Published in final edited form as:

J Health Commun. 2014 August ; 19(8): 893–906. doi:10.1080/10810730.2013.864730.

AIDS in Black and White: The Influence of Newspaper Coverage of HIV/AIDS on HIV/AIDS Testing Among African Americans and White Americans, 1993–2007

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Abstract

This study examined the impact of newspaper coverage of HIV/AIDS on HIV testing behavior in the US population. HIV testing data were taken from the CDC's National Behavioral Risk Factor Surveillance System (BRFSS) from 1993 to 2007 ($n=265,557$). News stories from 24 daily newspapers and one wire service during the same time period were content analyzed. Distributed lagged regression models were employed to estimate how well HIV/AIDS newspaper coverage predicted later HIV testing behavior. Increases in HIV/AIDS newspaper coverage were associated with declines in population level HIV testing. Each additional 100 HIV/AIDS related newspaper stories published each month was associated with a 1.7% decline in HIV testing levels in the subsequent month. This effect differed by race, with African Americans exhibiting greater declines in HIV testing subsequent to increased news coverage than did Whites. These results suggest that mainstream newspaper coverage of HIV/AIDS may have a particularly deleterious effect on African Americans, one of the groups most impacted by the disease. The mechanisms driving the negative effect deserve further investigation to improve reporting on HIV/AIDS in the media.

HIV/AIDS disproportionately affects African Americans and has throughout the majority of the epidemic. While the racial disparity in HIV is heavily documented, researchers continue to examine the societal and structural mechanisms behind these differential outcomes (Adimora, Schoenbach, & Floris-Moore, 2009). The media is one societal factor shown to influence a variety of health behaviors, both directly and indirectly (Hornik, 2002; Snyder et al., 2004). News media specifically may have influenced behavior related to HIV/AIDS, as news media have played a critical role, informing the public about the epidemic. This study tests whether newspaper coverage of HIV/AIDS is predictive of HIV testing behavior in the population, with implications for the national spread of HIV/AIDS. HIV testing is an important prevention behavior because knowledge of positive status can facilitate early treatment and lead to increased risk reduction behavior (Beckwith et al., 2005). Newspaper

coverage is particularly relevant because it not only influences those who read newspapers, but newspaper coverage also influences news coverage by other media outlets (Chapman, 2004; Stryker, 2008).

News Coverage of HIV/AIDS

From the emergence of the epidemic, the news media have been instrumental in informing the public about HIV/AIDS and the associated risks, though this role was assumed with reluctance by many news institutions (Backstrom, 1998; Shilts, 1987). The first major examination of HIV/AIDS news coverage focused on the agenda setting process during the 1980s (Rogers, Dearing, & Chang, 1991). The study chronicled the shifts in presentations of AIDS in three major newspapers and three television news programs. In testing the predictors of AIDS coverage, the authors found that changes in prevalence rates of AIDS in the country did influence coverage quantity, but only partially. This suggests that news coverage of the epidemic should in part reflect disease prevalence in the population. This study provided a thorough examination of AIDS coverage at the onset of the epidemic, but did not explicitly include race in the analyses.

Though it took several years for major newspapers to begin covering HIV/AIDS, the initial reporting focused heavily on infections among gays and on modes of transmission, largely ignoring the growing epidemic among African Americans and Latinos in many urban areas (Levenson, 2004; Shilts, 1987). Critics argue that earlier media attention highlighting the heightened risk among African Americans might have helped slow the spread of the HIV/AIDS among African Americans (Cohen, 1999; Levenson, 2004). An analysis of HIV/AIDS coverage in the New York Times from 1981 to 1993 found that only 5% of the stories mentioned African Americans specifically, while African Americans constituted 32% of all AIDS cases cumulatively (Cohen, 1999). Additionally, coverage of HIV/AIDS in the New York Times declined as the number of AIDS cases among African Americans markedly increased (Cohen, 1999).

A more recent study of news coverage from 1981 through 2001 found that HIV/AIDS news coverage peaked in 1987 and has been declining since, both in print and broadcast media (Brodie, Hamel, Brady, & Altman, 2004). The decline in news coverage preceded the decline in new AIDS cases by six years and continued as the cumulative number of AIDS cases rose above 500,000. This trend suggests that disease prevalence did not predict news coverage once the novelty of HIV/AIDS diminished (Brodie et al., 2004). Instead, peaks in coverage were driven by particular news events like Earvin “Magic” Johnson’s 1991 sero-status announcement, the introduction of highly active antiretroviral therapy (HAART) in 1996, and large HIV/AIDS conferences. Much of news coverage shifted to the global epidemic rather than domestic issues, further suggesting that there remains little novelty in stories related to HIV/AIDS as a domestic issue. In terms of portrayal of the affected population, only 3% of stories overall highlighted minorities in the US (Brodie et al., 2004). These content analyses offer insight into the trends in HIV/AIDS coverage, but they do not attempt to assess the impact of news coverage on behavior.

