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ARTICLE

Effectiveness of Infographics at Disseminating Health Information During the COVID-19 Pandemic

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Abstract

Background: Infographics are a popular method of delivery for health and physical activity promotion. Despite widespread use, research examining infographic effectiveness for health and physical activity information is limited. **Purpose:** Assess the effectiveness of infographics in disseminating the results of a research study investigating impacts of the first six months (March to August 2020) of the coronavirus pandemic on Canadian adults' physical activity and health behaviours back to study participants. This study also sought to evaluate participants' satisfaction with the infographics. **Methods:** Following each month of data collection, an infographic summarizing the previous month's results was emailed to participants ($N = 64$). Participants' knowledge of and satisfaction with the infographics, their desire to view the monthly infographics, as well as their usefulness and ease of understanding, were evaluated via an online survey. **Results:** Monthly knowledge questions were answered correctly by the majority of participants (monthly correct responses ranged from 58% to 80%). Overall infographic satisfaction received a mean rating of 4.36 ($SD = 1.21$) out of 5. Almost 83% of participants said they would still view/read the infographic, regardless of whether or not they had to answer knowledge questions. On average, participants rated their ease of infographic understanding as 4.66 ($SD = .73$) out of 5. **Conclusion:** Overall, this study provides support for infographics as an effective tool for health and physical activity promotion. **Health & Fitness Journal of Canada 2021;14(4):3-9.**

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Keywords: Physical Activity, Exercise, Health Research, Health Promotion

Introduction

In response to the novel coronavirus (COVID-19) pandemic, all provinces and territories in Canada implemented public safety measures including physical distancing, self-isolating, and quarantining (Government of Canada, 2021). Although extraordinary safety measures are vital for protecting physical health, such interventions can also be socially, mentally, and physically disruptive (Statistics Canada, 2021). At the onset of the pandemic, Canadians' physical activity

levels significantly decreased with concurrent increases in sedentary behaviours (e.g., Woodruff, Coyne, & St-Pierre, 2021). The Canadian Perspectives Survey Series revealed that between March 29 and April 3, 2020, Canadian adults, aged 20 and older, were not exercising outside (36%) or inside (41%), and more than half had increases in recreational screen time (Colley, Bushnik, & Langlois, 2020). Moreover, data collected from September to December 2020 reported that one in five Canadians screened positive for symptoms

of major depressive disorder, generalized anxiety disorder, or posttraumatic stress disorder (Statistics Canada, 2021). Researchers have consistently linked physical activity with mental health outcomes, and evidence has demonstrated that reductions in physical activity can subsequently lead to reduced mental health (Stockwell et al., 2021). Thus, physical activity is particularly important during the COVID-19 pandemic to combat poor mental health (Stockwell et al., 2021).

Given the reduction in physical activity, coupled with the challenges of regulated government restrictions, strategies to promote physical activity are imperative (Stockwell et al., 2021). One method for doing so is through knowledge dissemination (Graham et al., 2006). Although knowledge dissemination has been used effectively for health and physical activity promotion (e.g., Dearing, Maibach, & Buller, 2006), such a process is often complex (Graham et al., 2006). To navigate such complexity, Grimshaw, Eccles, Lavis, Hill, and Squires (2012) suggest considering and addressing how knowledge is disseminated (e.g., delivery method), and the effect the dissemination has on intended outcomes. Furthermore, researchers have highlighted the importance of evaluating the delivery method and the impact of such method in real-world environments (Ely, Munroe-Chandler, & McCullagg, 2020).

Infographics are one popular delivery method. An infographic is "an innovative and engaging method of visually communicating information in a colorful and concise manner" (McCrorie, Donnelly, & McGlade, 2016, p. 71). In fact, researchers have had success disseminating knowledge using infographics in several domains (e.g., healthcare; Goodyear-Smith et al., 2008;

mental health; Muir & Munroe-Chandler, 2020). When compared to visual delivery methods (e.g., written summary), researchers have indicated participants prefer infographics; finding them easier to understand (Ozdamli, Kocakoyun, Sahin, & Akdag, 2016; Thoma et al., 2017). Despite the widespread use of infographics, little is known regarding their effectiveness (Muir & Munroe-Chandler, 2020).

