1 #3. Lead author: Yuliia Storm Larsen, Calling BS on "Can Sleeping Pills Cause Cancer?", Brandel France de Bravo, MPH, Kousha Mohseni, MS, National Center for Health Research.

The article Can Sleeping Pills Cause Cancer?"[1] claims that sleeping pill use significantly increases cancer risk and mortality, suggesting a direct causal relationship and stating that sleeping pills could cause 320,000 to 507,000 deaths in just one year." It presents observational findings as definitive evidence that common sleep medications are dangerous carcinogens. This article highlights new-school BS through multiple statistical misconceptions. First, it makes unfair comparisons, stating patients taking sleeping pills were 3-5 times more likely to "have died" and "had a 35% greater risk" of developing cancer than non-users. These comparisons fail to properly account for selection bias - people prescribed sleeping pills likely have underlying health conditions causing sleep problems that independently increase mortality and cancer risk. Secondly, the article demonstrates a lack of alternative hypotheses by dismissing alternative explanations and claiming "there are no logical explanations to explain away the substantial increased risks". This ignores several plausible alternative hypotheses: reverse causality, where early, undiagnosed cancer or illness could cause sleep problems, leading to sleeping pill prescriptions; indication bias, where insomnia itself might be associated with cancer risk independently of medication and unmeasured confounders, where psychological factors like stress or depression could cause both insomnia requiring medication and physiological changes affecting cancer risk. Consequently, the article falls into a statistical trap by lacking a null hypothesis model. It fails to establish what the expected rates of cancer and mortality would be in a population with sleep disorders who do not take medication. Without this comparison, we can't determine whether the elevated risks are due to the medications or the underlying conditions they are treating. What is more, it makes a "correlation vs. causation" error by making definitive causal claims based on observational data that can only establish correlation, not causation. This BS is particularly evident when contrasted with the comprehensive alternative approaches document, which presents a balanced view of sleep management options and cites multiple controlled studies on alternative sleeping drugs like melatonin, which may actually have cancer-protective effects according to several referenced studies.

The unintended consequences of spreading this misleading information include: harmful medication discontinuation, where patients might abruptly stop prescribed medications out of cancer fears, leading to withdrawal symptoms, worsened insomnia, and it's associated health risks. This may lead to decreased trust in healthcare providers, as overstating risks undermines patient-doctor relationships when patients discover the evidence is not as conclusive as presented; missed opportunities for proper treatment, as the article fails to present evidence-based alternatives such as CBT-I (recognized as a first-line treatment by the American College of Physicians) and melatonin (which may have cancer-protective properties); and the nocebo effect, where creating fear about medication can actually worsen health outcomes through negative expectations. Potentially intended consequences include increased interest, as sensational health claims drive popularity into clicks and shares. Therefore promotion of alternative products, will benefit from creating fear about conventional treatments which may drive consumers toward alternative competitive products. A responsible presentation would acknowledge the limitations of observational studies, present a balanced view of risks and benefits, discuss evidence-based alternatives as presented in the supplementary document, and encourage patients to discuss concerns with healthcare providers rather than suggesting widespread deadly effects.[2]

[1] https://www.center4research.org/trouble-sleeping-pills-not-safe-solution/

[2] Bélanger L, et al. (2021): https://doi.org/10.1016/j.jsmc.2021.01.007; Pottie K, et al. (2018): https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5951648/; Howe LC, et al. (2019): https://doi.org/10.3389/fpsyt.2019.00475; Main A, et al. (2020): https://doi.org/10.1016/j.jpsychores.2020.110278; Qaseem A, et al. (2016): https://doi.org/10.7326/M15-2175; Trauer JM, et al. (2015): https://doi.org/10.7326/M14-2841; Li Y, et al. (2017): https://doi.org/10.18632/oncotarget.17016; Reiter RJ, et al. (2017): https://doi.org/10.3390/ijms18040843; Colloca L & Miller FG. (2011): https://doi.org/10.1097/PSY.0b013e3182294a50; Faasse K & Petrie KJ. (2013): https://doi.org/10.1136/postgradmedj-2012-131730; Caulfield T, et al. (2019): https://doi.org/10.7202/1060911ar; Nagler RH & LoRusso SM. (2018): https://doi.org/10.1093/acrefore/9780190228613.013.292; Schwartz LM, et al. (2011): https://doi.org/10.1001/archinternmed.2011.396; Boutron I & Ravaud P. (2018): https://doi.org/10.1073/pnas.1710755115