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THE EFFECT OF VIDEO EDUCATION ON ANXIETY AND QUALITY OF LIFE IN BREAST CANCER PATIENTS: A SYSTEMATIC REVIEW

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Abstract

Breast cancer most often attacks women so more women will seek medical attention when breast cancer is suspected if public health education is provided to raise awareness among women about the disease's symptoms, as well as the significance of early identification and treatment. Managing psychosocial needs involves a variety of services and activities, from educational initiatives to direct nursing measures. Patients can learn more about their illness, the course of therapy, and coping mechanisms for a range of mental and physical difficulties by watching films. Methods the source of the 9 articles using relevant keywords based on the title of the research obtained from a database among them PubMed, Googleschoolar and ProQuest. Articles were selected using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) diagram method. Results the 9 articles in this systematic review interventions from the articles in this systematic review were divided mobile app-based educational interventions (via a chat application) and website-based interventions to provide support to women from the start of their first chemotherapy cycle until the commencement of the third cycle, spanning a total of 7 weeks. The application was enriched with visuals, audio and video CDs so that the users could comprehend the information more easily and the content be interesting. Conclusion findings from this systematic review suggest that mobile app-based educational interventions (via a chat application) and website-based intervention in breast cancer can help reduce the anxiety and increase quality of life.

Keywords: *Anxiety, Breast Cancer, Quality of Life, Video Education*

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INTRODUCTION

The World Health Organization (WHO) estimates that 2.3 million women will be diagnosed with breast cancer and 670,000 will die worldwide in 2022. Breast cancer occurs in every country in the world, about half of all breast cancers occur in women with no specific risk factors other than sex and age. 99% of breast cancers occur in women and 0.5–1% occur in men. In 2022, breast cancer was the most common cancer in women in 157 of the world's 185 countries. Certain factors increase the risk of breast cancer, including increasing age, obesity, harmful alcohol use, family history of breast cancer, history of radiation exposure, reproductive history (such as age at onset of menstruation and age at first pregnancy), tobacco use, and postmenopausal hormone therapy. About half of breast cancers develop in women who have no identifiable risk factors for breast cancer other than sex (female) and age (over 40) (1).

According to an Australian population-based cohort study involving 22,505 cancer patients and 244,000 cancer-free adults, cancer survivors who underwent mastectomy reported higher levels of psychological distress than those who did not undergo mastectomy (2). Anxiety and depression are associated with mortality and decreased quality of life. Patients with primary breast cancer undergoing surgery reported higher levels of anxiety and hopelessness due to the difficult experience (Martinez-Calderon et al., 2024).

The Global Breast Cancer Initiative (GBCI) by WHO states that reducing global breast cancer mortality by 2.5% per year will prevent 25% of breast cancer deaths by 2030 and 40% by 2040 among women under 70 years of age. Three pillars are needed to achieve this goal, namely health promotion for early detection; timely diagnosis; and comprehensive breast cancer management. Providing public health education to increase awareness among women about the signs and symptoms of breast cancer, understanding the importance of early detection and treatment, more women will consult a medical practitioner when breast cancer is first suspected (3).

Health workers, especially nurses, act as educators by sharing knowledge and offering psychological support to reduce stress levels and improve quality of life in breast cancer patients. Handling psychosocial needs includes services and interventions, ranging from interventions with direct nursing actions to educational interventions (Travado & Bastos, 2024). Education through videos on digital platforms such as YouTube, medical applications, or social media has become an effective method in conveying health-related information, especially for breast cancer patients (4). Video education is often presented in a structured format and divided into short segments based on topics, such as cancer treatment, proper diet, or how to cope with nausea from chemotherapy. This allows patients to access relevant information according to their needs at any given time (5).

Videos that showcase the experiences of other patients who have undergone cancer treatment provide a sense of hope and support. These testimonials can show that even though the treatment journey can be difficult, there is hope and the possibility of recovery or a good quality of life. Additionally, visualizations of treatments or relaxation techniques suggested in the videos can help patients feel more mentally and emotionally prepared for their treatment (6). The educational content included routine in the training video are General information about breast cancer (epidemiology and treatment methods, etc; Dressing and surgical wound care; Understanding lymphedema, why it develops, possible risk factors, symptoms, and signs; Importance and application methods of exercises to prevent lymphedema; Breathing and coughing exercises; Types of implant breasts used after surgery; Healthy lifestyle behaviors after surgery (7).

