

## Introduction

- Dental caries form when bacteria in the mouth metabolize fermentable carbohydrates to produce acid that degrades tooth structures [1]
- Other diet factors also affect dental caries development (e.g., protein, meal spacing, xylitol) [1]
- Dental caries are the most common chronic disease in children and leading cause of day surgery in Canadian children <6y [2]
- Prior studies have found that the public uses the Internet to seek health information [3,4]; 76% of Canadian consumers use YouTube [5], with 71% using YouTube as their first choice for learning [6]
- Prior health-related YouTube content studies have found a lack of evidence-based info [7, 8, 9, 10]
- Few data exist on the content of YouTube videos regarding nutrition and dental caries.

## Objective

- To assess the content of YouTube videos regarding nutrition and dental caries

## Methods

### Video Selection

- YouTube searches were done on May 17<sup>th</sup>, 2021
- 6 searches were conducted using keywords related to nutrition and dental caries obtained from Google Key Word software; the top 20 videos were selected from each search
- Duplicates and videos that did not meet selection criteria (i.e., >20mins, no relevant information, not in English) were removed
- Video information was recorded (e.g., publisher, country, view count, date posted, length)

### Nutrition Message Scoring

- Videos were scored (scores partially based on Acad of Nutr and Dietetics' position on Oral Health and Nutrition [1]) based on inclusion of information on 17 evidence-based factors (1 point/factor) including:
  - dental caries mechanism
  - dietary factors that elevate the risk of dental caries (e.g., sugar, sugary beverages, sticky foods)
  - dietary factors that reduce the risk of dental caries (e.g., fruits and vegetables, water)
- Higher scores mean that more topics were covered
- All videos were scored by two individuals; discrepancies were discussed, and consensus was reached
- Scorers also made note of tone and other nutrition messages (inc. messages against recommendations)

## Results

- 120 videos were considered for inclusion
  - 42 videos were included** after removal of duplicates and those not meeting inclusion criteria
- Videos were sorted into 4 categories based on who posted them and/or who was featured in them:
  - oral health professionals (OHP)
  - other health professionals (RQ)
  - no health professional credentials/unknown (NC)
  - government

### Video Characteristics

- Most videos were posted by OHP, followed by NC, RQ, and government (Figure 1).
- Only 1 video featured a dietitian
- Most videos were from the USA; few were Canadian

