What do patients and healthcare professionals “tweet” about brachytherapy?

Many patients post on Twitter about their healthcare experiences. Patients with cancer are especially active on Twitter, and studies have found that sharing experiences online can reduce feelings of isolation. Healthcare professionals also frequently post on Twitter. However, research shows that they primarily use the website to keep up-to-date with the rapidly evolving medical literature as well as to share educational materials to patients.

Brachytherapy (“*short*-therapy”) is a form of radiation therapy used to treat cancer. In this procedure, radioactive seeds are placed within the body to deliver radiation at very *short* distances to the tumor. Because of the short distance of the radiation source, doctors can deliver high doses of radiation while allowing for shorter treatment times and fewer side effects compared to radiation delivered from outside of the body.

Fig. 1. Word Cloud of Patient Tweets about Brachytherapy.

Despite these advantages of brachytherapy, its use has been declining in the United States. As a result, we focused our attention to online discussion about brachytherapy since social media analysis has emerged as a useful tool for understanding beliefs and behaviors about health. We believed that analyzing unprompted, spontaneous posts on social media would minimize bias from the “Hawthorne effect”, or the tendency of individuals to respond differently when directly engaged in formal surveys. Thus, we conducted the first study analyzing what patients and healthcare professionals discussed on Twitter about brachytherapy.

In this study, we collected all English-language tweets about brachytherapy between January 2012 and May 2017 by searching “brachytherapy” in Twitter’s public search function. We only included posts that appeared to be written by the lay public.

We also collected tweets in the same time intervals that appeared to be written by a self-identified healthcare professional (e.g. physician, radiation technician, etc.). However, our initial search yielded an overwhelming number of results, and we ultimately only collected a random sample of posts consisting of the first tweet of every week in the time interval (January 2012 – May 2017).

We then “coded” the tweets by assigning them qualitative descriptions about their content. Multiple successive reviews were conducted to consolidate similar codes, yielding 26 unique final codes. We also categorized them as containing “positive”, “negative”, or “neutral/unclassifiable” emotional sentiment. All coding was performed by consensus of subjective author judgment, which prior research suggests is as – if not more – accurate than existing algorithmic methods.

In total, we analyzed 162 tweets by patients, as well as 260 tweets by healthcare professionals. On average, 2.5 patient tweets were shared per month, compared to 69 healthcare professional tweets. The most common themes by patients were “general sharing of experience/casual conversation”, “emotional content”, and “treatment chronology”. The most common themes by professionals were “science”, “genitourinary disease”, and “education”. Among tweets by patients and professionals, 57% vs. 12% expressed positive sentiment, 21% vs. 3% expressed negative sentiment, and 22% vs. 85% expressed neutral or unclassifiable sentiment, respectively.

Fig. 2. Word Cloud of Healthcare Professional Tweets about Brachytherapy.

Collectively, these results suggested that patients tweet less about brachytherapy than healthcare professionals but generally share overtly positive or negative sentiments about their experiences. In contrast, healthcare professionals tend to share emotionally-neutral content about research and patient education. Given the American Society for Radiation Oncology's initiative for greater radiation oncologist engagement on social media, we encourage further use and analysis of Twitter for understanding the patient experience of receiving brachytherapy as well as radiation therapy as a whole.

Joel Thomas [1,2], ***Arpan V. Prabhu*** [1,2,3], ***Dwight E. Heron*** [1,2], ***Sushil Beriwal*** [1,2]
[1]*University of Pittsburgh School of Medicine, Pittsburgh, PA, USA*
[2]*Department of Radiation Oncology, UPMC Hillman Cancer Center, Pittsburgh, PA, USA*
[3]*Department of Radiation Oncology, Winthrop P. Rockefeller Cancer Institute, University of Arkansas for Medical Sciences, Little Rock, AR, USA*

Publication

Twitter and brachytherapy: An analysis of "tweets" over six years by patients and health care professionals.
Thomas J, Prabhu AV, Heron DE, Beriwal S
Brachytherapy. 2018 Nov - Dec