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Résumé de l'article

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REACHING YOUTH WITH RELIABLE INFORMATION DURING THE COVID-19 PANDEMIC: "SOCIAL MEDIA FOR SURE"

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Abstract: As the COVID-19 pandemic evolves, it is important to continue providing accurate updates and public health information to various target audiences. In support of such efforts, this study aims to understand how youth have accessed information about COVID-19 and to record their perspectives on how such information is best communicated. As part of a larger longitudinal study, 463 youth (M = 21.2 years, SD = 2.2) were surveyed about their sources of information on COVID-19, with qualitative questions regarding their perspectives on optimal public health communication strategies. A majority of youth reported using online sources to access information about COVID-19, including online news sources and social media. They used a diversity of such sources, with a preference those they regarded as reliable. Participants recommended that public health information campaigns be conducted on a variety of social media channels. Other digital campaigns were also recommended, while some suggested providing information through schools. Information should be brief, engaging, accessible, and frequently updated, using verified sources to ensure accuracy. We conclude that, to reach youth effectively, it is essential that accurate COVID-19 information and public health guidelines be disseminated in an engaging manner using digital means, particularly social media. Communication campaigns should be developed in partnership with youth in order to best reach this audience with the information they need.

Keywords: youth, pandemic, COVID-19, communication

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Declarations: This study was funded by the Canadian Institutes of Health Research. All procedures performed in the study were in accordance with the ethical standards of the Research Ethics Board of the Centre for Addiction and Mental Health and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all participants. Data are available upon reasonable request to the authors, with Research Ethics Board approval.

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Authors' contributions: LDH contributed to the design and operation of the study and to the data analyses, and drafted the manuscript. MD and JR contributed to the design and operation of the study, interpretation of the findings, and editing the manuscript. PS contributed to the conceptualization of the analyses, interpretation of the findings, and editing the manuscript. MSS contributed to the data analyses and editing the manuscript. JH contributed to the design and operation of the study, conceptualization of the analyses, interpretation of the findings, and editing the manuscript.

COVID-19, the disease caused by the virus SARS-CoV-2, was declared a pandemic by the World Health Organization on March 11, 2020 (World Health Organization, 2020). Compliance with public health guidelines is considered critical to reducing the spread of COVID-19 (Plohl & Musil, 2021). As the pandemic evolves, therefore, the public must be kept informed regarding the state of the pandemic, changes to public health guidelines, and current response strategies.

In order to reach the public, guidelines must be communicated accurately and in a timely manner. The restrictions on personal behavior necessitated by the urgency of the pandemic have had many impacts on peoples lives; given the evolving nature of both the pandemic itself and the restrictions needed to combat it, it is important to communicate public health information on an ongoing basis, even as vaccination rates rise (Su, Wen et al., 2021). Health officials, international organizations, and governments have stressed the need for effective, ongoing communication strategies based on understandable, transparent, and reliable messaging to fight misinformation and sensationalization, and to address specific populations (Hyland-Wood et al., 2021; Su, McDonnell et al., 2021; Su, Wen et al., 2021). Indeed, information about COVID-19 has emerged rapidly throughout the pandemic, but has not always been of the highest quality (Mheidly & Fares, 2020), raising concerns that the public has not always been well served by the information provided thus far.

Sources of information have moved over the past decades from legacy media (e.g., traditional print sources, televised media networks) to online media. In order to reach people effectively, it is necessary to understand what media channels they use. It is particularly important to understand media use among youth, who have grown up in an era of online communication and show increasingly high rates of online media use, and therefore are likely to obtain their information largely from online sources (Twenge et al., 2019).

However, a substantial proportion of the information disseminated on social media channels comes from questionable sources and contains misinformation (Kouzy et al., 2020). Many young people — especially younger youth — cannot always identify "fake news" stories or misinformation and have been shown to be poor judges of their own ability to do so (Leeder, 2019; Metzger et al., 2015). Inadequate media coverage and poor communication during public health emergencies such as COVID-19 can negatively affect mental health (Su, McDonnell et al., 2021).

In the context of the COVID-19 pandemic, it is essential that accurate public health information reach the population, including youth, to support not only public health guideline compliance, but also overall health and well-being. It remains unknown what social media platforms youth have depended on as information sources during the pandemic, which avenues of information dissemination they prefer, and what their perspectives are on COVID-19 public health communications. This study therefore aims to understand youths' use of and perspectives on the communication of information about COVID-19 and associated public health guidelines. Through

quantitative and qualitative means, we examine the platforms used by youth to consume information about COVID-19, as well as gathering their recommendations regarding the best ways of reaching youth with reliable information in the future.

Method

This study is part of a longitudinal COVID-19 study of youth mental health, substance use, and wellness (Hawke et al., 2021), operating out of the Centre for Addiction and Mental Health, in Toronto, Canada (CAMH); the larger study launched in April 2020 and surveys were repeated every 2 months thereafter until August 2021, with two subsequent 6-month follow-up assessments. A youth-engaged research strategy was employed, with youth as core team members. Youth contributed to the design of the study, helped formulate the qualitative questions on the media, and were engaged in the interpretation and reporting of the findings.

