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A STUDY OF THE EFFECTIVENESS OF BREAST SELF-EXAMINATION INTERVENTION PROGRAMS AMONG UNIVERSITY STUDENTS

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ABSTRACT

Background: Breast cancer is the cancer with the highest incidence among women in my country. Students can use this system to observe the stage changes of virtual human breast cancer, so as to encourage them to conduct regular breast self-examination and early detection and early treatment. The purpose of this study is mainly to integrate the "YOU VR Virtual Reality Teaching Human Structure Learning System" education course to assist college students in performing breast self-examination learning effects. **Purpose:** A total of 60 male and female students in the third grade of the nursing department of the university were the research objects. The quasi-experimental design was designed, and the experimental group and the control group were randomly assigned. The contents of the questionnaire included personal attributes, breast self-examination knowledge, and breast self-examination skills. Perform analysis, including percentage, mean, t-test, correlation. **Results:** There are 60 people in the whole study sample, 50 are women (83.3%), 5 people (8.3%) have relatives suffering from breast cancer, 34 people (68%) have regular menstruation, and 34 people (68%) have attended breast self-examination health education courses. 38 people (46.7%), 8 people (13.3%) have regular breast self-examination,he experimental group had an average score of 0.83 (SD=0.11) in the pre-test of breast self-examination knowledge, and an average score of 0.84 (SD=0.09) in the post-test of breast self-examination knowledge. The average score of the control group was 0.79 (SD=0.09), the posttest average score was 0.83 (SD=0.07). The same results were compared before and after the breast self-examination knowledge in the experimental group. Breast cancer was the second most common cancer in Taiwanese women since 2001 (0.50 vs 0.97; t = -4.48; p <0.000); Taiwanese women are the second most likely to develop cancer (0.07 vs 0.97; t = -16.16; p <0.000), which is significantly higher in "posttest" than "pretest". The average score of breast self-examination techniques in the experimental group and the control group (17.10 vs 13.17) (total score 18).In the experimental group, the total comparison of breast self-examination knowledge before and after the test (0.79 vs 0.83; t = -2.39; p <0.05), the "post test" is significantly higher than the "pre test". In the control group, the "posttest" was significantly higher than the "pretest". Indicating that intervention activities are still effective, The VR education training in the experimental group was more effective than the traditional breast self-examination course intervention activities in the control group. The correlation between the "breast self-examination knowledge experimental group posttest" and the "breast self-examination technique score experimental group posttest" facets was highly positively correlated (r =.84, p<0.05); ” and “Breast Self-examination Technique Score Control Posttest” facet showed moderate positive correlation (r =.72 , p < 0.05). There was a moderate positive correlation between the facets of "Breast self-examination technique score control group pre-test" and "Breast self-examination knowledge control group pre-test" (r =.75, p<0.05). **Conclusion:** In this study, through the integration of innovative teaching of virtual reality, breast self-examination knowledge and self-examination technology scores are positively correlated. If it can enhance the awareness of breast self-examination of college students and perform correct breast self-examination techniques regularly, it can be used as a future campus promotion breast self-examination plan.

KEYWORDS: Effectiveness, Breast self-examination, Intervention programs, University students.

INTRODUCTION

The incidence of cancer among women in my country is the first, and the death rate is the fourth. About 10,000 women suffer from breast cancer every year, and about 2,000 women Death from breast cancer poses a great threat to women's health.[1] Taiwan Cancer Registry Data from 2011 to 2013According to the screening data in the database, 85.7% of the cases detected through breast cancer screening are still in stage 0-2, and after appropriate treatment, five years The survival rate of the zeroth stage is 97.5%, the first stage is 95.5%, and the second stage is 89.4%. Therefore, Chinese people still

need to work together to promote breast cancer prevention. The concept of treatment, in order to achieve early detection and early treatment. With breast self-examination, clinical breast examination and mammography Early screening, early detection and early treatment are necessary items to reduce breast cancer mortality for a long time.[2]

