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Short communication

Endorsement of COVID-19 related misinformation among cancer survivors

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Objectives: To determine whether cancer survivors currently in treatment are more or less likely to endorse COVID-19 related misinformation compared to their counterparts no longer in treatment and those without a cancer history.

Methods: We conducted a Qualtrics survey among 897 adults to determine differences in endorsement of COVID-19 misinformation among cancer survivors in active treatment, cancer survivors no longer in treatment, and a control group with no cancer history.

Results: Cancer survivors currently undergoing treatment were more likely to believe misinformation related to COVID-19 than those without a cancer history. Least likely to endorse COVID-19 misinformation were cancer survivor no longer in treatment.

Conclusion: These results alert healthcare professionals to overall high levels of endorsement of COVID-19 misinformation among cancer survivors on active treatment. Oncologists and other providers working with patients undergoing treatment for cancer should be particularly mindful of the potential elevated beliefs in misinformation among this group.

Practical implications: Since patients undergoing cancer treatment seem to be particularly vulnerable to COVID-19 misinformation, oncologists and other healthcare providers working with this patient population should help address patients’ concerns about the pandemic and how it relates to their course of treatment.

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1. Introduction

The COVID-19 health crisis has quickly spread throughout the world and led to two different types of pandemics, that of an infectious disease and another of misinformation. Eysenbach defined an ‘infodemic’ in 2009 as an “excessive amount of unfiltered information concerning a problem such that the solution is made more difficult” [1]. Misinformation is associated with increased cases of infectious diseases, including influenza, norovirus, and COVID-19 [2,3]. Much of COVID-19 misinformation is spread on social media, with COVID-19-related Twitter content showing an alarming level of misinformation [1,4]. Widespread belief in COVID-19 misinformation is problematic because these beliefs are difficult to correct and may influence behavior and reasoning [5]. Moreover, endorsement of COVID-19 misinformation, including conspiracy theories, is associated with decreased COVID-19 preventive behaviors [6].

Some cancer patients may be at greater risk for misinformation endorsement, as they frequently turn to online sources for health information and social support [7-9]. Misinformation can be particularly problematic for cancer patients if it results in skipped or delayed medical care, which can increase morbidity and mortality [10]. Knowing the extent to which COVID-19 misinformation is being endorsed by cancer populations is important during this and future pandemics but has not been investigated to date. The purpose of this study was to determine whether cancer survivors currently in active treatment are more or less likely to endorse COVID-19 related misinformation compared to their counterparts no longer in treatment or those with no cancer history.

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2. Method

Self-reported data were collected via a Qualtrics online survey from N = 897 respondents from June 1–15th, 2020. Approximately one-third were cancer survivors currently undergoing treatment (32.0%, n = 287), survivors not currently in treatment (either having completed treatment or not undergoing treatment at the moment) (33.6%, n = 301), and respondents with no cancer history (34.4%, n = 309). Survey items assessed participant gender, age, race, and education attainment. Using the NCI definition of “cancer survivor” [11], cancer and treatment statuses were queried and labeled accordingly as either “cancer survivor in treatment”, “cancer survivor, not in treatment”, or “a respondent with no cancer history”.

A question, “How much stress has the COVID-19 caused you?” was used to measure the amount of stress the pandemic had caused respondents. Responses ranged from “Not at all stressed” to “Extremely stressed”. Endorsement of a series of COVID-19 related misinformation statements (N = 21), taken from the World Health Organization’s website, was measured using responses ranging from “Definitely untrue” to “Definitely true” (Table 2).

After computing descriptive statistics, the COVID-19 misinformation items were evaluated in a single-factor confirmatory factor analysis (CFA) to assess whether they comprise a single scale. In the next step, the effect of cancer status on COVID-19 misinformation items was assessed by extending the Misinformation CFA model to a structural equation model where it was regressed on sex, age, race, highest attained education, COVID-19 stress, and dummy-code cancer status (reference group = no cancer). The fit of the model was deemed adequate using the cut-off values of CFI > 0.90 and RMSEA < 0.08 [12].

