# Evaluation of Reviews of Orthopaedic Oncologists on Institutional and Patient Review Websites

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INTRODUCTION:

Online reviews of physicians have significantly increased with an increase in the number of independent websites in addition to institutional websites collecting patient reviews. In addition to reviews, websites may contain other information regarding the physician including their age, number of years in practice, location of practice and physicians in the area with a similar specialty. Orthopaedic oncology is a relatively small subspecialty in orthopaedic surgery. The purpose of this study was to evaluate the online reviews of orthopaeidc oncologists and to determine the accuracy of the information provided on the websites and risk factors for poor reviews.

METHODS:

This study evaluated publicly available data and was deemed exempt from by our Institutional Review Board Review approval. Orthopaedic oncologists were identified on the publicly available Musculoskeletal Tumor Society (MSTS) "Member Search" tool on the MSTS website. Members that were not orthopaedic oncologists or were not actively practicing in the United States were excluded. A search was performed for all online reviews listed under the MSTS orthopaedic oncologist's name on their current institutional website, USNews, WebMD, Vitals.com, and Healthgrades. For each of the five websites, the number of reviews, number of comments, average rating (1-5), and number of 1- and 2-star reviews were collected. USNews does not include 1- or 2-star reviews with comments and was excluded from this portion of the study. In addition, a surgeon's sex, age, academic title, practicing state, and specialty were extracted. Physician age was reported only on Healthgrades. When similar physicians or advanced-practice providers were suggested on the website, we also captured data on whether they were orthopaedic oncologists or not.

We determined the total number of ratings and comments on each physician review website, as well as the number of 1- and 2-star ratings. For analysis, 1- and 2-star ratings were considered negative reviews, and each comparison considered 1-star reviews alone and 1- and 2-star reviews grouped together. We also determined the average rating of physicians per website. Next, we examined the accuracy of identifying the location of the surgeon compared to the MSTS website. The practicing states were categorized into the following US regions for analysis: the Northeast, the Midwest, the South, and the West. Explain why these regions were used in Methods/what part of the analysis we were using these regions for. We also assessed how often websites correctly identified the surgeon as an orthopaedic oncologist and offered comparable surgeons. The characteristics of surgeons were described as follows: Continuous variables are expressed as mean with standard deviation (SD) for normal data distribution and median (interquartile range: IRQ) for non-normal data distribution. Frequency and percentages are presented for categorical variables.

RESULTS:

A total of 231 orthopaedic oncologists were identified on the MSTS website and met inclusion criteria. There were 185 males and 46 females with a median age of 50 years (IQR 44-59). We found most surgeons to be rated online, including 96.7% (n=224) on institutional websites, 96.5% (n=223) on USNews, 98.2% (n=227) on WebMD, 96.7% (n=224) on Vitals.com, and 96.5% (n=223) on Healthgrades. A total of 53,486 ratings were discovered. The institutional websites had the largest number of ratings, with 29,250, while WebMD had the fewest with 3,095 ratings. The median number of ratings per surgeon was 144 (IQR 0-263). The overall average star rating was $4.5 \pm 0.46$ stars, with Vitals.com and Healthgrades having the lowest ratings at 4.4 stars and the institutional websites the highest at 4.8 stars. Across all websites, there were 413 and 44 1- and 2-star reviews with comments, respectively. The institutional websites had the least number of 1-star reviews with 16, followed by WebMD with 37, Vitals.com with 163, and Healthgrades with 197 1-star reviews. Of the surgeons with at least one 1-star review on one physician review website, 42.6% (55/129) had 1-star reviews on more than one website. Surgeons with three or more 1-star reviews were increasingly likely to receive 1-star reviews across multiple websites, with 73.7% of surgeons with three and 100% of those with five or more 1-star reviews having 1-star reviews on multiple sites. There were no significant differences in the average ratings, or 1- and 2-star ratings based on age, sex, academic title, or region of practice.

The orthopaedic oncologist's location matched the MSTS website on 93.6% of the institutional websites, 83.3% on USNews, 72.8% on WebMD, 73.4% on Vitals.com, and 84.4% on Healthgrades. The surgeon was identified as an orthopaedic oncologist on 84.8% of institutional websites, 83.9% on USNews, 40.5% on WebMD, 38.4% on Vitals.com and 0% on Healthgrades. Institutional websites did not offer any comparable surgeons whereas the majority of the websites identified surgeons other than orthopaedic oncologists. The average accuracy of identifying a comparable surgeon was 3.6%, with USNews identifying 8.2% of comparable surgeons, WebMD with 1.8%, Vitals.com with 1.2% and Healthgrades with 5.0%.

DISCUSSION AND CONCLUSION:

Overall, institutional websites provided a more positive and accurate review of the surgeon and their practice compared to other review websites. WebMD was the least accurate with location and had the least number of reviews, Healthgrades was the least accurate identifying specialty and Vitals.com had the lowest ratings. Multiple poor ratings on a single website were predictive of a surgeon having poor ratings on multiple websites. Age, sex, academic title, and practice location were not significant predictors of a poor rating. All patient review websites performed poorly in identifying comparable surgeons. The results of this study can be used to help guide practices to take control of a surgeon's online reputation and mitigate inaccurate information on the internet.