

Improving risk illiteracy among clinicians and patients to enable better risk communication

Understanding risk is an important consideration in health care delivery, as treatment decisions are often based on risk assessments. Deciding how to treat a caries lesion may differ based on the patient's caries status and risk of developing caries in the future. "Watch and follow" may be an appropriate course of action for a patient with a low risk of developing caries, while a definitive restorative intervention may be the treatment of choice for a patient with multiple caries lesions and a high risk of developing more lesions. Even a decision regarding which type of restoration (a direct composite resin restoration versus a crown) should be based on a risk assessment. Having an exact number to quantify the risk may not always be possible, as social determinants, medical conditions and medications, and advanced oral disease morbidities may all impact risk for benefits and harms and influence subsequent care options.¹

In some circumstances, such as those in which there is a clear benefit-to-harm balance, quantification of risk may help clinicians make appropriate treatment choices. For example, a decision whether to remove third molars in an asymptomatic 30-year-old man needs to take into consideration the benefit (possible reduced incidence of pathologies associated with keeping the teeth) and the harm associated with the planned surgery. Quantifiable risk assessments, for this and other clinical scenarios, are readily available in the biomedical literature, are communicated during lectures at dental schools and in continuing education courses, and are considered in recommendations put forth in clinical practice guidelines. However, in the emerging era of informed and shared decision making, in which a patient's values, preferences, and desires will influence and determine treatment decision, we need to be able to not only understand how to assess risk, but also how to communicate risk to our patients.² This is not always an easy task as the balance of the principles of beneficence and autonomy may have to be quantified and appropriately communicated to achieve informed shared decision making.

Numerous studies have shown the inability of both patients and health care professionals to understand conditional probability and Bayesian reasoning; for example, determining the probability of the presence of disease or the likelihood of disease after being informed of a test result or the consequences of screening statistics.³ There are many reasons that may explain this statistical illiteracy phenomenon, including biased reporting in the scientific and lay press that are later posted on social media and promulgated on various easily obtainable health apps, as well as inadequate tutoring in statistical literacy from the time of primary school through matriculation at advanced studies in biomedical educational settings.

Obviously, if health care professionals have difficulties interpreting risk data, they will not be able to communicate correct information to patients. Several attempts to tackle how to communicate quantifiable risk to patients are being made and have been published.^{4,5}

Discussions of risk are not only about numbers but also about how the concepts of risk are communicated, patient expectations, a provider's potential vested interest in a patient's acceptance of a specific treatment options, and more.^{2,6} Other considerations include the period associated with the risk (for example, risk of developing caries over a specific time span), the context (for example, is the risk small or big compared with different treatment options or with other risks, such as being hit by lightning), the quality of the risk information, and the uncertainty associated with any risk estimate. Clinical practice guidelines, systematic reviews, and meta-analyses provide evidence that is quantified into different risk categories, such as absolute risk, relative risk, and odds and different ratios. Translating these concepts into a plain and understandable language is necessary and requires a level of risk literacy that must be taught, learned, and honed. Importantly, in statistics "risk" is simply the probability for an event to happen, and it could be either a desirable or an undesirable event.



We need not only to enhance the teaching of all health care professionals to understand and assess risk, but also to teach them how to communicate all different types of risk. This is not being done in an organized and systematic manner by dental educational institutions or dental professional organizations. Use of appropriate decision aids has shown to be effective when people are facing treatment or screening options.^{7,8} However, the use of any tool for communicating risk is contingent on the providers' understanding of the risk and establishment of trust and respect between care providers and patients. In the end, no matter which communication strategy a health care professional uses, it is the patient who determines the clarity, interpretation, and usefulness of the strategy. Risk illiteracy is a major obstacle to achieving shared decision making and must be addressed for the benefit of our patients.

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