Health Promotion & Behavioural Change Theory
CANCER SCREENING HEALTH PROMOTION ENVIRONMENTAL SCAN

ACKNOWLEDGEMENTS

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HEALTH PROMOTION & BEHAVIOURAL CHANGE THEORY

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**Introduction**

A theoretical foundation clarifies how health promotion is conceptualized, encourages sharing of concepts and language between researchers and practitioners, and provides hypotheses about determinants of behaviour change that can be tested.\(^1\) Theoretical frameworks can increase the effectiveness of cancer screening promotion interventions by defining an intervention’s target population, who should be involved in delivering the intervention, expected outcomes of the intervention, factors that influence these outcomes, and strategies that can be used to improve these outcomes.\(^1\)\(^-\)\(^3\)

The choice of an appropriate framework for an intervention depends on a number of characteristics about the behaviour, target population, and environment. The theory or framework used to inform an intervention should be logical, consistent with everyday observations, similar to models/theories used in other successful programs, and supported by past research in the same or related areas.\(^2\)

The Alberta Health Services (AHS) Screening Programs Health Promotion Unit (SP-HPU) uses various health promotion theories and frameworks to guide cancer screening health promotion activities. For example, the Cancer Screening Health Promotion (CSHP) Model was created to guide the Cancer Screening Health Promotion Environmental Scan. The CSHP Model is based on the Ottawa Charter for Health Promotion, the Population Health Promotion Model, and the PRECEDE-PROCEED Model. The CSHP Model, the Ottawa Charter for Health Promotion, the Population Health Promotion Model is described in the document titled “Cancer Screening Health Promotion Model” on [www.screeningforlife.ca/healthpromotion](http://www.screeningforlife.ca/healthpromotion). As well, the Cancer Screening Health Promotion Environmental Scan Framework is based on the Community-As-Partner Model, the Community Health Promotion Model, and the Strengthening Community Action Framework. These three models and the Cancer Screening Health Promotion Environmental Scan Framework are described in the document titled “Framework for the Cancer Screening Health Promotion Environmental Scan” on [www.screeningforlife.ca/healthpromotion](http://www.screeningforlife.ca/healthpromotion).

In this document, we provide brief introductions to other health promotion frameworks used by the AHS SP-HPU. The models described in this document fall under the category of Behaviour Change models. Behaviour Change models examine factors that facilitate or hinder the adoption of new behaviours such as cancer screening. In this section, the Diffusion of Innovations model is described since it is often used to inform social marketing activities, which is one of the SP-HPU’s strategic activities. As well, this section includes descriptions of three individual-level behaviour change models: The Health Belief Model, the Theory of Planned Behaviour, and the Stages of Change (Transtheoretical) Model. These are three of the models mentioned most frequently in the peer-reviewed literature as a basis of behaviour change interventions.

These models may be of use to others in the process of designing, implementing, and/or evaluation cancer screening health promotion activities. References are provided for those interested in learning more about these models. Glanz and Rimer’s document titled “Theory at a Glance: A guide for health promotion practice”, published by the National Cancer Institute in the United States may be of particular interest to those who want to learn more about health promotion theory and practice (available at [http://www.cancer.gov/PDF/481f5d53-63df-41bc-bfaf-5aa48ee1da4d/TAAG3.pdf](http://www.cancer.gov/PDF/481f5d53-63df-41bc-bfaf-5aa48ee1da4d/TAAG3.pdf)).
**Diffusion of Innovations Model**

The **Diffusion of Innovations Model** was first introduced in 1962 by Everett Rogers. The model is not specific to health innovations but pertains to all innovations. Rogers defines diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system".\(^4\) Using a bell curve distribution, Rogers describes different segments of the general population by their likelihood of adopting an innovation (Figure 1). Table 1 defines each of the groups. Rogers also describes the stages in the adoption process for individuals (Table 2) as well as the characteristics of an innovation that determine how quickly it is adopted by society (Table 3).