Participants. The participants comprised 463 youth aged 15 to 28, an age range in line with the Statistics Canada definition of "youth" (Statistics Canada, 2019). Younger youth were defined as participants aged 15 to 19, and older youth were defined as those aged 20 to 28. Participants were drawn from four existing youth participant cohorts based at the Centre for Addiction and Mental Health (Hawke et al., 2020). Three cohorts were recruited from participant pools of youth who were seeking help from tertiary mental health and substance use services (n = 194, 41.9%), and the fourth, from a school-based study conducted in schools across Ontario, Canada, were participants in a longitudinal study that began in 2011 (n = 269, 58.1%). For more details on the study sample, see (Hawke et al., 2020). Recruitment for the first wave of data collection began on April 8, 2020 and continued for approximately 3 weeks. Subsequent data collection waves were conducted at 2-month intervals. To be included in the current study, the participants must have completed the October 2020, December 2020, or February 2021 survey up to and including the sections querying about sources of information about COVID-19.

The Sample. Participants' demographic information is presented in Table 1. There were 463 participants, with an average age of 21.2 years (SD = 2.2, range 15–28). There were 303 women/ girls (65.4%), 140 men/boys (30.2%), and 20 transgender and gender diverse youth (4.3%). The majority of youth were of Caucasian backgrounds (n = 275, 59.5%), were native speakers of English (n = 422, 91.1%), and were Canadian-born (n = 408, 88.1%). Over half the participants were students (n = 250, 61.4%); about half were working full or part time (206, 50.6%).

Procedure. Participants in the source cohorts had consented to be contacted for future research. Potential participants received an email message containing a web link to an online survey. The survey was carried out using the research electronic data capture (REDCap) system, a web-based application (Harris et al., 2009), and hosted on a secure CAMH server. Participants clicked on the web link to access the survey, which began with an informed consent form. Survey reminder email messages were sent approximately every 3 days. This study was approved by the CAMH Research Ethics Board.

Table 1. *Demographic Characteristics of Sample, N = 463*

Characteristic	*n* (%)
Age: *M* (*SD*)	*M* =*21*.2, *SD* = 2.2
Gender	
Man/boy	140 (30.2)
Woman/girl	303 (65.4)
Transgender or gender diverse	20 (4.3)
Ethnicity (*n* = 462)	
Caucasian	275 (59.5)
Asian (East and Southeast)	58 (12.6)
South Asian	35 (7.6)
Black (African, Caribbean, North American)	19 (4.1)
Indigenous	6 (1.3)
Multiple	37 (8.0)
Another background	32 (6.9)
Student status (*n* = 407)	
Full-time	223 (54.8)
Part-time	27 (6.6)
Not a student	157 (38.6)
Employment status (*n* = 407)	
Employed	206 (50.6)
Unemployed/Not working	257 (49.3)
First language English	422 (91.1)
Born in Canada	408 (88.1)

Note. Values are *n* (%), unless otherwise specified.

Measures. This study focuses on the October 2020, December 2020, and February 2021 waves of data collection. In October 2020, we asked participants to indicate, using multiple choice questions and selecting all that applied, the sources of information they were using to learn about COVID-19 and pandemic response strategies. We also asked them to select only one response for their primary source of information. The sources of information included in the questionnaire were: "TV news", "Radio news", "Online news sources (e.g., CBC, Toronto Star)", "Other online sources (blog posts, other articles, podcasts)", "Prime minister's address[1]", "Social media", "Friends or family members", "My school", "My workplace", "Community agencies", "Other sources (please specify)". In addition, we collected qualitative data regarding participant views on how public health guidelines could be better explained to youth. We followed up in the December 2020 wave of data collection with two additional qualitative questions regarding what platforms they were using to access information about COVID-19 and what they felt were the optimal strategies for disseminating information about COVID-19 to young people. These quantitative and qualitative questions were developed in consultation with the youth co-researchers on the team to

[1] Canada's prime minister provided regular televised speeches during the height of the pandemic.

ensure relevance to youth experiences (Hawke et al., 2018; Heffernan et al., 2017). In February 2021, we further followed up on social media usage, asking which platforms participants were using to access information about the COVID-19 vaccine, using quantitative checkboxes ("Select all that apply").

In terms of demographic information, gender was collected in nine categories representing a range of gender identities, then trichotomized for the purposes of analyses into man/boy, woman/girl, and transgender or gender diverse. Ethnicity was collected in 18 categories and grouped based on sample size considerations into Caucasian, East/Southeast Asian, South Asian, Black, Indigenous, multiple, and other. Also collected were English-speaking and Canadian-born status variables (dichotomous, yes/no). These were drawn from the April 2020 initial wave of data collection. The remaining demographic information was drawn from the October 2020 data collection wave. These demographic variables could be hypothesized to correlate with sources of information used during the COVID-19 pandemic.

