducted. For

Download English Version:

<https://daneshyari.com/en/article/2734104>

Download Persian Version:

<https://daneshyari.com/article/2734104>

[Daneshyari.com](https://daneshyari.com)