There is a significant body of evidence suggesting that news coverage of a health issue can influence behavior (Finnegan & Viswanath, 2002; Hertog & Fan, 1995; Yanovitzky & Bennett, 1999), and that the influence of coverage can differ based on demographic factors like socioeconomic status (Tichenor, Donohue, & Olien, 1970) and social proximity to disease (Niederdeppe, Frosch, & Hornik, 2008). To date, few studies have measured the impact of news coverage of HIV/AIDS on protective health behaviors and how this influence may be mediated by race.

This study examines how changes in national newspaper coverage of HIV/AIDS are related to subsequent HIV testing levels in the US population. While researchers have identified a variety of attitudinal and knowledge based correlates of HIV testing behavior (Anderson, Carey, & Taveras, 2000; Brown & Pardun, 2004; Lansky, Drake, DiNenno, & Lee, 2007; Siegel, Raveis, & Gorey, 1998), little is known about the role that newspaper coverage of HIV/AIDS plays in testing decisions. Communication theory provides insight into potential mechanisms that explain how HIV/AIDS news coverage can impact testing behavior.

The sphere of influence of newspapers goes well beyond the effect from direct exposure to the immediate readership. Newspapers can influence the public directly through exposure as well as through multiple indirect processes. Individuals may be influenced by a two-step flow model, whereby news coverage influences interpersonal communication (Katz & Lazarsfeld, 1955). Newspapers are also the market place of ideas, whereby coverage frequency and content can influence the larger agenda for the nation's elite, the general public and other media outlets. For example, newspaper coverage can influence policy makers and elites, who in turn make decisions that impact the lives and decision-making ability of the general populace (McCombs & Funk, 2011). Similarly, newspaper coverage also influences the public agenda by increasing the salience of a topic to the public (McCombs & Shaw, 1972). Newspaper coverage also influences news content in other media outlets in a process called intermedia agenda setting (Atwater, Fico, & Pizante, 1987; Golan, 2006; McCombs & Shaw, 1972). Based on the sphere of influence of newspapers, effects may occur through a myriad of processes, not limited to direct newspaper exposure.

In theory, news media messages, whether intentionally persuasive or not, are more likely to influence attitude and behavior when the news story is personally relevant to the reader in some way. Personal relevance occurs when some aspect of the message is linked to the individual's notion of self (Briñol & Petty, 2006).

Personal relevance is assessed based on a variety of characteristics in the story and can be manipulated in messages to influence perceptions of risk (Rothman, Salovey, Antone, Keough, & Martin, 1993). One way to increase the personal relevance of a story is to add an "at risk" statement, often presented with racial statistics, as evidence that one demographic group is at a higher risk than another. "At risk" statements are akin to evidential based messages in health communication, which generally use statistical evidence to convey that a particular health issue is of greater concern for a certain population subgroup (Kreuter & McClure, 2004). The use of evidence based messaging has been shown to lead to increased thinking about the issue and intentions to take preventative action (Weinstein & Sandman, 1992). Based on the work in health communication, it is reasonable to suspect that "at risk"

statements may function in a similar manner, increasing the personal relevance of the news story for members of the “at-risk” demographic group. When HIV/AIDS stories include racial statistics which frame certain groups as “at risk”, focus on HIV/AIDS stories of people from one racial group, or use other cues to present HIV/AIDS as a problem for a particular racial group; messages related to risk and protection are filtered through the lens of personal relevance. When HIV/AIDS is presented as a problem of the ‘other’ group, personal relevance can be diminished, decreasing the likelihood of persuasion to take preventative action. However, increasing personal relevance does not ensure increased persuasion to take preventative action. It is plausible that members of ‘at risk’ groups may respond to continued messages of their heightened risk with resistance, nihilism or “AIDS fatigue”. Depending on how risk is framed in HIV news stories, we can expect personal relevance and behavioral effects to vary by risk group affiliation. We suspect that the increasing personal relevance around HIV will lead to increased protective behavior and hypothesize that populations that find the news coverage personally relevant will be more likely to be tested for HIV/AIDS. HIV testing is important because it can lead to early diagnosis, which facilitates treatment that delays disease progression, as well as individual adoption of behaviors to reduce transmission to others.

METHODS

Newspaper coverage of HIV/AIDS is treated as a proxy for coverage of HIV/AIDS in the national news media environment. While newspaper coverage is limited as a measure of news exposure, it does provide clear advantages, for which there is scientific precedent (Niederdeppe, Frosch, & Hornik, 2008; Smith et al., 2008; Stryker et al, 2006; Yanovitzky & Stryker, 2001). In her validation study, Stryker reports that content analyses which sample the Associated Press, the New York Times and the Washington Post provide the most accurate measure of the larger news media environment, including print and broadcast media (Stryker et al., 2006). This study includes both the Associated Press and the New York Times, but could not include the Post as it was not available consistently throughout the sample period. Logistically, newspapers archives offer one of the most reliable, consistent measures of the news environment across geographic and time bounds. This study does not assume that changes in HIV testing in the population are the result of direct exposure to newspaper coverage. Potential behavior changes may also occur indirectly, through exposure to the broader news media environment.