The research hypothesis was supported by the comparison of the groups, which showed that the intervention group utilizing the mobile app had a considerably lower anxiety level. Numerous research investigating the impact of web and mobile-based information on BC patients' anxiety levels have been carried out, with varying degrees of success (8). Educational videos on platforms such as YouTube, medical apps, or social media, breast cancer patients have access to information anytime and anywhere. They can watch a video as many times as they need to understand a topic, or even repeat it to ensure better understanding. Video education through digital platforms has the potential to have a positive impact on anxiety and quality of life for breast cancer patients. Through videos, patients can get clearer information about

their disease, the treatment process, and how to cope with various physical and emotional challenges. However, its effectiveness depends greatly on the quality of the information provided and its accessibility to all patients. As an additional tool in cancer care, video education can be an important part of supporting patients through the treatment process (9).

METHOD

The writing method in this systematic review adopts narrative descriptive analysis to summarize the main findings of studies related to the effect on reducing anxiety and quality of life in breast cancer patients. In the review process, the authors followed the PRISMA guidelines to ensure the quality and systematicity of the selection of research articles. This process includes four main stages: identification, screening, eligibility, and inclusion, which aim to obtain relevant and high-quality articles. This approach is expected to provide a clear and comprehensive picture of the effectiveness of the intervention (Equator Network, 2020)

Researchers also use the PICO model (population, intervention, comparison, outcome) to determine inclusion and exclusion criteria so that it can help researchers carry out the article selection process in this systematic review. The PICO is a framework that can be used to help construct comprehensive foreground clinical question, to guide systematic reviews (11).

Inclusion Criteria and Exclusion Criteria

Table 1. Inclusion and Exclusion Criteria

	Inclusion Criteria	Exclusion Criteria
1.	The population focuses on breast cancer patients	Population not breast cancer patients
2.	Interventions used in research articles on intervention in breast cancer	Intervention not targeted at breast cancer
3.	Outcome measures focused on decreasing the anxiety and quality of life	Measurement of decreased anxiety and quality of life is not in breast cancer
4.	Quasy-experiment and RCT	Qualitative research, cross-sectional study, case study, systematic review and meta analysis
5.	Articles published in the range of 2020 - 2024 and full text	Research articles published before 2020
6.	Articles in English	

Search Strategies and Sources of Search Information

The author uses an international electronic database consisting of EBSCO, PubMed, and ProQuest as the source of the articles with the publication periods from 2020 to 2024. The search strategy uses keyword that match the research topic, using the equivalent word from the Medical Heading Subject (MesSH) and combining them with the standard Boolean operators (And and Or). The keywords used include "Video Educational" AND "Platform Digital" AND "Anxiety" AND "Quality of Life" AND "Breast Cancer".

Article Selection

The research article selection process using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method consists of several structured stages. The Identification Stage is the first stage, namely collecting research articles from various search sources in relevant databases. This includes searching various electronic databases such as PubMed, Scopus, Google Scholar, or other databases. All articles found, both relevant and irrelevant, will be combined into one collection for further review. The Screening Stage, articles that have been collected are filtered based on their titles and abstracts. Selection is carried out by assessing whether the article meets the inclusion and exclusion criteria that have been previously established. The Eligibility Stage, after the articles are filtered based on the title and abstract, the next stage is to read the full text of the article to ensure the relevance and eligibility of the article. Articles that pass this stage must still meet the predetermined inclusion criteria. The Inclusion Stage, is the last stage, namely articles that have passed the complete selection will be included in the study for systematic analysis (Equator Network, 2020).

Quality Assessment

The JBI Critical Appraisal is an instrument used to assess the methodological quality and to identify potential bias in the design, implementation, and analysis of a study. The guidelines were developed by the Joanna Briggs Institute (JBI) to assist researchers and health practitioners in assessing the strength of evidence from different types of studies. The instrument is complemented by a variety of assessment tools tailored to the type of study being conducted, such as randomized controlled trials (RCTs) and quasi-experimental studies (12)

Data Extraction

The data extracted from articles that passed the selection based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method, there are a number of important information that must be collected from the article including the author, year of publication, language used, publisher's journal, article title, objectives, research design, number of respondents, research methods, results, limitations of the study the country of origin of the researcher, the country where the research was carried out, specific health issues or problems discussed, the contribution of the research to the health issues discussed, methodological quality, and ethical clearance of the research. These data are very useful for organizing, analyzing, and summarizing the results of the research included in the systematic review. The results of data extraction can be seen in table 2.

