

A qualitative analysis of orthodontic-related posts on Twitter

M. Rachel Henzell^a; A. Margaret Knight^a; K. C. Morgaine^b; J. S. Antoun^c; M. Farella^d

ABSTRACT

Objective: To investigate the content of orthodontic-related Twitter posts in order to improve our understanding of orthodontic patients' perceptions and treatment experiences.

Materials and Methods: Some 131 consecutive posts were collected from Twitter over a 5-day period. Twitter's advanced-search function was used to limit the sampling frame to New Zealand. The posts were qualitatively analyzed for themes using discourse analysis.

Results: Four main themes were identified: (1) excitement about getting braces off, (2) problems with braces, (3) positive comments about braces, and (4) negative comments about braces. Various language tools and symbols were often used to convey different degrees of emotion. The present study explores these themes and discusses how they relate to modern-age orthodontics.

Conclusion: This is the first study to qualitatively analyze orthodontic-related posts in the social media era. Our findings suggest that orthodontic patients use social media sites such as Twitter to convey positive and negative feelings about braces. (*Angle Orthod.* 2014;84:203–207.)

KEY WORDS: Social media; Qualitative analysis; Orthodontic experiences; Twitter

INTRODUCTION

An increasing number of patients are using the Internet to source information about medical conditions or treatments. Patients are also interacting with other Internet users to provide and receive support and to share information.¹ Internet-based communication, which is commonly known as "blogging," has rapidly increased among cyberspace users, especially with the recent launch of social networking websites. Twitter, for instance, is a popular social networking site that allows users to update their status through short posts (Tweets) of up to 140 characters as well as follow and communicate with other users.² The surge

in popularity of such social networking sites, coupled with the increased accessibility and volume of information available on the Web, has led researchers to investigate the public's perception of some medical conditions through the surveillance of social network sites.

A recent analysis of concussion-related Twitter posts, for instance, found that approximately 33% of users shared or referenced a news story, while 27% posted information regarding a personal story or experience. Interestingly, some 13% of posts provided advice relating to the management of concussions.³ Similar results have also been reported from the surveillance of social media posts of some dental conditions. A study investigating the content of Twitter posts relating to dental pain found that the public was using this social media site to share their experiences and thoughts about dental pain, as well as to seek advice from fellow users.⁴ More specifically, some 15% of users described the impact of dental pain on their daily lives, and 14% sought advice regarding dental pain management.⁴

The evaluation of social media content may also play an important role in understanding the motivational factors, expectations, and experiences of orthodontic patients. Social media is likely to reflect current cultural and social trends, which may influence treatment demand and satisfaction. Indeed, a large number of teenagers undergo orthodontic treatment in an attempt to conform to social norms and modern beauty cultures.⁵ It is therefore important that

^a Dental Student, Department of Oral Sciences, Sir John Walsh Research Institute, Faculty of Dentistry, Dunedin, New Zealand.

^b Dental Student, Lecturer, Department of Oral Sciences, Sir John Walsh Research Institute, Faculty of Dentistry, Dunedin, New Zealand.

^c Resident, Discipline of Orthodontics, Department of Oral Sciences, Sir John Walsh Research Institute, Faculty of Dentistry, Dunedin, New Zealand.

^d Professor and Chair, Discipline of Orthodontics, Department of Oral Sciences, Sir John Walsh Research Institute, Faculty of Dentistry, Dunedin, New Zealand.

Corresponding author: Dr Mauro Farella, Discipline of Orthodontics, Department of Oral Sciences, Sir John Walsh Research Institute, Faculty of Dentistry, University of Otago, PO Box 647, Dunedin 9054, New Zealand (e-mail: mauro.farella@otago.ac.nz)

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orthodontists understand how their patients perceive and experience orthodontic treatment. The use of a qualitative approach to analyze social media content is one method that can be used to gain a better insight into the lives of orthodontic patients. This approach is particularly promising because it does not disrupt a patient's natural environment or behavioral patterns.

The aim of this qualitative study was to analyze the content of orthodontic-related posts on Twitter in order to improve our understanding of orthodontic patients' perceptions and treatment experiences.