Newspaper coverage was assessed with a content analysis of HIV or AIDS risk related news stories published in the Associated Press (AP) wire service and in 24 daily newspapers in the United States (US) with high levels of circulation, ranging from 2.5 million to 260,000 in 2006. The newspapers were drawn from the top 40 US daily newspapers in circulation, which were also archived in the Lexis Nexis database from 1992 to 2007. The sample included newspapers with national circulation like USA today, the New York Times, and the Los Angeles Times, as well as regional and local papers like the Philadelphia Inquirer and the Orlando Sentinel. This analysis included HIV/AIDS stories that discussed individual risk. Stories were excluded if they focused on scientific breakthroughs, funding issues, or legislation related to HIV/AIDS but were not linked to individual or group risk. Links to risk were typically described with statements like “Young women are one of the newest groups

at risk for HIV infection.” Duplicate articles in the same newspaper were also excluded, which typically resulted from the publication of more than one edition of the same newspaper. The content analysis involved computerized coding with a validated search term to retrieve the relevant articles from the database (Appendix A). The HIV/AIDS risk search term was validated using procedures described by Stryker, Wray, Hornik, and Yanovitzky (2006). The validation study showed that 88.6% (95% CI: 83.6-93.6%) of the stories captured by the term were relevant (called precision in the information retrieval literature) and 78.6% (CI: 73.6-83.6%) of all relevant articles were captured (called recall.) In total, 21,906 articles related to HIV/AIDS risk were retrieved by the search term from December 1992 through December 2007. To correct for the biases related to recall (underestimating the true number of relevant articles) and precision (overestimating the number of true articles,) the number of articles captured each month was adjusted by 0.88, the proportion of recall to precision. After the recall precision adjustment, the HIV/AIDS risk search term yielded approximately 19,453 relevant stories.

In order to capture coverage of HIV/AIDS risk which focused on African Americans, approximately 16% of retrieved HIV/AIDS risk stories were coded by trained human coders. The number of stories retrieved from the hand-coded sample was then used to estimate the number of African American risk stories presented monthly. A stratified random sampling technique was used to identify a sample of articles for hand coding to maintain the integrity of monthly quantitative variations, yielding five day constructed weeks from each month of the 3,166 stories from the total population of 19,453 stories or 16.28% of HIV/AIDS risk articles. From that sample, 501 stories were excluded because human coders agreed that the stories did not focus on HIV risk, leaving a total of 2,665 HIV risk related stories. Two coders achieved at least 80% simple agreement across all key content categories.

The HIV testing and demographic data were taken from the Center for Disease Control and Preventions' (CDC) National Behavioral Risk Factor Surveillance System (BRFSS) from 1993 to 2007.¹⁹ The BRFSS is a computer assisted telephone survey, conducted by the CDC, which collects monthly data from people in each state on a variety of risk behaviors. This repeated cross sectional survey is designed to be nationally representative and to provide surveillance on risk behaviors among non-institutionalized adults in the United States. Sampling weights are applied to approximate the adult population (Stryker et al., 2006). The sample of BRFSS data used in this project was restricted to unmarried adults, aged 18 to 34, who self-reported either Black or White racial affiliation. Only states that participated throughout the sample period were included. As a result seven states and three US territories were excluded from all analyses. Data from 1993 to 2007 were cleaned and merged into a multiyear dataset (n=265,557).

Measures

HIV/AIDS risk news coverage, the predictor variable, is a sum of all newspaper stories related to HIV/AIDS risk in the sample in each month between 1993-2007. This measure was generated from the content analysis.

African American Risk Articles are a type of HIV/AIDS risk articles, which specifically identify Blacks or African Americans in the United States as being at elevated risk of acquiring or having HIV/AIDS.

The BRFSS data provided the outcome measure, *HIV/AIDS testing*, as well as the demographic variables of *race*, *age*, *gender* and *educational status*. These variables were included as they have been linked to HIV testing behavior.

HIV Testing, was measured from 1993 to 2007, with the item “Have you ever been tested for HIV (AIDS), excluding during a blood donation” with the response options “yes”, “no”, and “I don’t know”. Though the question wording changed slightly during the 16-year period (AIDS vs. HIV), the variable was carefully coded to consistently reflect the same measure of HIV testing across years. The mean level of HIV testing by month for each age and racial subgroup is used in the analyses.

Race was measured with one of two items, “Which one of these groups would you say best represents your race?” (2000-2007) or “What is your race” (1993-1999). Those who self reported as African American/Black or White were included. Those who identified their ethnicity as Hispanic were excluded regardless of racial identification.

Age was measured with the item, “What is your age?” Only individuals aged 18-34 were included in the sample to maximize the subset of the population reporting higher levels of risky behavior. Participants are categorized into 3 age groups, 18-22 years old, 23-27 years old, 28-34 years old as HIV testing levels differed significantly by age group.