RESULT AND DISCUSSION

Search Result

The results of the searching for research articles based on the PRISMA diagram at the identification stage were obtained as many as 1958 articles from several databases used. Pubmed as many as 852 articles, from GoogleScholar 589 articles and from ProQuest 517 articles. In the second stage, namely the screening stage, there was a reduction in the number of articles of the same or duplicates by 985 articles, so that 613 articles were reviewed based on the title and abstract of the article. After the selection, 577 articles were excluded because the type of research was qualitative, cross sectional, systematic review, and case study so that it did not fit the inclusion criteria. In the third stage, namely the eligibility stage, a full text review was carried out on 36 articles that met the inclusion criteria, at this stage 27 articles were excluded because they did not measure the anxiety and quality of life, the intervention was not based on patients with breast cancer, articles are not in English and articles published under 2021. In the fourth stage, namely the included stage, 9 articles were obtained based on the selection results and according to the inclusion criteria.

Figure 1. PRISMA Flow Diagram of Identification and Selection of Articles

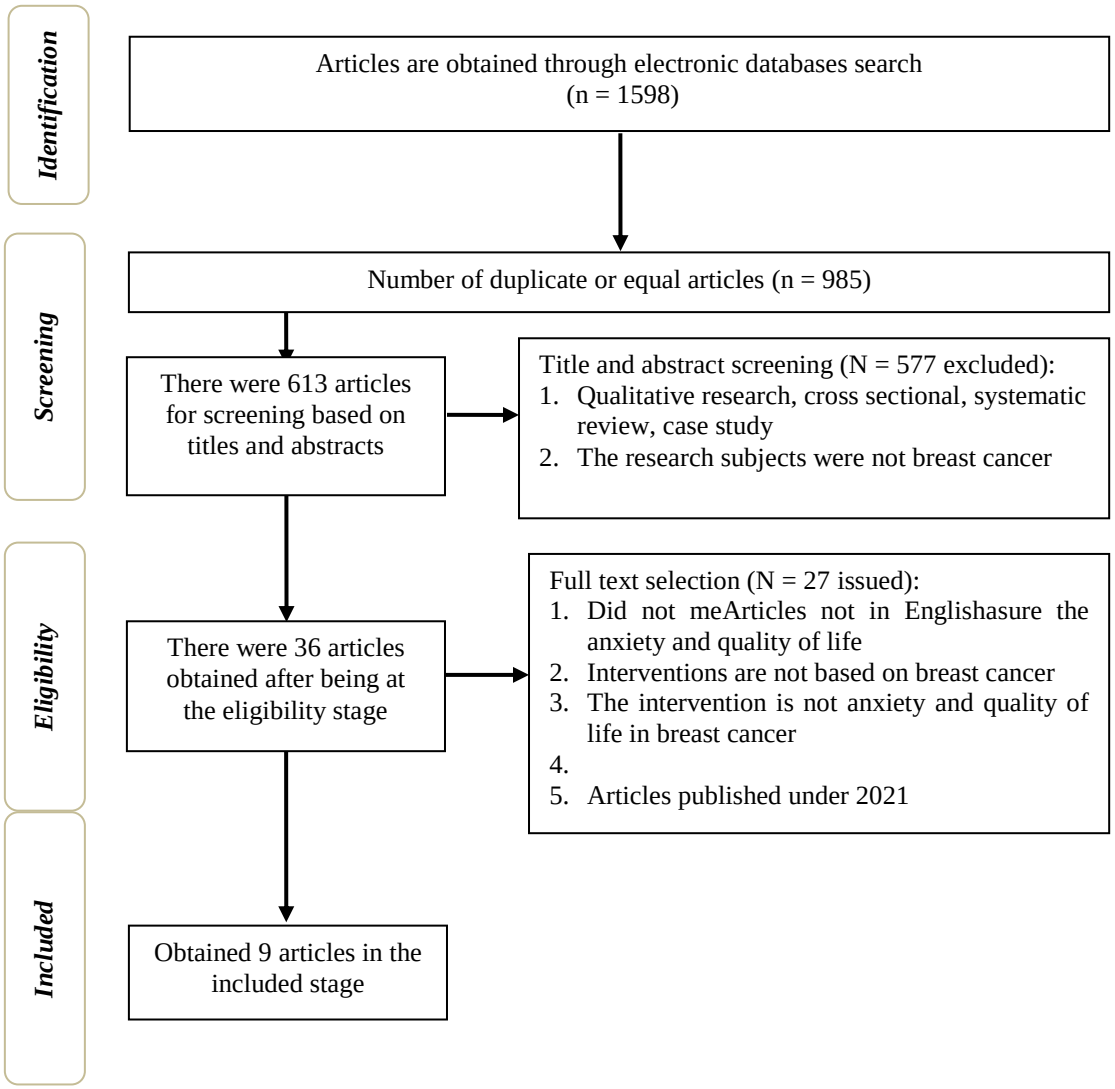

Table 2. Summary of Data Extraction Result

No	Author, Year, Journal, Country	Title Article	Aim & Total Respondent	Study Design	Intervention	*Validity* & *Realibility Instrument*	Statistic Test	Key Finding	Quality Appraisal	Ethics Approval	Limitation
1	Chen et al., (2024) European Journal of Oncology Nursing China	Effectiveness of A Phone-Based Support Program on Self-Care Self-Efficacy, Psychological Distress, and Quality of Life Among Women Newly Diagnosed With Breast Cancer: A Randomized Controlled Trial	Aim: To determine the effectiveness of a Phone-Based Support Program (PBSP) for newly diagnosed women with breast cancer Total Respondents: 94 Patients Breast Cancer	RCT	Intervention Group: n: 47 • Phone-Based Support Program (PBSP) • Four-session PBSP, consisting of four interactive sections: learning, discussion, ask-the-expert, and personal stories, plus the routine care. • Usual care Duration: PBSP was structured into four sessions spanning three weeks Control Group: n: 47 • Usual care	Anxiety / Depression: Hospital Anxiety and Depression Scale (HADS) CVI : 0.9 and 0.83 Cronbach's alpha: 0.75 and 0.73 Quality of life: quality of life (QOL) assessment tool for cancer patients, named the QLQ-C30 Cronbach's alpha: 0.68	Non-parametric test: Chi-Square Test	These findings indicate that the PBSP is effective. Healthcare professionals, especially nurses, could utilize it to enhance self-care self-efficacy and quality of life, as well as decrease psychological distress among women newly diagnosed breast cancer	Reasonable	Mentioned	The threat of data contamination may occur due to some cases of participants in both groups living in the same department at the same time. Although the researchers used the PBSP to isolate the participants of the intervention groups in separate rooms

No	Author, Year, Journal, Country	Title Article	Aim & Total Respondent	Study Design	Intervention	*Validity* & *Realibility Instrument*	Statistic Test	Key Finding	Quality Appraisal	Ethics Approval	Limitation
