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Review Article

Health Behavioural Theories and Their Application to Women's Participation in Mammography Screening: A Narrative Review

Olanrewaju Lawal, MSc^{*}, Fred Murphy, PhD, Peter Hogg, PhD and Julie Nightingale, PhD

ABSTRACT

The most effective method of detecting breast cancer among asymptomatic women is by mammography screening. Most countries have this preventive measure in place for women within their society; however, most of these programs struggle with attendance. This article discusses four health behavioural theories and models in relation to mammography screening that may explain the factors affecting women's participation, including the health belief model, theory of planned behaviour, trans-theoretical model, and the theory of care seeking behaviour. In summary, analysis of these theories indicates that the theory of care seeking behaviour has value for exploring these factors because of its sensitivity to socioeconomic differences that exist among women in society and because it has a broader construct (such as habit and external factors) compared to the other health behavioural theories.

RÉSUMÉ

La mammographie de dépistage est la méthode la plus efficace pour la détection du cancer du sein chez les femmes asymptomatiques. Bien que cette méthode de détection soit en place dans la plupart des pays, la plupart de ces programmes continuent d'avoir de la difficulté à susciter la participation des femmes. Cet article présente quatre théories et modèles comportementaux en santé, en lien avec la mammographie de dépistage, incluant le modèle des croyances en matière de santé, la théorie du comportement planifié, le modèle trans-théorique et la théorie de la recherche des soins, qui peuvent expliquer les facteurs ayant une incidence sur la participation des femmes aux programmes de mammographie de dépistage. Ceci résulte de la sensibilité aux différences socio-économiques qui existent entre les femmes dans la société et de la présence d'un construct plus large (comme l'habitude et les facteurs externes) comparative-ment aux autres théories comportementales en matière de santé.

Introduction

Breast cancer is the leading cause of death among women worldwide [1]. It is the second most common cancer, with about 1.7 million new cases diagnosed worldwide in 2012 [2]. The incidence of breast cancer varies in different geographical locations, with Western Europe reporting the highest incidence and middle Africa reporting the lowest incidence [1]. Higher mortality rates, however, are found within the African continent, with more than half of the women found to have had breast cancer dying of the condition [1]. The high mortality rate in these regions could be associated with factors such as late presentation for diagnosis and treatment; inadequate diagnostic and treatment facilities; and poor knowledge of and lack of participation in the breast cancer screening programs, where available [3].

For a screening program to be effective in reducing the mortality rate of women with breast cancer, it has to record both a high participation rate and a high detection rate of

breast lesions [4]. However, even developed nations with established mammography screening programs struggle to encourage attendance. The UK Health and Social Care Information Centre [5] shows that even with the UK Government's effort to ensure that at least 70% of eligible women participate regularly in the mammography screening program, this target has not been achieved among women living in London, with the black population being under-represented [6]. The issue of some minority groups being under-represented in mammography screening programs has also been reported in several other studies conducted in the United States [7], though the screening programs in these countries cannot be directly compared because of the varied characteristics of these programs [8].

The aim of this article is to explore a range of health behavioural theories that could be applied to mammography screening. Health behaviour theories have been developed to predict reasons why people choose to participate or not participate in health promotion programs. However, only a few of these theories have relevance to mammography screening because of their construct validity [9–11] because many of them were developed for different settings and purposes.

^{*} Corresponding author: Olanrewaju Lawal, MSc, School of Health Sciences, University of Salford, Greater Manchester M54WT, United Kingdom.
E-mail address: roal4u@yahoo.com (O. Lawal).

Understanding the relative merits and limitations of these theories might inform future mammography participation research design, and application of strategies supported by these theories within mammography screening programs might also improve women's participation.

Painters et al [12] identify that the health belief model, trans-theoretical model, theory of planned behaviour, and social cognitive theory are the most frequently used health behavioural theories. However, an additional theory, the theory of care seeking behaviour, was developed specifically to explore the factors affecting women's participation in mammography screening programs [13, 14]. The health behaviour theories can be classified into two groups: the first group focuses on how individual factors predict a person's health behaviour and the second group focuses on how society influences a person's health behaviour. In this second group lies the social cognitive theory focusing on how the society, social interactions, and the media influence an individual's participation in a health promotion program. However, this article provides an overview of the four other theories that focus on individual, rather than societal factors to predict or explain women's health behaviour, in the context of mammography screening.