**Figure 1: Distribution of Adopter Categories in the Diffusion of Innovation Theory\(^4\)**

![Categories of Innovativeness](image)

Table 1: Categories of Adopters in the Diffusion of Innovations Theory

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
<th>Examples of characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovators</td>
<td>First individuals to adopt an innovation</td>
<td>Risk takers, younger, financially and socially stable, interact with other innovators</td>
</tr>
<tr>
<td>Early Adopters</td>
<td>Second fastest individuals to adopt an innovation</td>
<td>High media-users, vast knowledge in specific areas, opinion is respected by others, young, educated, financially and socially stable</td>
</tr>
<tr>
<td>Early Majority</td>
<td>Slower to adopt an innovation than innovators and early adopters</td>
<td>Above average social status, contact with early adopters, media-users, good knowledge in specific areas, opinion is respected by others</td>
</tr>
<tr>
<td>Late Majority</td>
<td>Adopts innovation after the average member of society</td>
<td>Skeptical, below average social status, financially unstable, in contact with others in early and late majority</td>
</tr>
<tr>
<td>Laggards</td>
<td>Last to adopt an innovation</td>
<td>Aversion to change, older, low social status, financial unstable, few social connections beyond family and close friends</td>
</tr>
</tbody>
</table>

Table 2: Stages of the Adoption Process

<table>
<thead>
<tr>
<th>Stage</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>exposure to the innovation</td>
</tr>
<tr>
<td>Persuasion</td>
<td>interest in knowing more about the innovation</td>
</tr>
<tr>
<td>Decision</td>
<td>decision to adopt the innovation after considering the innovation’s advantages and disadvantages</td>
</tr>
<tr>
<td>Implementation</td>
<td>occasional use and evaluation of the innovation</td>
</tr>
<tr>
<td>Confirmation</td>
<td>final decision to continue using the innovation to its full potential</td>
</tr>
</tbody>
</table>
Table 3: Characteristics Determining an Innovation’s Speed of Adoption

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Advantage</td>
<td>advantage of an innovation over existing practices</td>
</tr>
<tr>
<td>Compatibility</td>
<td>ease of integration of the innovation into an individual’s daily life</td>
</tr>
<tr>
<td>Complexity</td>
<td>ease of use of the innovation</td>
</tr>
<tr>
<td>Trialability</td>
<td>ability to try the innovation before adoption</td>
</tr>
<tr>
<td>Observability</td>
<td>visibility of the innovation in use by others</td>
</tr>
</tbody>
</table>

The Diffusion of Innovations theory suggests that the spread and adoption of new health behaviours, such as cancer screening, throughout a population can be maximized by tailoring interventions to the categories, characteristics, and stages of adoption for individuals in the target population and promoting the intervention’s relative advantage, compatibility, complexity, trialability, and observability. To be effective, the behaviour must be promoted on multiple levels, in multiple settings, using multiple strategies. Once a critical number of individuals in a population have adopted the behaviour, the adoption process becomes self-sustaining.

The Health Belief Model

The Health Belief Model (Figure 2) is one of the oldest and most popular models used to inform behaviour change interventions. The original Health Belief Model included only four constructs: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. Subsequently, a number of other constructs were added to the model including cues to action and self-efficacy. Constructs are concepts that when combined form a theory. Table 4 provides definitions of the six most commonly used constructs in the Health Belief Model.

Figure 2: A recent version of the Health Belief Model

1. Individual Perceptions
2. Modifying Factors
   - Age, Sex, Ethnicity, Personality, Socio-economics, Knowledge
   - Perceived Threat
     - Cues to Action
       - education
       - symptoms
       - media information
3. Likelihood of Action
   - Perceived Benefits minus Perceived Barriers
   - Likelihood of Behaviour
Table 4: Constructs in the Health Belief Model2, 5