4. Discussion and conclusion

4.1. Discussion

These results highlight that, compared to healthy adults without cancer, cancer survivors currently undergoing treatment may be more vulnerable to COVID-19-related misinformation, while those no longer in treatment are less vulnerable. The reasons for this are not entirely clear. It may be that survivors currently undergoing treatment have heightened anxiety about how the current pandemic will impact their course of survival, leading them to seek out more information on the internet or via social media where they are more exposed to misinformation. Increased information seeking may impact cancer patients’ information processing abilities, making them more likely to use heuristics or cues, rather than more critical, central processing routes of assessing information credibility [13]. “Seasoned” survivors who are no longer undergoing treatment (50% were diagnosed more than five years ago, and 42% finished treatment more than five years ago) may be less vulnerable to COVID-19 misinformation, while those still in treatment are more likely to endorse misinformation, which is consistent with other studies examining COVID-19 misinformation [16]. One possible explanation may be that younger populations are higher users of misinformation-prone social media, while older populations are more likely to receive more trustworthy information from broadcast media sources [16]. In addition, older respondents are more susceptible to severe forms of COVID-19, and therefore may be more likely to critically evaluate information [17].

Table 1
Descriptive statistics of study covariates by cancer group.

|                      | Cancer treatment          | Cancer no treatment    | No cancer                |
|----------------------|---------------------------|------------------------|--------------------------|
| Gender               |                           | n (%) / M (SD)         | n (%) / M (SD)           | n (%) / M (SD)           |
| Male                 | 135 (47.0%)               | 145 (48.2%)            | 154 (49.8%)              |
| Female               | 152 (53.0%)               | 156 (51.8%)            | 155 (50.2%)              |
| Age                  |                           |                        |                          |
| 48.17 (17.06)        | 56.43 (16.24)             | 44.30 (16.29)          |
| Race                 |                           |                        |                          |
| White                | 230 (80.1%)               | 263 (87.4%)            | 105 (34.0%)              |
| Black                | 28 (9.8%)                 | 23 (7.6%)              | 100 (32.4%)              |
| Hispanic             | 29 (10.1%)                | 15 (5.0%)              | 104 (33.7)               |
| Education            |                           |                        |                          |
| (Some) HS            | 43 (14.9%)                | 52 (17.2%)             | 69 (22.3%)               |
| Some college         | 127 (29.2%)               | 102 (33.9%)            | 108 (34.9%)              |
| Bachelor’s degree    | 108 (37.6%)               | 83 (28.2%)             | 66 (21.4%)               |
| Graduate degree      | 52 (18.1%)                | 62 (20.6%)             | 66 (21.4%)               |
| COVID-19 stress      | 2.90 (1.10)               | 2.72 (1.14)            | 2.93 (1.17)              |
This study should be viewed within the context of its strengths and limitations. A strength of this study is the relatively large sample of cancer survivors (both on active treatment and off treatment). Limitations include the use of a convenience sample, cross-sectional design, and self-report of cancer diagnosis status with limited disease and treatment details. Also, although the overall sample was relatively diverse, racial/ethnic diversity was lower within the cancer groups. Nevertheless, our sample of cancer survivors in active treatment and those who had completed treatment is unique and the first study, to our knowledge, to examine COVID-19 misinformation among cancer patients both on active treatment and not on treatment. This distinction among cancer survivors produced meaningful results and future studies examining misinformation would be wise to analyze these groups separately.
4.2. Conclusion

Collectively, these results alert healthcare professionals to overall high levels of endorsement of COVID-19 misinformation among cancer survivors on active treatment.

Oncologists and other providers working with patients undergoing treatment for cancer should be particularly mindful of the potential elevated beliefs in misinformation among this group. Strategic communications aimed at individuals at high-risk of COVID-19 complications due to underlying co-morbidities are especially critical.

4.3. Practical implications

Since patients undergoing cancer treatment seem to be particularly vulnerable to be exposed to COVID-19 misinformation, oncologists and other healthcare providers working with this patient population have the opportunity play an important role in helping to address patient’s concerns about how the pandemic relates to their course of treatment. In addition, these results may have similar implications for other medically vulnerable populations and their healthcare providers.

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Jeanine Guidry: Conceptualization, Methodology, Investigation, Data curation, Writing - original draft, Writing - review & editing. Project administration, Supervision. Kellie Carlyle: Conceptualization, Methodology, Writing - review & editing. Carrie Miller: Conceptualization, Methodology, Writing - review & editing. Albert Ksinan: Methodology, Writing - original draft, Formal analysis. Kandace McGuire: Writing - review & editing. Robert Winn: Writing - review & editing. Vanessa Sheppard: Writing - review & editing, Funding acquisition. Bernard Fuemmeler: Conceptualization, Funding acquisition, Methodology, Writing - review & editing, Supervision.

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