Figure 1: Percent of Videos Posted by Each Publisher Category

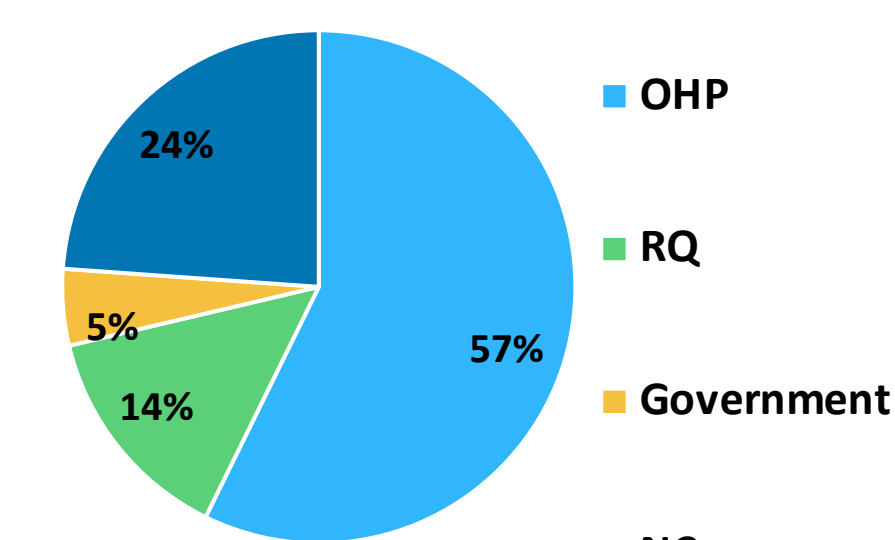
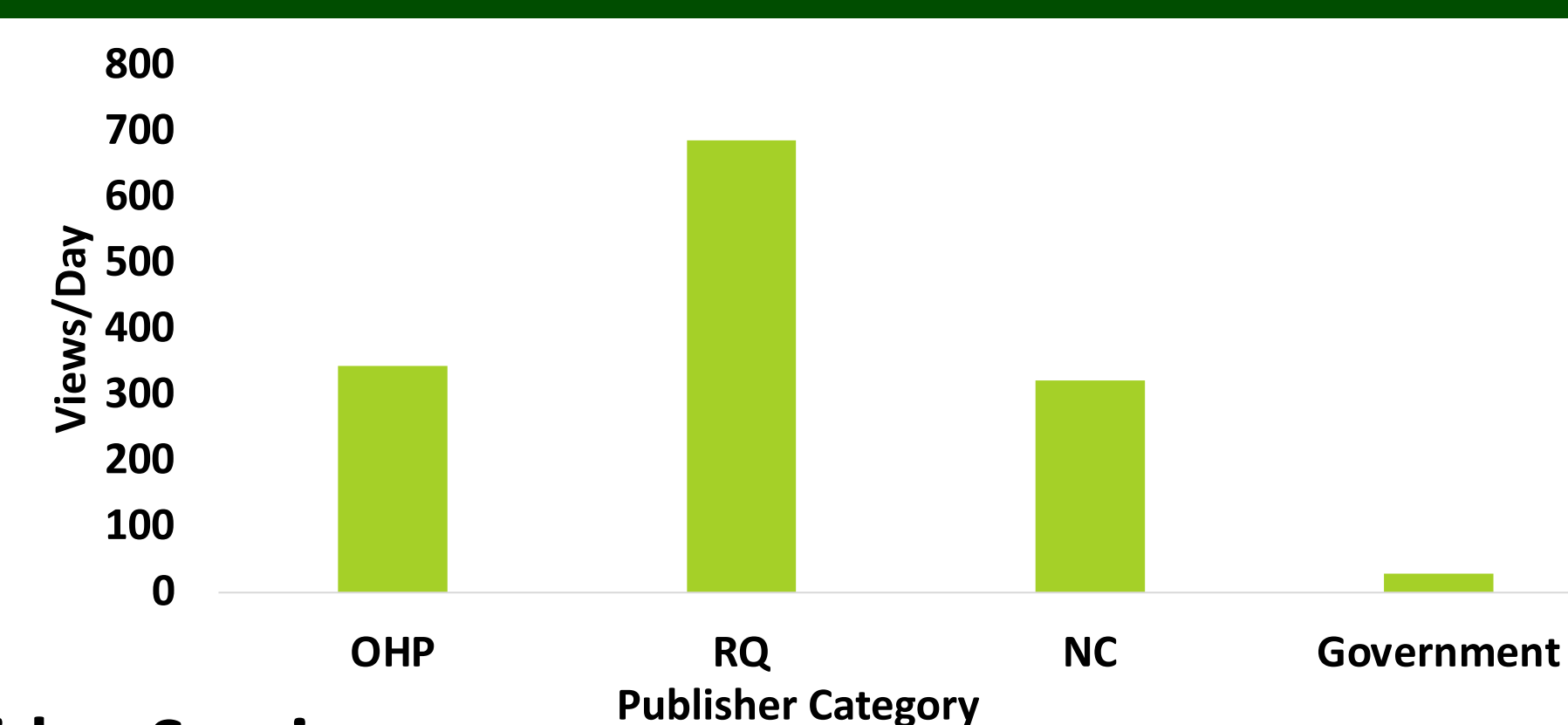