2	Çınar et al., (2021) European Journal of Oncology Nursing Turkey	Effect of Mobile Phone App-Based Training on The Quality of Life For Women With Breast Cancer	Aim: To determine the effects on quality of life (QoL) of a mobile phone app–based training for supportive care of women with breast cancer who were using adjuvant endocrine hormonal therapy Total Respondents: 64 Patients Breast Cancer	RCT	Intervention Group: n: 31 • Mobile app-based patient education: received face-to-face training on the use of the mobile app (T0) before the intervention. • Web-based management application: which offers information, advice, and consultation to patients • Usual care Duration: 12 weeks Control Group: n: 33 • Usual care	Quality of life: FACT-ES Quality of Life Scale (FACT-ES QLS). Cronbach alpha value was found as 0.92. Scale sub-dimensions' Cronbach alpha values range from 0.65 to 0.91	Non-parametric test: • Chi-Square Test • ANOVA Parametric Test • Paired T-Test • Mann Whitney U tests were	QoL of the treatment group after intervention increased and distress level was lower compared to the control group; these results were statistically significant	Reasonable	Mentioned	First, the study was conducted at a single center with participants who owned smartphones. Second, it was not possible to measure how much time participants spent using the mobile app and what specific features of the mobile app they used. Third; the app was new and first for the participants, and finally; one question was asked to the treatment group about their views on the mobile

No	Author, Year, Journal, Country	Title Article	Aim & Total Respondent	Study Design	Intervention	*Validity & Realibility Instrument*	Statistic Test	Key Finding	Quality Appraisal	Ethics Approval	Limitation
											app, but more evaluation questions should have been asked.
3	Ghanbari et al., (2021) Jmir Mhealth and Uhealth Iran	Effects of Psychoeducational Interventions Using Mobile Apps and Mobile-Based Online Group Discussions on Anxiety and Self-Esteem in Women With Breast Cancer: Randomized Controlled Trial	Aim: To investigate the effect of psychoeducational interventions on anxiety and self-esteem in women with breast cancer using a mobile app and an online support group Total Respondents: 82 Patients Breast Cancer	RCT	Intervention Group: n: 41 • The intervention group received psychoeducational interventions through a mobile phone app and participated in nurse-assisted online mobile support • Usual care Duration: 4 weeks Control Group: n: 41 • Usual care	Anxiety: State-Trait Anxiety Inventory (STAI) Cronbach's alpha: 0.89 Quality of life: (Rosenberg Self-Esteem Scale [RSES] score Cronbach's alpha: 0.70	Non-parametric test: • Chi-Square Test Parametric Test • Paired T-Test • Wilcoxon • Mann Whitney	This study demonstrated the key role of mobile apps in decreasing anxiety and improving self-esteem in women with breast cancer through psychoeducational interventions.	Good	Mentioned	This study limitations included its short duration (4 weeks) given that psychoeducation should be regularly performed over a long period. Moreover, several health care workers and more follow-ups are required for evaluating the long-term effects of the mobile app. Further studies with longer