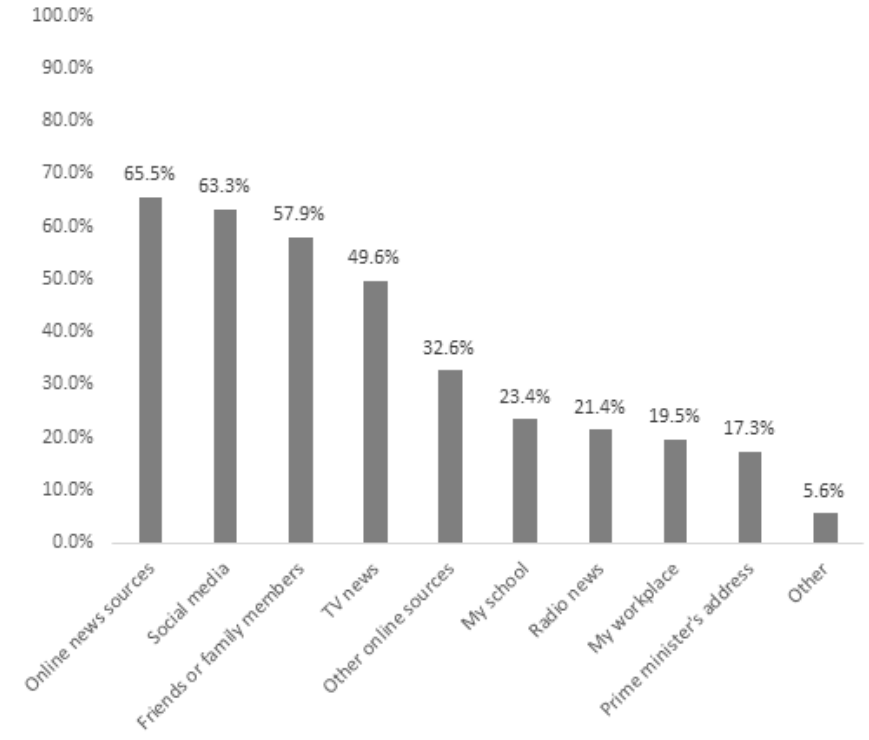
Analyses. We calculated descriptive statistics to describe the sample and their sources of information. We conducted chi-squared tests to examine overall and primary sources of information by categorical sociodemographic characteristics, with ANOVAs for age, which was treated as continuous. We also conducted chi-squared tests to examine social media sources by sociodemographic characteristic, with Mann-Whitney tests used for age, which was treated as continuous and had small sample sizes for individuals under 20 years. As a post-hoc exploratory analysis, we conducted chi-squared tests across ethnic group categories using the Bonferroni correction. For qualitative feedback, we conducted conventional qualitative content analysis with constant comparison (Hsieh & Shannon, 2005). Qualitative data were coded by a research staff member in frequent consultation with the lead author. Both the lead author and research staff members completed an open coding process, wherein a series of codes were identified, defined, and derived from data drawn from responses to each question (Hsieh & Shannon, 2005). In order to meaningfully group the codes, we organized them into categories based on similarities and differences, including sources of information, most trusted sources of information, and recommended communication approaches. Confirmability of the results was established through team discussions. The qualitative analysis was performed using the NVivo 12 data analysis software.

Results

Sources of Information: Quantitative

Sources that youth used to obtain information about COVID-19 are presented in Figure 1. Participants could select all that applied to them. Results show that the majority of participants sought information about COVID-19 from online news sources, social media, friends and family members, and TV news. Many youth also endorsed individual online sources of information such as LinkedIn, Reddit, Snapchat, and YouTube.

Figure 1. *Sources of COVID-19 Information Used by Participants*



The top four sources of information used during the pandemic (online news, social media, friends/family, TV news) were compared by gender (boy/man, girl/woman, transgender and gender diverse), age (< 20, 20+), area of residence (urban/suburban vs. small city to rural), and ethnicity (Caucasian vs. minority ethnicity). Some demographic differences were observed (Table 2). Social media use was marginally higher among participants living in urban or suburban areas compared to those not living in big cities ($p = .023$), but did not differ by age, ethnicity, or gender. TV news was less frequently used among transgender and gender diverse youth than among girls/young women and boys/young men ($p = .017$); there was no difference for TV news based on urban/rural status, age, or ethnicity, or between girls/young women and boys/young men. Obtaining information from friends or family members was more common among younger youth ($p = .043$), but there was no difference by other demographic characteristics. There was no difference in the acquisition of information from online news sources across any of the demographic variables examined (for each, $p > .05$). Among those participants who endorsed social media as a source of information, 70.4% also endorsed the use of online news sources. In our exploratory post-hoc analyses of ethnicity groupings, social media use did not differ across categories of ethnicity (for each, $p > .05$; see Tables A1, A2, A3 in Appendix).

Figure 2 summarizes participants' primary sources of COVID-19 information; participants could select only one option. The largest proportion of youth reported that social media and other online news were their primary sources: online media (social media, online news, and other online sources) represented the primary source of information for about 63% of the sample.