<table>
<thead>
<tr>
<th>Construct</th>
<th>Definition</th>
<th>Potential Change Strategies</th>
</tr>
</thead>
</table>
| Perceived Susceptibility| Beliefs about the chances of getting a condition                          | • define population(s) at risk and levels of risk  
|                         |                                                                           | • tailor risk information based on individual characteristics or behaviours                 |
|                         |                                                                           | • help individuals develop accurate perceptions of own risk                                  |
| Perceived Severity      | Beliefs about the seriousness of a condition and its consequences          | • specify consequences of condition and recommended action                                   |
| Perceived Benefits      | Beliefs about the effectiveness of taking action to reduce risk or seriousness | • explain how, where, and when to take action and potential positive results                 |
| Perceived Barriers      | Beliefs about the material and psychological costs of taking action       | • offer reassurance, incentives, and assistance  
|                         |                                                                           | • correct misinformation                                                                  |
| Cues to Action          | Factors that activate "readiness to change"                              | • provide how-to information, promote awareness, and employ reminder systems               |
| Self-Efficacy           | Confidence in one’s ability to take action                                | • provide training and guidance in performing action  
|                         |                                                                           | • use progressive goal setting  
|                         |                                                                           | • give verbal reinforcement  
|                         |                                                                           | • demonstrate desired behaviours                                                            |

In the context of cancer screening, the Health Belief model states that individuals are more likely to adopt cancer screening behaviours when they believe that they are at-risk for those cancers and the cancer is severe enough to warrant preventive action. Individuals are also more likely to adopt screening behaviours if they are confident that they will be able to perform the behaviour successfully and they believe that the benefits of screening outweigh the risks.

The Health Belief Model has been used frequently for theoretical-based interventions that promote breast, cervical, and/or colorectal cancer screening.1, 3, 7-22. Interventions that use the Health Belief Model are able to assess individual perceptions of susceptibility and severity of developing cancer, the likelihood of being screened, and benefits of and barriers to screening participation.1 As well, recent versions of the Health Belief Model, which include self-efficacy and account for socioeconomic and demographic factors, may be particularly useful when planning interventions that target underserved women such as low-income, minority, and Aboriginal populations.
A note about self-efficacy
The construct **self-efficacy** is used in a number of behaviour change and psychological models, not just the Health Belief Model. Self-efficacy describes an individual's confidence in successfully performing a behaviour.\(^{23}\) Individuals with more self-efficacy are more likely to attempt behaviours since they believe they will succeed. Self-efficacy shapes the initiation of a behaviour, amount of effort put towards that behaviour, and length of time the behaviour is sustained in the presence of obstacles or challenges. Self-efficacy is influenced by personal accomplishments, vicarious experiences (experiences of other people who the individual relates to), verbal persuasion (social influences that encourage or discourage a behaviour), and the individual’s physical state.\(^{23}\)

**The Theory of Planned Behaviour**

A second individual behaviour change model that is useful as a foundation for cancer screening promotion interventions is the **Theory of Planned Behaviour** (Figure 3).\(^{24}\) The Theory of Planned Behaviour created by Icek Ajzen combines constructs from the Theory of Reasoned Action\(^{25}\) and the concept of self-efficacy.\(^{23}\) The Theory of Planned Behaviour includes all of the constructs in the Theory of Reasoned Action plus the additional construct of perceived behaviour control which is created from Bandura’s concept of self-efficacy.\(^{23}\) Table 5 defines the constructs in the Theory of Planned Behaviour.

**Figure 3: Theory of Planned Behaviour\(^{6,25}\)**

<table>
<thead>
<tr>
<th>Subjective Norm</th>
<th>Attitude toward Behaviour</th>
<th>Perceived Behavioural Control</th>
<th>Behavioural Intention</th>
<th>Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory of Planned Behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory of Reasoned Action</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5: Constructs in the Theory of Planned Behaviour\textsuperscript{2,25}