Gender was coded by the BRFSS interviewer and asked only when necessary.

Educational Status was measured with the item, “What is the highest grade or year of school you completed” with response items recoded into four categories: ‘no high school education/completed some high school’, ‘graduated from high school’, ‘completed some college’, and ‘completed college’. Educational status is treated as a proxy for socio-economic status.

Statistical Analysis

Due to the complex survey design of the BRFSS, Stata 10 survey (svy) commands were employed to make estimations, accounting for weighting, clustering and stratification. The multiyear BRFSS dataset was aggregated, creating mean population estimates by month for African Americans and Whites in three age groups; 18-22, 23-27 and 28-34. The aggregation was conducted with the sample weights applied, allowing for a generalization of the findings to the US population (Centers for Disease Control and Prevention, 2006). From the total data (n= 265,557), there were 180 independent months of aggregated serial data. The data were aggregated separately by race and age and then combined to yield one dataset with 1,080 independent observations, in a method described by Simonton (1977). The monthly estimates of HIV/AIDS news coverage, generated from the content analysis were merged into the aggregated BRFSS data.

Distributed lagged regression (DLR) models were used to predict testing behavior from prior HIV/AIDS newspaper coverage, as well as the differential effects of newspaper

coverage on African Americans and Whites. Distributed lagged regression is a form of time series analysis, which includes 1-month lagged versions of both the predictor variable, newspaper coverage and the outcome variable, HIV testing. The 1-month lag was used as it provided the most theoretical and predictive validity (i.e. Stryker, 2003; Yanovitzky & Bennett, 1999). Controlling for testing in the prior month (t_{-1}) removes the correlation between testing at time 1 (t_1) and testing at time t_{-1} and controls for any effects of potential confounders, like time (Ostrom, 1990; Simonton, 1977; Yanovitzky & Bennett, 1999; Yanovitzky & Blitz, 2000). DLR supports causal order claims by ensuring that newspaper coverage precedes the testing behavior with the inclusion of the 1-month lagged newspaper coverage variable in the model (Yanovitzky & Blitz, 2000).

The distributed lagged regression models included four components; newspaper coverage in the prior month (t_{-1}) and HIV testing (t_{-1}), the outcome variable HIV testing (t_1) and the demographic controls. The demographic controls in each model were race, age group, gender, and educational level. The lagged version of HIV testing was the mean level of HIV/AIDS testing in the previous month. The model equation is as follows:

$$1. \text{ Testing } t = \beta \text{ Testing } t_{-1} + \beta \text{ gender} + \beta \text{ educ1} + \beta \text{ educ2} + \beta \text{ educ3} + \beta \text{ race} + \beta \text{ age1} + \beta \text{ age3} + \beta \text{ News } t_{-1} + e.$$

To test for differential effects by race, a race – newspaper coverage interaction term was added to the second model. Multicollinearity was tested with variance inflation factor (VIF) and tolerance statistics. The models met the regression assumptions and there was no evidence of serial autocorrelation using the Durbin Watson statistic.

RESULTS

The content analysis of HIV/AIDS risk coverage revealed several key trends that inform this study. Overall news coverage of HIV/AIDS related to risk declined by 79.2%, falling from a monthly average of 201.7 (SD=53.39) news stories in 1993 to 54.6 (SD=18.0) news stories in 2007 ($t(179) = -20.09, p < .05$). In addition to overall coverage declines, the 1990s saw precipitous declines of domestic HIV/AIDS risk coverage and a clear shift to reporting on the epidemic internationally (Figure 1). Coverage of the epidemic among African Americans fluctuated between 10-20% of all risk coverage. Coverage of HIV/AIDS among African Americans was typified by the reporting of epidemiologic evidence of higher morbidity and mortality rates.

Table 1 presents the demographics of the full sample prior to aggregation. African Americans reported significantly higher levels of HIV testing compared to Whites. From 1993 to 2007, the average percentage of African Americans reporting ever being tested for HIV is 65%, compared to 46% for Whites ($t=23.34, p < .01$).

Table 2 presents the results of two DLR models of HIV/AIDS newspaper coverage effects on HIV testing. The first model shows the main effect and the second model shows the addition of the race-newspaper coverage interaction variable. Those most likely to be tested are older (28-34), African American and male. They also report higher levels of education and previous HIV testing experience. For every additional 100 HIV/AIDS risk related

newspaper stories published in this group of US papers each month, there was a 1.7% decline in HIV testing levels in the following month. As expected, given the effects of subgroup aggregation, neither gender nor educational status were significant predictors of testing behavior.

Model 2 provides evidence that the decrease in testing was most significant among African Americans as evidenced by the significant interactive effect between race and newspaper coverage. The interaction is best represented graphically in figure 2. While African Americans exhibit a strong negative testing response to newspaper coverage of HIV/AIDS, Whites exhibit markedly smaller declines.