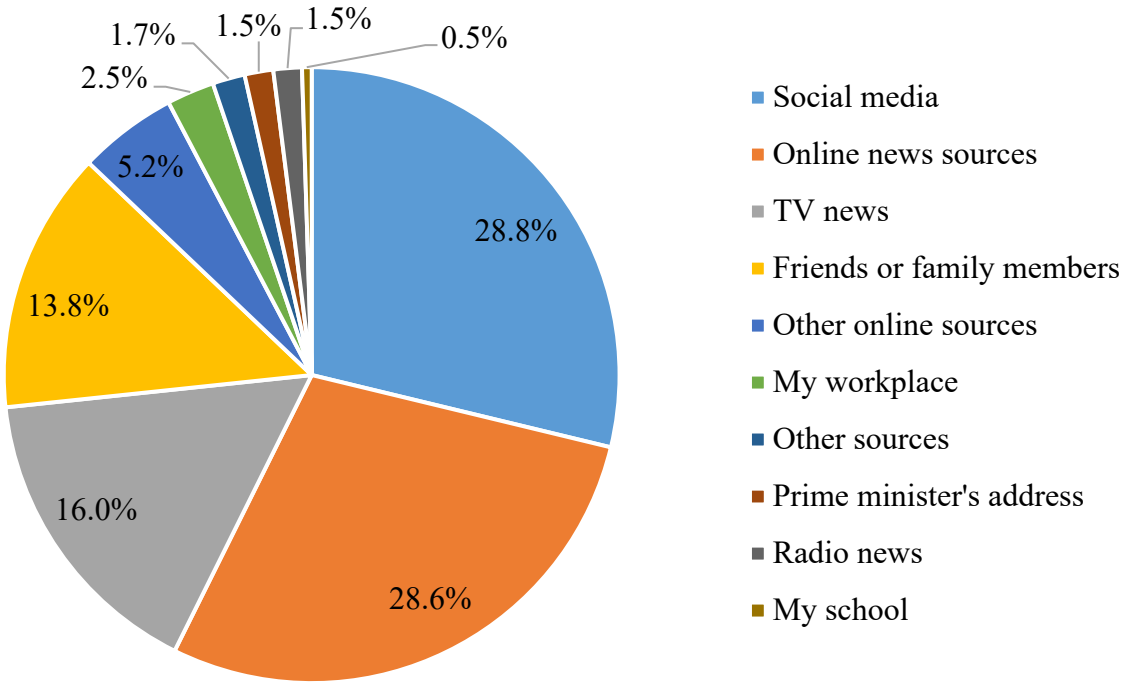
Table 2. *Sources of Information Used During COVID-19, by Demographic Characteristic*

	Social media		Online news		TV news		Family/friends	
Characteristic	*n* (%)	χ^2 or *F*	*n* (%)	χ^2 or *F*	*n* (%)	χ^2 or *F*	*n* (%)	χ^2 or *F*
Gender	*N* = 260	5.007	*N* = 269	4.771	*N* = 204	8.112*	*N* = 238	5.373
Boy/man	68 (26.2)		75 (27.9)		58 (28.4)		62 (26.1)	
Girl/woman	179 (68.8)		179 (66.5)		143 (70.1)		163 (68.5)	
Transgender/ gender-diverse	13 (5.0)		15 (5.6)		3 (1.5)		13 (5.4)	
Age[a]	*N* = 259	2.145	*N* = 268	0.031	*N* = 203	3.062	*N* = 237	4.138*
< 20	63 (24.3)		63 (23.5)		47 (23.2)		60 (25.3)	
≥ 20	196 (75.7)		205 (76.5)		156 (76.8)		177 (74.7)	
Area of residence	*N* = 260	5.135*	*N* = 269	1.972	*N* = 204	2.829	*N* = 238	0.789
Urban/suburban	185 (71.2)		187 (69.5)		145 (71.1)		164 (68.9)	
Small city to rural	75 (28.8)		82 (30.5)		59 (28.9)		74 (31.1)	
Ethnicity	*N* = 260	1.861	*N* = 268	0.219	*N* = 204	0.047	*N* = 238	0.439
Caucasian	145 (55.8)		154 (57.5)		120 (58.8)		142 (59.7)	
Minority ethnicity	115 (44.2)		114 (42.5)		84 (41.2)		96 (40.3)	

*Indicates $p < .05$.

[a] Differences in use across age as a continuous variable were assessed with one-way analysis of variance (ANOVA).

Figure 2. *Participants' Primary Sources of Information About COVID-19*



For the top four primary sources of information, a few demographic differences emerged. Results showed no significant difference for online news or TV news as a primary information source by gender, area of residence, age, or ethnicity (for each, $p > .05$; see Table 3). In our exploratory post-hoc analyses of ethnicity groupings, social media as a primary source was higher among Southeast/East Asians than among Caucasians ($p = .001$). No other significant differences were present for ethnicity. However, for social media as a primary source, rates were higher among youth in urban/suburban areas ($p = .016$), those with a minority (non-Caucasian) ethnicity ($p = .001$), and those under age 20 ($p = .032$). Rates of using social media as a primary source did not differ based on gender. Rural youth relied primarily on information from friends or family at a significantly higher rate than their urban/suburban peers ($p = .041$).There was no difference based on gender when including transgender and gender diverse youth, but a difference emerged when examining only girls/young women versus boys/young men, with higher rates ($p = .031$) among the former (note, gender-based analyses are exploratory due to small sample sizes). Reliance on friends or family as a primary source of information did not vary based on age or ethnicity.

