Screening practices can mislead us about the true incidence of “scrutiny-dependent” cancers and their risk factors, according to a recent opinion article in the Annals of Internal Medicine.

“Physicists have long understood that the act of observation can affect the phenomenon being observed,” write H. Gilbert Welch, MD, MPH, of the Dartmouth Institute for Health Policy and Clinical Practice, and Otis W. Brawley, MD, of Emory University and chief medical officer of the American Cancer Society. “Physicians would do well to understand how the act of observation can affect the apparent incidence of cancer—as well as apparent risk factors for this disease.”

Welch and Brawley offer the example of prostate cancer, for which diagnosis rates have risen and fallen rapidly in recent decades, not because of actual changes in the number of men developing the cancer but due to shifts in screening practices including use of prostate-specific antigen (PSA) testing.

The best-known drawback of cancer screening is overdiagnosis, or detection of cancers that never would have progressed to a life-threatening stage. But widespread screening for scrutiny-dependent cancers can also increase the apparent incidence of certain cancers and mislead doctors and the public about the risk of developing cancer, STAT reports.

Men with a family history of prostate cancer are more likely to request and receive PSA screening tests and follow-up biopsies, which may make this risk factor appear to be a bigger contributor than it actually is, Welch and Brawley argue. A recent analysis found that family history becomes a weaker risk factor when all men undergo prostate biopsies regardless of their history.

Likewise, women with a family history or other risk factors for breast cancer are more likely to get mammograms. This may help explain why neighborhoods with more wealthy and well-educated women appear to have higher rates of breast cancer: These women are more likely to know about and request regular screening.

Similarly, women—who access health services and get screening tests more often than men—are three times more likely than men to be diagnosed with thyroid cancer, but women and men have about the same rates of death from this cancer. Female sex may therefore be a “risk factor” for getting tested, not for getting the cancer itself.
Melanoma and lung cancer are other examples of scrutiny-dependent cancers. Welch and Brawley warn that the concern about increased diagnosis skewing perceptions of risk may also apply to genetic risk factors for cancer and that new genetic tests may render more types of cancer scrutiny-dependent. They call for less emphasis on risk factors for developing cancer and more on risk factors for cancer-related death.

“Detecting cancers that would never become apparent is screwing up our understanding of risk factors,” Welch told STAT. “Family history influences how hard we look for prostate cancer and therefore how much we find. The risk factor becomes a self-fulfilling prophecy.”

Click here for the Annals of Internal Medicine article.