DISCUSSION

During the study period, African Americans, at heightened risk for HIV, reported higher levels of testing behavior than Whites, a finding consistent with previous research on prevention behaviors among African Americans (Hallfors, Iritani, Miller, & Bauer, 2007). When HIV/AIDS was heavily covered in the newspaper, a decline was seen in the number of Americans being tested for HIV. Interestingly, this decrease in testing was greatest for African Americans. Indeed in the months that followed the highest periods of news coverage, testing rates were similar between the two racial groups. These findings beg two questions; why did newspaper coverage have a negative effect on testing, and why was the negative effect significantly larger for African Americans?

The essential finding, illustrated in Figure 2, says that there was essentially no effect of coverage on Whites, and a clear negative effect on African Americans. This was surprising in two senses: we expected that more coverage of HIV/AIDS would lead to more testing, and we thought that the relatively small proportion of coverage focused on African Americans would mean that they would find coverage irrelevant and not be affected by it. Neither of those expectations were met. Post hoc, we can speculate as to why African Americans would have been affected and negatively.

The literature on HIV testing behavior suggests one explanation for the sharp decrease among African Americans. For African Americans, a group already stigmatized as “at risk”, any increase in newspaper coverage, regardless of the foci, may have activated feelings of fear that led to resistance to testing. Fear, particularly among those who perceive themselves at higher risk, has been associated with delays in HIV testing (Hutchinson, Corbie-Smith, Thomas, Mohanan, & del Rio, 2004; Irwin, Valdiserri, & Holmberg, 1996; Siegel et al., 1998). African Americans may hold elevated fear due to closer social proximity of HIV/AIDS and a larger portion of African Americans may have witnessed people being tested and receiving seropositive results. Perhaps for some, newspaper coverage of HIV/AIDS activates previously held concerns about HIV/AIDS, generating increased fear and testing avoidance. When considered within the language of the Health Belief Model, (Rosenstock, Strecher, & Becker, 1988), being tested for HIV may not actually be viewed as a beneficial or protective behavior when one anticipates a seropositive result. If increased news coverage of HIV led African Americans to feel increasingly susceptible to HIV, testing as a health action may not unequivocally be perceived as beneficial.

Another, more hopeful explanation is that newspaper coverage was particularly influential on African Americans, leading people to increase other risk reducing activities like consistent condom use, abstinence, or to limit the number of sexual partners. By increasing these behaviors, fewer African Americans may have felt compelled to be tested, due to personal declines in risky behavior and subsequently declines in perceived susceptibility. It is plausible to expect that declines in perceived susceptibility would be reflected in declines in testing behavior.

Future research on the manner in which HIV/AIDS is covered in the news and the potential mechanisms that led to testing declines among African Americans are necessary to provide a clearer understanding of the influence of news. This knowledge can guide those interested in using media and communication to reduce racial disparities by illustrating the ways in which the media can work to address disparities.

In addition, linking this work to the predictors of news coverage is an important next step. There is evidence that factors like community context, disease prevalence and scientific breakthroughs can influence the news coverage and the presentation of HIV/AIDS in by news media (Pollock, 2007; Rogers et al., 1991). This study suggests the high prevalence rates among African Americans were not sufficient to garner sustained media attention as the coverage shifted to AIDS globally. Further investigation on the social and community context that influenced news making, similar to the work by Pollock could provide greater insight into the antecedents of the media agenda (Pollock, 2007). This work suggests that community context, particularly related to community level socio-economic status and media outlet diversity can influence the tone of coverage, and that emergent HIV related media events even shift the tone of media coverage (Pollock, 2007). Based on this work, additional studies that focus on the tone of coverage may reveal useful explanations of the dynamic between community context, coverage and behavior as it related to HIV.

Critics may argue that the shown differential effects are not due to racial affiliation but socio-economic status (SES). The models presented were overly conservative, as they included controls for gender and SES, measured as educational status. Educational status was not a predictor of testing behavior and there is no evidence that race served as a proxy for SES in these analyses. At first glance it might seem that there is a threat of history inherent in this type of research design (Shadish, Cook, & Campbell, 2002), since both media coverage and testing were varying over time, and overall show a negative cross-sectional association (-0.294). However, any historical threat is minimized greatly by the distributed lagged regression analysis procedure that controls for the influence of the immediately prior level of testing, in addition to other potential rival variables (Simonton, 1977). As previously noted, there was no evidence of residual serial correlation; it appears that this method effectively accounts for the tendency for adjacent months to be affected by their common history.

This study has some limitations. The newspaper coverage variable is not a measure of direct exposure to news coverage, in two ways. First it is a measure of what appears in newspapers and not of individual exposure, which is assumed to be a consequence of varying access to such stories. Also, coverage is viewed as an assessment of the larger news media

environment. Newspaper coverage is a good, though imperfect proxy measure of TV news coverage, and of topics high on the public agenda. One underlying assumption of this study is that young African Americans were exposed to news coverage about HIV. If African Americans had no exposure to HIV news in any form, we would expect to find no significant interactions in the model. Instead, we find evidence of a statistically significant relationship, utilizing conservative models which effectively control for potential third variables. This study measured the quantity, not the content of the newspaper coverage, making it difficult to explain the take-away messages that ultimately influenced testing behavior. The findings cannot be used to make assumptions about individual level behavior related to HIV/AIDS, as the prediction models were conducted at the aggregate level.