<table>
<thead>
<tr>
<th>Construct</th>
<th>Definition</th>
<th>Measurement Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Behavioural Intention</strong></td>
<td>Perceived likelihood of performing behaviour</td>
<td>Are you likely or unlikely to (perform the behaviour)?</td>
</tr>
<tr>
<td><strong>Attitude</strong></td>
<td>Personal evaluation of the behaviour</td>
<td>Do you see (the behaviour) as good, neutral, or bad?</td>
</tr>
<tr>
<td><strong>Subjective Norm</strong></td>
<td>Beliefs about whether key people approve or disapprove of the behaviour; motivation to behave in a way that gains their approval</td>
<td>Do you agree or disagree that most people approve of/disapprove of (the behaviour)?</td>
</tr>
<tr>
<td><strong>Perceived Behavioural Control</strong></td>
<td>Belief that one has, and can exercise, control over performing the behaviour</td>
<td>Do you believe (performing the behaviour) is up to you, or not up to you?</td>
</tr>
</tbody>
</table>

With regards to cancer screening, the *attitude* construct reflects an individual’s desire to have the cancer detected early and belief that a screening behaviour will lead to early detection of cancer. *Subjective norms* reflect the social pressure an individual feels to be screened for cancer. This pressure arises from the perceived expectations from others such as family, friends, and colleagues who may encourage or discourage cancer screening, and an individual’s desire to comply with these expectations. *Perceived behavioural control*, similar to self-efficacy, reflects the individual’s belief in his or her ability to perform the cancer screening behaviour in the presence of constructive or obstructive factors.

The Theory of Planned Behaviour can potentially predict cancer screening behaviours such as initiation and continued screening by mammograms and Pap tests.\textsuperscript{26-31} In these studies, “Perceived Behavioural Control” was most associated with intention to perform a behaviour. When examining actual performance of a behaviour, existing and perceived barriers must also be considered.\textsuperscript{32,33}

**The Stages of Change (Transtheoretical) Model**

A third individual behaviour change model frequently mentioned in the literature is the Stages of Change model, also known as the Transtheoretical Model, developed by Prochaska and DiClemente (Figure 4).\textsuperscript{34} The model approaches behaviour change as a process in which a person moves through five different stages: *precontemplation, contemplation, preparation, action, and maintenance*. The person can relapse into an earlier stage at any point in the process. Table 6 defines the stages in the model and presents potential behaviour change strategies for individuals in that stage. Behavioural interventions can be designed to meet the needs of individuals at different stages.
Figure 4: Stages of Change Model\textsuperscript{34}

Table 6: Stages and Change Strategies in the Stages of Change Model\textsuperscript{2,34}

<table>
<thead>
<tr>
<th>Stage</th>
<th>Definition</th>
<th>Potential Change Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precontemplation</td>
<td>No intention of taking action within the next six months</td>
<td>• increase awareness of need for change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• personalize information about risks and benefits</td>
</tr>
<tr>
<td>Contemplation</td>
<td>Intends to take action in the next six months</td>
<td>• motivate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• encourage making specific plans</td>
</tr>
<tr>
<td>Preparation</td>
<td>Intends to take action within the next thirty days and has taken some behavioural steps in this direction</td>
<td>• assist with developing and implementing concrete action plans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• help set gradual goals</td>
</tr>
<tr>
<td>Action</td>
<td>Has changed behaviour for less than six months</td>
<td>• assist with feedback, problem solving, social support, and reinforcement</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Has changed behaviour for more than six months</td>
<td>• assist with coping, reminders, finding alternatives, avoiding slips/relapses (as applicable)</td>
</tr>
</tbody>
</table>

The Stages of Change model is particularly popular when focusing on addictive behaviours, however, a number of studies in the literature have based cancer screening promotion interventions on this model.\textsuperscript{35-42} The model is used for identifying appropriate strategies for individuals depending on where they are in the Stages of Change process. For example,
convincing participants who are in the pre-contemplation or contemplation stage to be screened requires more intensive interventions than ensuring that participants in the preparation stage to be screened. As well, though participants in the action and maintenance stage are practicing screening, ensuring screening behaviour is sustained for those in the action stage requires different interventions than for those in the maintenance stage. The model is also used to determine if participants who have not adopted screening after the interventions have shown progress through the model and what additional support they may need in order to adopt the behaviour. In other words, though a participant may not have engaged in screening after the intervention, the intervention may have helped that participant move from the pre-contemplation or contemplation stage to the preparation stage.
References


