REVIEW ARTICLE

The contradictions of e-health intervention experience of users toward its outcome: a systematic review

Background: Electronic Health is a kind of communication technology that covers a wide range of healthcare activities, from diagnosis to treatment. This study aimed to investigate the conflicts caused by e-health interventions in patients' attitude and its influence on consequences of the disease in a Meta synthesis study.
Methods: Present study is a systematic review and meta-synthesis qualitative research according to articles found by Medline searching the keyword "e-health" published, collected, and reviewed from 2000 to 2019,. Then the search was narrowed down using the keywords "qualitative studies", "patients' attitudes", "Patients' view" about e-health. All English texts or abstracts were included in the study. Duplicated remote papers and paper with main and complementary treatment, also, web base, internet, software, and mobile mediated treatment process as an electronic way were included to the search process. All irrelevant, duplicated, and qualitative studies were excluded from study and totally 23 papers were extracted to review.
Results: Regarding the effective features of e-health, it has a significant beneficial effect by empowering patients, treatment through supportive networks, changing the traditional therapeutic algorithms in inducing a successful and influential treatment, successful outcomes with functionality, also being flexible and attractive. Patients also referred to its shortcomings in treatment and expressed the ability to implement it with aura, parallel, and non-variable coverage.
Conlusions: Due to the perceptions and positive outcomes of the method, it is necessary to consider ways and means to neutralize or minimize the negative effects of technology on treatment, therefore more efficient use of the electronic health system can be achieved.

Keywords: Meta-synthesis, Quantitative study, Electronic Health, Patient, Consequences

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تناقضات تجربة المستخدم لتدخل الصحة الإلكترونية من النتيجة: مراجعة منهجية

الخلفية: الصحة الإلكترونية هي نوع من تقنيات الاتصال التي تغطي مجموعة واسعة من أنشطة الرعاية الصحية من التشخيص إلى العلاج. هدفت هذه الدراسة إلى التحقيق في التعارضات التي تسببها تدخلات الصحة الإلكترونية في مواقف المرضى وتأثيرها على عواقب المرض من دراسة التركيب التلوي.
الطرق: الدراسة الحالية عبارة عن مراجعة منهجية وأبحاث نوعية في مجال التوليف التلوي ، حيث تم نشر وجمع ومراجعة المقالات التي عثرت عليها Medline التي تبحث في الكلمة الرئيسية "e-health" بين عامي ٢٠٠٠ و ٢٠١٩. ثم تم تضييق نطاق البحث باستخدام الكلمات الرئيسية "دراسات نوعية" و "مواقف المرضى" و "رأي المرضى" حول الصحة الإلكترونية. يتضمن كل نص أو ملخص باللغة الإنجليزية للدراسة. نسخ الورق عن بعد والورق مع المعالجة الرئيسية والتكميلية ، وكذلك قاعدة الويب والإنترنت والبرمجيات وعملية المعالجة عبر الهاتف المحمول كطريقة إلكترونية مضمنة في عملية البحث. جميع الدراسات غير ذات الصلة والمكررة والنوعية مستبعدة من الدراسة وإجمالي ٢٣ ورقة مستخرجة للمراجعة.
النتائج: فيما يتعلق بالسمات الفعالة للصحة الإلكترونية ، فهي قادرة على تحقيق تأثير مفيد كبير من خلال تمكين المرضى ، والعلاج من خلال الشبكات الداعمة ، وتغيير المخططات العلاجية التقليدية في إحداث علاج ناجح ومؤثر ، والنتائج الناجحة مع الوظائف و المرونة و الجاذبية. فقد أشاروا المرضى أيضًا إلى أوجه القصور في الصحة الإلكترونية في العلاج وأعربوا عن قابليتها للتطبيق مع تغطية هالة وموازية وغير بديلة.
الاستنتاجات: بسبب التصورات والنتائج الإيجابية للطريقة ، من الضروري النظر في طرق و وسائل لتحييد أو تقليل الآثار السلبية للتكنولوجيا على العلاج ، بحيث يمكن تحقيق استخدام أكثر كفاءة للنظام الصحي الإلكتروني.