Table 3. *Main Sources of Information Used During the COVID-19 Pandemic, by Demographic Characteristic*

	Social media		Online news		TV news		Family/friends	
Characteristic	*n* (%)	χ^2 or *F*	*n* (%)	χ^2 or *F*	*n* (%)	χ^2 or *F*	*n* (%)	χ^2 or *F*
Gender	*N* = 117	1.090	*N* = 116	5.597	*N* = 65	3.665	*N* = 56	4.722
Boy/man	31 (26.5)		36 (31.0)		22 (33.8)		10 (17.9)	
Girl/woman	80 (68.4)		71 (61.2)		43 (66.2)		44 (78.5)	
Transgender/ gender-diverse	6 (5.1)		9 (7.8)		0 (0%)		2 (3.6)	
Age[a]	*N* = 117	4.627*	*N* = 115	1.716	*N* = 64	0.416	*N* = 56	0.627
< 20	30 (25.6)		25 (21.7)		13 (20.3)		16 (28.6)	
≥ 20	87 (74.3)		90 (78.3)		51 (79.7)		40 (71.4)	
Area of residence	*N* = 117	5.814*	*N* = 116	0.493	*N* = 65	0.902	*N* = 56	4.165*
Urban/suburban	89 (76.1)		75 (64.7)		47 (72.3)		31 (55.4)	
Small city to rural	28 (23.9)		41 (35.3)		18 (27.7)		25 (44.6)	
Ethnicity	*N* = 117	10.800*	*N* = 115	3.553	*N* = 65	0.003	*N* = 56	0.374
Caucasian	54 (46.2)		76 (66.1)		38 (58.5)		35 (62.5)	
Minority ethnicity	63 (53.8)		39 (33.9)		27 (41.5)		21 (37.5)	

*Indicates $p < .05$.

[a] Differences in use across age as a continuous variable were assessed with one-way analysis of variance (ANOVA).

Social Media Sources

Participants identified the social media channels (Facebook, TikTok, Instagram, Twitter, or "Other social media") they used to access information. Results show that 21.3% ($n = 83$) reported using Instagram, 15.4% ($n = 60$) used Twitter, 13.6% ($n = 53$) used Facebook, 10.3% ($n = 40$) used TikTok, and 4.4% used another service ($n = 17$), notably YouTube ($n = 6$, 1.3%).

For Facebook and Twitter use, there was no significant difference based on demographic characteristics — gender, age, area of residence, and ethnicity (Table 4). In the post-hoc analyses of ethnicity groupings, no significant differences were present with respect to any platform. However, for TikTok, there was a difference based on age: those who endorsed using TikTok were younger, with a mean age of 20.09 (SD = 2.48), than those who did not endorse TikTok (M = 21.32, SD = 2.14, U = 3524, p = .001). Instagram use was higher among youth in urban/suburban areas (n = 62, 27.1%) rather than small cities and rural areas (n = 11, 9.2%, $\chi^2(1) = 15.019$, $p < .001$, $\varphi = .208$). Instagram was also used more by younger youth in the cohort (M = 20.63, SD = 2.20) than by older youth (M = 21.36, SD = 2.19, U = 7923, p = .006). There was no difference based on ethnicity or gender.

Table 4. *Types of Social Media Use by Demographic Characteristic*

	Facebook		TikTok		Instagram		Twitter	
Characteristic	*n* (%)	χ^2 or *U*	*n* (%)	χ^2 or *U*	*n* (%)	χ^2 or *U*	*n* (%)	χ^2 or *U*
Gender	*N* = 53	0.471	*N* = 40	1.958	*N* = 83	0.491	*N* = 60	1.592
Boy/man	14 (26.4)		8 (20.0%)		22 (26.5)		20 (33.3)	
Girl/woman	36 (67.9)		30 (75.0%)		57 (68.7)		36 (60.0)	
Transgender/ gender-diverse	3 (5.7)		2 (5.0%)		4 (4.8)		4 (6.7)	
Age[a]	*N* = 45	7081	*N* = 34	3524*	*N* = 73	7923*	*N* = 54	8536
< 20	8 (17.8)		14 (41.2)		23 (31.5)		9 (16.7)	
≥ 20	37 (82.2)		20 (58.8)		50 (68.5)		45 (83.3)	
Area of residence	*N* = 45	0.295	*N* = 34	1.905	*N* = 73	15.019*	*N* = 54	1.942
Urban/suburban	28 (62.2)		26 (76.5)		62 (84.9)		40 (74.1)	
Small city to rural	17 (37.8)		8 (23.5)		11 (15.1)		14 (25.9)	
Ethnicity	*N* = 53	0.074	*N* = 40	0.070	*N* = 83	1.170	*N* = 60	0.148
Caucasian	33 (62.3)		25 (62.5)		46 (55.4)		35 (58.3)	
Minority ethnicity	20 (37.7)		15 (37.5)		37 (44.6)		25 (41.7)	

*$p < .05$.

[a] Differences in social media use across age as a continuous variable were assessed with the Mann-Whitney test.

Sources of Information: Qualitative

Qualitative findings are summarized in Table 5. Qualitatively, youth reported accessing information about COVID-19 on a variety of online platforms. Commonly reported were social media platforms, with some stipulating that they used reliable sources on these platforms, including online news sources with a social media presence. Also reported were online official news sources, including TV, news applications, and news sources in general. Some youth mentioned the challenges of navigating false information on these platforms. Some participants reported relying primarily on friends and family members or other sources. Others reported avoiding news about COVID-19.