MATERIALS AND METHODS

A convenience sample of consecutive tweets posted on Twitter between September 3 and 7, 2012 were collected and entered into an Excel database (version 14.2.0, Microsoft, Redmond, WA, USA). Twitter's advanced-search function was used to limit the sampling frame to New Zealand posts only. This was accomplished by limiting the search results to "Wellington" city (capital) and the surrounding 1000 miles of land, so that most of New Zealand was included. Three key words were used to identify relevant tweets: "braces," "orthodontist," and "orthodontics." The search function of Twitter allowed all the key words to be searched simultaneously.

Twitter posts were included if they related to orthodontic braces and not other items, such as knee or neck bracings. Exclusion criteria included the following: (1) advertising or promotional posts, (2) posts involving statements that did not include content that could be used to make inferences about how people felt about their braces, and (3) posts that had been posted previously and then re-posted by another user.

Data Analysis

Unique identifiers were allocated to twitter users on a chronological basis, for example P3 or P75. Data were qualitatively investigated using discourse analysis, which is commonly used to analyze relatively small amounts of text such as those found in Twitter posts. The analysis included a descriptive account of the meanings, position, and underlying assumptions found in the text. Posts were read several times by two researchers separately and then together until distinct themes could be identified. Each post was then categorized into one of the identified themes.

RESULTS

A total of 131 tweets were collected over five weekdays. Most of the tweets collected expressed either a positive or negative view about orthodontic treatment. Some users tweeted about problems they were experiencing, and others expressed a desire to

Table 1. Glossary of Twitter Symbols Called Emoticons

Symbol	Meaning
:)	Happy
:(Unhappy
:P	Tongue poking out; cheeky
B-)	Sunglasses on happy face; cool
:D	Big grin; very happy
:O	Surprised

have their braces removed. In contrast, some users were excited about getting their braces removed or expressed positive feelings regarding the esthetic benefits of orthodontic treatment. A discourse analysis of the 131 Twitter posts was used to identify four main themes: "excitement about getting braces off," "problems with braces," "positive comments about braces," and "negative comments about braces." Tweets which illustrate each theme are quoted below.

A number of language tools were used in the posts collected, including capital letters, explicit language, text language, symbols, and hashtags. Capital letters are often used for emphasis and may imply that the words are being shouted. Explicit language can also be used to add strong emotion to a statement and to express feelings more definitively. Where explicit language is quoted we replaced some letters with ** to retain the meaning but not cause offence. Text language is commonly used in posts because of the 140-character restriction imposed by Twitter. In addition to text, symbols called emoticons are often included in posts to illustrate facial expressions and reflect current emotions. Unique identifiers were allocated to twitter users on a chronological basis, for example P3 or P75. For example, a user may use such symbols as :) and :(to express happiness and unhappiness, respectively. Other common symbols are contained in Table 1. Hashtags are added to posts to identify a theme or to categorize tweets, which enables other users to follow related posts with the same hashtag using Twitter's search function.

Excitement About Getting Braces Removed

A large proportion of Twitter users in our sample expressed excitement and relief about getting their braces removed soon. In fact, most of these users seemed to be counting down the days until they got their braces off. Some expressed considerable excitement about getting braces off earlier than expected, and often used the hashtag function to emphasize the importance of this exciting news. The degree of eagerness and anticipation expressed in getting the braces removed led some to make light of the situation by adding an element of comedy to their posts. Other users were more supportive and reassured followers that braces would be worthwhile in the end. Following are some examples of this type of post:

P18. *back from dentist... braces off in 5 months!! :O 9 months ahead of schedule #yeeey*
 P1. *Droppin dead weight in more than one way. Cuttin the loose ends and it's my last day with braces. HOLLA*
 P12. *Once you get your braces off, it'll definitely be worth it! Trust me! Haha :P*

Problems With Braces

Users frequently posted about the various problems they experienced with braces, which included pain from adjustments, eating and cleaning difficulties, appliance maintenance, and injuries caused by sharp parts of the appliance. In particular, negative adjectives and explicit language were often used to express the pain experienced during treatment. The hashtags “#Ow” and “#KillMe” were used to illustrate the extreme nature of their feelings. Other users expressed frustration at their inability to eat the foods that they normally enjoyed before receiving orthodontic treatment. Some users expressed irritation from the soft tissue injuries that were caused by sharp parts of the orthodontic appliance. Some posts also conveyed frustration about the length of time involved in cleaning braces. Finally, one user posted about the inconvenience caused by the need to have an orthodontic appliance repaired.

