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EXTENDED ABSTRACT

P3

Computing risks. Physicians do it better?

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Introduction

The lack of statistical literacy that prevails in patients and health professionals are responsible for unnecessary and sometimes harmful medical procedures, overdiagnosis and overtreatment [1]. Basic statistical literacy for physicians, nurses and patients is required so that correct assessment of risks and benefits can be carried out. This is often not the case, and the problem is compounded when the lack of statistical literacy is added to the skewed transmission of information carried out by health authorities, pharmaceutical companies, medical journals, pamphlets, websites and media [1]. The correct interpretation of the information is required so that an informed decision can take place.

Often, the benefits are widespread as the relative risk reduction without the baseline risk. When the baseline risk is known, it is necessary to compute the absolute risk reduction to allow a judicious decision making.

In order to ascertain whether health professionals and the population in general correctly handle the information when it is communicated as the relative risk reduction together with the baseline risk, a question very similar to one already asked by [2] was placed in a questionnaire for a period of 3 months and 10 days at the year 2019.

The first part of the question ascertains whether health professionals and the general population knows how to compute the new risk of dying after taking a drug, from the relative risk reduction and the baseline risk.

The second part of the question was asked to find out whether health professionals and the general population know that to reduce the overall risk of death from different causes, it is necessary to identify the cause in which the absolute risk reduction is higher and know how to compute it.

Methods

The questionnaire was distributed through social media and respondents were asked to share it, so that the answers could grow like a snowball. Anonymity was guaranteed to all respondents and only the identification of the professional group was not optional. The question studied was:

Mrs. Madalena is informed that she runs a 28 in 1000 risk of dying from cancer and a 40 in 1000 risk of dying from a heart attack. Mrs. Madalena's physician tells her that a new drug 'Cancrex' will decrease her risk of dying from cancer by 50%. Another new drug, 'Enfartex' will decrease her risk of dying from a heart attack by 40%. She can only take one of the drugs. Mrs. Madalena decided to take the drug 'Enfartex'. What is now her risk of dying from a heart attack? a)16 in 1000; b) 20 in 1000, c) 24 in 1000 and d) 30 in 1000

Assuming that the safety and price of the two drugs described in the previous question are the same, which drug do you suggest Mrs. Madalena to take? A) Enfartex; B) Cancrex

The relative risk reductions and the baseline risks are given. Doing the computations, the absolute risk reduction of dying from cancer taking 'Cancrex' is 14 in 1000, and the absolute risk reduction of dying from heart attack taking 'Enfartex' is 16 in 1000. So, the new risks of dying are 14 in 1000 and 24 in 1000 respectively. To answer the second part of the question one has to compare the absolute risk reductions for cancer and heart attack. Since 'Enfartex' leads to an absolute risk reduction of death by 16 in 1000, the right choice would be 'Enfartex'. Although the relative risk reduction of death taking 'Enfartex' is smaller, the baseline risk is higher. The computations must be performed to pick the correct choice.

Results

There were 485 answers, of which 154 (31.8%) were from physicians, 142 (29.3%) from nurses and 189 (39.0%) from the general population.

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relative risk reduction, absolute risk reduction, baseline risk

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The results for the first part of the question are depicted in Figure1. The correct option was chosen by 59.7% of physicians, 40.8% of nurses and 38.1% of the general population. The second most common answer, which may suggest a confusion in the interpretation of what was requested, was that of'16 in 1000', which reflects the absolute risk reduction of dying from a heart attack and not the new risk after taking the drug. The differences between the four options available, for physicians, nurses and the general population, proved to be statistically significant ($x^2\ (6) = 21.222,\ p = 0.002$). The data show that physicians are the ones who best compute the requested risk.

Again, for the second part of the question, physicians proved to be the most capable to perform the basic calculations to pick the correct option, with 76.6% correct answers, followed by nurses with 67.6% and finally by the general population with 57.1% (Figure 2). The differences between the two options, for physicians, nurses and the general population, were statistically significant ($x^2\ (2) = 12.839,\ p = 0.002$).

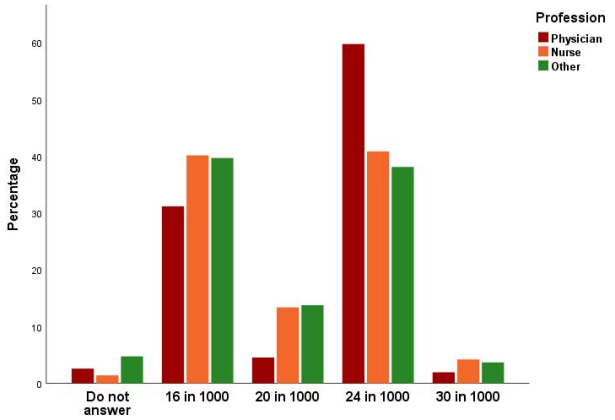

Figure 1 - Answers, by profession, to the first part of the question.

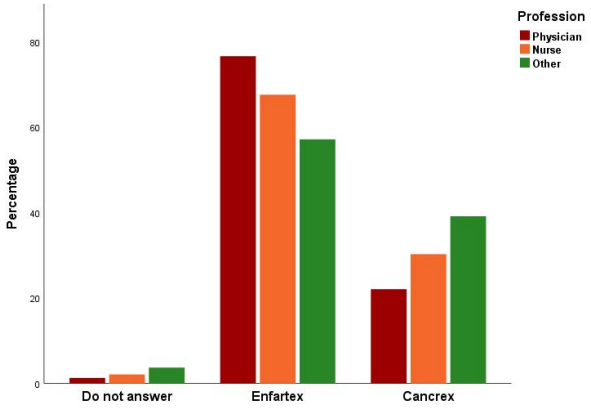

Figure 2 - Answers, by profession, to the second part of the question.

Discussion and conclusion

The data show that physicians are the ones who best compute the new risk of dying after taking a drug, knowing the relative risk reduction and the baseline risk. The nurses have a poorer performance and very similar to the performance of the general population.

Also, physicians seem to understand that to quantify the reduction of the risk of death, it is necessary to know the absolute risk reduction, followed by nurses. Nevertheless, the statistical literacy must be improved among both health professionals and patients. Statistical education must be reinforced.

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