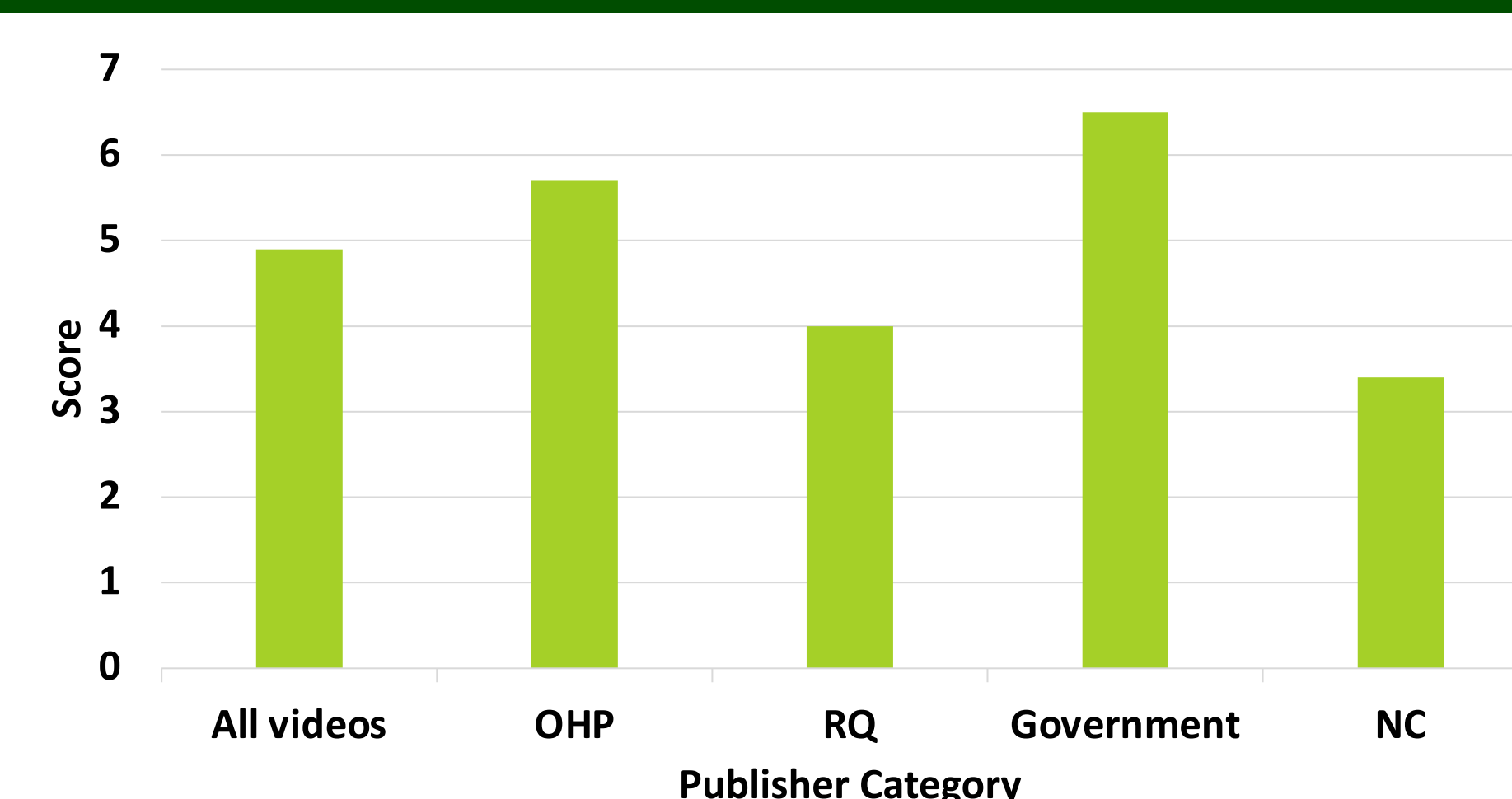
Figure 2: Views/day Since Upload for Each Publishing Category



### Video Scoring

- Mean score for all videos = 4.9 ± 3.4 out of 17 points
- 6 videos (14.3%) had a score of zero (n=3 from NC; n=3 OHP)

