

Effectiveness of Audio-visual Education Through Digital Media Platforms Regarding Quality of Life Amongst Breast Cancer Person

Astika Cahyarani¹, Solikhah¹, Sitti Nur Djannah¹

¹Faculty of Public Health, Universitas Ahmad Dahlan

ABSTRACT

Background: Improving the education system of patient-centered health information is particularly important for vulnerable populations. The magnitude of the attributable breast cancer burden is very essential to be a concern to developing a good management strategy. Improving the patient's understanding of their conditions may enhance the quality of life following breast cancer. The study aimed to review the effectiveness of audio-visual education through digital media platforms to improve the quality of life among people with breast cancer.

Method: These 1643 articles from eight databases i.e., Scopus, PubMed, MEDLINE via EBSCO, the Cochran Library, Springer Link, Wiley Online Library, BioMed Central, and Sage Journals were searched by a combination of medical subject heading (MESH) term, and unique references were examined. All studies evaluating audio-visual education of women with breast cancer delivered by digital media platforms were included.

Results: The search yielded 14 articles with various digital media platforms, such as web-based, applications, e-mail, videoconference, YouTube, and WhatsApp. All studies reported improving quality of life, except one study using WhatsApp as the platform. Audio-visual interventions were variably effective in enhancing the quality of life of patients depending on their characteristics. Audio-visual interventions appear to be effective in improving quality of life amongst breast cancer person. Nevertheless, its effectiveness depends on the frequency and intensity of audio-visual delivery. Meanwhile, the contents of education materials must be adjusted to the administration method. Audio-visual modeling via digital platforms may facilitate improving quality of life and can be an important consideration in future health-education interventions.

Correspondence

solikhah@ikm.uad.ac.id

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INTRODUCTION

According to global cancer statistic, almost 2.3 million new cases of breast cancer have been diagnosed in 2020.¹ This is partially due to significant barriers to providing access to timely and high-quality medical care.² In the era of digitalization, technologies are being increasingly used as wearable devices as potential tools for remote patients monitoring and estimating the chance of a new or intense therapy. These technologies are proving to be very cost-effective.³ Technology can be provided enrich learning experience for patients to promote well-being. A digital learning platform can designed to educate cognitive, physical, emotional, and helping people get the right treatment for themselves.^{4,5}

A person with breast cancer can often experiences emotional distress.⁶ Psychological monitoring and support for breast cancer patients are needed. There is an

association between dynamic changes in anxiety and depression with decreased patient's quality of life.⁷ Unmet need for psychosocial support was associated with depressive symptom and distress. Special attention should be paid to breast cancer person especially younger sufferers.⁸ Breast cancers survivors who received psychosocial intervention or exercise interventions had an improved their self-image better than baseline.⁹ Likewise, telehealth-based exercise intervention enhances physical performance and quality of life of breast cancer patients compared with usual care.¹⁰ Thus it is necessary to integrate video-based multimedia training in breast cancer awareness, because this method provides an easy, flexible and affordable means of detection.¹¹ Several national public health campaigns have used social media technologies to promote early cancer diagnosis, including increasing awareness of cancer symptoms, encouraging

help-seeking, and attempting to modify social norms towards help-seeking.^{12,13} Previous systematic reviews examining a variety of media-based treatments for cancer screening contained very few articles evaluating audio-visual education platforms and have concentrated on specific study topics about impact and efficacy.^{14,15} Social media interventions can influence behavior by targeting cognitive or emotional responses, generating discussions, and changing social norms.¹⁶ Nevertheless, the use of audio-visual interventions for public health is expanding rapidly. There were many audio-visual projects made that raised breast cancer as the topic and most of them circulated widely in various circles of society. Considering the phenomenon a more comprehensive mapping of varied studies is required to inform future development and reviews. This is important considering that education using digital media platforms has a great opportunity to reach a wider audience more efficiently. However, recommendations are needed to develop an audio-visual breast cancer education by utilizing a digital platform. Therefore, this study aimed to evaluate the effectiveness of audio-visual education through digital media platforms to

improve the quality of life among people with breast cancer. We described to what extent these videos were found to be effective in increasing quality of life.

METHOD

This study followed the PIOT/PICO framework to answer the research question. The PIOT/PICO model organizes and focuses on database queries to help identify terms and concepts in the literature searching. The researchers modified the PIOT/PICO’s model as a guide to answer the research questions, as shown in Table 1.

To conduct a systematic literature search on breast cancer person, the first step involves the formulation of the research question. The following PIOT question has been developed into the study: What kind of educational audio-visual can be provided through digital media platforms that can improve the quality of life amongst persons with breast cancer? The final step is to make recommendations for educators of breast cancer persons in making audio-visual education based on digital media platforms (Figure 1).

Table 1. Research question based on the PIOT model.