This study provides evidence that racial affiliation plays an important role in the effect of mainstream news on population level behavior. The mechanisms driving the negative effect, potentially related to fear or behavioral substitution, deserve further investigation. When news coverage is associated with decreased testing among African Americans, there is clearly potential for increases in racial disparities due to racial differences in behavior change. The implications are magnified considering the findings can be generalized to African Americans and Whites nationally across a fourteen-year period. While the goal of reporting on HIV/AIDS is not specifically to decrease the spread of HIV/AIDS in the population, news outlets should be mindful of the effects of particular coverage on individual behavior. These findings raise a flag for those who view the media as a tool to fight health disparities as well as for those who are concerned about the unintended consequences of media coverage of health issues. Increasing media attention of a health disparity without considering the content of the news stories may not be the most appropriate strategy to fight the AIDS epidemic. It is clear that news coverage can have a powerful influence on population behavior. Additional research to investigate the content and underlying mechanisms is needed to aid in the creation of journalistic guidelines and standards for positive reporting on HIV and AIDS.

Acknowledgments

The authors acknowledge the funding support of the National Cancer Institute's Center of Excellence in Cancer Communication (CECCR) located at the Annenberg School for Communication, University of Pennsylvania (P50-CA095856-05).

References

- Adimora AA, Schoenbach VJ, Floris-Moore MA. Ending the Epidemic of Heterosexual HIV Transmission Among African Americans. *American Journal of Preventive Medicine*. 2009; 37(5): 468–471. doi:10.1016/j.amepre.2009.06.020. [PubMed: 19840704]
- Anderson J, Carey J, Taveras S. HIV testing among the general US population and persons at increased risk: information from national surveys, 1987-1996. *American Journal of Public Health*. 2000; 90(7):1089–1095. doi:10.2105/AJPH.90.7.1089. [PubMed: 10897187]
- Atwater T, Fico F, Pizante G. Reporting on the state legislature: A case study of inter-media agenda-setting. *Newspaper Research Journal*. 1987; 8(2):53–61.
- Backstrom C. The Media and AIDS. *Journal of Health & Social Policy*. 1998; 9:45–69. doi:10.1300/J045v09n03_04. [PubMed: 10174384]

