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News media and health behaviors: What can we learn from COVID-19?

Guanlin Gao
Chaminade University of Honolulu

Danyang Li
Hofstra University

Abstract

Understanding how media influences public health behaviors is crucial, given its essential role in health communication, education, and the promotion of health behaviors. This study investigates how news media choices influence people's knowledge and behavior during the COVID-19 pandemic. We administered a cross-sectional survey to 662 U.S. residents and collected their news media choices, personal characteristics, and knowledge and preventative measures taken against COVID-19. Our results show that news media choice is strongly correlated with people's knowledge and health behaviors such as social distancing and wearing a mask in public. Although receiving information from both left- and right-leaning media negatively impacts the respondents' performance in the knowledge test, exposure to news media from both sides increases their likelihood of practicing social distancing. Political views, race, and income level also contribute to one's knowledge and health behaviors. Based on our findings, we recommend coordination efforts with news media in health promotion and education.

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Contact: Guanlin Gao - guanlin.gao@chaminade.edu, Danyang Li - danyang.li@hofstra.edu.
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1. Introduction

Media influences the public's knowledge, views, and responses towards a social phenomenon (McQuail 2010). Evidence shows that accurate and timely media coverage of the COVID-19 global pandemic increased health information-seeking and reduced vaccine hesitancy (Blank and Reisdorf 2023). However, insufficient coverage of scientific-based reports and overstatements of negative and extreme news fail to inform the public about the efficacy of preventative measures, and thus, mislead the public in their health decisions and behaviors during the pandemic (Basch et al. 2020, and Sacerdote et al. 2021).

Left-leaning media are considered to contain more exposing and warning coverage of the pandemic, while right-leaning media are perceived to have low scientific quality and more sensationalism, downplaying the reality (Mach et al. 2021). Previous research found that exposure to left-leaning news media was associated with a lower probability of receiving a positive COVID-19 test result, while exposure to right-leaning news media showed a null relationship (Spiteri 2021). Lasher et al. (2022) found a correlation between right-leaning media consumption and COVID-19 vaccine hesitancy. Besides media channels and message framing (Lee and Cho 2017), other factors such as political views (Christensen et al. 2020), educational attainment (Gao and Li 2022), race and ethnicity (Christensen et al. 2020, and Gao and Li 2022), and gender (Christensen et al. 2020, and Gao and Li 2022) are also associated with people's knowledge and health behaviors in seeking preventative measures.

Understanding how media influences public health behaviors is crucial, given its essential role in health communication, education, and the promotion of health behaviors. This study answers the question of how news media choices relate to people's knowledge and health behaviors against the backdrop of the recent COVID-19 global pandemic. We conducted an online cross-sectional survey with 662 U.S. residents recruited from Amazon Mechanical Turk (MTurk) crowdsource workers. Our survey questionnaire included a COVID-19 knowledge test, behavioral questions, sources of information on COVID-19 news, and questions on demographics and political views.

Our results show that people who received information from both left- and right-leaning media were more likely to practice preventive health behaviors, such as social distancing and wearing a mask in public, compared to those who were only exposed to one side of the news or no news at all. However, news media choices were uncorrelated with one's knowledge about COVID-19. Additionally, we found that people's political views were correlated with their COVID-19-related knowledge and health behaviors. Individuals holding more liberal political views tended to have more correct answers in the knowledge test and were also more likely to follow CDC-recommended guidelines compared to their counterparts holding conservative political views. Participants with various levels of educational attainment, income, and racial/ethnic backgrounds also demonstrated disparities in knowledge and health behavior. Our study contributes to the growing literature on how media choice affects individual's health behavior during COVID-19. Media play a positive role in influencing the civic engagement in the preventive health behaviors. Educational programs may have a high added value on marginalized populations. Based on our findings, coordinating efforts with news media in health promotion and education are recommended.

The rest of this paper proceeds as follows: The next section describes our survey design and procedure. Section 3 presents the data and results. Section 4 concludes, provides policy implications, and discusses the limitations of this study.

2. Survey Design and Procedure

We designed and administered an online survey via Amazon Mechanical Turk (MTurk) in August 2020.[1] Our respondents were U.S. residents aged 18 and above. We obtained participants' news media choices for COVID-19 information, their basic knowledge of, and health behaviors related to COVID-19, as well as their demographics and political views.

Participants selected their news media choices from a list of eight major national channels and newspapers, including ABC, CBS, CNN, Fox News, MSNBC, The New York Times, The Washington Post, and USA Today. These news media outlets were later classified as "left-leaning" or "right-leaning" according to the lastest Media Bias Chart of Ad Fontes Media, complemented by Pew Research Center, with Fox News identified as the "right-leaning" news media among the eight.[2]

The COVID-19 knowledge test consisted of ten fact-check multiple-choice questions. The two behavioral questions asked respondents how often they practiced social distancing and wore a mask in public over the past two weeks, each rated on a 5-point Likert scale from "not at all" to "all the time". We also incorporated one attention check question to ensure the quality of the data. The complete questionnaire is included in the Appendix. The study protocol was approved by the authors' affiliated Institutional Review Board.