No	Author, Year, Journal, Country	Title Article	Aim & Total Respondent	Study Design	Intervention	*Validity & Realibility Instrument*	Statistic Test	Key Finding	Quality Appraisal	Ethics Approval	Limitation
											follow-ups and larger samples are also recommended to be conducted in this context. Furthermore, this study failed to measure adherence to the mobile app and the length of use by the users.
4	Güzel et al., (2024) Journal of PeriAnesthesia Nursing Turkey	The Effects of Preoperative Video-Assisted Education on Anxiety and Comfort After Breast Cancer Surgery: Nonrandomized Controlled Study	Aim: To determine the effects of video-assisted education given before breast cancer surgery on patients' anxiety and comfort Total Respondents: 70 Patients Breast Cancer	Quasi-experi-mental design	Intervention Group: n: 35 • The intervention group received psychoeducational interventions through a mobile phone app and participated in nurse-assisted online mobile support • Usual care	Anxiety: State-Trait Anxiety Inventory (STAI) Cronbach's alpha: 0.89	Non-parametric test: • Chi-Square Test Parametric Test • Paired T-Test • Wilcoxon • Mann Whitney	According to this study, patients' anxiety levels and overall comfort levels following breast cancer surgery were considerably reduced when video-assisted instruction was used. As medical experts, nurses should post videos with comprehensive and reliable information on the	Good	Mentioned	Limitations was that the patients' reports were used to determine whether they performed the exercises and frequently viewed the training films at home. The final drawback we can see is that they need a friend who

No	Author, Year, Journal, Country	Title Article	Aim & Total Respondent	Study Design	Intervention	*Validity & Realibility Instrument*	Statistic Test	Key Finding	Quality Appraisal	Ethics Approval	Limitation
					Duration: 4 weeks Control Group: n: 35 • Usual care			internet, which is a vital source of information for everyone these days, in order to properly inform patients.			understood how to operate a computer or phone to launch the training video because they were unable to do so on their own.
5	Korkmaz et al., (2020) Journal of Cancer Education Turkey	An Evaluation of the Influence of Web-Based Patient Education on the Anxiety and Life Quality of Patients Who Have Undergone Mammaplasty: a Randomized Controlled Study	Aim: To evaluate the influence of web-based education on the anxiety and quality of life of patients who were hospitalized and underwent breast surgery (modified radical mastectomy or breast-conserving surgery) with axilla lymph node dissection. Total Respondents: 75 Patients Breast Cancer	RCT	Intervention Group: n: 24 • The intervention group Web Based Education • Usual care Duration: 6 weeks Brochure-Assisted Education Group n: 24 Control Group: n: 24 • Usual care	Anxiety: State-Trait Anxiety Inventory (STAI) Cronbach's alpha: 0.89 Quality of Life: SF 36 Quality of Life Scale Cronbach's alpha: 0.80	Non-parametric test: • Chi-Square Test • ANOVA Parametric Test • Paired T-Test • Mann Whitney	In terms of patients' perceptions of their overall health, role limits, vitality/fatigue, and physical and emotional well-being, web-based patient education was shown to be more successful than the brochure and control groups. Patients' anxiety levels can be effectively reduced and their quality of life enhanced by web-based patient education.	Good	Mentioned	This study included only 1-month post-operative impressions of the patients in addition to pre-operative and immediate post-operative evaluations. For future studies, 3-month and 6-month follow-up scan be added

No	Author, Year, Journal, Country	Title Article	Aim & Total Respondent	Study Design	Intervention	*Validity* & *Realibility Instrument*	Statistic Test	Key Finding	Quality Appraisal	Ethics Approval	Limitation
6	Oghli et al., (2024) Medical Journal of the Islamic Republic of Iran (MJIRI) Iran	Comparison of the Effect of 2 Virtual Education Methods: Family-based Versus Peer-Support on Perceived Stress and Stress Coping in Women with Breast Cancer: A Randomized Controlled Trial	Aim: To compare the impact of 2 virtual education methods on perceived stress and stress coping in women with BC Total Respondents: 315 Patients Breast Cancer	RCT	They were randomly assigned to 3 groups: Family-based, receiving family-based training package (trained virtually over an educational package with an active family member) n: 105 Peer-support, receiving peer-support educational package n: 105 Control Group: receiving routine hospital care. n: 105	The Perceived Stress Scale (PSS-14) Cronbach's alpha: 0.89 Quality of Life: SF 36 Quality of Life Scale Cronbach's alpha: 0.80	Non-parametric test: • Chi-Square Test • ANOVA Parametric Test • Paired T-Test • Mann Whitney	This study indicated that virtual education of FB and PS could reduce perceived stress and increase problem-oriented coping strategy (unsurpassed stress coping pro- cess) in women with BC in Freire adult education model.	Good	Mentioned	The study had some limitations, including difficulty in determining the impact of the intervention and granting patients access to follow-up. To further study such cases generally, the questionnaires employed are not specifically tailored for patients with BC.
7	Xiao et al., (2024) Trials	Effectiveness of WeChat-assisted preoperative	Aim: To evaluate the use of WeChat public	RCT	Intervention Group: n: 196	Anxiety: State-Trait Anxiety	Non-parametric test:	This study innovatively utilizes the WeChat	Good	Mentioned	The study had some limitations this