Research question	PIOT component
Population (P)	Women with breast cancer among the worldwide
Issues (I)	The intervention of educational audio-visual with digital media platforms in the population
Outcome (O)	Reporting on quality of life
Type of study (T)	Randomized Control Trial

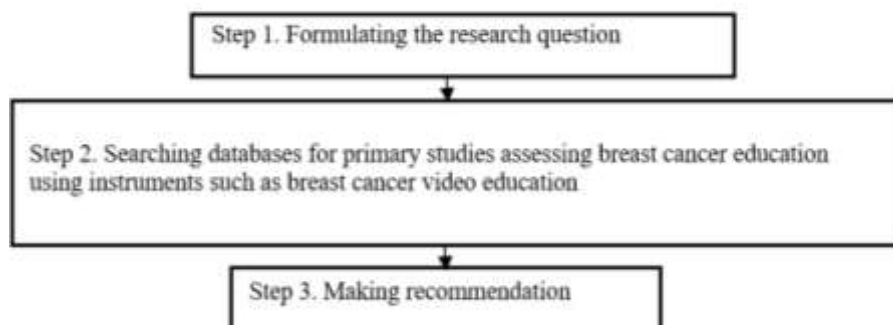


Figure 1. Three steps of the research process

Eight databases (Scopus, PubMed, Cochrane Library, MEDLINE via EBSCOhost, SpringerLink Library, Wiley Online, BioMed Central, and Sage Journals) were searched in the last five years (2018-2022). The main keywords were entered by a combination of Medical Subject Heading (MESH) terms and text words, including ‘breast cancer’, ‘education’, and ‘video’. The type of research chosen was a randomized control trial design only. Studies that met the following inclusion criteria were included: published in English; accessible in full text; video submission done via digital media platforms and provided sufficient data. The exclusion criteria were articles that were not published in English, including proceedings, case reports, scientific conference articles, and article reviews, the study design was not a

randomized control trial, publications that were not in the database above, and studies that not report sufficient data. This study was approved by the Ahmad Dahlan University Ethical Committee (Approval No. 012211179).

RESULTS AND DISCUSSION

A total of 1643 English language articles were identified from databases in last five years from 2018 to 2022. There were 35 references found after a detailed screening due to the titles and abstract on data related to educational video applying in breast cancer person. Afterwards full-text reviews and some duplicates articles were removed. Of these, fourteen articles were eligible for inclusion in this review (Figure 2).