The primary purpose of the current study was to examine the effectiveness of infographics in disseminating information related to health and physical activity promotion during the COVID-19 pandemic. Infographic effectiveness has been defined as a two-part process of increasing both the awareness and understanding of the intended audience on a particular topic (Muir & Munroe-Chandler, 2020). A secondary aim was to evaluate participants' satisfaction with the infographics.

Methods

Participants

Regular activity tracker wearers, aged 18 years and older, were recruited via a social media advertisement to participate in a 6-month longitudinal study about stress, physical activity, and other lifestyle behaviours during the COVID-19 pandemic in Canada. Social media advertisements yielded 167 potential participants.

Of the 167 prospective participants, 64 participants provided acceptable longitudinal data (i.e., pedometer and survey) for all six months of data collection. The majority of the sample were women ($n = 56$; 86%), White ($n = 56$; 86%), with a mean age of 39.27 years ($SD = 15.11$; range = 21 to 77 years).

Experimental Design

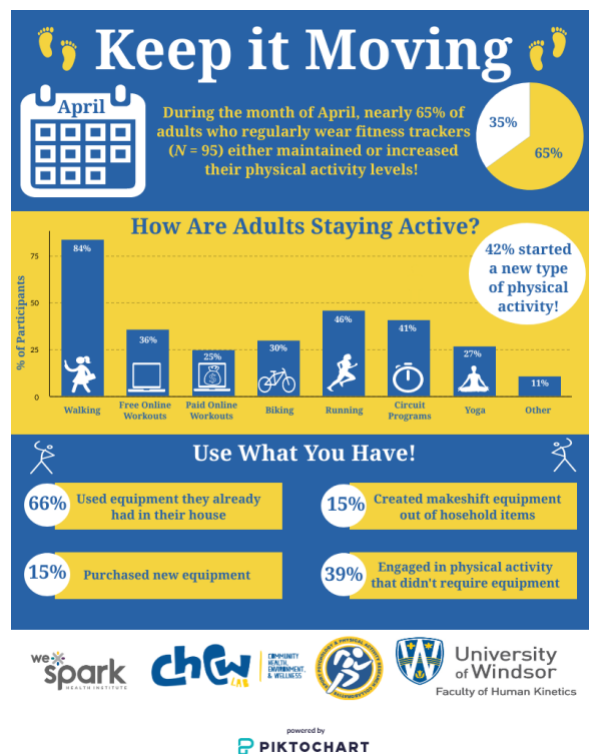
Infographics: Health Knowledge Dissemination during COVID-19

Prior to commencing, university ethics (REB# 20-069) was obtained. For each month of the longitudinal study, participants completed a fillable steps calendar (for the previous month) and an online survey, administered via Qualtrics XM (Provo, UT). For each completed month (i.e., calendar and survey), participants were eligible to win a \$25 grocery or gas gift card. Described below are the methods associated with evaluating the effectiveness of infographics in disseminating the results of the larger study to study participants.

Infographics

From May to September 2020, participants were emailed an infographic (see Figures 1 & 2 for examples).

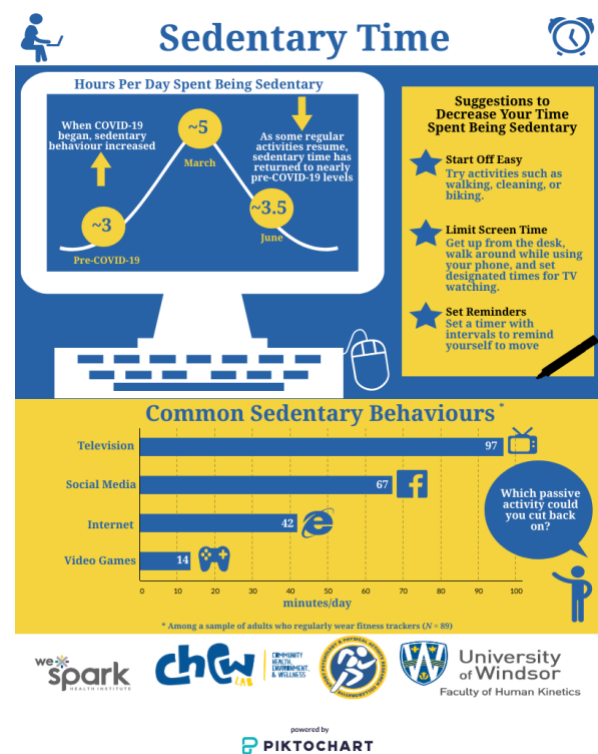
Figure 1. Infographic for month of April.