No	Author, Year, Journal, Country	Title Article	Aim & Total Respondent	Study Design	Intervention	*Validity & Realibility Instrument*	Statistic Test	Key Finding	Quality Appraisal	Ethics Approval	Limitation
	China	education to reduce perioperative anxiety in breast cancer patients: a prospective randomized controlled study protocol	platform as a tool for preoperative education in patients undergoing breast surgery. Total Respondents: 392 Patients Breast Cancer		• Wechat Education group • WeChat public platform and watch educational videos • Usual care Duration: 1 weeks 1 month 3 month Regular Group: n: 196 • Usual care	Inventory (STAI) Cronbach's alpha: 0.85 Quality of Life: QoR-15 scores Cronbach's alpha: 0.80	• Chi-Square Test • Fisher's exact test Parametric Test • Paired T-Test	platform to provide preoperative education for breast cancer patients, aiming to reduce periop- erative anxiety, improve sleep and life quality, alleviate acute postoperative pain, and ultimately enhance overall prognosis.			approach has not been extensively studied in the field of perioperative rehabilitation.
8	Lee et al., (2024) International Journal of Radiation Oncology Biology Physics South Korea	A Study on Breast Cancer Patient Care Using Chatbot and Video Education for Radiation Therapy: A Randomized Controlled Trial	Aim: To evaluate the use of chatbot and video education to reduce anxiety in patients with breast cancer undergoing radiation therapy (RT). Total Respondents: 145 Patients Breast Cancer	RCT	4 groups: 1. Video + chatbot 2. Video + paper 3. Paper + chatbot 4. Paper + paper	Anxiety: Amsterdam pre- operative anxiety and information scale (APAIS), State-trait anxiety inventory (STAI) Cronbach's alpha: 0.85	Non-parametric test: • Chi-Square Test • ANOVA test	Hospital patients' experiences are becoming increasingly significant. Many patients experience vague anxieties before surgery or treatment. Addressing these anxieties using detailed information can be comforting for patients. Thus,	Good	Mentioned	The study had some limitations the patients needed to engage with chatbots consistently. While many participants used the chatbot for 1 or 2 days, their subse- quent usage dropped

No	Author, Year, Journal, Country	Title Article	Aim & Total Respondent	Study Design	Intervention	*Validity & Realibility Instrument*	Statistic Test	Key Finding	Quality Appraisal	Ethics Approval	Limitation
								integrating digital health care technologies, such as chatbots, can be a valuable tool for improving hospital patient experiences.			off. Given that this chatbot is tailored for patients undergoing breast cancer RT, it is understand- able that inquiries may decrease toward the end of treat- ment
9	Saraç et al., (2024) Eur J Breast Health Turkey	The Effect of Informative Mobile App Use on Anxiety, Distress, and Quality of Life of Women With Breast Cancer	Aim: To evaluate the effect of mobile app-based educational information on anxiety, distress, and quality of life in patients with breast cancer (BC) Total Respondents: 88 Patients Breast Cancer	RCT	Intervention Group: n: 42 • Mobile App Evaluation • Mobile applications and web-based educational programs • Usual care Duration: 4 month Control Group: n: 40	Anxiety: Hospital Anxiety and Depression Scale Cronbach's alpha: 0.85 Stress: The NCCN Distress Thermometer and Problem List Cronbach's alpha: 0.73	Parametric Test • Paired T-Test	These findings suggest that using informative mobile apps starting before surgery can effectively reduce anxiety and distress in the early periods after surgery. Although the impact on overall quality of life was insignificant, such interventions may have long-term positive effects on quality of life.	Good	Mentioned	The results of this study only include patients who underwent surgery for BC in the hospital where the study was conducted. Patients were operated on in three different ways based on the findings of preoperative tests, but there

No	Author, Year, Journal, Country	Title Article	Aim & Total Respondent	Study Design	Intervention	*Validity & Realibility Instrument*	Statistic Test	Key Finding	Quality Appraisal	Ethics Approval	Limitation
					• Usual care	Quality of Life: Functional Assessment of Cancer Therapy-General (FACT-G) Quality of Life Scale Cronbach's alpha: 0.92					could be changes in the type of surgery depending on the patient's condition. Whether or not an axillary dissection would be performed on a patient scheduled for breast-conserving surgery was often clarified during the operation.