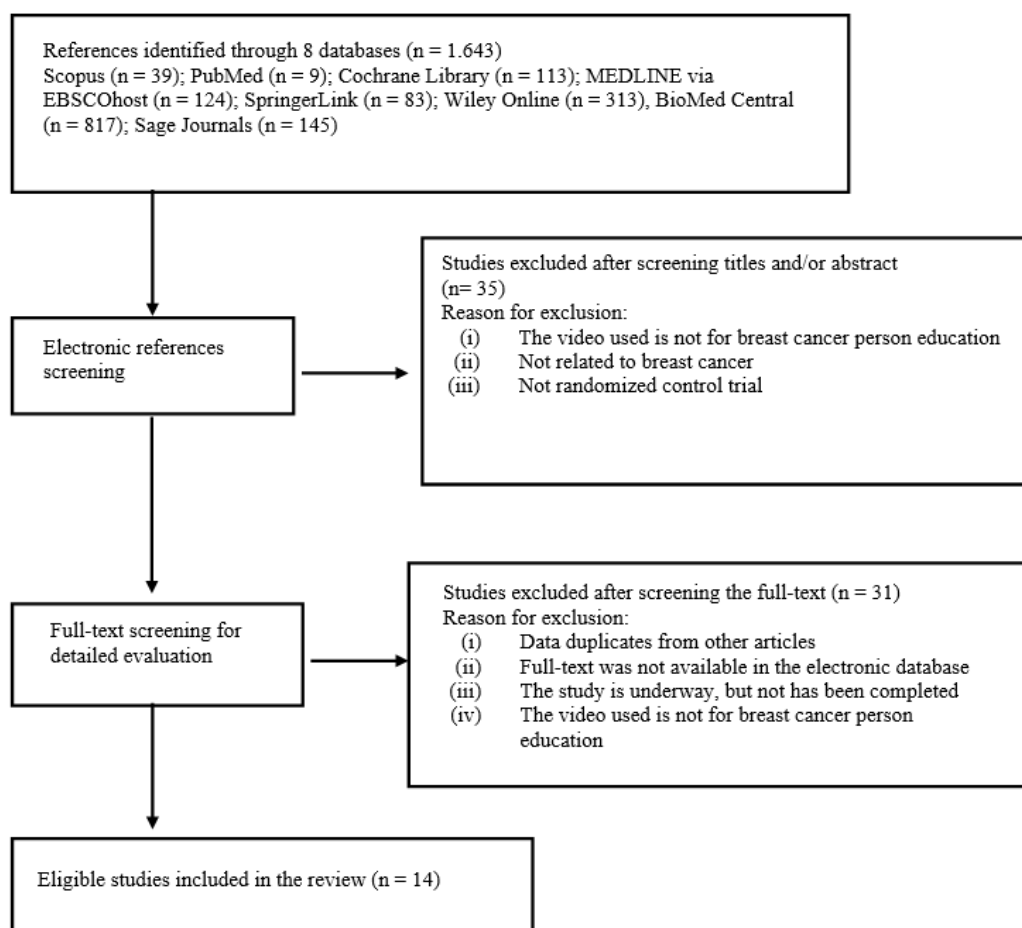


Figure 2. Flow PRISMA diagram to illustrate the study selection procedure

Table 1. The summary of the included studies

Reference	Country	Year	Study Design	Sample	Education	Target People	Study population	BC phase	Breast cancer (BC)/Breast Cancer+Other	Intervention arm	Control arm	Conclusion
Golzarifard, et al ¹⁹	Iran	2022	RCT	70 women	a diploma or higher	Intervention group 43.00+/-8.29 years; control group 41.42+/-8.89 years	High risk women (women referred to the breast clinic)	NR	BC	Uploading a training video on WhatsApp	Face to face group, through PowerPoint lectures	Face-to-face training was better than smart-phone based training methods provide satisfaction with training and create appropriate self-efficacy for breast self-examination
Korkmaz, et al ²⁴	Turkey	2020	RCT	75 women	NR	Web-based education group (n 44.63 ± 7.53 brochure group 48.72 ± 7.46; control group 49.95 ± 8.28	Breast cancer surgery patients	BC surgery patients	BC	A website named www.bilincihasta.com ,	group 2: education with brochures, and group 3: control (received routine education).	Web-based patient education was more effective in decreasing the anxiety of patients and improving their quality of life. than the brochure and control groups in terms of patients' physical and emotional well-being, vitality/fatigue, and role limitations emotional and general health perception.
Kasting, et al ²⁵	US	2019	RCT	119 women	Up to GED/Diploma mean 31(26.1), College mean 37(31.1), College grand or beyond mean 51(42.9)	Mean age was 62.9 (SD=10.4)	Post-surgical female BC patients (BC survivors)	Post-surgical female BC patients;	BC	PEI DVD and booklet. The video was 12-minutes long	A one-page factsheet with frequently asked questions (e.g. "What is hereditary cancer?" and "What is genetic counselling?"), information about GC, and information about how to schedule an appointment with a genetics professional	The PEI (psychoeducational intervention) was feasible, acceptable, and efficacious. Women in the intervention group reported greater intentions to pursue GC, greater perceived risk, and decreased avoidance.
Santoyo-Olsson, et	US	2019	RCT	153 women	a high school	28-88, mean 54.8 (SD 10.4)	low literacy Spanish-speaking Latinas with	BC survivors	BC	DVD Nuevo Amanecer :90	Waiting-list	Applying the Transcreation Framework to engage stakeholders in

Reference	Country	Year	Study Design	Sample	Education	Target People	Study population	BC phase	Breast cancer (BC)/Breast Cancer+Other	Intervention arm	Control arm	Conclusion
al ²⁶					education or less		breast cancer survivors at all phases of survivorship			minutes		designing community-based RCTs enhanced congruence with community contexts and recruitment of this vulnerable population
Dong, et al ²³	China	2019	RCT (randomized single-blinded control trial)	60 women	NR	42-60 years	BC at phase I-III who have finished post operative radiotherapy/chemotherapy within 4 months to 2 years	BC at phase I-III who have finished post operative radiotherapy/chemotherapy within 4 months to 2 years	BC	Face-to-face tele-video, was performed 3-4 times per week in 30-min sessions.	traditional treatment and rehabilitation according to daily specifications of the hospital (the recommendations of the National Institute for Health and Care Excellence clinical guidance (NG101))	The CEIBISMS offered rehabilitative effects in quality of life (QOL) and muscle strength of postoperative patients with breast cancer (BC) in China.
Ariza-Garcia et al ¹⁸	Spain	2019	RCT two-arm, assessor-blinded, parallel	68 women	Basic, medium and high	e-CuideChemo group 48.82 (7.68) Control group 47.32 (9.92)	Breast cancer patient who were undergoing chemotherapy	Breast cancer patient who were undergoing chemotherapy (Tumor stage I-III A)	BC	8-week program; 15-30 minutes	Usual care with some written basic recommendations	Web-based exercise program was effective in reversing the detriment in functional capacity and strength due to chemotherapy
Haas, et al ²⁰	US	2018	Prospective RCT	235 + 224 control (459) women	high school or less, college or technical school, college graduate or more	40-74 years	personalized to a woman's MBD (mammographic breast density) result and breast cancer risk	BC high risk women	BC	Videoscripts (https://www.videoscrip.com), brief (3-5 min) informational videos, for their personalized video based on their calculated breast cancer	Received their personalized video described below to view if they wanted.	Brief, personalized videos following mammography can improve knowledge of MBD and personal risk of breast cancer compared to a legislatively mandated informational letter.