- Beckwith CG, Flanigan TP, del Rio C, Simmons E, Wing EJ, Carpenter CCI, Bartlett JG. It is time to implement routine, not risk-based, HIV testing. *Clinical Infectious Diseases*. 2005; 40(7):1037–1040. doi:10.1086/428620. [PubMed: 15824997]
- Briñol P, Petty RE. Fundamental Processes Leading to Attitude Change: Implications for Cancer Prevention Communications. *Journal of Communication*. 2006; 56:S81–S104. doi:10.1111/j.1460-2466.2006.00284.x.
- Brodie M, Hamel E, Brady L, Altman D. AIDS at 21: Media coverage of the HIV epidemic 1981–2002. *Nation*. 2004; 49(68)
- Brown JD, Pardun CJ. Little in Common: Racial and Gender Differences in Adolescents' Television Diets. *Journal of Broadcasting & Electronic Media*. 2004; 48:266.
- Centers for Disease Control and Prevention. Racial Ethnic Disparities in Diagnoses of HIV/AIDS – 33 States. Morbidity and Mortality Weekly Report. 2006; 55:121–125. [PubMed: 16467777]
- Chapman S. Advocacy for public health: a primer. *Journal of Epidemiology and Community Health*. 2004; 58(5):361–365. doi:10.1136/jech.2003.018051. [PubMed: 15082730]
- Cohen, CJ. *The Boundaries of Blackness: AIDS and the breakdown of Black politics*. University of Chicago Press; Chicago, IL: 1999.
- Finnegan, JR.; Viswanath, K. *Health Behavior and Health Education*. Jossey-Bass; San Francisco, CA: 2002. *Communication Theory and Health Behavior Change: The Media Studies Framework*; p. 361–388.
- Golan G. Inter-media agenda setting and global news coverage. *Journalism Studies*. 2006; 7:323–333.
- Hallfors DD, Iritani BJ, Miller WC, Bauer DJ. Sexual and Drug Behavior Patterns and HIV/STD Racial Disparities: The Need for New Directions. *American Journal of Public Health*. 2007; 97(1): 125–132. doi:10.2105/AJPH.2005.075747. [PubMed: 17138921]
- Hertog JK, Fan DP. The Impact of Press Coverage on Social Beliefs: The Case of HIV Transmission. *Communication Research*. 1995; 22:545–574. doi:10.1177/009365095022005002.
- Hornik, RC., editor. *Public health communication: evidence for behavior change*. Lawrence Erlbaum Associates; Mahwah, NJ: 2002.
- Hutchinson AB, Corbie-Smith G, Thomas SB, Mohanan S, del Rio C. Understanding the patient's perspective on rapid and routine HIV testing in an inner-city urgent care center. *AIDS Education and Prevention: Official Publication of the International Society for AIDS Education*. 2004; 16(2): 101–114. [PubMed: 15134119]
- Irwin KL, Valdiserri RO, Holmberg SD. The acceptability of voluntary HIV antibody testing in the United States: a decade of lessons learned. *AIDS (London, England)*. 1996; 10(14):1707–1717.
- Katz, E.; Lazarsfeld, PF. *Personal influence: The part played by people in the flow of mass communications*. Free Press; New York: 1955.
- Kreuter M, McClure S. The role of culture in health communication. *Annu Rev Public Health*. 2004; 25:439–455. [PubMed: 15015929]
- Lansky A, Drake A, DiNenno E, Lee C-W. HIV Behavioral Surveillance Among the U.S. General Population. *Public Health Reports*. 2007; 122(Suppl 1):24–31. [PubMed: 17354524]
- Levenson, J. *The secret epidemic: the story of AIDS and Black America*. Anchor Books; USA: 2005.
- McCombs ME, Shaw DL. The Agenda-Setting Function of Mass Media. *Public Opinion Quarterly*. 1972; 36(2):176–187. doi:10.1086/267990.
- McCombs M, Funk M. Shaping the Agenda of Local Daily Newspapers: A Methodology Merging the Agenda Setting and Community Structure Perspectives. *Mass Communication and Society*. 2011; 14(6):905–919. doi:10.1080/15205436.2011.615447.
- Niederdeppe J, Frosch D, Hornik R. Cancer News Coverage and Information Seeking. *Journal of health communication*. 2008a; 13(2):181–199. doi:10.1080/10810730701854110. [PubMed: 18300068]
- Niederdeppe J, Frosch DL, Hornik RC. Cancer News Coverage and Information Seeking. *Journal of Health Communication*. 2008b; 13(2):181–199. doi:10.1080/10810730701854110. [PubMed: 18300068]
- Ostrom, CW. *Sage University Paper Series on Quantitative Applications in the Social Sciences*. Sage; Thousand Oaks, CA: 1990. *Time series analysis: regression techniques*. 07-009

- Pollock, J. *Tilted Mirrors: Media Alignment with Political and Social Change—A Community Structure Approach*. Hampton Press; Cresskill, NJ: 2007.
- Rogers, EM.; Dearing, JW.; Chang, S. *Aids in the 1980s: the agenda-setting process for a public issue*. Association for Education in Journalism and Mass Communication; Columbia, SC: 1991. Journalism Monographs, No. 126
- Rosenstock IM, Strecher VJ, Becker MH. Social Learning Theory and the Health Belief Model. *Health Education & Behavior*. 1988; 15(2):175–183. doi:10.1177/109019818801500203.
- Rothman AJ, Salovey P, Antone C, Keough K, Martin CD. The Influence of Message Framing on Intentions to Perform Health Behaviors. *Journal of Experimental Social Psychology*. 1993; 29(5): 408–433. doi:10.1006/jesp.1993.1019.
- Shadish WR, Cook TD, Campbell DT. *Experimental and quasi-experimental designs for generalized causal inference*. 2002
- Shilts, R. *And the Band Played On: Politics, People, and the AIDS Epidemic*. St. Martin's Press; New York, NY: 1987.
- Siegel K, Raveis VH, Gorey E. Barriers and pathways to testing among HIV-infected women. *AIDS Education and Prevention: Official Publication of the International Society for AIDS Education*. 1998; 10(2):114–127. [PubMed: 9573434]
- Simonton DK. Cross-sectional time-series experiments: Some suggested statistical analyses. *Psychological Bulletin*. 1977; 84:489–502. doi:10.1037/0033-2909.84.3.489.
- Smith KC, Wakefield MA, Terry-McElrath Y, Chaloupka FJ, Flay B, Johnston L, Saba A, et al. Relation between newspaper coverage of tobacco issues and smoking attitudes and behaviour among American teens. *Tobacco Control*. 2008; 17(1):17–24. doi:10.1136/tc.2007.020495. [PubMed: 18218802]
- Snyder LB, Hamilton MA, Mitchell EW, Kiwanuka-Tondo J, Fleming-Milici F, Proctor D. A Meta-Analysis of the Effect of Mediated Health Communication Campaigns on Behavior Change in the United States. *Journal of Health Communication*. 2004; 9:71–96. doi: 10.1080/10810730490271548. [PubMed: 14960405]
- Stryker J, Wray R, Hornik R, Yanovitzky I. Validation of database search terms for content analysis: the case of cancer news coverage. *Journalism and Mass Communication Quarterly*. 2006; 83(2): 412–430.
- Stryker, Jo. Media and Marijuana: A Longitudinal Analysis of News Media Effects on Adolescents' Marijuana Use and Related Outcomes, 1977-1999. *Journal of Health Communication*. 2003; 8(4): 305–328. doi:10.1080/10810730305724. [PubMed: 12907398]
- Stryker, Jo. Measuring Aggregate Media Exposure: A Construct Validity Test of Indicators of the National News Environment. *Communication Methods and Measures*. 2008; 2(1-2):115–133. doi: 10.1080/19312450802062620.
- Tichenor PJ, Donohue GA, Olien CN. Mass Media Flow and Differential Growth in Knowledge. *Public Opinion Quarterly*. 1970; 34(2):159–170. doi:10.1086/267786.
- Weinstein ND, Sandman PM. A model of the precaution adoption process: Evidence from home radon testing. *Health Psychology*. 1992; 11(3):170–180. doi:10.1037/0278-6133.11.3.170. [PubMed: 1618171]
- Yanovitzky I, Bennett C. Media Attention, Institutional Response, and Health Behavior Change. *Communication Research*. 1999; 26(4):429–453. doi:10.1177/009365099026004004.
- Yanovitzky I, Blitz C. Effect of media coverage and physician advice on utilization of breast cancer screening by women 40 years and older. *Journal of Health Communication*. 2000; 5(2):117–134. doi:10.1080/108107300406857. [PubMed: 11010345]
- Yanovitzky I, Stryker J. Mass Media, Social Norms, and Health Promotion Efforts. *Communication Research*. 2001; 28(2):208–239. doi:10.1177/009365001028002004.