Respondent Characteristics

The total number of research respondents from the 9 research articles reviewed was 1.325 respondents with breast cancer. The highest number of respondents was found in articles with RCT designs with 392 respondents (17). From the 9 articles of this study, it was found that the respondents involved in the study were patients with breast cancer, the average age of the respondents was in the 18-80 years range. Research conducted in 9 articles came from several countries, namely 4 articles from Turkey, 2 articles from China, Iran and 1 article each from South Korea.

Intervention Characteristics

The interventions from the articles in this systematic review were divided into 2 types of programs: *mobile app-based educational* interventions (*via a chat application*) (4,7,8,13,14,16–18) to provide support to women from the start of their first chemotherapy cycle until the commencement of the third cycle, spanning a total of 7 weeks. The application was enriched with visuals, audio and video CDs so that the users could comprehend the information more easily and the content be interesting. Besides as relaxation techniques (relaxation exercises sound CD of 30 min which includes breathing and muscle exercises) and guided imaginary (guided imaginary video as the mind-body-based practice of 12 min which includes natural views accompanied by relaxing, restful, slow music for the oncology patients) were installed in the app. *Website-based interventions* (15) the website was designed with the aim of providing the necessary education to breast cancer surgery patients in the pre-operative and post-operative process and named.

Result of Methodological Quality Assessment

Table 3. The results of the article assessment for systematic review use JBI critical appraisal tools

Citations	Criteria													Result
	1	2	3	4	5	6	7	8	9	10	11	12	13	
RCT:														
Chen et al., (2024)	√	√	√	√		√	√	√	√	√	√	√		11/13 (84,6%) (Good quality)
Çınar et al., (2021)	√	√	√	√		√	√	√	√	√	√	√		11/13 (84,6%) (Good quality)
Ghanbari et al., (2021)	√	√	√	√		√	√	√	√	√		√	√	11/13 (84,6%) (Good quality)
Korkmaz et al., (2020)	√	√	√	√			√	√	√	√	√	√		11/13 (84,6%) (Good quality)
Oghli et al., (2024)	√	√	√	√		√	√	√	√	√		√	√	11/13 (84,6%) (Good quality)
Xiao et al., (2024)	√	√	√	√			√	√	√	√	√	√	√	11/13 (84,6%) (Good quality)
Saraç et al., (2024)	√	√	√	√		√	√	√	√	√		√	√	11/13 (84,6%) (Good quality)
Lee et al., (2024)	√	√	√	√		√	√	√	√	√		√	√	11/13 (84,6%) (Good quality)
Quasy-Experiment:														
Güzel et al., (2024)	√	√	√	√	√	√	√	√	√					9/9 (100%) (Good quality)

Based on the table of the results of the assessment of the quality of the research article, 9 articles of RCT design were obtained with 8 articles of good quality (4,8,13–18) of the 13 questions, 11 were answered with yes and 2 questions with no answers. Whereas for research articles with a quasy-experimental design, 1 article was obtained with good quality (7) where of the 9 questions all the answers are obtained. From the results of the quality assessment of the research articles, the risk of bias that occurs from writing this systematic review can be minimized.

Risk of Bias

The research article still has the possibility of a risk of bias because there are research articles that use the 1 article that does not mention ethical approval in the article (7).

Discussion

The interventions from the articles in this systematic review were divided into 2 types of programs: mobile app-based educational interventions (via a chat application) (4,7,8,13,14,16–18) to provide support to women from the start of their first chemotherapy cycle until the commencement of the third cycle, spanning a total of 7 weeks. The application was enriched with visuals, audio and video CDs so that the users could comprehend the information more easily and the content be interesting. Besides as relaxation techniques (relaxation exercises sound CD of 30 min which includes breathing and muscle exercises) and guided imaginary (guided imaginary video as the mind-body-based practice of 12 min which includes natural views accompanied by relaxing, restful, slow music for the oncology patients) were installed in the app. Website-based interventions (15) the website was designed with the aim of providing the necessary education to breast cancer surgery patients in the pre-operative and post-operative process and named.