In the 1950s, Cushman Haagensen proposed breast self-palpation examination (Breast Self Examination, referred to as BSE), and widely advocated by countries around the world, and in the past few centuries, almost all breast cancers were found by women female self-examination findings. Because breast self-palpation examination is simple and non-radioactive, it is suitable for Comprehensive Implemented in communities or areas with insufficient medical equipment resources, and can increase women's self-health awareness, so women are still is encouraged.[3] 90% of the breast cancers found in women in Taiwan are found due to abnormalities in palpation. Therefore, the average tumor size is 2.7 cm, which is obviously too large compared to 1.5 cm in European and American countries, and the prognosis is naturally not good. Research reports in recent years have also pointed out that whether women check themselves regularly every month does not affect the reduction of breast cancer mortality. However, women can still be reminded to pay attention to their breast health at any time, and seek medical advice immediately if any abnormalities are found; therefore, in addition to self-examination, Regular examinations by specialists and mammography screening are still something every woman should not forget. It can be seen that breast cancer plays an important role in women's health. The surface impact is huge. The advantages of women performing breast self-examination include simplicity, low cost, and regular screening for early detection of tumors, estimated It is estimated that the mortality rate can be reduced by about 18 to 27%. However, a study in Taiwan found that one of the breast cancer patients over the age of 20 and other pro-female, monthly Regularly performing breast self-examination only accounted for 27.2%, and the implementation rate was low.[4] Leakage from the nipple (Especially bloody discharge) is also seen in 75% to 80% of male breast cancer patients. if the cancer has spread Additional symptoms may include breast pain, bone pain, and swollen lymph nodes (Glands) near the breast, usually in the or armpits Around.[5] Highly sensitive screening methods will enable early detection of diseased patients, and early treatment, which can avoid The course of the disease is delayed and the golden period of treatment is missed. Virtual reality (Virtual reality, VR) is the use of computer simulation to generate a three-dimensional virtual world, providing users with simulations of vision and other senses, allowing users to feel as if they are in the scene, and can observe the three-dimensional space instantly and without restrictions things within. When the user moves the location, the computer can immediately perform complex calculations and send back accurate 3D world images to create a sense of presence. From a technical point of view, the virtual reality system has the following three basic characteristics: the three "I" immersion-interaction-imagination (Immersion-interaction-imagination), emphasizing the leading role of people in the virtual system. Virtual reality can define the following concepts: simulation, interaction, immersion, presence and network communication.[6,7] A successful virtual reality environment should have three important chracteristics of interactivity, integration and imagination[8,9] 1. Interactivity: The so-called interactivity refers to the human-computer interaction between the user and the virtual reality through the operation interface. Another major advantage of augmented reality is that it allows users to easily interact with the surrounding environment and communicate with the surrounding people. Have face-to-face communication.[10] 2. Immersion: The so-called immersion (or immersion) means that users can integrate into the 3D virtual environment generated by computer-related software and hardware technologies. Virtual reality is the use of computer-related software and hardware technologies to generate a 3D virtual environment that allows users to "believe it is real". Therefore, it is a successful virtual system that allows users to blend into the virtual environment.[11] 3. Imagination: The so-called imagination means that the production of virtual reality can provide te space for users to imagine. Humans have rich imagination and creativity, and the design of virtual scenes should provide space for users to imagine, so as to create lively themes and enhance users' willingness to use or interest in learning.[12] Additionally, virtual reality can help students learn abstract concepts as they can experience and visualize these concepts in a virtual environment. Compared with the traditional learning process, the virtual reality learning environment promotes active learning and helps students master abstract knowledge.[13] Low-ability learners especially benefit from virtual reality as visualization helps reduce irrelevant cognitive load on learning objectives.[14]

This time, the YOU VR software was used to understand the changes in healthy breasts and breast cancer staging tissue, which encouraged female college students to take breast cancer seriously, and encouraged them to conduct regular breast self-examination, early detection and early treatment. Because the national health insurance mammography examination only provides breast cancer examinations for 44-year-old women, so Female college students regularly perform breast self-examination every month, which is simple and low-cost. Through regular inspections, lumps can be found early and seek medical treatment early. The purpose of this study is mainly to integrate the "YOU VR Virtual Reality Teaching Human Structure Learning System" course to assist college students in performing breast self-examination cognition and skills. Through this system, learners can observe the changes of virtual human breast cancer staging, enhance the health belief of breast cancer screening, promote

regular breast self-examination, and early detection and early treatment.

MATERIALS AND METHODS

Research design

This study is a quasi-experimental design before and after the test design, randomly assigned the experimental group and the control group, both the experimental group and the control group have breast self-examination course teaching; the experimental group conducted VR education training intervention; before education Conduct pre-test and post-test after educational intervention to understand the effect of educational intervention. The subjects of the study were 60 male and female third-year students aged 20 and above in the nursing department of the university. In this study, quantitative questionnaires were used as measurement tools, including personal attributes, breast self-examination knowledge, and breast self-examination techniques. Analysis was performed with SPSS 22.0 software, including percentage, mean, t-test, and correlation. The research architecture is shown in Figure 3.