Figure 3: Average Score of Videos based on Publisher Category

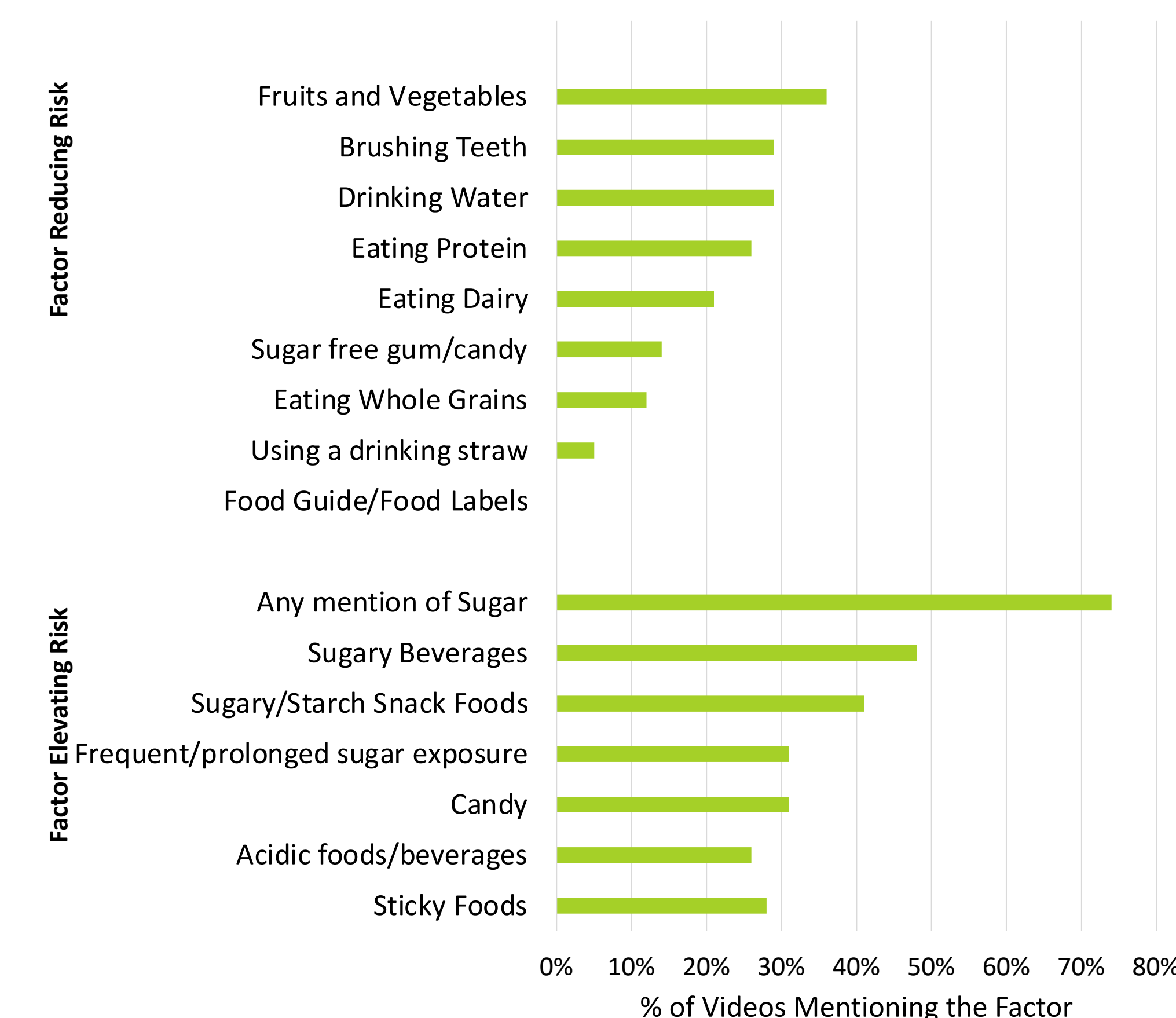


- Government and OHP videos had higher mean scores than RQ or NC videos (Figure 3)
- Videos with higher views/day had lower scores

## Results Continued

- 47.6% of videos mentioned the dental caries mechanism
  - Words like “attack”, “fight”, “enemy”, and “destroy” were sometimes used to describe dental caries formation
- 83.3% of videos mentioned harmful factors that elevate dental caries risk
- 47.6% of videos mentioned healthful factors that reduce dental caries risk

Figure 4: Number of Videos Mentioning Each Scoring Factor for Elevated and Reduced Risk of Dental Caries