Mobile app and website-based health education that utilizes chat and video features is an innovative approach to improving health literacy and access to medical services. This concept allows users to obtain health information, consult with medical personnel, and receive interactive education through easily accessible digital media (4,7). Through video education, we provide information on the disease, surgery, and anesthesia preoperatively to reduce perioperative anxiety. Even though the educational content is highly accessible, there may still be a very small subset of patients who might misinterpret the provided information, potentially leading to biases and/or misunderstandings (13). Health workers, especially nurses, act as educators by sharing knowledge and offering psychological support to reduce stress levels and improve quality of life in breast cancer patients. Handling psychosocial

needs includes services and interventions, ranging from interventions with direct nursing actions to educational interventions (Travado & Bastos, 2024).

Sending mobile app-based health education videos via app chat may help patients better understand pertinent medical information, increase their adherence and nursing focus, and increase their confidence in their capacity to combat the illness. Additionally, the Ask-Expert group's doctors and patients may communicate more quickly thanks to the app's chat platform's call video feature (19). Moreover, it promoted physical recovery by stimulating pa- tients to regulate consciousness, relaxation, sleep, exercise, nutrition, medication, and other aspects, so as to help them achieve an optimistic attitude to confront the disease Therefore, the mobile app-based health education supply the new thoughts for clinical nurse to carry out full-process and systematic care. The mobile app-based health education presents an independence that can enrich life and enhance the women's quality of life (6).

Education through videos on digital platforms such as YouTube, medical applications, or social media has become an effective method in conveying health-related information, especially for breast cancer patients (4). Video education is often presented in a structured format and divided into short segments based on topics, such as cancer treatment, proper diet, or how to cope with nausea from chemotherapy. This allows patients to access relevant information according to their needs at any given time (5). Videos that showcase the experiences of other patients who have undergone cancer treatment provide a sense of hope and support. These testimonials can show that even though the treatment journey can be difficult, there is hope and the possibility of recovery or a good quality of life. Additionally, visualizations of treatments or relaxation techniques suggested in the videos can help patients feel more mentally and emotionally prepared for their treatment.

Educational videos on platforms such as YouTube, medical apps, or social media, breast cancer patients have access to information anytime and anywhere. They can watch a video as many times as they need to understand a topic, or even repeat it to ensure better understanding. Video education through digital platforms has the potential to have a positive impact on anxiety and quality of life for breast cancer patients. Through videos, patients can get clearer information about their disease, the treatment process, and how to cope with various physical and emotional challenges. However, its effectiveness depends greatly on the quality of the information provided and its accessibility to all patients. As an additional tool in cancer care, video education can be an important part of supporting patients through the treatment process (9)

The research hypothesis was supported by the comparison of the groups, which showed that the intervention group utilizing the mobile app had a considerably lower anxiety level. Numerous research investigating the impact of web and mobile-based information on BC patients' anxiety levels have been carried out, with varying degrees of success (8). Similarly Korkmaz et al., (2020); Xiao et al., (2024) reported that the supportive education given via a mobile app to breast cancer patients receiving hormone therapy reduced the distress level of the patients. Although the postoperative quality of life decreased in both groups, the quality of life score of the intervention group was better than that of the control group. In contrast to the present study's findings, research has indicated that interventions, such as self-management support supportive education, and awareness training delivered through mobile applications and web-based educational programs positively impact the quality of life among women diagnosed with breast cancer.

This systematic review also has several limitations. In 9 studies that have been reviewed including, the use of RCT designs that have not used blinding techniques in the study and the follow-up time for measurements of anxiety and quality of life are still considered too short in just 3 weeks.

Further Research Suggestions

The further research is still needed, the application of blinding techniques and the use of control group need to be done to strengthen the research results. The use of other interventions as a comparison needs to be done in order to see which intervention is more effective to implement, the follow-up time for the results of the intervention also needs to be considered and added to see the extent of its effectiveness.

Implications for Practice

Based on the results of this study, it supports the intervention as one of the health education programs by utilizing technology via a digital platform, namely smartphones owned by everyone. This nursing action can be carried out by nurses and in collaboration with family members during the breast cancer treatment process. The implementation of this intervention can be used as a monitoring of health conditions and increasing the knowledge of breast cancer patients to improve their health.

CONCLUSIONS

The Interventions from 9 research articles reviewed in the systematic review can be categorized into 2 types of intervention groups, namely mobile app based health education that utilizes chat and video features and website-based health education. Both of these interventions focus on providing knowledge to breast cancer patients to understand the clinical conditions experienced both before and after chemotherapy. This intervention is able to provide significant results in reducing anxiety and improving quality of life. This systematic review can also be used as one of the nursing interventions in providing health education to breast cancer patients because it can provide significant results. For further research, it is expected to use the application of blinding techniques in their research.

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Desika Anita Gultom: Compile and conduct systematic reviews and write manuscripts
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Conflict of Interests
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