Reference	Country	Year	Study Design	Sample	Education	Target People	Study population	BC phase	Breast cancer (BC)/Breast Cancer+Other	Intervention arm	Control arm	Conclusion
Kim, et al ²⁷	Korea	2018	RCT	76 patients	NR	18-65 years	females diagnosed with metastatic breast cancer	metastatic BC	BC	A mobile game, ILOVEBREAST (CLGAMES, 3 week program, which recommended to play the game for >30 minutes a day, 3 times per week.	Routine care (a brochure elaborating the coping strategies for the side effects of chemotherapy drugs, the 26-page education material consisted of 2 parts).	Education using a mobile game led to better patient education, improved drug compliance, decreased side effects, and better QoL compared with conventional education.
Rosen et al ²⁸	US	2018	2-arm RCT	112 women	<4-year degree; 4-year degree; Graduate degree	25- 73 (M = 52.29; SD = 10.33).	Women diagnosed with breast cancer ≤5 years	BC survivors	BC	mindfulness app (Headspace) audio and animated video	Waiting list	Commercially available AMT may proffer some benefit to women seeking to enhance their QOL following breast cancer diagnosis.
Gell, et al ²⁹	US	2022	Randomized controlled pilot trial	39 female and male	College/University degree mean 33 (85%)	mean age 70.4 ± 5.7)	rural cancer survivors age ≥ 60 years (79% female;	Cancer survivor	BC and other	remotely delivered EnhanceFitness (tele-EF) exercise program	Waiting list	Tele-EF is feasible in older, rural cancer survivors and results in positive changes in physical function and physical activity.
Peipert, et al ³⁰	US	2021	r-arm RCT	129 female and male	Less than high school grad/GED ; High school grad/GED ; Some college or more	52.6 (10.3); control: 51.1 (10.5)	Ambulatory cancer patients	Stage I–III breast cancer	BC and colorectal cancer,	CancerHelp-TT educational program software	No intervention	This trial’s capacity to evaluate the CancerHelp-TT program was diminished by significant patient drop-out over the course of follow-up. The CancerHelp-TT software was favourably rated by intervention participants. The CancerHelp-TT program showed promise to increase vulnerable cancer patients’ cancer knowledge and adaptive health beliefs and attitudes.

Reference	Country	Year	Study Design	Sample	Education	Target People	Study population	BC phase	Breast cancer (BC)/Breast Cancer+Other	Intervention arm	Control arm	Conclusion
Cacioppo, et al ³¹	US	2020	RCT (three-armed)	147 female and male	College degree or higher; Some college/associate degree; Some/completed high school	Remote telehealth (13.0); usual care (11.6)	Participants meeting cancer genetic testing guidelines were recruited to this multi-center	cancer high risk people	BC and others	Remote telehealth services (phone and real-time videoconference)	Remote phone services, informational flyer	Telehealth increases uptake of genetic counselling and testing at oncology practices without genetic counsellors and could significantly improve identification of genetic carriers and cancer prevention outcomes.
de Frutos et al ²²	Spain	2020	A two-arm, pragmatic randomized controlled trial	269 women	Primary, secondary, and tertiary	PPC : 52.17 (8.36) ; OPPC 47.34 (8.05)	Cancer patients, complete oncological treatment/cancer survivors	Cancer patients, complete oncological treatment	BC and others	11 weekly online group sessions of 90 to 120 minutes OPPC (Online group Positive Psychotherapy for Cancer survivorship)	Face-to-face treatment consisting of 12 weekly group sessions of 90 to 120 minutes. Face-to-face group positive psychotherapy for cancer survivorship (PPC)	The OPPC treatment was found to be effective and engaging for female cancer early survivors.
Nissen, et al ²¹	Denmark	2019	RCT	150 female and male	NR	mean age 54.55 years	breast (n = 137) and prostate cancer (n = 13) survivors	BC and prostate Ca survivor	BC and prostate Ca survivor	BC and prostate Ca	iMBCT (70%); Each of the eight 1-week modules included written material, audio exercises, writing tasks, cancer-specific	waiting-list control

Reference	Country	Year	Study Design	Sample	Education	Target People	Study population	BC phase	Breast cancer (BC)/Breast Cancer+Other	Intervention arm	Control arm	Conclusion
											patient examples, and videos with patients and experts.	

