Citation for published version:
O'Keeffe, M, Barratt, A, Fabbri, A, Zadro, JR, Ferreira, GE, Sharma, S & Moynihan, RN 2021, 'Global Media Coverage of the Benefits and Harms of Early Detection Tests', *JAMA Internal Medicine*, vol. 181, no. 6, 0261, pp. 865-867. https://doi.org/10.1001/jamainternmed.2021.0261

DOI:
10.1001/jamainternmed.2021.0261

Publication date:
2021

Document Version
Peer reviewed version

Link to publication

University of Bath

Alternative formats
If you require this document in an alternative format, please contact:
openaccess@bath.ac.uk

General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Download date: 16. May. 2022

Media Coverage of the Benefits and Harms of Early Detection Tests: a global cross-sectional study

Mary O'Keeffe, PhD[1,2], Alexandra Barratt, MD[3], Alice Fabbri, MD[4], Joshua R Zadro, PhD[1], Giovanni E Ferreira, PhD[1], Sweekriti Sharma, MS[1], Ray Moynihan, PhD[5]

[1]Institute for Musculoskeletal Health, Sydney Local Health District and The University of Sydney, Sydney, Australia.

[2]School of Allied Health, Faculty of Education & Health Sciences, University of Limerick, Limerick, Ireland.

[3]Sydney School of Public Health, Faculty of Medicine and Health, University of Sydney, Sydney, New South Wales, Australia.

[4]Centre for Evidence-Based Medicine Odense (CEBMO), Odense University Hospital and University of Southern Denmark.

[5]Institute for Evidence-Based Healthcare, Bond University, Gold Coast, Queensland, Australia.

Corresponding author:

Mary O'Keeffe, PhD

Institute for Musculoskeletal Health, Sydney Local Health District and The University of Sydney, Sydney, Australia.

E: Mary.OKeeffe@sydney.edu.au

T: +612 8627 6856

Word count: 598

Innovations in technologies for early detection of diseases like breast cancer, dementia, and atrial fibrillation are gaining increasing attention. The media is a key avenue through which tests are promoted to asymptomatic individuals, and could have an important role in encouraging realistic expectations of benefits and harms of early detection, including unnecessary diagnoses.[1] Evidence suggests medical media coverage tends to overplay benefits, downplay harms and ignore conflicts of interest,[2] but there are few data on coverage of early detection tests.

METHODS

We performed a cross-sectional study to examine global media coverage of benefits and harms of early detection tests for asymptomatic individuals. We also examined conflicts of interest among commentators in stories, as well as media disclosure of conflicts. We studied five early detection tests: 1. Blood-based liquid biopsy tests for cancer(s); 2. 3D mammography for breast cancer; 3. Apple Watch Series 4 electrocardiogram for atrial fibrillation; 4. Blood biomarker tests for dementia; and 5. Artificial intelligence technology for dementia. Our published protocol[3] provides detail regarding selection of these tests.

We searched for all English-language stories from 2016 to 2019 in LexisNexis, ProQuest and Google News. We included all non-fictional story types from newspapers, blogs, magazines, broadcast and podcast transcripts, wire feeds/services, and webnews if they mentioned/implied a test benefit or harm. Pairs of independent reviewers screened stories for inclusion and coded stories for coverage of health benefits (e.g. early treatment, saves lives) and/or harms (e.g. false positives, overdiagnosis) and inclusion of commentator views with or without disclosure of conflicts of interest.

RESULTS

We included 1,173 stories: liquid biopsy (n = 124), 3D mammography (n = 579), Apple Watch (n = 273), blood biomarker tests (n = 128), artificial intelligence (n = 69).

Overall, 97% [95% CI 96-98%] reported on the benefits. (Figure 1) 37% (95% CI 34-40%]) reported any harms, and only 34% (95% CI 31-36%) reported on both benefits and harms. 63% (95% CI 60-66%) of stories reported on benefits only, while only 3% (95% CI 2-4%) reported on harms only. There was variation between tests in the percentage reporting any harms (from 14% for artificial intelligence to 58% for Apple Watch and liquid biopsy) and both benefit and harm (from 14% for artificial intelligence to 54% for liquid biopsy). Harms were mentioned but deemphasized in just over one quarter (27%) of stories.

