# THE MEANINGS OF VERBAL MESSAGES ABOUT THE RISK OF SIDE EFFECTS

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## Abstract

Cultural changes are reshaping the doctor-patient relationship, highlighting the importance of shared decision-making in treatment. This process requires physicians to present statistical data on treatment effectiveness and potential side effects. However, understanding numerical risk can be difficult for patients, often making verbal descriptors necessary. The way these labels are interpreted influences risk perception and treatment choices. This study explored how people perceive words describing the frequency of side effects and evaluated their unambiguity. A total of 175 participants assigned percentage values to 13 verbal labels and assessed their clarity. The results revealed how verbal labels were understood and perceived in terms of unambiguity. Discrepancies emerged between laypeople's interpretations and the official European Medicines Agency. These findings highlight the need for further research to improve risk communication in medical settings.

Keywords: Risk perception, shared decision-making, side effects, verbal labels.

#### **1. Introduction**

In recent years, more and more patients want to actively participate in the medical decision-making process, working together with their doctors to choose the appropriate treatment (Chewning et al., 2012). This shift stems from growing patient awareness and the need for greater autonomy in health-related matters. As a result, physicians are expected to not only present available treatment options but also provide reliable information on their effectiveness and potential risks. This requires clear communication, often involving the presentation of statistical data in a way that is understandable to patients. Effectively conveying this information is crucial for shared decision-making, influencing both patient trust and satisfaction with the treatment process.

Presenting risk using numerical data is a more effective way of communicating risk than relying on verbal labels (Büchter, Fechtelpeter, Knelangen, Ehrlich, & Waltering, 2014). When informing patients about the uncertainty associated with the side effects of a particular treatment, numerical data are recommended as they provide a more neutral presentation. In contrast, verbal labels often carry implicit values and can significantly shape patients' perceptions (Knapp et al., 2009). However, in medical practice, there are situations where verbal risk expressions are necessary. This occurs when patients have low numeracy and may struggle to analyze data. Even patients with strong numerical skills may feel overwhelmed by emotions during medical consultations, which can make it more difficult for them to interpret statistical information. Moreover, conversations about health risks often involve elderly patients, who may face age-related cognitive decline. In these situations, verbally labeling numbers is one method of simplifying the data. Rather than saying, "This side effect occurs in fewer than 1 in 1,000 people," a physician can say, "This side effect is rare." Everyday conversation naturally incorporates verbal risk expressions and people commonly describe events as "common" or "rare". In conclusion, despite the challenges associated with verbal risk expressions, they remain an integral part of medical practice. It is essential to understand how people understand the meaning of verbal risk labels to ensure effective risk communication with patients.

The theoretical framework for the study was Fuzzy Trace Theory (FTT) (Reyna & Brainerd, 1995). FTT posits that in response to a stimulus, people encode multiple mental representations of their experience at the same time. These representations range in specificity from low (gist representations) to high (verbatim representations). A verbatim representation is a mental representation of exact details (e.g., the word, number, or color), reflecting its literal value (e.g., 7%) and playing a crucial role in analytical reasoning. In contrast, a gist representation is a fuzzy impression of the general meaning of information supporting

intuitive thinking. The fundamental premise of FTT is that when evaluating a situation, people rely more on the gist representation and the underlying meaning of the communicated message rather than on its literal wording. In a verbal message, the representation of the gist is linked to the semantic connotations of the expressions used. Consequently, the recipient's lifetime exposure to the particular verbal term influences the primary message they comprehend. For example, if a person processes a message stating that a particular side effect is common, it activates associations with the word 'common'.

### 2. Design

This study employed a cross-sectional survey design using an anonymous, self-administered questionnaire. The study was part of a larger project on best practices for communicating risk to patients (Olchowska-Kotala, 2021).

### 3. Objectives

The goal of this study was to find out how people understand words referring to the frequency of a side effect of medical treatment. Furthermore, the respondents' perceptions of the unambiguity of these verbal risk labels were assessed. Considering that no previous research in Poland has examined the semantic connotations of words used to describe side effects, the study was exploratory in nature.