Table 3. The effect audio-visual intervention of related studies

Reference	Sample	Target People	Study population	Video study arm	Video content	Non-video study arm	Video duration	Session	Platform	Real time communication during intervention	Follow up time points	Conclusion
Golzarifar d, et al (2022)	70 women	Intervention group 43.00+/- 8.29 years; control group 41.42+/- 8.89 years	High risk women (women referred to the breast clinic)	Uploading a training video on WhatsApp	BSE training	Face to face group, through PowerPoint lectures	Not reported (NR)	Once	WhatsApp	NR	After intervention	Face-to-face training was better than smart-phone based training methods provide satisfaction with training and create appropriate self-efficacy for breast self-examination
Korkmaz et al (2020)	75 women	Web-based education group (n 44.63 ± 7.53; brochure group 48.72 ± 7.46; control 49.95 ± 8.28	Breast cancer surgery patients	A website named www.bilincliha.com ,	The education program was categorized under 6 main titles as pre-operative preparation, pre-operative exercises, post-operative considerations, post-operative exercises, post-surgery therapies, and breast self-examination.	Group 2: education with brochures, and group 3: control (received routine education).	15-20 min	Six main titles, participants had to watch at least one from a list of post-operative treatment method videos	Web-based	None	After participants finished watching the video	Web-based patient education was more effective in decreasing the anxiety of patients and improving their quality of life. than the brochure and control groups in terms of patients' physical and emotional well-being, vitality/fatigue, and role limitations emotional and general health perception.
Kasting, et al (2019)	119 BC survivors	Mean age was 62.9 (SD=10.4)	Post-surgical female BC	PEI DVD and booklet. The video was 12-	The video and the booklet contained information	A one-page factsheet with frequently asked	12 minute	Once in e-mail	E-mail	None	Four months after they	The PEI (psychoeducational intervention) was feasible, acceptable, and efficacious.

Reference	Sample	Target People	Study population	Video study arm	Video content	Non-video study arm	Video duration	Session	Platform	Real time communication during intervention	Follow up time points	Conclusion
			patients;	minutes long	regarding genetic risk, genetic counselling (GC), and genetic testing (GT). This included information on hereditary breast cancer, the benefits of GC and GT, patient testimonials, and a list of resources.	questions (e.g. “What is hereditary cancer?” and “What is genetic counselling?”), information about GC, and information about how to schedule an appointment with a genetics professional					completed the materials and have provided feedback.	Women in the intervention group reported greater intentions to pursue GC, greater perceived risk, and decreased avoidance.
Santoyo-Olsson, et al (2019)	153 women	28-88, mean 54.8 (SD 10.4)	Low literacy Spanish-speaking Latinas with breast cancer survivors at all phases of survivorship	DVD Nuevo Amanecer ;90 minutes sessions, conducted in person by a companera (trained breast cancer survivors who delivered the program); Compañeras are given tablets preloaded with the same audio-visual materials provided to participants. Compañeras use the tablet during sessions to demonstrate program videos of the skills and exercises, such as meditation with	The impact of cancer, breast cancer and survivorship, finding cancer information, getting support, managing thoughts and mood, stress management techniques, managing activities that affect mood, healthy lifestyle, and goal-setting	Waiting-list	90 minutes	10 weekly,	Accessible on YouTube and DVD	None	After intervention	Applying the Transcreation Framework to engage stakeholders in designing community- based RCTs enhanced congruence with community contexts and recruitment of this vulnerable population

Reference	Sample	Target People	Study population	Video study arm	Video content	Non-video study arm	Video duration	Session	Platform	Real time communication during intervention	Follow up time points	Conclusion
				guided imagery								
Dong, et al (2019)	60 women	42-60 years	BC at phase I-III who have finished post operative radiotherapy/chemotherapy within 4 months to 2 years	Face-to-face tele-video, was performed 3- 4 times per week in 30-min sessions.	Cardio-pneumatic endurance training, muscle training, conventional fitness exercises, and postoperative rehabilitation knowledge	Traditional treatment and rehabilitation according to daily specifications of the hospital (the recommendations of the National Institute for Health and Care Excellence clinical guidance (NG101))	30-min sessions.	12 weeks (36-48 session)	Videoconfer ence	Yes	After interventio n	The CEIBISMS offered rehabilitative effects in quality of life (QOL) and muscle strength of postoperative patients with breast cancer (BC) in China.
Ariza-Garcia et al (2019)	68 women	E-CuidateCh emo group 48.82 (7.68) Control group 47.32 (9.92)	Breast cancer patient who were undergoing chemotherapy	8-week program ; 15-30 minutes	A telerehabilitation program, each session was organized into a warm up, a main, and a cool down part, and also included a communication system between patients and research staff through an internal service.	Usual care with some written basic recommendations	15-30 minutes	8-week	Web-based	Yes	At the end of 8-week program	Web-based exercise program was effective in reversing the detriment in functional capacity and strength due to chemotherapy
Haas, et al (2018)	235 + 224 control	40-74 years	women who had received a bilateral screening mammogram with a normal or benign finding (i.e., Breast Imaging-	brief (3-5 minutes) informational video ; their personalized video based on their calculated breast cancer risk and MBD result. available in Vidscrips (https://www.vid	Presented an overview of breast density, how it is measured, a woman's personal MBD, an overview of risk factors for breast cancer, a woman's personal risk for breast cancer, and personalized recommendations for	Received their personalized video described below to view if they wanted.	3-5 minutes	4 session	Web-based	no	the end of 2-week program	Brief, personalized videos following mammography can improve knowledge of MBD and personal risk of breast cancer compared to a legislatively mandated informational letter.