Table 5. *Qualitative Findings and Representative Quotes*

Qualitative finding	Representative quote
Sources of information	
Social media	"I get my information from our local public health unit on Facebook." "Snapchat on DailyMail sometimes (even though I know it is not credible)."
Family	"I mainly get my information from my family, as they read trustworthy news articles about the pandemic, whereas I would otherwise only learn from social media."
Most trusted sources of information	
Credible sources	"News articles from credible sources." "If it's a government page, then I trust it."
Scientific sources	"Medical studies. After all, the news just quotes medical studies. So I can just read the study for myself, plus many more studies that the mainstream news will not report on." "Instagram posts from medical professionals."
Family	"My mom. She's a nurse. She knows what she's talking about."
No trusted sources	"I don't feel like I can trust any information on it."
Recommended communication approaches	
Social media ads	"Social media for sure, maybe an Instagram page." "YouTube and TikTok ads would be the best way to convey this information to young people. I have seen the Government of Canada have ads on TikTok and I think they are very effective. If I were a decision-maker, I would target these social media because I know they will be seen by young people. I think video ads are most immersive and are the least likely to be clicked away from."
Other digital sources: mass texts, email	"I would set up a daily text service that you would subscribe to which gives accurate information and updates." "I'd research news websites that young people use most and gather all the articles you can find and continuously update this database so that the audience you are trying to reach can have a central place for all of their COVID news."
Schools	"The obvious choice of social media, but I suppose it depends how young the demographic is. If they're in grade school, then we need to make sure teachers are effectively communicating this information."
Brief, accessible, engaging format	"Infographics are super aesthetic and most young people like having information condensed and easy to read. The visuals are a bonus." "YOUTH FRIENDLY LANGUAGE!!! Get a youth on their team."
Accurate, pragmatic, from verified sources	"Social media with validation stickers or icons marking credible sources and flagging suspicious sources."
Frequent updates	"Keep information up front in places frequented by young people. Like, Twitter has a section in trending that always will update you on official news. YouTube has a similar section of news videos and official addresses in regards to COVID. Maybe, I'd suggest, making more informative advertisements to put on sites like YouTube."

Most Trusted Sources of Information

Participants qualitatively reported on the sources of information they trusted most. Throughout the results, it was often indicated that information was acquired via the web. Many youth cited news sources, specified by some as online or on TV, stating that they trusted information from

news sources they perceived as reliable, such as official news platforms. A few youth specified social media sources or various web searches.

Youth widely trusted government-affiliated sources, including federal government sources and formal local sources such as health units. Medical professionals were another trusted source of information. Some participants expressed trust in scientific sources of information, such as medical research studies. Some youth trusted information from personal contacts. Examples included friends and family members, particularly those who were also medical professionals. Medical professionals familiar to the participants were also trusted. A number of youth reported that they did not trust information from any sources.

Recommended Communication Approaches

Participants offered a variety of recommendations for optimal ways to reach youth with public health information and other updates regarding the COVID-19 pandemic (Table 5). Six overlapping themes were observed in the data, as described below.

Social media ads. Dominant in the data was the recommendation to use social media platforms, with an overwhelming emphasis on using social media to communicate reliable public health information and updates regarding COVID-19. As part of such social media approaches, participants suggested using trusted influencers to disseminate information and stimulate discussion. Influencers, or opinion leaders, are popular figures and spokespeople who have a broad reach on social media platforms and can thus transmit messages to a large audience.

Other digital sources: mass texts, email. In addition to social media, participants suggested using other forms of digital media to disseminate information. These included texting modalities and email subscription options, as well as digital news avenues.

Schools. Youth further proposed reaching youth through schools. This suggestion involved using school-based digital platforms, including but not limited to social media. Participants also suggested ensuring that teachers are prepared to disseminate the information effectively.

Brief, accessible, engaging format. Participants emphasized the importance of ensuring that advertising should employ a brief format, and should be accessible and highly engaging. It should rely on visually appealing ads using infographics and videos that can be easily understood and shared, with simple, actionable messages. Ensuring the youth-friendliness of the information through engaging mechanisms was a priority.

Accurate, pragmatic, from verified sources. Youth were concerned that information provided to them about COVID-19 must be accurate and pragmatic. They wanted to avoid misinformation by accessing information from verified, official sources, including government sources. They wanted the information to be factual and useful, with concrete information about guidelines and impacts.

Frequent updates. Perhaps due to the rapidly evolving nature of the pandemic, youth wanted updates to be frequent. They wanted to be able to access updates on an ongoing basis to stay current on the evolving situation.

Discussion

This study examined youth's sources of information about COVID-19 and summarized their recommendations for communicating to youth about COVID-19. Results show that the majority of youth obtain their information from online sources, including both social media and formal news sources. Qualitative comments revealed a strong emphasis on social media, suggesting that some of the online news sources may have been accessed via social media channels, since many news outlets have a strong social media presence. The social media channels used by youth are diverse. When asked to consider recommendations of optimal communication strategies regarding COVID-19, youth overwhelmingly recommended targeting social media channels with brief, engaging, and accurate information ads.

