EFFECT OF EDUCATION ON PERCEIVED SUSCEPTIBILITY OF BREAST CANCER PREVENTIVE BEHAVIORS IN FEMALE TEACHERS AT SECONDARY SCHOOLS BASED ON HEALTH BELIEF MODE

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Abstract

Background: Breast cancer is the main type of cancer affecting women and the fourth most common cancer mortality cause. Approximately one out of eight women worldwide develop breast cancer. Screening prevention plays a vital role in the early detection of breast cancer and reducing mortality rates.

Materials and Method: True experimental randomized control trial, using a study-control groups approach, is conducted to determine the efficacy of the health beliefs model in changing the belief related to perceived susceptibility of breast cancer preventive behaviors in female teachers at secondary schools in Al-Rusafa District in Baghdad City for the period of September 12th 2023 through February 22nd 2024.

Results: Findings of this study depict that the teachers in the study group had a poor level of perceived susceptibility during the pretest, then they had a good level of preventive activities during posttest 1, and posttest 2.

Conclusions: This study concluded that the positive effects of the health belief model-based education on female teachers' beliefs regarding the perceived susceptibility of breast cancer preventive behaviors.

Key-words: Perceived susceptibility, health beliefs model, breast cancer

Introduction

According to Saadatpour et al. (2017), cancer is regarded as one of the health issues that worries people the most globally. Breast cancer is the second most frequent disease worldwide and the most common in women; yet, because of its generally favorable prognosis, breast cancer has a higher survival rate than other cancers and ranks fifth in terms of cause of death (Bray et al., 2018). According to reports, the prevalence is 29% in the US and accounts for roughly 16% of yearly mortality (Ferlay et al., 2015; Matlabi et al., 2021).

Breast tissue changes and uncontrollably grows can cause breast cancer (BC), which usually manifests as a lump or tumor. Worldwide, it is the most prevalent cancer and the leading cause of death for female patients (Siegel et al., 2022). With 2.1 million cases each year and over half a million deaths in 2018, it is the most common cancer-related condition in the world among female patients in terms of both morbidity and mortality. Although the incidence of breast cancer is higher in wealthy nations, it is rising globally (Alsaraireh & Darawad, 2019).

Globally, 685,000 women died and 2.3 million women received a BC diagnosis in 2020. By the end of 2020, 7.8 million women had received a breast cancer diagnosis within the previous five years. 57% of cancer cases and 65% of cancer deaths occur in low- and middle-income nations, respectively. Due to their early health-seeking behavior, diagnosed cases of breast cancer have a survival rate of over 80% in affluent nations and less than 40% in developing countries (wondmu et al., 2022).

One of the first models to apply behavioral science ideas to health issues and show how behavior and beliefs are related is the Health Belief Model (HBM) (Naji, 2022). And among the psychological theories of health behavior that are applied the most widely.

The health belief model comprises six components: perceived susceptibility and severity, advantages, barriers, cues to action, and self-efficacy. It takes into account both psychological readiness and normative or environmental influences on health behavior (Karim & Naji 2018).

The Health Belief Model's concepts

1. Perceived susceptibility: According to Ahmed et al. (2023), this is an individual's subjective assessment of the likelihood of contracting a disease or sickness.

2. Perceived Severity: This describes how someone feels about how serious it is to get a disease or illness, or how serious it is to treat a disease or illness without treatment (Hlail & Kareem Faraj, 2019).

3. Perceived benefits: According to Naji and Baktash (2019), this is the individual's assessment of the efficacy of different measures that can be taken to either prevent or treat sickness or illness.

4-Perceived hurdles: According to Ismael and Mohammed Noori (2019), perceived barriers are one's thoughts about what stands in the way of carrying out a recommended health intervention.

5-Cue to action – This is the impetus required to start the process of accepting a suggested course of action for health (Abbas & Naji, 2021).

6. Self-efficacy: This is the degree to which an individual believes that they can carry out an action successfully. The most recent addition to the model was made in the middle of the 1980s. A concept included in many behavioral theories, self-efficacy is related to an individual's ability to carry out the intended conduct (Younis & Naji, 2021).

Aim of the Study
The study aimed to determine the efficacy of the health beliefs model in changing the belief related to perceived susceptibility of breast cancer preventive behaviors in female teachers at secondary schools in Al-Rusafa District in Baghdad City.

Research hypothesis
There is a statistically significant in perceived susceptibility concept of the health belief model related to breast cancer preventive behaviors.