Reference	Sample	Target People	Study population	Video study arm	Video content	Non-video study arm	Video duration	Session	Platform	Real time communication during intervention	Follow up time points	Conclusion
			Reporting and Data System (BIRADS) 1 or 2	scrip.com),	screening based on risk and MBD							
Kim, et al (2018)	76 patients	18-65 years	females diagnosed with metastatic breast cancer	A mobile game, ILOVEBREAST (CLGAMES, 3 week program were recommended to play the game for >30 minutes a day, 3 times per week.	Education for preventing side effects of anticancer drugs, support for the prevention of side effects of anticancer drugs including numbness, hair loss, and loss of appetite, encouragement of mood and activity, including exercise, pet walking, cooking, and social game playing, which may facilitate participation in such activities in real life, and self-assessment using a personal avatar	Routine care. A brochure elaborating the coping strategies for the side effects of chemotherapy drugs, The 26-page education material consisted of 2 parts.	>30 minute	3 times per week, 3 week (9 session)	A mobile game application	none	the end of 3-week program	Education using a mobile game led to better patient education, improved drug compliance, decreased side effects, and better QoL compared with conventional education.
Rosen et al (2018)	112 women	25- 73 (M = 52.29; SD = 10.33).	Women diagnosed with breast cancer ≤5 years	Mindfulness app (Headspace App.) a meditation training audio and animated video	Training content included techniques for calming meditation (e.g., focus on the breath) and insight meditation (e.g., cultivating awareness, insight, and compassion).	Waiting list	Minimum, a 10-minute introductory mindfulness session	Overall participant interaction with the app was self-guided to approximate typical day-to-da	Application	None	post intervention (9-weeks) and 12 week post-baseline	Commercially available AMT may proffer some benefit to women seeking to enhance their QOL following breast cancer diagnosis.

Reference	Sample	Target People	Study population	Video study arm	Video content	Non-video study arm	Video duration	Session	Platform	Real time communication during intervention	Follow up time points	Conclusion
Gell, et al (2022)	39 female and male	mean age 70.4 ± 5.7)	rural cancer survivors age ≥ 60 years (79% female;	Remotely delivered EnhanceFitness (tele-EF) exercise program via Zoom	10 minutes for social interaction, then the 1-h exercise classes were delivered by an EF-certified instructor	waiting list	1 hour	48 (3 days/week for 16 weeks)	Videoconfer ence	yes	at the end of 16 weeks program	Tele-EF is feasible in older, rural cancer survivors and results in positive changes in physical function and physical activity.
Peipert, et al (2021)	129 female and male	52.6 (10.3); control: 51.1 (10.5)	Ambulatory cancer patients	CancerHelp-TT educational program software	Main menu in CancerHelp-TT educational program is: treatment and radiation therapy, cancer breast and colon and rectum, eating hints, cancer pain, topic for today, video doctor welcome, video learning about cancer and finding help, patient resources to help, and facing forward life after cancer treatment	Usual care	As often as they wish	Participants could access the software at any time and as often as they wished	Application	no	1 year post-baseline	This trial's capacity to evaluate the CancerHelp-TT program was diminished by significant patient drop-out over the course of follow-up. The CancerHelp-TT software was favourably rated by intervention participants. The CancerHelp-TT program showed promise to increase vulnerable cancer patients' cancer knowledge and adaptive health beliefs and attitudes.
Cacioppo, et al (2020)	147 female and male	Remote telehealth 52.4 (13.0); usual care 55.0 (11.6)	Participants meeting cancer genetic testing guidelines were recruited to this multi-centre.	Remote telehealth services (phone and real-time videoconference) via MediSprout, Vidyo, and/or BlueJeans	genetic disclosure sessions by videoconference	Group 2: remote phone services. Group 3: Usual care (informational flyer)	NR	one disclosure session	Videoconfer ence	yes	After intervention and six month later	Telehealth increases uptake of genetic counselling and testing at oncology practices without genetic counsellors and could significantly improve identification of genetic carriers and cancer prevention outcomes.
de Frutos et al (2020)	269 women	PPC : 52.17 (8.36) ; OPPC	Cancer patients, complete oncologica	11 weekly online group sessions of 90 to 120 minutes Online	Psycho-oncological treatment	face-to-face treatment consisting of 12 weekly group	90-120 minutes	11 weekly	Videoconfer ence	yes	After treatment and 3 month	The OPPC treatment was effective and engaging for female cancer early survivors.