3. Results

We recruited 662 participants and obtained 595 valid observations after excluding duplicated and incomplete answers and those failing the attention check question. The summary statistics and participants' responses to the knowledge test and behavioral questions can be found in the Appendix.

3.1 Media Choice and Knowledge

We construct a Tobit regression model, Model (1), to analyze the relationship between respondents' news media choices and their performance on the knowledge test. The dependent variable is the number of correct answers on the knowledge test. The independent variables include the respondents' media choices and personal characteristics, such as age, gender, marital status, race, educational attainment, income levels, and political views. We use those who

[1] By March 2020, the World Health Organization (WHO) had declared COVID-19 a global health emergency. It was also in the same month that WHO officially declared the COVID-19 outbreak a pandemic. In July 2020, U.S. surpassed 150,000 recorded COVID-19 deaths, which was the highest death toll in the world. On August 12, 2020, U.S. reported the highest number of COVID-19 deaths in one day. Our survey was conducted during this period.
[2] Our media list was not exhaustive. The classification of left-leaning and right-leaning media may differ across other media review sources and may also change over time.

receive information from both left-leaning and right-leaning media as the reference group and control for individual heterogeneity in various model specifications. ε_i represents the error term. Subscript *i* denotes the individual indicator.

$$\#\ of\ Correct\ Answers_i = \beta_0 + \beta_1 Media\ choice_i + \beta_2 Political\ View_i + \beta_3 Age35_i + \beta_4 Female_i + \beta_5 Married_i + \beta_6 White_i + \beta_7 No\ College_i + \beta_8 Low\ income_i + \varepsilon_i \quad (1)$$

Table 1: Media Choice and Knowledge of COVID-19

VARIABLES	(1)	(2)	(3)
Left-leaning only	0.679***	0.466***	0.297***
	(0.0853)	(0.0817)	(0.0797)
Right-leaning only	0.290*	0.0703	0.301*
	(0.174)	(0.167)	(0.172)
No media	2.277***	1.779***	1.343***
	(0.149)	(0.150)	(0.150)
Independent			0.701***
			(0.117)
Republican			-1.139***
			(0.0837)
No college		0.871***	0.680***
		(0.102)	(0.101)
Income <$25K		-0.435***	-0.537***
		(0.101)	(0.104)
White		0.234***	0.170**
		(0.0832)	(0.0797)
Female		0.638***	0.616***
		(0.0784)	(0.0759)
Married		1.103***	0.949***
		(0.0981)	(0.0956)
Age≥35		0.853***	0.829***
		(0.0814)	(0.0788)
Constant	6.153***	5.034***	5.638***
	(0.0567)	(0.103)	(0.115)
Sigma	2.730***	2.629***	2.541***
	(0.0292)	(0.0296)	(0.0281)
Observations	595	595	595

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 1 presents the regression results. Our results indicate that, on average, individuals receiving information exclusively from left-leaning media scored 0.679, 0.466, and 0.297 more correct answers on the knowledge test across various model specifications, respectively, compared to their counterparts who received information from both sides. Similarly, those receiving information solely from right-leaning media also had slightly more correct answers compared to the baseline group, which received both left- and right-leaning media. Respondents who did not consume any news media scored significantly higher, with an additional 2.277,

1.779, and 1.343 correct answers in various model specifications, respectively. One possible explanation is that confusion may arise from receiving contradicting news coverage on COVID-19 from both left- and right-leaning news media, leading to lower scores on the knowledge test. Another possible explanation is that certain unobserved characteristics may influence both the choice of news media and one's knowledge about COVID-19.

