

When Informed Decision Making Meets Health Promotion

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summary



Decision making, including health-related decision making, is an integral part of people's daily living. Such health-related decision making can be relatively simple (for example, the decision to brush one's teeth), but can also be more complex, involve substantial uncertainty, and have a big impact on people's lives (for example, the decision for or against a certain cancer treatment). Especially as decision making becomes more complex, it is important that the decision is informed, as people generally experience less ambivalence about their decision if they can make an informed (as opposed to an uninformed) decision. Making an informed decision means two things: first, one has the information needed to make a decision, and second, one can use this information to determine what is personally perceived as important in relation to the decision in question.

Informed decision making has become increasingly important since the 1990s, but is mainly applied to treatment (for example, cancer treatment) and population screening (for example, cancer screening) decisions. Health promotion decisions have so far received little attention in the informed decision-making literature, even though such decisions can also evoke ambivalent feelings. This can be seen, for example, in relation to smoking cessation: People who are motivated to quit smoking often lack the information needed to make an informed decision between the different smoking cessation support tools. This also makes them less able to determine what is important to them regarding this decision. Consequently, smokers may find it difficult to make an informed decision between the different smoking cessation aids available, which can lead to ambivalent feelings regarding the decision.

Decision aids can be used to avoid such ambivalent feelings and to support smokers in making an informed decision. Decision aids often have two components: (1) balanced information provision and (2) so-called value clarification methods that can help determine what is personally experienced as important regarding the decision in question. These value clarification methods can be explicit (including interactivity) or implicit (without interactivity). However, decision aids (and by extension value clarification methods) have so far been mainly studied in treatment and screening contexts and not much in the context of health promotion.

Based on the introduction above, this thesis had two objectives: (1) to gain a good understanding of the decision aids used in health promotion and (2) to describe the work that was undertaken to develop and test the smoking cessation decision aid *VISOR*. This goal as well as the background to this goal are described in more detail in *Chapter 1*.

Decision Aids Applied to Health Promotion

The aim of *Chapter 2* was to critically review behavior change interventions (often used in health promotion) and decision aids (described in this chapter as patient decision aids). Similarities and differences were explored and the potential for integration was identified to ultimately increase the benefits for the users of both interventions. We found that behavior change interventions and decision aids mainly differ in terms of (1) goals and foci, (2) theoretical basis, (3) development frameworks, (4) active ingredients, and (5) effect evaluation. Integration can be achieved by using the knowledge generated by decision aid research to facilitate decision-making processes that enable patients to choose goals that align with their personal values and preferences. On the other hand, findings from research on behavior change interventions can be used to support the implementation of these chosen goals. To facilitate the integration of scientific insights from studies of behavior change interventions and decision aids, the following recommendations are made in *Chapter 2*: (1) bring both fields together and promote interprofessional discussions, (2) train (health) professionals to recognize strengths of both approaches, (3) investigate the synergy of the two fields, and (4) be prepared for and try to mitigate a culture shock when the fields start to interact.

The aim of *Chapter 3* was to review the existing literature on decision aids that support health promotion decision making. The focus was on diet, exercise, sleep, and substance use. Thirty-five scientific articles and four decision aids (grey literature) are included in this 'scoping review', of which 29 were on substance use. All decision aids included information, value clarification methods, and methods to clarify personal preferences. However, there were also many other elements, such as goal setting. This made it difficult to determine which of these elements helped users (and through which processes) and which did not. While most studies used theories to some extent, little was done to integrate insights from behavior change and (informed) decision making. Although some positive behavioral effects (e.g., related to smoking) were reported, the effects of decision aids were generally mixed. Also, studies did not always follow a randomized study design and little use was made of standardized outcome measures. This made knowledge synthesis difficult. Based on this scoping review, several areas for improvement could be identified: (1) researchers should establish which intervention elements are effective regarding health promotion decision making, and for which processes, (2) the integration between theoretical insights from behavior change and (informed) decision making should be strengthened, by either using a flexible theoretical approach or by designing a framework that integrates behavior change and (informed) decision making, and (3) more randomized trials should be conducted to enable other reviews to draw stronger conclusions regarding behavioral and decisional outcomes and how those relate to one another. In conclusion, our literature review shows

that decision aids may potentially be helpful in helping people change their health behavior, especially when it comes to smoking cessation.