### Other Key Findings

- No videos spoke about amount of sugar to consume
- Some videos implied it was common knowledge that sugar (candy or soft drinks) was linked to dental caries
  - Phrases sometimes used included: “most people know,” and “everyone knows”
- Only 2 videos mentioned drinking fluoridated water
- Confusing/conflicting messages were present both between and within videos. The following factors were both recommended and cautioned against:
  - juice
  - dried fruits
  - honey
  - dairy
  - whole grains
  - carbohydrates in general
- Home remedies to treat dental caries were sometimes recommended; some videos had recipes
- Some videos recommended oil pulling, probiotic supplements/foods, and fad diets (e.g., Paleo diet)

## Conclusions

- Overall, the videos had low scores
  - Many evidence-based topics regarding nutrition and dental caries were not covered
- Videos with higher views/day had lower scores
  - Some videos posted by health professionals scored poorly and presented non-evidence-based info
- Sugar was the most consistent topic mentioned (>70% of videos)
  - However, only 31% discussed frequency of sugar consumption and exposure despite this being a key dietary risk factor for dental caries
- Except for sugar, no topics were covered in >50% of included videos
  - These may be topics less well known to the public
- Viewers may be exposed to contradicting/confusing advice which may cause confusion.
  - This finding is useful for health professionals to develop resources to address areas of confusion
- Some videos provided non-evidence-based recommendations (e.g., Paleo Diet) that currently do not have strong evidence towards dental caries prevention
- Only one video featured a RD; oral health is an emerging practice area for RDs
  - ↑ collaboration between RDs, oral health professionals, and other health professionals will allow for the best care
- Determining the types of videos that are most effective and well liked by the public on this topic is an area of future research

## References

- Touger-Decker, R., Mobley, C. (2013). Academy of Nutrition and Dietetics. Position of the Academy of Nutrition and Dietetics: oral health and nutrition. *J Acad Nutr Diet*, 13(5); 693-701.
- Salvaterra, R. (2019). The Most Common Reason for Day Surgery in Children under 6 years of Age in Canada, Early Childhood Caries is Preventable! *Peterborough Public Health*. Available from <https://www.peterboroughpublichealth.ca/wp-content/uploads/2019/08/The-Most-Common-Reason-for-Day-Surgery-in-Children.pdf>
- Shahab, L., Brown, J., Gardner, B., Smith, S.G. (2014). Seeking health information and support online: does it differ as a function of engagement in risky health behaviors? Evidence from the health information national trends survey. *J Med Internet Res*, 16(11); e253.
- Prestin, A., Vieux, S.N., Chou, W.Y. (2015). Is Online Health Activity Alive and Well or Flatlining? Findings From 10 Years of the Health Information National Trends Survey. *J Health Commun*. 20(7); 790-8.
- Delgado-López, P. D., & Corrales-García, E. M. (2018). Influence of Internet and Social Media in the Promotion of Alternative Oncology, Cancer Quackery, and the Predatory Publishing Phenomenon. *Cureus*, 10(5), e2617.
- Berkowitz, I, S., Davis, C, H., Smith, H., (2019). Watchtime Canada: How YouTube Connects Creators and Consumers, Ryerson University Faculty of Communication & Design. Available from <https://sites.google.com/view/watchtime-2019>
- Smyth, R., Amlani, M., Fulton, A., Sharif, M, O. (2020). The availability and characteristics of patient-focused YouTube videos related to oral hygiene instruction. *Br Dent J* 228; 773-781.
- Hassona, Y., Taimeh, D., Marahleh, A., Scully, C. (2015). YouTube as a source of information on mouth (oral) cancer. *Oral Diseases*, 22(3); 202-208.
- Qureshi, N., Lowenstein, E.J. (2011). The role of nutrition in acne pathogenesis: YouTube as a reflection of current popular thought. *Skinmed*. 9(5); 279-280.
- Batar, N., Kermen, S., Sevdin, S., Yildiz, N., Guclu, D. (2020). Assessment of the Quality and Reliability of Information on Nutrition After Bariatric Surgery on YouTube. *Obes Surg*. 30; 4905-4910

## Acknowledgments

This project was funded by a Saskatchewan Health Research Foundation Establishment Grant