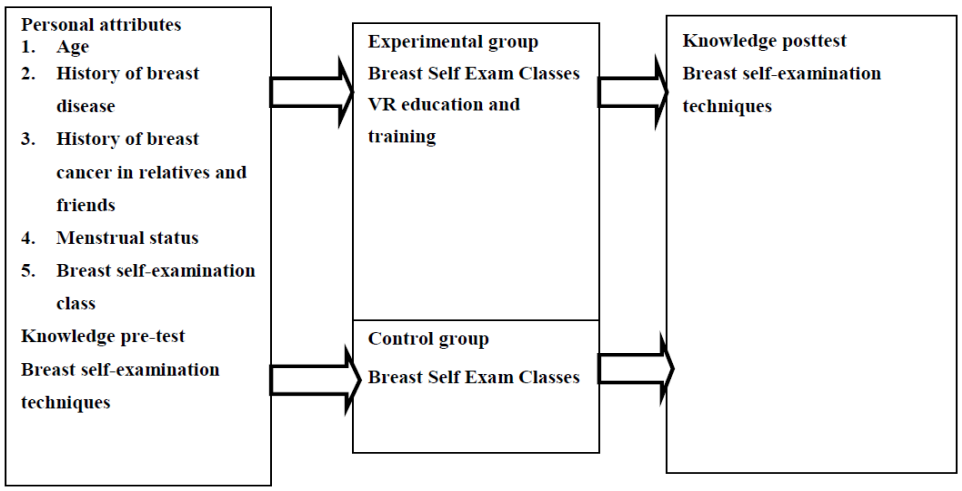

Figure 3: Research architecture diagram.

Research ethics

In this study, through IRB (CRREC-107-073), the researcher went to the classroom to explain the purpose of the study to the nursing students according to the agreed time, and after seeking the consent of the research subjects, signed the consent form, issued it, and the subjects filled in and returned the relevant information, and Explain that some of the virtual reality pictures or questions you saw during the research, if you feel uncomfortable, you can stop at any time, quit the discussion or research at any time, if you feel psychological discomfort, we will arrange counseling center teachers to assist you , when you choose not to participate in the research, it will not affect any of your course grades. All research records will be properly kept and kept confidential, locked and kept in a file cabinet, and the retention period is 3 years after the end of the research, and will be destroyed after 3 years.

RESULTS

Personal attributes

There are 60 people in the whole research sample, 50 women (83.3%), all of them have never suffered from breast disease, 5 people (8.3%) have relatives who have breast cancer, and 38 people (63.3%) have attended breast self-examination hygiene education courses38(63.3), and 8 (13.3%) had regular breast self-examination (Table 1).

Table 1: Personal attributes.

Variable	N (%)
Sex	
Male	10(16.7)
Female	50(83.3)
Have you been diagnosed with breast disease by a physician	
yes	0(0.0)
no	60 (100.0)
Has anyone in your family ever had breast cancer	
yes	55(91.7)
no	5(8.3)
Have you attended breast self-examination hygiene education courses?	
yes	38(63.3)

no	22(36.7)
Have you had regular breast self-exams in the past	
yes	8(13.3)
no	52(86.7)

Breast self-examination knowledge table (experimental group, control group)

n the experimental group, in the pre-test of breast self-examination knowledge, the average score was 0.83 (SD=0.11), the average score of each sub-item ranged from medium to high level of agreement (M=0.47-1.00), and the highest average was "Men will not suffer from breast cancer" (M=1.00) and "Symptoms of breast cancer may have breast appearance changes such as sunken or protruding" (M=1.00). The lowest average was "Breast cancer is diagnosed and treated in general surgery" (M=0.47). In the post-test of breast self-examination knowledge, the average score was 0.84 (SD=0.09), and the average score of each sub-item ranged from medium to high level of agreement (M=1.00-0.73), with the highest average being "Men will not suffer from breast cancer"; The advantages of breast self-examination include simplicity, low cost, and early detection of tumors through regular inspections"; "Families with breast cancer patients, especially those with first-degree relatives such as mothers or sisters who have had the disease are high-risk groups"; "Symptoms of breast cancer There may be changes in the appearance of the breast, such as depression or bulging"; "Breast fibroadenoma is the most common benign tumor in mature women"; "Because breast cancer is early and often painless, it is often ignored"; "Breast cancer only occurs Women over the age of 40"; "Paper workers, painters, and furniture workers have a higher risk of male breast cancer, which may be related to the fact that the work environment is rich in alkylphenol compounds that can cause hormone disorders in the body" and "Doing Check axillary lymph nodes during breast self-exam" (M=1.00). The lowest mean was "breast cancer was diagnosed and treated in general surgery" (M=0.73) (Table 2).