Figure 1.
Percentage of HIV/AIDS risk coverage by “at-risk” group, 1993–2006 ($n = 2,166$).

Figure 2. Model predicting relationship between monthly HIV newspaper coverage and HIV testing by race ($n = 1,074$).

Table 1

Proportions (SE) for HIV Testing and Demographic Characteristics among non-Hispanic Blacks and Whites, ages 18-34 in the BRFSS, 1993–2007 ($n = 265,557$)

	Total		Black		White		Adjusted Wald, racial differences	P value
	Proportion	SE	Proportion	SE	Proportion	SE		
<i>HIV Tested</i> Tested	0.47	(0.002)	0.62	(0.005)	0.44	(0.003)	2253.64	<.001
<i>Demographics</i> Black	0.17	(0.002)	1.00	(0.000)	0.00	(0.000)	615.33	<.001
Female	0.54	(0.002)	1.46	(0.005)	1.56	(0.003)		
<i>Age</i> 18-22 yr old	0.41	(0.002)	0.38	(0.005)	0.42	(0.003)	138.28	<.001
23-27 yr old	0.30	(0.002)	0.30	(0.005)	0.30	(0.002)	1.28	NS
28-34 yr old	0.29	(0.002)	0.33	(0.005)	0.28	(0.002)	228.64	<.001
<i>Education Level</i> No HS Diploma	0.10	(0.001)	0.13	(0.004)	0.09	(0.002)	129.78	<.001
HS Diploma/ GED	0.33	(0.002)	0.41	(0.005)	0.31	(0.002)	588.91	<.001
Some College	0.35	(0.002)	0.33	(0.005)	0.36	(0.003)	76.36	<.001
College Degree	0.22	(0.002)	0.13	(0.003)	0.24	(0.002)	1162.45	<.001
	Monthly Mean		Standard Deviation					
<i>HIV Risk News Stories</i>	79.60		(40.430)					

Note: ns = Non-significant findings.

Table 2

Results of DLR equations predicting Testing from Newspaper Coverage, Race Interactions

DLR	Model 1			Model 2: News × Race Interaction		
	(N=1074)			(N=1074)		
	B	(SE)	P	B	(SE)	P
HIV Testing, previous month	0.475	(0.027)	<0.001	0.468	(0.028)	<0.001
Black	0.117	(0.010)	<0.001	0.111	(0.010)	<0.001
18-22 yr old	-0.084	(0.012)	<0.001	-0.087	(0.012)	<0.001
28-34 yr old	0.026	(0.006)	<0.001	0.026	(0.006)	<0.001
Female	-0.013	(0.034)	0.698	-0.023	(0.034)	0.490
No HS Diploma	-0.093	(0.060)	0.124	-0.087	(0.060)	0.145
HS Diploma/GED	-0.066	(0.045)	0.143	-0.062	(0.045)	0.172
Some College	0.019	(0.044)	0.662	0.021	(0.044)	0.638
100 Newspaper Stories, previous month	-0.017	(0.003)	<0.001	-0.018	(0.004)	<0.001
Perceived Risk						0.001
100 Newspaper Stories, previous month × Race				-0.030	(0.008)	<0.001
Constant	0.357	(0.063)	<0.001	0.375	(0.063)	<0.001
N	1,074			1074.000		
Model R ²	0.784			0.786		
R ² Change				0.002		<0.001
Durbin Watson				2.321		