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COMMENTARY

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Effective risk communication to promote behavioral change in patients at elevated risk for breast cancer based on the Health Belief Model

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Modifiable factors associated with increased breast cancer risk include obesity, low physical activity levels, and alcohol consumption; however, few women at elevated breast cancer risk follow a risk-reducing lifestyle. In addition, although chemoprevention lowers risk by ~50% in high-risk women, <1% of women aged 35-79 years who were eligible for chemoprevention in 2010 actually took it.[1] These disparities present a challenge and opportunity for healthcare providers to improve their approach toward encouraging behavioral changes that will improve breast health. Application of the Health Belief Model (HBM) may provide insight into guiding such improvements.

The HBM is a theory of health behavior that focuses on factors within the individual that influence behavioral change and is based on the assertion that health-seeking behavior is influenced by one's perception of a threat and the value associated with actions aimed at reducing that threat.[2] In this commentary, the HBM will be applied to breast cancer risk, with the goal of improving communication and promotion of healthy lifestyle changes. Each component of the HBM, relevance to breast cancer risk, and potential applications for effective communication are summarized in Table 1.

The HBM predicts that higher perceived threat leads to higher likelihood of engagement in health-promoting behaviors.[2] A woman's perceived threat of breast cancer is derived from a combination of her perceived susceptibility and severity of developing the disease. A recent study showed that as perceived threat increased, so did willingness to undergo invasive procedures.[3] For example, when asked

TABLE 1 Application of the health belief model to breast cancer risk communication

Concept	Definition and examples	Application to encourage reducing behaviors
Perceived Susceptibility	Beliefs about chances of getting breast cancer (eg, knowledge of family history of disease or mutation)	Address perception of breast cancer susceptibility Heighten accuracy of perceived risk [eg, encourage genetic testing for patients with strong family history of breast or ovarian cancer]
Perceived Severity	Understanding of seriousness of breast cancer (eg, whether life-threatening or will cause disability/pain)	Educate patient about consequences of breast cancer diagnosis (eg, how will breast cancer affect lifespan/QOL)
Perceived benefits	Views regarding benefit of behavioral changes (eg, reduces cancer risk, increases QOL)	Define behavioral changes (eg, weight reduction) Specify short- and long- term benefits of each action
Perceived barriers	Views regarding obstacles preventing/discouraging behavioral changes/reduced risk (eg, lack of knowledge of chemoprevention, cost of healthier foods, social pressures)	Identify personal barriers and reduce through incentives, reassurance, and assistance (eg, address diet and nutrition as affected by patient's income)
Cues to action	Events, people, or things that motivate behavioral change (eg, media, physician's advice, a family member's death due to breast cancer, activity tracker)	Relate patient's health to relationships with loved ones (eg, encourage family members to support patient with healthful diet changes) Remind to engage in healthful behaviors
Self-efficacy	Confidence that risk-reducing behavior can be practiced correctly and effectively (eg, exercising with awareness and knowledge; understanding healthier vs. calorie-dense foods)	Provide guidance on practice of risk-reducing behaviors and resources (eg, provide brochure with exercise instructions and nutrition information)

to assume that their lifetime breast cancer risk was 60%, 75% said they would take chemoprevention, and 60% would undergo prophylactic mastectomy. If women were told their risk was 20%, <30% would take chemoprevention, and <30% would undergo a prophylactic mastectomy. Thus, a good understanding of one's breast cancer risk is important in determining which preventive interventions a woman would be willing to undergo.

The HBM also addresses perceived benefits and barriers to taking action.[2] Numerous clinical trials have shown that chemoprevention decreases risk by ~50%,[1] and a number of lifestyle behaviors are also associated with decreased breast cancer risk. A recent multinational study found that the risk of postmenopausal breast cancer decreased by 3% for each one point increase in a healthy lifestyle index score, which included diet, physical activity, smoking, alcohol consumption, and BMI.[4] This information could be a powerful motivator for lifestyle changes.

Barriers to adopting behavior modifications are also significant and may be affected by demographic factors, culture, education, skill levels, and motivation to take action. For example, many women in the USA do not take chemoprevention because they do not know that chemoprevention decreases risk, and they may also fear the side effects of the medications.[1] Barriers to increasing physical activity include lack of enjoyment or knowledge on how to exercise, self-consciousness during exercise, and frustration about how long it takes for weight loss to occur.[5] Additional barriers to maintaining a healthy BMI include higher cost and lower palatability for "healthy" foods and psychosocial factors like stress-related binge eating.[6] Barriers to decreasing alcohol consumption include alcohol dependence, social pressures, and reluctance to give up the induced mood effects.[7] A person's perceived benefits must outweigh the barriers in order for them to adopt lifestyle changes.

Even if a patient understands her disease risk and benefits of an intervention, she often needs a reason or trigger to promote behavioral change and confidence in her knowledge to properly execute the change. In the HBM, these two factors are expressed through cues to action and self-efficacy. Examples of cues to action relevant to reducing breast cancer risk are diagnosis of a family member with breast cancer, media reports, mass media campaigns, a personal health scare, and communication from a health provider. These cues to action offer a teachable moment wherein health provider intervention may be most effective.

Physicians can improve patients' accuracy of disease perceptions and educate them on risk reduction methods. For example, discussion of weight management is a critical cue to action but is not consistently implemented by health providers, and the absence of this discussion may endorse poor health habits.

In another study, physician advice was cited by 30% of patients with unilateral breast cancer as the main reason for choosing contralateral prophylactic mastectomy (CPM). Interestingly, women whose physicians first initiated discussion of CPM before they did themselves experienced less regret with their decision.[8] Many factors surrounding physician communication contribute to patients' responsiveness to recommendations of prophylactic surgery, including physician's tone and sensitivity, presentation of possible alternatives to surgery, and timing of the communication.[9]

Self-efficacy is achieved when a patient has confidence that she can practice a risk-reducing behavior correctly and effectively. This confidence is key in improving lifestyle behaviors,[2] and patient education and perceived physician support, or a physician's recommendation to adopt a behavior, can be very effective in increasing self-efficacy. In addition, physician communication behaviors that demonstrate attentiveness and empathy, such as listening, letting the patient ask questions, giving information in a precise manner, and ability to respond to the patients' emotions, are also associated with higher self-efficacy.[10]

Using the HBM, we described the importance of creating an accurate perception of severity and susceptibility of disease through interactions with physicians and other healthcare providers. We also showed the importance of addressing barriers, benefits, self-efficacy, and how to act upon certain cues to action. Using the HBM as a guide, physicians may be better able to promote risk-reducing behavioral modifications in their patients at risk for breast cancer.

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