In the control group, the average score of breast self-examination knowledge pretest was 0.79 (SD=0.09), the average score of each sub-item ranged from low to high agreement (M=0.07-1.00), and the highest average was "paper workers, painters, Furniture workers also have a higher risk of male breast cancer, which may be related to the fact that the working environment is rich in alkylphenol compounds that can cause hormone disorders in the body" and "Axillary lymph nodes should be checked when doing breast self-examination" (M=1.00) . The lowest average is "Breast cancer is the second most common cancer among Taiwanese women since 2001" (M=0.07). In the post-test of breast self-examination knowledge, the average score was 0.83 (SD=0.07), and the average score of each sub-item ranged from medium to high level of agreement (M=0.40-1.00). Such as depression or protrusion"; "Breast fibroadenoma is the most common benign tumor in mature women"; "Because breast cancer is in the early stage and is often painless, it is often ignored" and "Axillary lymph nodes should be checked during breast self-examination "(M=1.00). The lowest average was "the incidence ratio of male to female breast cancer is 1:1000" (M=0.40) (Table 2).

The results of the pre- and post-test breast self-examination knowledge of the experimental group showed that breast cancer was the second most common cancer among Taiwanese women since 2001 (0.50 vs 0.97; t = -4.48; p <0.000); the incidence ratio of male to female breast cancer was 1: 1000 (0.53 vs 0.93; t = -3.53; p <0.001); breast cancer is diagnosed and treated in general surgery (0.47 vs 0.73; t = -2.50; p <0.05), the "post-test" is more significant than the "pre-test" higher (Table 2).

The results of pre- and post-test breast self-examination knowledge in the control group show that breast cancer is the second most common cancer in Taiwanese women since 2001 (0.07 vs 0.97; t = -16.16; p <0.000); breast cancer symptoms may have breast appearance changes Such as depression or protrusion (0.87 vs 1.00; t = -2.11; p <0.05); because breast cancer is early and often painless, it is often ignored (0.73 vs 1.00; t = -3.25; p <0.001); For the treatment of male breast cancer, modified mastectomy was the most commonly performed procedure by physicians (0.70 vs 0.93; t = -2.54; p <0.05); breast cancer occurred only in women over the age of 40 (0.97 vs 0.70; t = 2.80 ; p <0.001), significantly higher in the "post-test" than "pre-test". In the control group, the sum of pre- and post-test breast self-examination knowledge (0.79 vs 0.83; t = -2.39; p <0.05) was significantly higher in the "post-test" than in the "pre-test" (Table 2).

Table 2 Breast self-examination knowledge table N=60 (experimental group, control group)

Variable	Experimental group N=30					Control group N=30				
	Pretest N(%)		Posttest N(%)			Pretest N(%)		Posttest N(%)		
	Correct	Mean (standard deviation)	Correct	Mean (standard deviation)	t-value	Correct	Mean (standard deviation)	Correct	Meam (standard deviation)	t-value
1. Men don't get breast cancer	30(100.0)	1.00(0.00)	30(100.0)	1.00(0.00)	0.00	28(93.3)	0.94(0.25)	29(96.7)	0.97(0.18)	-0.57

2. Breast cancer has been the second most common cancer among Taiwanese women since 2001	15(50.0)	0.50(0.51)	29(96.7)	0.97(0.18)	-4.48***	2(6.7)	0.07(0.25)	29(96.7)	0.97(0.18)	-16.16***
3. Every woman should self-examine her breasts within one week after menstruation	26(86.7)	0.87(0.35)	27(90.0)	0.90(0.31)	-0.57	26(86.7)	0.87(0.35)	28(93.3)	0.93(0.25)	-1.00
4. The advantages of performing breast self-examination include simplicity, low cost and early detection of tumors by regular examination	29(96.7)	0.97(0.18)	30(100.0)	1.00(0.00)	-1.00	29(96.7)	0.97(0.18)	27(90.0)	0.90(0.31)	1.44
5. Families with breast cancer patients, especially first-degree relatives such as mothers or sisters who have had the disease are high-risk groups	29(96.7)	0.97(0.18)	30(100.0)	1.00(0.00)	-1.00	25(83.3)	0.83(0.38)	25(83.3)	0.83(0.38)	0.00
6. People with early menopause (under 11 years old) or late menopause (after 55 years old) are high-risk groups	27(90.0)	0.90(0.31)	28(93.3)	0.93(0.25)	-0.44	24(80.0)	0.80(0.41)	25(83.3)	0.83(0.38)	-0.33
7. The most common symptom of male breast cancer is the appearance of breast lumps	26(86.7)	0.87(0.35)	28(93.3)	0.93(0.25)	-1.00	27(90.0)	0.90(0.31)	28(93.3)	0.93(0.25)	-0.57
8. No smoking, no or less alcohol consumption and more fatty	28(93.3)	0.93(0.25)	26(86.7)	0.87(0.35)	0.81	23(76.7)	0.77(0.43)	21(70.0)	0.70(0.47)	1.44