P25. *h8 u braces. You hurt too much*
 P27. *OMG!!! My teeth are in so much pain right now I just want to rip these ****braces off!! **** you teeth - -*
 P37. *My mom made tacos but I couldn't even eat them cause of my braces #KillMe):*
 P33. *My braces gave me a cut on my bottom lip t-t*
 P40. *My braces actually got stuck to my cheek earlier, omg pain*
 P32. *Surprise orthodontist trip because of broken brace. Nice way to spend my last day before going back to school (for actual lessons). #Ow*
 P38. *Seems like all I do is eat, complain, think about the future and clean my braces.....*

Positive Comments About Braces

Encouragingly, some users posted comments that conveyed a positive image of braces. Most of these posts reflected excitement about getting braces, missing braces, and the esthetic benefits of orthodontic treatment. Some users were excited about getting braces, especially with respect to the novelty of being able to choose the colors of the elastomeric modules. Some users commented on the esthetic benefits of having braces and expressed excitement at the prospect of having straight teeth.

P62. *... Getting braces tomorrow... what colors should I get? hmmm*

P77. *I miss my braces. I wanna get braces again....*
 P67. *My teeth have gotten so much straighter and I've only had my braces on for four months*
 P72. *But I'm going to the orthodontist soon and I will get something done and have straight teeth yay*

Negative Comments About Braces

Some users posted negative comments about braces, which included a strong desire to have the braces removed, frustration at the extent of treatment required, and a general dislike of braces. Some used capital letters to emphasize their wishes for having the braces removed. Symbols that indicate “unhappiness” were also used to emphasize a strong dislike toward orthodontic treatment. For instance, one user expressed frustration at the extensive procedures involved in their orthodontic treatment by posting a text abbreviation (*omg* = oh my g*d) and a combination of symbols that conveyed unhappiness (see P60).

P44. *Can these braces be off PLEASE*
 P60. *So yeah, I went to the orthodontist yesterday and she told me that I need another operation omg :(*
 P46. *No one understand how much I hate these braces.*

DISCUSSION

The purpose of the present study was to investigate what the New Zealand public was posting about their orthodontic experiences on social media sites such as Twitter. The study used discourse analysis to identify and categorize Twitter posts that were collected over the 5-day study period. Four themes were identified from the analysis: (1) excitement about getting braces off; (2) problems with braces, (3) positive comments about braces, and (4) negative comments about braces. In addition, various language tools and symbols were often used to convey different degrees of emotion.

One limitation of the present study was the relatively short period used to capture data. The use of a prolonged study period, however, can often generate an overwhelmingly large volume of social media data, which becomes unmanageable and difficult to analyze. Because no previous data exist in this area, we decided to focus on a small selection of posts in order to carefully explore and identify the main themes relating to orthodontic experiences. Another limitation of this study is the inclusion of online users only, which may not reflect the general population.^{6,7} It has been suggested, however, that these online samples are likely to be representative of adolescents as most of them have access to the Internet.⁸ Even so, there may be certain personality characteristics that may compel some adolescents to blog but not others.⁴ In addition,

our findings are based on a New Zealand sample, which may not necessarily reflect other populations. Although differences in treatment delivery and patient attributes may exist between populations, it was believed that this research approach was not sensitive enough to discriminate between such differences even if they existed. Further research, however, is needed to determine the usefulness of this tool in identifying cross-cultural differences. On the other hand, the present study has a number of important strengths. First, Twitter posts were collected from all around New Zealand, not just the major metropolitan centers. Second, two researchers independently established the themes before reaching consensus on the final themes, which enhances the trustworthiness of the results.

Several intrinsic and extrinsic factors may influence an adolescent's decision to undergo orthodontic treatment.⁹ External factors, in particular, appear to play an important role in this decision-making process, and many teenagers are influenced by the social norms and beauty culture that surround them.⁵ In fact, it seems that the decision to undergo or postpone treatment is highly dependent on one's group of friends, and their attitude toward orthodontic treatment.⁵ Social media sites are often used to communicate with friends, and it is likely that feedback derived from these casual conversations will affect a teenager's attitude toward orthodontic treatment. We did not investigate individual Twitter threads, although this exercise could potentially identify how negative or positive comments influence other users' motivations and attitudes toward treatment.

