RISK – A VAGUE CONCEPT

Irrespective of whether you are a clinician, researcher or a patient it is important to consider not only existing risks, but also to reflect upon what is known and what is not known. For example, what are the consequences of our ignorance? There is not one but literally hundreds of more or less well thought-out definitions of RISK, which is a multidimensional concept. Although commonly used in oral health care, the risk concept has not been thoroughly defined.

One dimension is the Outcome Risk. The general view is that risk has to do with the outcomes of our actions. Risk can mean something like ‘the probability of a negative outcome’ or ‘the frequency with which a negative outcome occurs’. Such a view is, however, too simplistic and problematic. A caries lesion or loss of a tooth may be a catastrophe for one person but negligible for another person. Thus, risk includes also a value perspective.

There is more to risk than outcome risk. When knowledge and information, that forms the basis for our judgements and decisions is scanty and indeterminate, there is a knowledge risk. To ground a judgement and inform our patients on scanty and indeterminate information is to take a risk, an epistemic risk. Reliable risk analysis requires careful scrutiny of the present epistemic state.

We present three examples of projects where we analyse risk in order to underpin prevention.

EXAMPLE 1
How can we improve tools to identify patients at risk of caries with implications for prevention?

STATEMENT
A substantial number of patients are falsely identified as being at risk of caries or periodontitis with current methods (see guidelines from 2006 and 2017). Thus, there is a need for improvement. To develop effective risk markers and to implement tailor-made prevention, we need to understand the biological mechanisms fundamental to the initiation of caries and periodontal lesions.

One may believe that once specific biological markers are found, risk assessment will be effectively practised. This is not the case! More than 25 years of research shows that we are not ideal decision makers and risk assessors. We make errors! To obtain a foundation for improvement, it is vital to analyse how risk assessment actually takes place and how risk is understood. In this project, such analyses will be made by means of theories in risk philosophy.

Our project presents a multidisciplinary approach. We will test the following HYPOTHESES:

- Acid tolerance of bacteria can be used as a biological marker to identify patients at risk of caries (see poster Oral Ecosystem with Microbial Biofilms).
- Proteolytic activity of bacteria can be used as a biological marker to identify patients at high risk of periodontitis and at low risk of caries (see poster Oral Ecosystem with Microbial Biofilms).
- Current clinical praxis in risk assessment, risk grouping and interventions can be improved as praxis is based on low rather than high quality of evidence.
- The novel biological markers will improve the efficacy of identification of patients at risk as compared to current models.
- The implementation of novel biological markers will together with clinicians increase understanding of risk and risk assessment present opportunities for novel strategies with implications for strategies to prevent caries and periodontitis.

EXAMPLE 2
Clinical studies to assess risk models

Is it possible to predict risk of disease (caries and periodontitis) in young individuals?

In a longitudinal, prospective clinical study, the caries risk profiles for a group of children were evaluated using the Cariogram model (see poster Oral Ecosystem with Microbial Biofilms). Ongoing study – a longitudinal, prospective clinical study over three years with the aim to:
- Evaluate guidelines for risk assessment of oral diseases with the actual outcome over 3 years
- Compare the risk assessments of the guidelines with the Cariogram in terms of risk of caries
- Develop effective risk markers and to implement tailor-made prevention

Our model presents factors at different levels – the biological, the individual and the society levels – involved in the caries process. The biological level is comprised by the dental biofilm on the tooth surface (plaque). The elegance (beauty or excellence) of our model is that risk assessment (risk marker = proportion of acid tolerant bacteria in the biofilm) and prevention (inhibition of acid adaptation) will occur at the same biological level.

EXAMPLE 3
Can dentists identify patients with osteoporosis and risk for fractures? EU-project OSTEODENT

In this EU-project, 652 females (45 – 70 years) from four European countries were examined with one panoramic radiograph and one femoral radiograph. One in four of the upper and lower premolar regions were radii of patients measured with a central dual energy x-ray absorptiometry (DXA) examination of the hip and lumbar spine. The novel biological markers will improve the efficacy of identification of patients at risk as compared to current models.

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