food intake can prevent breast cancer										
9. The incidence ratio of breast cancer between men and women is 1:1000	16(53.3)	0.53(0.51)	28(93.3)	0.93(0.25)	-3.53**	9(30.0)	0.30(0.47)	12(40.0)	0.40(0.50)	-1.00
10. Symptoms of breast cancer may include changes in the appearance of the breast such as sunken or protruding	30(100.0)	1.00(0.00)	30(100.0)	1.00(0.00)	0.00	26(86.7)	0.87(0.35)	30(100.0)	1.00(0.00)	-2.11*
11. Breast fibroadenoma is the most common benign tumor in mature women	27(90.0)	0.90(0.31)	30(100.0)	1.00(0.00)	-1.80	25(83.3)	0.83(0.38)	30(100.0)	1.00(0.00)	-2.41
12. Because breast cancer is early and often painless, it is often overlooked	29(96.7)	0.97(0.18)	30(100.0)	1.00(0.00)	-1.00	22(73.3)	0.73(0.45)	30(100.0)	1.00(0.00)	-3.25**
13. For the treatment of male breast cancer, modified mastectomy is the most commonly used method by doctors	26(86.7)	0.87(0.35)	28(93.3)	0.93(0.25)	-0.81	21(70.0)	0.70(0.47)	28(93.3)	0.93(0.25)	-2.54*
14. Breast cancer only occurs in women over 40	29(96.7)	0.97(0.18)	30(100.0)	1.00(0.00)	-1.00	29(96.7)	0.97(0.18)	21(70.0)	0.70(0.47)	2.80**
15. Paper workers, painters, and furniture workers also have a higher risk of male breast cancer, which may be related to The work environment is rich in alkylphenol compounds that can cause	28(93.3)	0.93(0.25)	30(100.0)	1.00(0.00)	-1.44	30(100.0)	1.00(0.00)	29(96.7)	0.97(0.18)	1.000

hormone disorders in the body										
16. Check your axillary lymph nodes during your breast self-exam	29(96.7)	0.97(0.18)	30(100.0)	1.00(0.00)	-1.00	30(100.0)	1.00(0.00)	30(100)	1.00(0.00)	0.00
17. Breast cancer is diagnosed and treated in general surgery	14(46.7)	0.47(0.51)	22(73.3)	0.73(0.45)	-2.50*	22(73.3)	0.73(0.45)	25(83.3)	0.83(0.38)	-1.14
mean (Standard deviation)	0.83(0.11)		0.84(0.09)		-0.22	0.79(0.09)		0.83(0.07)		-2.39*

p<.05 ; ** p<.01 ; ***p<.001

Breast self-examination technique score (Experimental group, control group)

The average scores of breast self-examination techniques in the experimental group and the control group (17.10 vs 13.17) (total score 18), the average scores of each sub-item of breast self-examination techniques in the experimental group ranged from medium to high agreement (M=1.73-2.00), and the average was the highest For "When you stand in front of the mirror, you can observe whether the nipple is sunken or wrinkled when you stand in front of the mirror with your hands drooping naturally or when you raise your hands up." and "Pinch the left nipple lightly with your index finger to observe whether there is secretion flowing out." (M=2.00), and the lowest average was "When you stand in front of the mirror with your hands hanging down naturally and your hands raised up, you can observe whether the skin color of the breasts changes" (M=1.73). The average scores of each sub-item of the breast self-examination technique in the control group ranged from medium to high levels of agreement (M=0.87-1.93), and the highest average score was "Pinch the left nipple gently with the index finger to observe whether there is secretion or not" (M=1.93), and the lowest average was "When you stand in front of the mirror with your hands drooping naturally and your hands raised up, you can observe whether the breasts are sunken or wrinkled." (M=0.87) (Table 3).