The Four Theories

A theory is a set of statements or principles devised to explain a group of facts or phenomena. Many scientific

theories have been repeatedly tested and can be used to make predictions about natural phenomena. The components of a theory are known as constructs, and mathematical or systematic relationships between a set of constructs (explanatory variables) are used to explain its assumptions.

This narrative review discusses the health behavioural theories that have been used in mammography screening. Relevant articles were drawn from databases including Science Direct, MEDLINE, and Google Scholar, using "mammography screening" and "health behaviour" as the search terms. The key constructs of the primary health behavioural theories are compared and contrasted in Table 1 and discussed below.

Main Feature of the Theories

The oldest of the four theories is the health belief model. It was developed by social psychologists Hochbaum, Rosenstock, and Kogels in the 1950s [27] to explain and predict the health behaviour of individuals by focusing on the beliefs and attitude of the individuals [9]. These researchers set out to investigate the factors responsible for the failure of a free tuberculosis screening program in the USA [28]. Since then, this model has been used to explain short- and long-term health behaviours, including mammography screening program attendance [29]. The model assumes that a woman will participate in mammography screening if:

Table 1
Comparison of the Health Behavioural Theories that Explore women's Behaviour Toward Mammography Screening

Characteristics	Health Belief Model	Theory of Planned Behaviour	Trans-Theoretical Model	Theory of Care Seeking Behaviour
Main features	<ul style="list-style-type: none"> • Developed by Hochbaum, Rosenstock, and Kogels in the 1950s. • Constructs are: <ul style="list-style-type: none"> ▪ Perceived susceptibility ▪ Perceived severity ▪ Perceived barrier ▪ Perceived benefit ▪ Self-efficacy ▪ Cue to action 	<ul style="list-style-type: none"> • Developed by Ajzen and Fishbein in 1980. • Constructs are: <ul style="list-style-type: none"> ▪ Attitude ▪ Subjective norm ▪ Perceived behavioural control ▪ Intentions 	<ul style="list-style-type: none"> • Developed by James Prochaska in 1977. • Constructs are; <ul style="list-style-type: none"> ▪ Stages of change ▪ Processes of change ▪ Decisional balance ▪ Self-efficacy 	<ul style="list-style-type: none"> • Developed by Lauver in 1992. • Constructs are: <ul style="list-style-type: none"> ▪ Affect ▪ Belief ▪ Habit ▪ Norms ▪ Clinical and socio-economic factors ▪ External factors
Advantage	It has a construct that explores the trigger to health behaviour, which is the cue to action.	The addition of perceived behavioural control as a construct that helps predicts a woman's adoption of a health behaviour.	It explores women's health behaviour through the stages of change to a healthier behaviour.	It includes broader constructs such as habit, clinical and socioeconomic factor, and external factors.
Limitations	<ul style="list-style-type: none"> • It does not explore the effect of socioeconomic factor on behaviour. • It does not have a construct to explore the effect of habit on behaviour. 	<ul style="list-style-type: none"> • Intention does not always lead to a person performing health behaviour. • It also does not explore the effect of socioeconomic factor on behaviour. 	<ul style="list-style-type: none"> • Inconsistent findings noticed among studies that evaluated the relationship between the processes and stages of change. 	<ul style="list-style-type: none"> • The low use of theory in behavioural studies, to explore women's health behaviour toward mammography screening
Application in mammography screening program literature	Women with multiple sclerosis in the USA [15], Taiwanese women [16], Iranian women [17], Korean women living in USA [18]	American Indian women [19], Australian women [20], women living in the Quebec geographical region of Canada [21], Cypriot women [22]	Women in the USA [23], Muslim women living in USA (Hasnain et al, 2014b), African-American women [24], Greek women [25]	Hmong women in the USA [14], women in the USA [10, 11, 26]

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