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Lost in Interpretation: Teaching Basic Epidemiology Terminology

The story behind the lesson

When the World Health Organization declared that COVID-19 could be characterized as a pandemic (Mahase, 2020) the fields of epidemiology, biostatistics and public health took center stage. Media outlets spotlighted infectious disease experts and epidemiologists worldwide (Nature, 2021). Since then, people have become accustomed to terminology they may not have recognized two years ago – 'flattening the curve', incidence rate, ICU admissions per 100,000, vaccine efficacy - the list goes on.

In the age of high-speed internet, news travels fast. Along the way, many scientific findings get lost in interpretation (Scales, 2021). Whether it was malicious in nature (disinformation) or unintentional (misinformation) many incorrect interpretations of public health findings and guidelines were shared by the general public on social media (Scales, 2021). This posed a threat to implementation and participation of communities in public health initiatives to mitigate risks of the pandemic.

Epidemiology, biostatistics and public health are fields that students typically encounter explicitly at the graduate level. Concepts from these fields are often taught at surface level in undergraduate science courses. Epidemiology classes for example are often graduate courses, or small undergraduate introductory classes. The lack of early exposure to these fields and limited access to this knowledge can make science communication challenging.

Lesson overview

By completing this activity, students will define basic terminology from the fields of epidemiology, biostatistics and public health. This will lay a strong foundation for interpretation of material they would encounter later on. Additionally, students will actively engage with material accessible to the wider public, and critically assess the difference between generic definitions and field-specific definitions. Accessing public material contributes to the applicability of the exercise in real-world scenarios, and highlights the impact of language beyond the scope of academic epidemiology. Finally, students will recognize patterns of misinformation and the importance of science communication. By recognizing the difference between generic definitions and field-specific definitions students will evaluate the incongruence between interpretations from the academic-sphere and the public-sphere.

Lesson outline

The purpose of this lesson is to investigate basic epidemiology terminology and the possible mis-use of these terms in media. This "word search" activity is suitable for undergraduate or graduate epidemiology and public health students. It would be geared towards introductory epidemiology or quantitative research methods classes. This lesson can also be beneficial for instructors and Teaching Assistants that encounter the field of public health, such as political science or media studies.

The activity would be conducted as follows:

1. The instructor shares a word bank of terminology and concepts with students (Examples below).
2. In pairs, students sign up and claim a term to research further.
3. Each pair of students will be responsible for presenting their findings which will include:
   a. Generic definition of the chosen term. *For example, the generic definition of the term "odd" is the chances or likelihood of something happening or being the case.*
   b. An example of the term being used correctly and an example of the term being used incorrectly, based on the generic definition of the term.
   c. Epidemiology/public health definition of the chosen term. *For example, the epidemiology definition of the term "odds" is the ratio the ratio of the number of people with the disease to the number of people without it in a particular population*
   d. An example of the term being used correctly and an example of the term being used incorrectly, based on the epidemiology definition of the term.
4. Student pairs will share their findings with the rest of the class. They are encouraged to find examples of use/misuse of terms in the media or literature rather than create them. This enables students to identify use/misuse of terms in a context where the work has been published and read.
5. Finally, students will be asked to share their predictions of potential implications when mis-interpretation of terms occurs.

Terms that can be used include: randomization, bias, reproducibility, generatability, placebo, effectiveness, efficacy, efficiency, prevalence, incidence, odds, rate, risk, association, significance.

The students are assessed on 3 main components: successfully retrieving appropriate definitions and examples of terms, articulating their reflections and critical assessment of differences between the two terms and examples, and finally evaluating potential implications of poor communication.

References

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