The comparison results of the breast self-examination technology control group showed that "when you stand in front of the mirror with your hands naturally drooping and your hands raised, you can observe whether the breasts are sunken and wrinkled." (1.73 vs 0.87; t = 3.88; p <0.000); "When you stand in front of the mirror, you can observe whether the skin color of the breast appearance changes when you stand in front of the mirror with your hands hanging down naturally or when you raise your hands up." (2.00 vs 0.93; t = 5.76; p <0.000); "When you Standing in front of the mirror, you can observe the appearance of the breasts, whether the breasts and nipples are symmetrical, and the size changes when the hands are naturally drooping and when the hands are raised." (1.93 vs 1.00; t = 4.73; p <0.000); Use moderate pressure to carefully press each part of the room (at least four circles), including the lower part of the clavicle, the midline of the sternum, the lower edge of the ribs and the axilla, and feel whether there is any lump." (1.97 vs 1.53; t = 2.98; p <0.001); " The total score of breast self-examination technique" (17.10 vs 13.17; t = 3.82; p <0.000), was significantly higher in the "experimental group" than in the "control group" (Table 3).

Table 3 Breast self-examination technique score sheet (experimental group, control group)
N= 60

Items	Experimental group				Control group				t-value
	N(%) completely Correct N(%)	N(%) part Correct N(%)	Incorrect	mean (standard deviation)	N(%) completely Correct N(%)	N(%) part Correct N(%)	Incorrect	mean (standard deviation)	
	2	1	0		2	1	0		
1. When you stand in front of the mirror, you can observe whether	26(86.7)	0(0)	4(13.3)	1.73 (0.69)	13(43.3)	0(0)	17(56.7)	0.87(1.00)	3.88***

the breasts are sunken or wrinkled when your hands are naturally drooping and your hands are raised.									
2. When you stand in front of the mirror, you can observe whether there is any change in the skin color of the breast appearance when your hands are naturally drooping and your hands are raised.	30(100.0)	0(0)	0(0)	2.00 (0.00)	14(46.7)	0(0)	16(53.3)	0.93(1.01)	5.76***
3. When you stand in front of the mirror, you can observe the appearance of the breasts, whether the breasts and nipples are symmetrical, and the size changes when your hands are naturally drooping and your hands are raised.	29(96.7)	0(0)	1(3.3)	1.93 (0.37)	15(50.0)	0(0)	15(50.0)	1.00(1.02)	4.73***
4. Put the right hand	26(86.7)	4(13.3)	0(0)	1.87 (0.35)	22(73.7)	8(26.7)	0(0)	1.73(0.45)	1.29

behind the head, straighten the index finger, middle finger, and ring finger of the left hand together, press, spiral, and slide from the outer nipple in a clockwise direction through the tactile sensation of the finger pulp way to check.									
5. Carefully press each part of the breast (at least four circles) from the outside to the nipple, including the lower part of the clavicle, the midline of the sternum, the lower edge of the ribs and the armpit, and feel for any lumps.	26(86.7)	4(13.3)	0(0)	1.87 (0.35)	20(66.7)	10(33.3)	0(0)	1.67(0.48)	1.85
6. Gently pinch the right nipple with the thumb of the index finger to observe whether there is	29(96.7)	1(3.3)	0(0)	1.97 (0.18)	27(90.0)	1 (3.3)	2(6.7)	1.83(0.53)	1.30

secretion flowing out.									
7. Put the left hand behind the head, straighten the index finger, middle finger, and ring finger of the right hand together, use the touch of the finger pulp to follow the clock direction, and press, spiral, and slide from the outer nipple way to check.	24(80.0)	5(16.7)	1 (3.3)	1.77 (0.50)	22(73.3)	6(20.0)	2(6.7)	1.67(0.61)	0.70
8. Carefully press each part of the breast with moderate pressure from the outside to the nipple (at least four circles), including the lower part of the clavicle, the midline of the sternum, the lower edge of the ribs and the armpit, and feel for any lumps.	29(96.7)	1(3.3)	0(0)	1.97 (0.18)	21(70.0)	4(13.3)	5(16.7)	1.53(0.78)	2.98**
9. Gently pinch the left nipple with the	30(100.0)	0(0)	0(0)	2.00 (0.00)	29(96.7)	0(0)	1 (3.3)	1.93(0.37)	1.00

thumb of the index finger to observe whether there is secretion flowing out.									
分數	17.10 (1.06)				13.17 (2.51)				
Mean (standard deviation)	94.90(5.89)				73.30(13.82)				3.82***

p<.05；** p<.01；p<.001***

Correlation among constructs of breast self-examination knowledge and breast self-examination technique scores before and after the experimental group

The correlation between the "breast self-examination knowledge experimental group posttest" and the "breast self-examination technique score experimental group posttest" facets was highly positively correlated (r =.84, p<0.05); " and "Breast Self-examination Technique Score Control Posttest" facet showed moderate positive correlation (r =.72, p<0.05). There was a moderate positive correlation between the facets of "Breast self-examination technique score control group pre-test" and "Breast self-examination knowledge control group pre-test" (r =.75, p<0.05) (Table 4).