Each infographic contained a monthly theme (i.e., step counts, physical activity,

sedentary behaviour, outdoor exercise, sun safety) developed using the data from the previous month and following best-practice guidelines for creating engaging infographics (Muir & Munroe-Chandler, 2020). Infographics shared from June to September 2020 were accompanied by additional infographic-related questions in the subsequent monthly online survey (e.g., Wang et al., 2019). An additional, final summary infographic, derived from September 2020 data (i.e., last collection time point), was shared with participants but did not receive any participant feedback as the study had already finished.

Figure 2. Infographic for month of June.



Survey Measures

Knowledge Accuracy Questions

Knowledge of monthly infographic content was evaluated using one question, with the exception of September, which had two questions. To limit the number of

Infographics: Health Knowledge Dissemination during COVID-19

participants selecting a correct response by chance, participants were provided a textbox to answer. For example, the knowledge question for the July infographic (see Figure 2) was: “Among participants, what was the most common sedentary behaviour?”

Infographic Usefulness

Perceptions of infographic usefulness was measured by asking “How useful did you think the infographic was?” Response options ranged from *not at all useful* (1) to *extremely useful* (5). An additional option of *not applicable* (0) was added from July onwards to account for those that chose not to look at the infographic prior to answering the monthly survey.

Overall Ease of Understanding

Participants were asked to “Rate your satisfaction with the ease to understand the content presented in the infographics.” Response options were presented on a 5-point rating scale that ranged from *extremely dissatisfied* (1) to *extremely satisfied* (5).

Overall Satisfaction

Participants were asked to “Rate your overall satisfaction with the series of infographics provided this summer.”

Infographic Usefulness

Response options were presented on 5-point rating scale that ranged from *extremely dissatisfied* (1) to *extremely satisfied* (5).

Desire to View Infographics

To gauge if participants were only viewing/reading the monthly infographics because they were being asked a knowledge question for each infographic, the following question was posed: “If you knew you were not going to be asked questions about last month’s infographic, would you still take a look at it?” Response options included *yes*, *no*, and *I have not looked at any of the infographics previously sent out*. This question was only administered on the final survey.

Results

Knowledge Accuracy Questions

On average, 70% of participants correctly answered knowledge questions during the months of June, July, and August (see Table 1). The two knowledge questions for September yielded the highest (80%) and lowest (58%) correct response totals. In addition, not all participants chose to answer these questions and the response rate declined with each month of the study.

Table 1. Knowledge Accuracy and Perceived Usefulness of each Infographic

Month	Knowledge Accuracy ^a			Usefulness ^b
	Correct % (#)	Incorrect % (#)	Did not answer % (#)	
June	72 (46)	22 (14)	6 (4)	3.17 (SD = 0.83)
July	69 (44)	23 (15)	8 (5)	2.95 (SD = 1.51)
August	72 (46)	16 (10)	13 (8)	3.06 (SD = 1.13)
September (Q1)	80 (51)	8 (5)	13 (8)	3.00 (SD = 1.27)
September (Q2)	58 (37)	23 (15)	19 (12)	NA

Note: On each monthly survey, one knowledge question and one usefulness question were assessed; however, on the September survey two knowledge questions were included.

^aKnowledge accuracy is presented by the percentage of participants that answered the question in the particular manner followed by the overall number of participants who selected that response.

^bAll questions related to the usefulness of the infographics were rated on a 5-point Likert scale ranging from not at all useful (1) to extremely useful (5).

For June, July, August, and September, the average monthly infographic usefulness ratings were 3.17 ($SD = 0.83$), 2.95 ($SD = 1.51$), 3.06 ($SD = 1.13$), and 3.00 ($SD = 1.27$), respectively (see Table 1). Combined, the average infographic usefulness score is 3.05 ($SD = 1.21$), suggesting moderate usefulness.

Overall Ease of Understanding

On average, participants rated their ease of understanding the infographics as a 4.66 ($SD = .73$). Almost all participants rated their ease of understanding as *somewhat* ($n = 11$) or *extremely satisfied* ($n = 46$), whereas few were *neither satisfied/dissatisfied* ($n = 7$) or *extremely dissatisfied* ($n = 1$).