Reference	Sample	Target People	Study population	Video study arm	Video content	Non-video study arm	Video duration	Session	Platform	Real time communication during intervention	Follow up time points	Conclusion
		47.34 (8.05)	1 treatment	group positive psychotherapy for cancer survivorship (OPPC)		sessions of 90 to 120 minutes. Face-to-face group positive psychotherapy for cancer survivorship (PPC)					after treatment	
Nissen, et al (2019)	150 female and male	Mean age 54.55 years	Breast (n = 137) and prostate cancer (n = 13) survivors	iMBCT; Each of the eight 1-week modules included written material, audio exercises, writing tasks, cancer-specific patient examples, and videos with patients and experts.	Program collaboration with cancer survivors adjust the cancer survivors needs, including the incorporate of cancer-specific adjustment by clinical psychologist, written material, audio exercises, writing tasks, cancer-specific patient examples, and videos with patients and experts.	wait-list control (30%).	Average 6 hours and 38 minutes on each completed 1 week module	8 week	E=mail	no	After intervention and six month later	iMBCT was a helpful intervention for cancer survivors suffering from symptoms of anxiety

Table 4. Educational content of audio-visual intervention

Author, year	Knowledge	Psychological Issues	Exercise guideline	Counselling	Skill	Platform
Golzarifard, et al (2022)					Yes	WhatsApp
Korkmaz et al (2020)	Yes		Yes		Yes	Web-based
Kasting, et al (2019)	Yes					E-mail
Santoyo-Olsson, et al (2019)	Yes	Yes				YouTube (and DVD)
Dong, et al (2019)	Yes		Yes			Videoconference
Ariza-Garcia et al (2019)			Yes			Web-based
Haas, et al (2018)	Yes					Web-based
Kim, et al (2018)	Yes	Yes	Yes			Application
Rosen et al (2018)			Yes			Application
Gell, et al (2022)			Yes			E-mail
Peipert, et al (2021)	Yes					Application
Cacioppo, et al (2020)				Yes		Videoconference
de Frutos et al (2020)		Yes				Videoconference
Nissen, et al (2019)	Yes	Yes				E-mail

Population Characteristics

Seven studies recruited breast cancer patients,¹⁷⁻¹⁸ two studies enrolled high risk breast cancer participants,^{19,20} and five studies obtained subject breast and other cancer sufferers.²¹⁻²² The number of samples in the studies between 60-459 participants.^{23,20} All studies included participants who were 18 years or older. Educational level of participants ranged from high school or less to college or university. Only one study reported some of their participants had primary education.²² Four studies not informed the education level of their participants. The summary results of included studies are presented in Table 2.

Audio-visual Duration

The majority of the studies used multiple videos as the educational tool (Table 3). However, three studies have utilize videoconferencing as a real-time communication as an additional^{22,23} or sole educational³¹ interventions. Further, not all studies determine the length of the videos, one study did not reported the video duration¹⁹, and one study did not describe the duration of videoconferencing.³¹

Furthermore, audio-visual duration ranged from 10 minutes to 1 hour in single view.

Interventions Delivery Mode

All the 14 studies reviewed utilize internet platforms media. Four studies reported interventions based on video conference, three studies adopted web-based intervention, three studies used mobile application, two study deliver video by e-mail, a study utilize YouTube accompanied by a DVD, and a study utilized WhatsApp application (Table 4).

Educational Content

The content of educational video included in the studies varied, but could be divided into four categories: relevant basic knowledge, psychological issues, exercise guideline, and counselling. Eight studies^{17,20,21,23,24-26,30} provided basic breast cancer knowledge. Meanwhile, four studies^{17,21,22,26} explained psychological issues relevant to breast cancer psychotherapy, six studies^{17,18,23,24,28,29} introduce exercise guideline, a study³¹ mentioned counselling session, and two studies^{19,24} contain BSE method. A total of fourteen studies utilized video or

audio-visual as interventions in their researches. The video or audio-visual take advantage various digital media platforms such as the web-based^{18,24,20}; videoconference^{22,23,31}; e-mail^{21,25,29}; digital application^{17,28,30} YouTube²⁶ and WhatsApp.¹⁹

Audio-visual which purpose to improve knowledge, can be provided through various platforms, such as web-based, e-mail, videoconference, YouTube or application. The intervention related to psychological issues used platforms such as YouTube, digital application, videoconference and video sent by e-mail. The conclusion of the studies described the results, that psychological issues including psychological therapy can be provided with digital media platforms. As cancer diagnosis can develop a complex psychological person's life, support is needed to improve patient's quality of life. In the way of delivering health information using digital media platform represented how new digital revolution can improve patient care.^{32,33} Emotional support is the area most needed by breast cancer survivors, and the next need is general health information.³⁴ Beside that, cognition therapy method based on mindfulness can reduce the distress and defective thinking patterns of breast cancer patients.³⁵ Various digital platforms are useful to provide convenience in supporting patients.⁴