Table 4: Correlation table of breast self-examination knowledge and breast self-examination technique scores in the experimental group and control group.

facet	Breast self-examination knowledge experimental group pre-test	Breast self-examination knowledge experimental group post-test	Breast Self-examination Technique Score Experimental Group Pretest	Breast Self-Examination Technique Score Experimental Group Posttest	Breast self-examination knowledge control group pre-test	Post-test of breast self-examination knowledge in the control group	Breast Self-examination Technique Score Control Group Pretest Breast	Breast Self-examination Technique Score Control Posttest
Breast self-examination knowledge experimental group pre-test	1	0.33	.55	0.48	0.17	0.28	0.35	0.41
Breast self-examination knowledge experimental group post-test	0.48	1	0. 41	0. 84*	0.52	0.41	0.22	0.61
Breast Self-examination Technique Score Experimental Group Pretest	055	0.41	1	0.31	0.12	0.08	0.17	0.33
Breast Self-Examination Technique Score Experimental Group	0.33	0.84*	0.31	1	0.09	0.75	0.36	0.50

Posttest								
Breast self-examination knowledge control group pre-test	0.41	0.61	0.33	0.50	1	0.47	0.75*	0.27
Post-test of breast self-examination knowledge in the control group	0.35	0.22	0.17	0.66	0.27	1	0.51	0.72*
Breast Self-examination Technique Score Control Group Pretest Breast Self-Examination Technique Score Control Group Posttest	0.28	0.41	0.08	0.75	0.75*	0.51	1	0.61
Breast Self-examination Technique Score Control Posttest	0.17	0.52	0.12	0.09	0.47	0.72*	0.61	1

p<.05，p<.01，***p<.001*

DISCUSSION

Breast self-examination awareness

In the experimental group, in terms of pre- and post-test breast self-examination knowledge, the highest average score was "men will not suffer from breast cancer". average most Low is "breast cancer is diagnosed and treated in general surgery". In the control group, in terms of breast self-examination knowledge before and after the test, the average number was the highest. Gao Jie said "When doing a breast self-examination, you should check the axillary lymph nodes." Comparison of breast self-examination knowledge before and after the experimental group and the control group Compared with the results, it is known that the same is "Breast cancer is the second most common cancer in Taiwanese women since 2001", in the "post-test" of the total knowledge score Significantly higher than the "pre-test". The knowledge of breast self-examination, the results of the pre-test comparison between the experimental group and the control group are known, and the common people's cognition Breast cancer consultation is in obstetrics and gynecology, not in general surgery diagnosis and treatment. The most common symptom of male breast cancer is the appearance of a breast lump (70-90%). In most cases, the lump will be painless. Less common symptoms of male breast cancer often affect nipple. These symptoms include nipple constriction, sores where fluid begins to leak from the nipple (Especially bloody discharge) can also be seen in It is seen in 75% to 80% of male breast cancer patients. Additional symptoms if the cancer has spread may include breast pain, bone pain, and swollen lymph nodes (glands) near the breast, usually in or around the armpits. Highly sensitive screening method will allow early detection of Early treatment of patients who are currently suffering from the disease can avoid delaying the course of the disease and missing the golden period of treatment.[5]

Breast self-examination techniques

The average score of breast self-examination techniques in the experimental group and the control group (17.10 vs 13.17) (total score 18), the "total score of breast self-examination techniques" in the "experimental group" was significantly higher than that in the "control group". For example: "When you stand in front of the mirror, you can observe whether the breasts are sunken and wrinkled when your hands are naturally drooping and