Overall Satisfaction

Participants' overall satisfaction with the infographics mean rating was 4.36 ($SD = 0.66$). Most participants said they were *somewhat* ($n = 31$) or *extremely satisfied* ($n = 23$), while just seven participants were *neither satisfied/dissatisfied*, and no participants were *somewhat* or *extremely dissatisfied*.

Desire to View Infographics

Almost 83% of participants (53 out of 64) said they would have still viewed/read the infographic, regardless of whether or not they had to answer knowledge questions. Conversely, five participants indicated that they *would not have* viewed/read the infographics, while three participants indicated they *had not* viewed/read any of the infographics and three participants did not provide an answer.

Discussion

The aim of the present study was to examine the effectiveness of infographics

in disseminating health and physical activity information during the COVID-19 pandemic. Overall, participants seemed to both have interest in viewing the infographics and understood the information presented. Moreover, most participants found the infographics moderately useful, easy to understand, and were satisfied with their experience engaging with the infographics. In all, this series of infographics appeared to be an effective form of knowledge dissemination.

Given the importance of promoting physical activity during the pandemic (Stockwell et al., 2021), it is positive to have seen genuine interest in the use of infographics to increase awareness. Thoma and colleagues (2017) noted that increasing the awareness of information can be an important first step towards successful knowledge dissemination. While researchers have found infographics to be a preferred delivery method to more traditional outlets (e.g., journal articles; Thoma et al., 2017), our findings suggest viewership of infographics occurred more out of volition than any obligation to the study. Such findings lend further support for the utilization of infographics as a delivery method (Grimshaw et al., 2012).

Understanding the effect of a knowledge dissemination product is essential (Grimshaw et al., 2012), which we attempted to quantify objectively and subjectively. Interestingly, our finding that participants scored high on knowledge accuracy questions was counter to that of previous research (Wang et al., 2019). Wang and colleagues used a similar knowledge accuracy question approach and reported correct responses 57% of the time (which dipped to 43% four weeks later). These scores are lower than our findings (70%), suggesting that future research should employ similar knowledge

accuracy questions. Moreover, participants found the infographics relatively easy to understand. Similar to our findings, existing literature denotes infographics can condense large volumes of information while remaining clear and concise and can enhance understanding (McCrorie et al., 2016; Muir & Munroe-Chandler, 2020). Taken together, this series of infographics appeared to be effective in disseminating knowledge during the pandemic, at least within the current sample.

In addition, participants found the infographics to be useful and were satisfied with their utilization. Likewise, Ozdamli and colleagues (2016) reported that university students found infographics easy to understand and were satisfied with this approach. As a result, scholars suggest that learning from infographics promotes greater recollection of information (Muir & Munroe-Chandler, 2020). Perhaps if an individual is more satisfied, they may be more motivated to learn. Hence, this evidence suggests that the general population may be satisfied with infographics and find them useful.

There were notable limitations to this study, which should be considered in future research. First, the sample size was small, making it difficult to generalize the effectiveness of infographics on a large scale. Second, only one or two knowledge accuracy question were asked for each infographic. By doing so, we were only able to assess the knowledge of participants on limited aspects of the infographic. These questions, however, were deliberately designed as 'fill-in' responses to force recall of information. Third, we cannot be sure participants were not actively looking at the infographic while answering these questions; however, infographics were not distributed with the survey so the

participant would have had to pull up the infographic on their own.

Conclusions

Infographics have the potential to act as a cost-effective, easy-to-use tool for researchers and practitioners to disseminate knowledge. This study provides initial support for the effectiveness of infographics in disseminating health and physical activity promotion to research participants. However, given its sample size (and other biases), future studies with larger sample sizes (and reduced biases) are needed to achieve better generalizability.

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Authors' Qualifications

The authors' qualifications are as follows: Paige Coyne BHK, MHK, PhD(c); Frank O. Ely BKin, MKin, PhD(c); Jenna Fiala BHK(c); Krista J Munroe-Chandler BA, MA, PhD; Sarah J Woodruff BPE, MSc, PhD.

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Infographics: Health Knowledge Dissemination during COVID-19

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