### 4. Methods

Respondents were asked to adjust percentages for 13 verbal labels (never; hardly ever; very rare; rare; unlikely to occur; uncommon; may occur; moderate risk of occurrence; probably; likely; common; very common; certainly) related to the frequency of a side effect, i.e., headache, and to indicate how unambiguous they found the verbal label. Unambiguity was assessed using a bipolar scale with numerical indicators at both endpoints ranging from 1 to 5, the higher the number the more unambiguous the term. The order of the verbal labels to which percentage values and clarity were appended was rotated.

#### 4.1. Participants

The survey was conducted in Poland with a convenience sample of participants who were recruited from a population of adults attending outpatient clinics by trained research assistants. A total of 175 respondents (102 women and 73 male) aged 40-90 years ( $M_{age}$ =56.4; *SD*=11.7) participated in the study. Participants' educational level was as follows: 19% had basic/vocational education, 37%, completed secondary school and 44% had graduated from college or university. To be eligible for the study, participants had to be: (a) aged 40 and over, (b) literate (individuals with signal difficulties in reading or interpreting questions were excluded), and (c) lacking any medical condition that would affect their ability to participate. All participants were informed about the purpose of the study and provided informed consent.

### 5. Results

The study revealed the semantic connotations of verbal terms used to describe potential side effects of treatment. The observed standard deviations indicate how much individuals differ in their interpretation of a given verbal expression (never: M=4.23; SD=17.35; hardly ever: M= 9.59; SD=12.23; very rare: M= 11.79; SD=11.97; rare: M=15.33; SD=14.27; unlikely to occur: M=17.41; SD=14.33; uncommon: M=27.97; SD=17.46; may occur: M=34.91; SD=18.40; moderate risk of occurrence: M=40.54; SD=13.95; probably: M=44.01; SD=23.39; likely; M=47.49; SD=13.95 common; M=65.60; SD=25.23; very common: M=67.21; SD=22.58; certainly: M=87.51; SD=24.83). The words used to describe potential risk of a side effect also differed in the degree to which they were unambiguous to the subjects. The study enabled the creation of a 'map' (Figure 1) to illustrate what the various verbal labels of risk mean to respondents and how clear they appear to them.



Figure 1. A map of verbal labels. X-axis: unambiguity; Y-axis: attributed frequency of side effect.

#### 6. Discussion

How patients interpret the words is important, because verbal risk labels appear not only in the case of side effects, but also when taking a history and making recommendations to the patient. Verbal risk labels appear during almost every medical consultation. The study revealed how far the numerical values people assign to verbal risk statements differ from the recommendations made by the European Medicines Agency (EMA). For instance, according to patients' mean indications, a headache is "common" if it occurs in more than 65% of cases; however, the EMA recommendations and descriptions on Polish medication pamphlets define "common" as a side effect that occurs in less than 10% of patients. Researchers conducting studies on populations from other countries have come to similar conclusions about the discrepancy in the EMA's recommendations and the meaning patients assign to words (Knapp et al., 2009).

The study found that people have different understandings of verbal determinations of the frequency of side effects. When informing the patient about the risk of treatment with verbal terms, it is essential to take into account this difference in interpretation. Using the terms of fuzzy trace theory, it can be said that the same word can lead to varied traces of meaning resulting from experience with a given verbal term. The experience accumulated during life determines the range of meaning of such terms as 'rare' or 'common'.

#### 7. Conclusions

Words describing the frequency of a side effect may be understood differently by laypeople. The demand for more research on this topic has been revealed. A deep analysis of the meaning of the words used to describe the risk of potential side effects of treatment is needed. It seems advisable for linguists and psychologists to conduct joint research to identify words or verbal descriptors that most closely correspond to the presented numerical values. Such studies need to be conducted independently in each country due to the semantic and cultural connotations of the given language.

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