your hands are raised."; "Whether the skin color of the breasts changes."; "Observe the breasts and nipples Symmetry, size change, etc."; "Carefully press each part of the room (at least four circles) from the outside to the nipple side with moderate pressure, including the lower part of the clavicle, the midline of the sternum, the lower edge of the ribs and the armpit, and feel whether there is any lump. And 100% of the experimental group performed the correct items as "When you stand in front of the mirror with your hands drooping naturally or when you raise your hands up, you can observe whether there is any change in the skin color of the breast appearance."; "Pinch the left nipple gently with the index finger to observe whether there is secretion flow out."; the most easily overlooked step is "put the left hand behind the head, straighten the index finger, middle finger, and ring finger of the right hand together, and follow the direction of the clock through the touch of the finger pulp. Check from the outer nipple side by pressing, spiraling, and sliding."; this result is consistent with Li et al. (1994)' [15] correctness of BSE, pointing out that "standing in front of the mirror, with hands hanging down to observe the appearance of the breast" accounted for the most; Newcomb et al. (1990) [16] found that the incidence of metastatic breast cancer could be reduced by 35% in people who performed more complete BSE steps. In the experimental group, the total comparison of breast self-examination knowledge before and after the test (0.79 vs 0.83; t = -2.39; p <0.05), the "post test" is significantly higher than the "pre test". In the control group, the "posttest" was significantly higher than the "pretest". It indicated that the intervention activities were still effective, and the VR education training in the experimental group was more effective than the traditional breast self-examination course intervention activities in the control group.

VR is rich in imagination and creativity, and the design of virtual scenes should provide space for users to imagine, so as to create lively themes and enhance users' willingness to use or interest in learning.[12] Additionally, virtual reality can help students learn abstract concepts as they can experience and visualize these concepts in a virtual environment. Compared with the traditional learning process, the virtual reality learning environment promotes active learning and helps students master abstract knowledge.[13] Low-ability learners especially benefit from virtual reality as visualization helps reduce irrelevant cognitive load on learning objectives. [14] There are 50 women (83.3%) in the total research sample, and 8 women (13.3%) have regular breast self-examination (BSE). According to the research of Solomon et al. Hospital BSE, on the contrary, will slightly increase the rate of participation in hospital BSE. Breast self-examination knowledge and self-examination technology scores are positively correlated, which is positively helpful for breast cancer prevention. Although BSE is of limited help in the detection of early breast cancer, it is still one of health maintenance. Even if the proportion of people who have heard of BSE is high, the proportion of correct implementation is low.[16,17] Literature reports indicate that the proportion of correct implementation of BSE in the United States is only 32%[18] 44% in Australia,[19] 16% in Hong Kong,[20] and only 20% in Taiwan.[21] Taiwan's current policy promotes breast cancer screening, and the breast cancer screening rate in 106 39.9%,[22] although the importance of BSE has been widely publicized, there are still very few women who do it regularly. Another study conducted on nursing staff found that 86% had done BSE, but regularly Only 18% of them are executors[23] domestic research has also conducted a survey on the nursing staff of Taipei City Health Center, and it shows that even among the nursing staff responsible for teaching the public, only 24.4%[24] Lauver & Angerame (1988)[25] pointed out that although 96-99% of women had heard of BSE, only 14-40% of women had this check every month; the research conducted by Champion (1985) [26] only had 39 % Perform BSE on time every month, and many domestic literatures also support the low proportion of women performing breast self-examination,[17,27,28, 29] That's why it's important to perform breast self-exams correctly.

CONCLUSIONS

In the experimental group, the average pre-test score of breast self-examination knowledge was 0.83 (SD=0.11), and the average post-test score was 0.84 (SD=0.09). Test scores were higher than the pre-test scores. In the control group, the average score of breast self-examination knowledge pre-test was 0.79 (SD=0.09), and the average score of post-test was 0.83 (SD=0.07). The total comparison of breast self-examination knowledge before and after the test (0.79 vs 0.83; t = -2.39; p <0.05), the "post test" is significantly higher than the "pre test". The average score of breast self-examination techniques in the experimental group and the control group (17.10 vs 13.17) (total score 18). "Total score of breast self-examination technique" (17.10 vs 13.17; t = 3.82; p <0.000), in the "experimental group" was significantly higher than in the "control group", indicating that the experimental group's VR education training was better than the control group's traditional breast self-examination. Check that the course intervention activities are highly effective. The correlation between the "Breast Self-examination Knowledge Experimental Group Posttest" and the "Breast Self-examination Technique Score Experimental Group Posttest" facets showed a high positive correlation; The correlation between the facets of "post-test" and "breast self-examination technology score control group pre-test" and "breast self-examination knowledge control group pre-test" showed a moderate positive correlation. The interaction, integration and imagination of virtual reality related situations in this research can provide students with opportunities to judge and think, and then train students to solve clinical problems. Breast self-examination knowledge is positively correlated with self-examination technology scores. Enhancing college students' awareness of breast self-examination and regularly implementing breast self-examination techniques can be

used as a reference for future campus promotion of breast self-examination programs.

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