Table 2: Media Choice and Health Behavior in COVID-19

	Social distancing			Wearing a mask in public		
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Left-leaning only	-0.143	-0.173	-0.237	-0.0907	-0.0925	-0.149
	(0.178)	(0.184)	(0.194)	(0.191)	(0.199)	(0.200)
Right-leaning only	-0.642**	-0.591*	-0.535	-0.505	-0.466	-0.384
	(0.316)	(0.336)	(0.345)	(0.338)	(0.354)	(0.367)
No media	-0.608***	-0.653***	-0.800***	-0.206	-0.241	-0.423
	(0.228)	(0.234)	(0.237)	(0.269)	(0.279)	(0.287)
Independent			0.299			0.358
			(0.220)			(0.232)
Republican			-0.338*			-0.436**
			(0.194)			(0.195)
No college		-0.312	-0.387*		-0.268	-0.377*
		(0.198)	(0.200)		(0.210)	(0.216)
Income < $25K		-0.186	-0.228		-0.369	-0.406*
		(0.253)	(0.255)		(0.237)	(0.240)
White		0.139	0.131		0.188	0.165
		(0.169)	(0.168)		(0.177)	(0.176)
Female		0.116	0.108		0.308*	0.315*
		(0.158)	(0.162)		(0.169)	(0.171)
Married		0.365*	0.319		0.260	0.199
		(0.201)	(0.201)		(0.219)	(0.221)
Age≥35		0.381**	0.365**		0.272	0.261
		(0.175)	(0.174)		(0.186)	(0.185)
Constant cut1	-4.774***	-4.462***	-4.667***	-4.067***	-3.729***	-3.984***
	(0.433)	(0.427)	(0.458)	(0.351)	(0.363)	(0.388)
Constant cut2	-2.554***	-2.236***	-2.435***	-2.698***	-2.360***	-2.610***
	(0.181)	(0.242)	(0.295)	(0.219)	(0.271)	(0.309)
Constant cut3	-1.369***	-1.041***	-1.228***	-1.520***	-1.173***	-1.410***
	(0.148)	(0.223)	(0.277)	(0.169)	(0.242)	(0.285)
Constant cut4	-0.224*	0.116	-0.0573	-0.624***	-0.263	-0.485*
	(0.134)	(0.215)	(0.266)	(0.148)	(0.231)	(0.272)
Observations	590	590	590	589	589	589

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

We also observe that respondents' political views influence their performance on the knowledge test. Compared to their Democratic counterparts, Republicans tend to have 1.139

more incorrect answers, while Independents have 0.701 more correct answers. Respondents of various ages, genders, marital statuses, races, educational attainments, and income levels demonstrate differences in their knowledge test scores as well.

3.2 Media Choice and Health Behavior

Furthermore, we construct an ordered logit regression model, Model (2), to analyze the relationship between respondents' media choices and their health behavior during the pandemic. The dependent variables are how often the respondents practice social distancing and wear a mask in public, respectively. The independent variables and other notations are the same as in Model (1).

$$Health\ Behavior_i = \beta_0 + \beta_1 Media\ choice_i + \beta_2 Political\ View_i + \beta_3 Age35_i + \beta_4 Female_i + \beta_5 Married_i + \beta_6 White_i + \beta_7 No\ College_i + \beta_8 Low\ income_i + \varepsilon_i \quad (2)$$

Table 2 presents the regression results. Respondents' media choices correlate with their practice of social distancing. Compared to those who are exposed to media from both sides, respondents receiving right-leaning media are 59.1 - 64.2% less likely to practice social distancing in various model specifications. When factoring in personal characteristics and political views, the coefficient of consuming right-leaning media becomes insignificant. Respondents who receive no information from news media are 80% less likely to practice social distancing compared to those receiving information from both sides in the model specification including all personal characteristics and political views. Respondents without a college degree are less likely to practice social distancing while those of 35 years old and above are more likely to do so.

On the other hand, media choices do not have any significant influence on the respondents' mask-wearing decisions. Females are more likely to wear a mask in public compared to their gender counterparts in various model specifications. Being a Republican, not having a college degree, and having an annual household income less than $25,000 reduce one's likelihood of wearing a mask in public when factoring in all personal characteristics.

4. Conclusion and Discussion

Collective efforts are required to mitigate public health crises and promote health behaviors. News media plays an essential role in transmitting news updates and health information. This study examines the role of news media in influencing people's knowledge and health behaviors against the backdrop of the latest global pandemic. Exposures to more, and possibly conflicting information about COVID-19 negatively impacts one's knowledge but positively influences health behaviors. People who receive information from both left- and right-leaning media are more likely to abide by the CDC guidelines on social distancing than those who do not receive any information from the news media.

Results of this study also reveal disparities in knowledge and health behaviors regarding income, race, and political views, which provide actionable policy advice to address public

health emergencies beyond COVID-19. We recommend coordinating efforts with news media for health promotion and education and allocating more resources to low-income, racial minorities, and those holding a more conservative political views. Additionally, we suggest providing educational programs that are more relevant to these populations.

This study is subject to several notable limitations. Our survey sample, comprised of MTurk workers, tends to be younger and more educated than the general U.S. public. We also find imbalanced demographic characteristics across our respondents with different political views. Compared to their political counterparts, Democratic respondents tend to be single females under 35 years of age. Independents are more likely to have lower educational attainment compared to both Republicans and Democrats. In addition, this study focused on news media choices from eight major national channels. Other news media channels and programs, as well as various news sources, such as social media, which are not included in our survey, may also influence people's health behaviors. Additionally, the amount of media consumption, including how often and how much time people spend on these channels, may affect their health behaviors as well. Further studies are needed to gain a comprehensive understanding of the influence of media choice and consumption on people's health behaviors.

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