Even as vaccines against COVID-19 have achieved substantial coverage, public health guidelines must continue to be disseminated and followed (Su, Wen et al., 2021); this is particularly important for youth, who are receiving their vaccinations later in the vaccine rollout plan. However, while youth are in favor of social distancing and feel they are following guidelines, it has been demonstrated in this and other studies that youth, like adults, do not fully understand and consistently follow the guidelines, which they may find confusing and contradictory (Dunn et al., 2021). It is therefore important to explain public health guidelines in simple, pragmatic ways that are adapted to the target population, and to do so frequently as guidelines evolve. Infographics have been identified as a positive means of disseminating health information to the public (McCrorie et al., 2016), as have videos; however, Bora et al. (2018) noted that the information provided is not always accurate. Indeed, the social media sites from which youth obtain much of their news make frequent use of such engaging dissemination techniques (Twenge et al., 2019).

The results of this study indicate that youth receive COVID-19 information from family and friends, social media companies, and policymakers/governmental bodies. When situating these findings in theory, we may consider the social-ecological model. This model attributes health behaviors and outcomes to both proximal and distal influences, including intrapersonal, interpersonal, organizational, community, and societal influences (Kolff et al., 2018). Information provided by institutions and regulatory health bodies is situated at the organizational level, whereas information provided by family, friends, or social media is at the interpersonal level. While we found that youth are subject to these various levels of influence, the majority of youth obtain information from social media sources. This suggests that social media and other organizational stakeholders can play a large role in influencing the quality, quantity, and frequency of the COVID-19 information that young people are exposed to.

Factors at the intrapersonal level also affect perceptions about information sources and willingness to follow public health guidelines (Kumar et al., 2012). We found that youth were most willing to trust information provided by government and scientific sources. This aligns with a study examining Canadians' interactions with federal and provincial government Twitter accounts, which found that Canadians generally trusted the government's response to COVID-19 (Kada et al., 2022). Participants also suggested using trusted and verified influencers to disseminate information, although it is unclear how youth would distinguish between trustworthy public health influencers and less reliable ones. These results on the most trusted sources of information align with the Health Belief Model, which states that attitudes and beliefs such as perceived susceptibility to disease, perceived benefits and barriers to adopting a health behavior, and trust in government will influence compliance with government-recommended health behaviors (Alagili & Bamashmous, 2021).

There have been calls for public health messaging to be disseminated via social media channels (Breland et al., 2017). Social media is now rife with content on COVID-19 and is very widely used by youth (Gruzd & Mai, 2020), but the information shared is not always accurate. Abdoh's (2022) study on university students in Saudi Arabia also found that social media was among the most frequently used sources of information. Students in that study echoed the challenges of finding verifiable information on social media. Importantly, accessing COVID-19 information via social media has been positively associated with conspiracy beliefs regarding the virus (Allington et al., 2020). The importance of truthful information is highlighted by the finding that beliefs in conspiracy theories may motivate non-compliance with guidelines in adults (Freeman et al., 2020), while those who have high trust in science show more compliance (Plohl & Musil, 2021). It appears that factual information may be engaged with more frequently on social media platforms, despite the widespread availability of false information (Pulido et al., 2020). Since youth may not be able to distinguish between accurate, reliable information and misinformation (Leeder, 2019; Metzger et al., 2015), it is all the more important to ensure that accurate information is widely available across the social media channels that young people use. Many youth in the current study were aware of the risks of false information and wanted to be assured that the information they were consuming was accurate.

It is important to recognize that youth use a wide variety of social media channels (Grudz & Mai, 2020), and that their choices of channels evolve rapidly. It is not enough for public health organizations to focus on one or two social media channels, or on channels that may lend themselves more easily to public health guideline reporting, as this approach will miss many youth. For example, Twitter is well established and enables organizations to create text-based messages. TikTok, however, which is based on short, engaging video clips, has emerged as among the favorites of youth, along with Instagram, which is photo-based, and Snapchat, which uses photos and videos available on a time-limited basis. One study conducted on Twitter found that shocking content garnered more reaction, humorous messages had more engagement, and informational content was shared more (Gough et al., 2017). However, these findings may not apply equally to

other social media platforms. A social media campaign must be diverse, with ads appropriate to different platforms, engagement styles, and target audiences, to ensure that young people have access to reliable information. Many social media users follow "influencers" (opinion leaders), and engaging these figures may help improve reach (Bergström & Jervelycke Belfrage, 2018), supplementing information posted by formal news outlets and confirmed reliable sources.

Youth co-researchers on this project from the Centre for Addiction and Mental Health echoed the findings, based on their own lived experiences. In particular, they highlighted that the accuracy of information is paramount in this time when false information and scams are prevalent in society, particularly online. They agreed with the potential utility of "verified" tags to reassure users that the information provided is accurate. These co-researchers also pointed out that older adults are more likely to share fake news than younger people (Brashier & Schacter, 2020), which may make youth skeptical of the information shared by older relatives. In addition, they pointed to the need for research to determine the optimal message frequency, given the varied roles and needs of young people, and the potential for youth to feel overwhelmed by frequent messages, especially young essential workers who are exposed to the public on a regular basis. Lastly, the youth team members particularly emphasized the importance of engaging individuals from the target population, including youth, when developing media campaigns, to enhance credibility and appropriateness.