Overdiagnosis was only mentioned in 13% of stories that mentioned any harms – 5% of stories overall.

Overall, 39% of stories quantified a benefit. However, only 14% of these used absolute numbers. Overall 29% of stories quantified a harm. Almost half (46%) of these provided absolute numbers.

Over half (55% [95% CI 52-57%]) of all stories included the views of commentators with conflicts of interest, but these conflicts were only disclosed in 12% (95% CI 10-14%) of these stories. (Figure 2)

DISCUSSION

In this study, we examined how innovative early detection tests are covered in the media. The findings are important because of the potential of such tests to harm healthy people, in contrast to tests promoted for investigation of symptoms. Yet coverage emphasised benefits far more than harms, and the risk of overdiagnosis received little coverage. Our findings align with other medical media coverage studies.[2, 4,5] Coding benefits and harms involves subjective judgments, although we piloted an explicit coding scheme and had pairs of independent coders to minimise bias. We did not examine social media coverage. Higher quality reporting by journalists could encourage more healthy scepticism towards health options[6] and curb overdiagnosis.[1] Strategies to improve media reporting so professionals, patients and public receive more balanced information about early detection tests are urgently needed.

Author contributions

Dr O'Keeffe had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study conception: O'Keeffe

Study design: O'Keeffe, Moynihan, Barratt, and Fabbri

Acquisition, analysis, or interpretation of data: All authors

Critical revision of the manuscript for important intellectual content: All authors

Statistical analysis: O'Keeffe

Administrative, technical, or material support*:* All authors

Study supervision: O'Keeffe

Disclosures

Mary O'Keeffe is supported by a Marie Skłodowska-Curie Fellowship from the European Union's Horizon 2020 Research and Innovation programme. Joshua Zadro and Ray Moynihan are supported by research fellowships funded by the National Health and Medical Research Council of Australia (NHMRC). Alexandra Barratt and Ray Moynihan are investigators on a NHMRC funded CRE grant and program grant to conduct research on reducing overdiagnosis and overtreatment. https://www.wiserhealthcare.org.au Alexandra Barratt and Ray Moynihan are on the scientific steering committee of the Preventing Overdiagnosis conference. No other disclosures were reported.

Funding/Support: None

Additional contributions

We thank Professor Steven Woloshin (Center for Medicine in the Media, Dartmouth Institute for Health Policy and Clinical Practice, Lebanon, New Hampshire, United States and The Lisa Schwartz Foundation for Truth in Medicine, Norwich, Vermont, United States), Professor Chris G Maher (Institute for Musculoskeletal Health, Sydney Local Health District and The University of Sydney, Sydney, Australia) and Dr Mark Jones (Institute for Evidence-Based

Healthcare, Bond University, Gold Coast, Queensland, Australia) for providing feedback on an earlier draft of this manuscript. They did not receive compensation for these contributions.

References

1. Brodersen J, Kramer BS, Macdonald H, et al. Focusing on overdiagnosis as a driver of too much medicine. *BMJ* 2018;362:k3494..
2. Moynihan R, Bero L, Ross-Degnan D, et al. Coverage by the news media of the benefits and risks of medications. *New England Journal of Medicine* 2000;342(22):1645-50.
3. O'Keeffe M, Barratt A, Maher C, et al. Media Coverage of the Benefits and Harms of Testing the Healthy: a protocol for a descriptive study. *BMJ Open* 2019;9(8):e029532.
4. Moynihan R, Clark J, L A. Media coverage of the benefits and harms of the 2017 expanded definition of hypertension. *JAMA Internal Medicine* 2019; 179(2): 272-273.
5. Walsh-Childers K, Braddock J, Rabaza C, et al. One step forward, one step back: changes in news coverage of medical interventions. *Health Communication* 2018;33(2):174-87.
6. Schwartz LM, Woloshin S. The Media Matter: A Call for Straightforward Medical Reporting. *Annals of Internal Medicine* 2004;140(3):226-28.