METHODS
Research Design:
True experimental randomized control trial, using a study-control groups approach, two group pretest posttest design was adapted.
Research Settings:
The study was conducted at secondary schools at Al-Rusafa District in Baghdad City
Study participants:
Probability simple random sample of (60) female teachers at (60) secondary schools in Al-Rusafa District in Baghdad City. The sample is selected randomly and assigned to the experimental and control groups of (30) teachers each who have the following criteria: a. Female teachers b. Biology teachers.
Tools of Data Collection
Self-report questionnaires are constructed for the purpose of the study. Such instruments are presented as follows:
Part I: Demographic Information
This part consists of the demographic information of age, level of education, and marital status.
Part2: Health Belief Model
This part consists of (36) items about health beliefs related to breast cancer and early detection of breast cancer.
2-1 Perceived Susceptibility:
Perceived susceptibility is comprised of (6) items that measure participants' perceived susceptibility to breast cancer, the responses range from 0 (I don't know) to 2 (I know).
2-2 Perceived Severity:
Perceived severity is comprised of (6) items that measure participants' perceived severity of breast cancer, the responses range from 0 (I don't know) to 2 (I know).
2-3 Perceived Barriers:
Perceived barriers are comprised of (6) items that measure participants' perceived barriers of breast cancer preventive behaviors, the responses range from 0 (I don't know) to 2 (I know).
2-4 Perceived Benefits:
Perceived benefits are comprised of (6) items that measure participants' perceived benefits of breast cancer preventive behaviors, the responses range from 0 (I don't know) to 2 (I know).

2-5 Cues to Action:
Cues to action is comprised of (6) items that measure participants' cues to the action of breast cancer preventive behaviors, the responses range from 0 (I don't know) to 2 (I know).
2-6 Self-Efficacy:
Self-Efficacy is comprised of (6) items that measure participants' self-efficacy of breast cancer preventive behaviors, the responses range from 0 (I don't know) to 2 (I know).
Validity
Content validity of the study instrument is obtained through panel of (15) experts. These experts are (2) faculty members at the College of Medicine/ University of Mosul, (3) faculty members at the College of Nursing/ University of Mosul, (4) faculty members at the College of Nursing/ University of Babylon, and (6) faculty members at the College of Nursing/ University of Baghdad. They are presented with copy of the intervention program and the study instruments and asked to value their content clarity and adequacy. Their responses suggested that the intervention program and the study instruments are clear and adequate
Reliability
The internal consistency method was used to determine the reliability of questionnaire in current study; internal consistency reliability measures the consistency between different items of the instrument. The internal consistency between items was determined by using Cronbach`s alpha coefficient.
The Statistical Package for Social Science Program (IBM SPSS) version 26.0 was applied to calculate the two methods of reliability; a sample of (10) participants was selected randomly.
Pilot study
In order to determine the reliability of the education program and study instrument, a pilot study was conducted by (10) female teachers. Female teachers in the pilot study have the similar criteria of the original study sample. It was conducted at Al-Rusafa District in Baghdad city throughout the period of 3rd January 2024, the sample of the pilot study was excluded from the main study sample.
Ethical Consideration
Female teachers who have participated in the study, have signed consent form for their agreements for the sharing in the study and the participants informed that their participation is voluntary and the information will be treated confidentially and used for the research purposes only.
Data Collection
Data are collected through the use of the study instruments and the application of the pretest-posttest and approach as means of data collection. For the period of September 12th 2023 through February 22nd 2024.
Data Analysis Techniques:
The data were analyzed and interpreted through use of the application of Statistical Package for Social Sciences (SPSS), version 26.0.
The present study uses descriptive statistical data analysis approach of frequency, percentage, mean, total scores, standard deviation and the inferential statistical tests of Cronbach Alpha….

RESULTS

Table (1): Socio-Demographic Characteristics

No.	Characteristics		Study group		Control group	
			F	%	f	%
1	Age (Years)	25 – less than 35	3	10	6	20
		35 – less than 45	17	56.7	13	43.3
		45 and more	10	33.3	11	36.7
		Total	*30*	*100*	*30*	*100*
		M ± SD	*43 ± 3*		*43 ± 2*	
2	Level of education	Diploma	1	3.3	0	0
		Bachelor	25	83.4	28	93.3
		Postgraduate	4	13.3	2	6.7
		Total	*30*	*100*	*30*	*100*
3	Marital status	Unmarried	3	10	2	6.7
		Married	24	80	20	66.7
		Separated	2	6.7	3	10
		Widowed	1	3.3	5	16.6
		Total	*30*	*100*	*30*	*100*

No: Number, f: Frequency, %: Percentage, M: Mean, SD, Standard deviation

This table shows that average age for teachers in the study group refers to 43±3 years and 43±2 years for teachers in the control group; 56.7% of teachers in the study group and 43.3% in the control group seen within age group of 35 – less than 45 year.

The level of education indicates that teachers are graduated with bachelor degree as reported among 83.4% of them in the study group and 93.3% in the control group.

The marital status reveals that 80% of teachers in the study group and 66.7% of teachers in the control group are married.