For exercise guiding purpose, two studies employed web-based, two studies used application, a study used videoconference and a study via video sent by e-mail. Breast cancer survivors revealed that they would prefer to have a knowledgeable mental counsellor to guide and empower them during the exercise intervention.⁹ Supervised exercise in overweight breast cancer patients improve body composition, quality of life and symptom.³⁶

Furthermore, to improve BSE skill, a study used video WhatsApp¹⁹ and a study used video in web-based.²⁴ Nevertheless, the result of video WhatsApp has not be better than face-to-face to provide satisfaction with BSE training and create appropriate self-efficacy for breast self-examination. On the other hand, BSE is still carried out for low and middle-income countries so this should be a concern. The main barriers to using digital media platforms can be due to patients discomfort with technology, poor access to reliable internet connection and limited supported clinic infrastructure.³⁷ Patients perceived barriers can include absence face-to-face connection with health-providers, lack of acquaintance with technology, and perceived lack of personalized telehealth utilities and platforms.³⁸

In developed countries, cancer treatment is very developed and equipped with adequate facilities and infrastructure. Cancer screening methods and early cancer detection have also been developed to prevent cancer from becoming fatal due to late diagnosis and slow treatment. As in the breast cancer prevention screening program using mammography, in developed countries such as the US and Europe, this program has become a government program.^{39,40,41} The women will be issued an invitation to have a mammography by email. Email as a platform that is owned by almost all residents of developed countries increases the ease of communicating calls for breast cancer screening in women. Advances in information technology and digital media platform capability have a great opportunity to be at the forefront of delivering health service information to the public, especially cancer patients.⁴² Meanwhile, the community's ability to absorb and manage the information that reaches them is also one of the success factors in conveying health information. In countries that have low per capita income where the people are less educated, as well as in conflict countries and have limited access to digital technology, the delivery of information via digital media platforms becomes more limited and not optimal.^{43,44} Low income prevents people from having digital equipment as a medium for self-development. The lack of literacy skills in this community group is also often an obstacle in absorbing and managing information conveyed through digital media platforms.⁴⁵ Thus, outcomes in countries that have limited telecommunications infrastructure as a basis for digital media platforms and have low levels of education are less than satisfactory.

There are some acknowledged limitations of the study. Firstly, several articles did not report the contents and duration of audio-visual intervention. Secondly, several articles from this study were not followed up after conducting the post-test intervention, so their long-term effects are not clear. Thirdly, the comparison between the duration and frequency of audio-visual interventions did not take into account statistically that can provide effective and efficient results. Fourth, most of the research in these articles has been carried out in high-income countries, so further research is needed to be used as a basis for managing digital media platforms in developing countries or in countries with low incomes. However, this literature review has several strengths. Firstly, all articles in the study were reviewed using the randomized control trial design,

that gives the power of the data. Secondly, disclosing the duration and frequency of audio-visual interventions can be the basis for health care providers in conducting audio-visual interventions for patient well-being. Thirdly, although the majority of the articles was conducted in high-income countries, the demographic characteristics of the target population in the study was varied, thus the results could be more generalizable. Fourth, there are many types of digital media platforms used in this research article, so it can provide alternative options for health service providers to choose the type of digital media platform that best suits the audience to be treated. Therefore, we conclude that the results based on the current evidence are relatively trustworthy.

CONCLUSION

This study found that compared to other educational media, audio-visual interventions had more variable degrees of effectiveness to enhance the patients quality of life. The effectiveness of audio-visual interventions was dependent on certain characteristics. Audio-visual interventions appear to be effective improvement of quality of life amongst breast cancer patients. Nevertheless, its effectiveness depends on frequency and quality of audio-visual delivery. The contents of education materials must be adjusted to the method of delivery. The potential for audio-visual modelling via digital media platforms to enhance quality of life may be a consequential consideration in the development of future audio-visual interventions.

The development of telecommunication infrastructure should be of particular concern to stakeholders as an effort to improve the quality of health education in the community. Improving health service facilities and ease of access is also needed as a follow-up to the health promotion delivered.

Health workers as the front line of health service providers also need to have adequate knowledge and skills, so they can provide optimal health services to the community. Continuous long-life learning for health workers must be emphasized and facilitated so that they can continue to improve their quality and skills in handling cases and are able to keep abreast of medical technology developments that are developing very rapidly. It is necessary to carry out research to develop guidelines for creating health education projects using digital media platforms so that the audio-visual model made is more effective and efficient

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