It was encouraging to note that orthodontic patients used Twitter not only to share negative experiences but also to express positive attitudes toward orthodontic treatment. The simple novelty of being able to choose the colors of orthodontic modules still seems to be valued among present-day adolescents, despite their frequent exposure to more sophisticated activities. It is unclear why orthodontic patients chose to share their experiences through Internet-based social media sites, although one explanation may be the search for acceptance into social groups.⁵ For instance, it is plausible that some adolescents may post comments about their braces in an attempt to convey a public image of similarity with a particular group at school.

Other people may use social media sites to search for support or emotional comfort.¹ This explanation seems to be consistent with previous studies, which found that people in acute pain might often use Internet-based social media sites to share their experiences and seek support.⁴ A wide range of orthodontic problems can cause acute episodes of

pain, which may lead some patients to seek immediate support from their online peers. One drawback of this scenario is the provision of unproven or incorrect management advice that can easily occur during casual conversations. It is not uncommon for an orthodontist to have to address the misconceptions of a patient undergoing treatment. The widespread use of social media sites may compound this problem even further.

One practical method for reducing such problems may be to encourage orthodontic patients to be social media "followers" of a practice, which can help provide valuable and timely solutions to specific problems.¹⁰ Alternatively, orthodontists may use online social networks to direct patients to reputable sources that contain accurate health information.¹¹ On the other hand, a large proportion of medical professionals have questioned the ethics of patient–doctor interactions through social networking sites,¹² and most automatically decline "friendship" requests by patients.¹³ This grey area is likely to receive more attention in the future as health practitioners turn to social media sites in a bid to improve their services.

Occasionally, general information from patients with existing illnesses may help improve the knowledge base of new patients.¹ Patients with multiple sclerosis, for example, have reportedly benefited from Internet-based resources by increasing awareness of new treatment techniques.¹⁴ Surprisingly, we identified only two posts that appeared to be from persons seeking information about orthodontic treatment. It seems that prospective patients are not currently using social media sites to seek information about orthodontic treatment, although this may also be a reflection of the reduced popularity of Twitter.¹⁵

Nonetheless, the specific use of Twitter in qualitative health research has a number of important advantages. First, users often post comments and status updates in real time as an event is happening. This improves data accuracy because it reduces retrospective accounts and recall bias.⁴ Second, users can use smartphones or tablets to post, which increases the frequency of Twitter posts.¹⁶ Third, researchers can use Twitter's advanced search function to extract retrospective events or real-time events as they occur. Moreover, researchers can set unique search filters to capture specific subsets of data (eg, by location). Finally, public mood may be evaluated using sentiment analysis tools.¹⁷

Social media sites represent a valuable source of information that can be used to evaluate the public's perception of the orthodontic profession and treatment experience. Furthermore, surveillance of social networking sites may provide novel insight into the public's perceptions of orthodontic products and

treatment techniques. Public debates and opinions on important health issues, such as human papillomavirus vaccines, have recently been investigated by analyzing social media content.¹⁸ The surveillance of public opinion may be useful for a number of orthodontic topics, such as the long-standing debate of extraction vs non-extraction. At a clinical level, social media sites may open new doors for orthodontists to interact and communicate with orthodontic patients.^{4,19}

It is likely that the popularity of social media sites, such as Twitter and Facebook, will continue to increase over the next few years. In fact, these online social networks may become a powerful adjunct to traditional sources of health information. As the frenzy of social media continues to gain momentum among clinical orthodontists,¹⁹ more researchers should start to become familiar with qualitative research techniques that may be useful for the analysis of social media content. Future research should be carried out over a longer period to capture a broader range of discriminative themes (and subcategories). The geographic coverage of these studies should also be extended to include a wider selection of populations to identify cross-cultural differences.

CONCLUSIONS

- The orthodontic experiences of users in the present study were both positive and negative.
- Although some patients may hold negative views during treatment, these are often counterbalanced by more positive thoughts as treatment approaches completion and the final esthetic result is realized.
- Future qualitative research in this area should focus on identifying a broader range of themes that may be appropriate for hypotheses testing using quantitative study designs.

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