The Smoking Cessation Decision Aid *VISOR*

The aim of *Chapter 4* was to use a so-called cluster analysis to identify early adopters of a smoking cessation decision aid, such as *VISOR*, based on the general decision-making style of 200 smokers. The clusters of smokers found were compared on demographic and socio-cognitive variables, such as attitude towards smoking cessation aids. Follow-up analyses were performed to see whether cluster membership affected the intention to use a smoking cessation decision aid. Ultimately, two groups were identified; "*Avoidant Regretters*" were more avoidant, more likely to regret their decisions, and more dependent on others in their decision making, while "*Intuitive Non-regretters*" were more spontaneous and intuitive in their decision making. Cluster membership was significantly related to intention to use a decision aid, with "*Avoidant Regretters*" being more interested in a decision aid, such as *VISOR*. However, this relationship disappeared when adjusting for social-cognitive variables, suggesting that cluster membership may influence this intention via these social-cognitive variables. In general, it was concluded that the general decision-making style can be used to identify smokers at an early stage who may be interested in a digital decision aid. As such, decision-making style can be used to tailor recruitment materials and decision aid content.

The aim of *Chapter 5* was to explore the needs and viewpoints of potential users of smoking cessation decision aids and experts in smoking cessation (decision aids) to inform the development of the decision aid *VISOR* with their input. The data was collected through two approaches applied in three (sub)studies: (1) twenty semi-structured interviews with potential users and (2) two studies with 61 smoking cessation counselors and 44 scientific experts in which consensus was sought. At the time of the interviews, the potential users indicated that they obtain information about smoking cessation aids in various ways: through their own experiences, through their social environment, and through the media. Key characteristics for choosing between smoking cessation aids also varied, but effectiveness and cost were often named as important. The smoking cessation counselors agreed on 38 statements and the scientific experts agreed on 40 statements about the important features of smoking cessation aids and their views on a smoking cessation decision aid. For example, statements such as that a tool should match the addiction level of the user were considered important. However, there was some variation in the needs and wishes between the (different) stakeholders. This indicates that a 'one size fits all'-approach is not desirable within a smoking cessation decision aid. This should be taken into account during the development of such a decision aid, for example by allowing users to adapt a decision aid according to their personal preferences, while safeguarding essential elements.

The aim of *Chapter 6* was to present the systematic development of *VISOR*. We developed two versions of *VISOR*: (1) The *intervention version* contained an explicit value clarification method in combination with computer-tailored advice, while (2) these two elements were missing in the *control version*. *Chapter 6* also describes the protocol of the randomized controlled trial in which the effects of the *intervention version* of *VISOR* were compared with the effects of the *control version*. The development of *VISOR* was based on the guidelines of the international decision aid organization (that is, the International Patient Decision Aid Standards (IPDAS) Collaboration), the findings from the needs assessment (see *Chapter 5*), and principles from the so-called 'Self-Determination Theory'. A first prototype of the decision aid was tested in September 2019 and a second version was tested for usability in December 2019; the results from these two tests were then processed and this resulted in the two final versions of *VISOR*. These final versions include: (1) an information section, (2) an optional knowledge quiz, (3) a brief smoking assessment, (4) an intuitive decision, (5) intermediate advice, (6) an explicit value clarification method (only within the *intervention version*), (7) tailored advice (only within the *intervention version*), and (8) information about the availability of smoking cessation aids. In the randomized controlled trial, the effects of these two versions on long-term (primary outcome, after six months) and short-term (after one month) smoking abstinence, on the use of evidence-based smoking cessation aids, and on ambivalence regarding the decision between different smoking cessation aids were compared.

The aim of *Chapter 7* was to present the findings from this randomized controlled trial. In the end, 2375 participants randomly received one of the two versions, 599 participants then used it completely, 276 participants completed the follow-up questionnaire immediately after using the decision aid, 97 participants completed the follow-up questionnaire after one month, and 103 participants did so after six months. Statistical analyses were performed to assess the effects on all outcome measures, with and without adjustment for other factors, such as education level. Effects were tested using three scenarios: (1) only with participants who completed the entire experiment, (2) a worst-case scenario assuming that respondents who did not complete the follow-up questionnaires still smoke, and (3) using multiple imputations, in which missing data are imputed on the basis of the available data. Effects in favor of the *intervention version* on the primary outcome (that is, smoking abstinence after six months) were only found in the worst-case scenario. Effects on the other outcomes were only found regarding smoking abstinence after one month and the use of smoking cessation aids (again only in the worst-case scenario). In conclusion, the inclusion of explicit value clarification methods and computer-tailored advice within a smoking cessation decision aid cannot be recommended with confidence. Adding these elements may even lead to more users not using the decision aid fully, since in our sample more people dropped out during the *intervention version* than during the *control version*. However, because too small a sample size may have influenced our findings regarding the outcomes, replication of these

findings is recommended, taking into account our lessons learned. For example, we found that more attention should be paid to the required usage times of digital decision aids.

The aim of *Chapter 8* was to put all chapters and findings in perspective and to compare them with other literature, as well as to make scientific and practical recommendations.