Table (2): Evaluation of Perceived Susceptibility for Breast Cancer among Teachers in the Study and Control Groups

Susceptibility	Study Group												Control Group											
	Pre-test				Post-test I				Post-test II				Pre-test				Post-test I				Post-test II			
	f	%	M	SD	f	%	M	SD	f	%	M	SD	f	%	M	SD	f	%	M	SD	f	%	M	SD
Low	30	100	6.62	2.157	1	3.3	15.03	2.157	1	3.3	15.07	2.067	30	100	7.67	2.564	30	100	7.90	2.545	30	100	7.85	2.664
Moderate	0	0			1	3.3			1	3.3			0	0			0	0			0	0		
High	0	0			28	93.4			28	93.4			0	0			0	0			0	0		
Total	30	100			30	100			30	100			30	100			30	100			30	100		

f: Frequency, %: Percentage, M: Mean of total score, SD Standard deviation of total score
Low= 6 – 10, Moderate= 10.1 – 14, High= 14.1 – 18

This table indicates that teachers in the study group show low level of susceptibility to breast cancer during the pretest (100%) while they show high level during post-test1 (93.4%), and post-test 2 (93.4%).

The teachers in the control group show low level of susceptibility to breast cancer during the three times of test: pretest (100%), posttest 1 (100%), and posttest 2 (100%).

Table (3): Evaluation of Perceived *Susceptibility for Breast Cancer* among Teachers in the Study and Control Groups

List	Susceptibility for Breast Cancer	Study Group (N=30)						Control Group (N=30)					
		Pre-test		Post-test 1		Post-test 2		Pre-test		Post-test 1		Post-test 2	
		M	Eval.	M	Eval.	M	Eval.	M	Eval.	M	Eval.	M	Eval.
1	I feel very likely to develop breast cancer in the future	1.17	L	2.44	H	2.40	H	1.30	L	1.30	L	1.33	L
2	Not exercising daily can lead to breast cancer	1.10	L	2.27	H	2.80	H	1.17	L	1.27	L	1.28	M
3	If my breast cancer is treated in time I will live a normal life	1.17	L	2.80	H	2.87	H	1.57	L	1.55	L	1.35	L
4	Early diagnosis of breast cancer reduces cancer complications	1.10	L	2.93	H	2.50	H	1.40	L	1.50	L	1.30	L
5	I have a family history of breast cancer, so I'm more likely to get	1.27	L	2.47	H	2.50	H	1.33	L	1.43	L	1.23	L

	breast cancer than the average woman .											
6	If I find painless swelling in my breasts, I'm afraid it could be cancer.	2.43	High	2.40	H	2.50	H	1.20	L	1.30	L	1.20	L

*M: Mean, Eval: Evaluation, **L**: Low= 1 – 1.66, **M**: Moderate= 1.67– 2.33, **H**: High= 2.34 – 3*

Table 3 reveals that the teachers in the study group show low level of susceptibility among almost of items during pre-test while they show high level during posttest 1, and posttest 2. The teachers in the control group show low susceptibility during pretest, posttest 1, and posttest 2.

DISCUSSION
Part 1: Discussion of Teachers' Demographic Characteristics
Throughout data analysis for such characteristics Table (1) the study reveals that the average age for teachers in the study group refers to 43±3 years and 43±2 years for teachers in the control group; more than half of teachers in the study group and more than two fifth in the control group seen within age group of 35 – less than 45 year. Supportive evidence for such findings is presented by Shankar et al. (2015) who revealed that participants mean age was 42 years.

Regarding the level of education, the majority of teachers in the study group and vast majority of them in the control group were graduated with bachelor degree. Supportive evidence for such findings is presented by Attai et al. (2019) who revealed that the majority of participants were graduated with bachelor degree.

Concerning the marital status, the majority of teachers in the study group and more than two thirds of them in the control group are married. Supportive evidence for such findings is presented by Alwan et al. (2019) who revealed that the majority of participants were married.

Part 2: Discussion of Susceptibility for Breast Cancer among Teachers in the Study and Control Groups
The analysis of susceptibility for breast cancer in the study and control groups (Table 2 and 3), indicates that all teachers in the study group show low level of susceptibility to breast cancer during the pretest while the vast majority of them show high level during post-test1, and post-test 2.

All teachers in the control group show low level of susceptibility to breast cancer during the three times of test: pre-test, posttest 1 and posttest 2.

This could be explained as that the perceived susceptibility to breast cancer for teachers in the study group was improved after administering the HBM-based health education.

Supportive evidence for such evaluation is presented in a review of literature which has revealed that after the intervention, the mean differences of the scores of perceived susceptibility significantly higher in the study group compared to the control group (Wondmu et al., 2022; Kadhim & Naji, 2021; Matlabi et al., 2021; Mahmoud et al., 2018; Farma et al., 2014; Rezaeian et al., 2014).

CONCLUSIONS
This study concluded that the positive effects of the health belief model-based education on female teachers' beliefs regarding the perceived susceptibility of breast cancer preventive behaviors.

RECOMMENDATIONS
The study recommends the need to conduct future studies based on the HBM on a large number of the Iraqi population to change people's behavior in the direction of breast cancer.

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