Recommendations for Public Health Communicators

Given these findings, we recommend that robust social media campaigns be developed through collaborations of government, public health and medical bodies, and social media managers to specifically target young people with frequent, accurate, reliable information from verified sources in concise infographic and video forms. A wide variety of social media platforms should be targeted, with campaigns adapted to each platform. The information disseminated should provide clear, accessible guidelines that young people can understand and follow. To achieve this goal, it is strongly recommended that youth team members be an integral part of social media campaign development and implementation, as youth team members are experts in the ways other youth will be attracted to and engage with content. To supplement social media campaigns, accurate and engaging information should be provided in schools and other venues by official news outlets and government sources.

Strengths and Limitations

This is the first study, to our knowledge, that provides insights into Canadian youths' use of and perspectives on the communication of information about COVID-19. Our findings, however, should be interpreted in the context of some limitations. These findings are cross-sectional in nature, yet means of engaging with the media may change for youth over time. The qualitative data was derived from open-ended questions posed in survey format, not full-scale interviews, which limits the depth of the findings. Despite some diversity, the sample is not representative of the entire youth population; future studies may wish to assess sources of information in larger, more diverse samples of young people, including younger teens and children, and vulnerable

subpopulations. Lastly, the source of "online news" was not stipulated and may reflect accessing news via social media channels, limiting the ability to clearly distinguish between social media and other online news sources.

Conclusions

Youth want access to clear, reliable information on COVID-19 and public health guidelines, and most want to access it online, particularly via diverse social media channels and formal news outlets. It is essential that COVID-19 information and public health guidelines be disseminated clearly and frequently, using engaging materials in a diversity of online formats, to keep youth informed. The accuracy and truthfulness of the information should be verified. Importantly, to best reach young people with the information they need, communication campaigns should be developed with youth at the table as team members.

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Appendix

Table A1. *Sources of Information Used During the COVID-19 Pandemic, by Ethnicity*

	Social media		Online news		TV news		Family/friends	
	n (%)	X^2	*n* (%)	X^2	*n* (%)	X^2	*n* (%)	X^2
Ethnicity	*N* = 260	6.841	*N* = 268	2.188	*N* = 204	4.070	*N* = 238	10.175
Caucasian	145 (55.8)		154 (57.5)		120 (58.8)		142 (59.7)	
Southeast and East Asian	35 (13.5)		35 (13.1)		23 (11.3)		28 (11.8)	
South Asian	23 (8.8)		20 (7.5)		17 (8.3)		22 (9.3)	
Black	15 (5.8)		10 (3.7)		10 (4.9)		7 (2.9)	
Indigenous	4 (1.5)		4 (1.5)		4 (2.0)		1 (0.4)	
Mixed	23 (8.8)		24 (8.9)		14 (6.9)		22 (9.2)	
Other	15 (5.8)		21 (7.8)		16 (7.8)		16 (6.7)	

Table A2. *Main Sources of Information Used During the COVID-19 Pandemic, by Ethnicity*

	Social media		Online news		TV news		Family/friends	
	n (%)	X^2	*n* (%)	X^2	*n* (%)	X^2	*n* (%)	X^2
Ethnicity	*N* = 117	17.930*	*N* = 115	5.427	*N* = 65	8.759	*N* = 56	7.767
Caucasian	54 (46.2)		76 (66.1)		38 (58.5)		35 (62.5)	
Southeast and East Asian	23 (19.6)		10 (8.7)		5 (7.7)		5 (8.9)	
South Asian	11 (9.3)		6 (5.2)		5 (7.7)		8 (14.3)	
Black	7 (6.0)		4 (3.4)		6 (9.2)		0 (0)	
Indigenous	3 (2.6)		1 (0.9)		1 (1.5)		1 (1.8)	
Mixed	14 (12.0)		11 (9.6)		3 (4.6)		4 (7.1)	
Other	5 (4.3)		7 (6.1)		7 (10.8)		3 (5.4)	

* Indicates $p<0.05$

Table A3. *Types of Social Media Use by Ethnicity*

	Facebook		TikTok		Instagram		Twitter	
	n (%)	X^2	*n* (%)	X^2	*n* (%)	X^2	*n* (%)	X^2
Ethnicity	*N* = 53	4.378	*N* = 40	2.533	*N* = 83	10.365	*N* = 60	2.298
Caucasian	33 (62.3)		25 (62.5)		46 (55.4)		35 (58.3)	
Southeast and East Asian	7 (13.2)		4 (10)		9 (10.8)		5 (8.3)	
South Asia	5 (9.4)		4 (10)		13 (15.7)		5 (8.3)	
Black	1 (1.9)		1 (2.5)		4 (4.8)		4 (6.7)	
Indigenous	2 (3.8)		1 (2.5)		1 (1.2)		1 (1.7)	
Mixed	2 (3.8)		4 (10)		4 (4.8)		6 (10)	
Other	3 (5.7)		1 (2.5)		6 (7.2)		4 (6.7)	