الكلمات المفتاحية: التركيب التلوي، الدراسة الكمية، الصحة الإلكترونية، المريض، العواقب

اس کے نتائج کی طرف صارفین کے ای ہیلتھ مداخلت کے تجربے کے تضادات: ایک منظم جائزہ

بیک گراوند: الیکٹرانک ہیلتھ ایک قسم کی مواصلاتی ٹکنالوجی ہے جو صحت سے متعلق سرگرمیوں کی ایک وسیع رینج کا احاطہ کرتی ہے ، تشخیص سے علاج تک۔ اس مطالعے کا مقصد مریضوں کے رویے میں ای ہیلتھ مداخلت کی وجہ سے پیدا ہونے والے تنازعات اور میٹا ترکیب مطالعہ میں بیماری کے نتائج پر اس کے اثر و رسوخ کی تحقیقات کرنا ہے۔
طریقے: موجودہ مطالعہ ۲۰۰۰ سے ۲۰۱۹ تک شائع شدہ ، جمع ، اور جائزہ لینے والے مطلوبہ الفاظ "ای ہیلتھ" کو تلاش کرنے والے مضامین کے مطابق ایک منظم جائزہ اور میٹا ترکیب معیار کی تحقیق ہے۔ اس کے بعد ای-ہیلتھ کے بارے میں مطلوبہ الفاظ "کوالیٹیٹیو اسٹڈیز" ، "مریضوں کا رویہ" ، "مریضوں کا نظریہ" استعمال کرتے ہوئے تلاش کو محدود کردیا گیا۔ تمام انگریزی عبارتیں یا خلاصہ مطالعے میں شامل تھے۔ مرکزی اور تکمیلی علاج کے ساتھ نقل شدہ ریموٹ پیپرز اور پیپر ، الیکٹرانک طریقے کے طور پر ویب بیس ، انٹرنیٹ ، سافٹ ویئر ، اور موبائل ثالثی علاج کے عمل کو بھی تلاش کے عمل میں شامل کیا گیا۔ تمام غیر متعلقہ ، نقل ، اور معیار کے مطالعے کو مطالعہ سے خارج کر دیا گیا اور مکمل طور پر ۲۳ کاغذات کو جائزہ لینے کے لیے نکالا گیا۔
سفارش: ای ہیلتھ کی موثر خصوصیات کے بارے میں ، اس کا ایک اہم فائدہ مند اثر ہے مریضوں کو بااختیار بنانا ، معاون نیٹ ورکس کے ذریعے علاج ، روایتی علاج کے الگورتھم کو تبدیل کرنے سے کامیاب اور بااثر علاج ، فعالیت کے ساتھ کامیاب نتائج ، لچکدار اور پرکشش بھی۔ مریضوں نے علاج میں اس کی کوتاہیوں کا بھی حوالہ دیا اور اسے چمک ، متوازی اور غیر متغیر کوریج کے ساتھ نافذ کرنے کی صلاحیت کا اظہار کیا۔

تعارضات ناشی از مداخلات سلامت الکترونیک در تجربه بیماران و تأثیر آن بر پیامد بیماری: یک مرور نظام مند

زمینه و هدف: سلامت الکترونیک تکنولوژی برقراری ارتباط است که فعالیت های مربوط به مراقبت های بهداشتی از تشخیص تا پیگیری را پوشش می دهد. این مطالعه با هدف بررسی تعارضات ناشی از مداخلات سلامت الکترونیک در نگرش بیماران و تاثیر ان بر پیامد بیماری در قالب یک مطالعه مرور نظام مند انجام شده است.
روش: در مطالعه متاسنتز حاضر که به صورت سیستماتیک صورت پذیرفت، مقالات کیفی منتشر شده پیرامون کلمات کلیدی "e- health" در سالهای۲۰۱۹-۲۰۰۰جمع آوری و مورد بررسی قرار گرفت. در ابتدا مدلاین با کلمات کلیدی مذکور بررسی و سپس با اختصاصی نمودن ان با کلمات کلیدی "مطالعات کیفی ، نگرش بیماران ، دیدگاه بیماران به سلامت الکترونیک " ادامه یافت. همه متن انگلیسی یا چکیده آن شامل مطالعه است. کلیه درمان های الکترونیک به عنوان درمانهای اصلی و مکمل مد نظر قرار گرفت و استفاده از اینترنت و نرم افزار و موبایل در توسعه درمانهای الکترونیک لحاظ گردید و بعد از حذف مقالات بی ربط، کمی و مواردی که با متاسنتز همخوانی نداشت ۲۳ مقاله جهت انجام متاسنتز آماده گردید.
یافته ها: سلامت الکترونیک با ویژگی های کارامدی روش، سودمندی قابل توجهی را با قدرتمند سازی بیماران، درمان از طریق شبکه های حمایتی، تغییر الگوریتم های سنتی درمانی در القای یک درمان موفق و تاثیر گذار، پیامدهای موفقی را با قابلیت اجرا، منعطف و جذاب ایجاد می نماید. بیماران ضمن درک اثرات درمانی مثبت و قابلیت اجرایی آن، به کاستی های سلامت الکترونیک در درمان نیز اشاره نمودند و قابلیت اجرای آن را با پوشش هاله ای، موازی و غیر جایگرین بیان کردند.
نتیجه گیری: با توجه به ادراکات و پیامدهای مثبت روش، لازم است تمهیدات و شیوه هایی جهت خنثی سازی و یا کاهش اثرات منفی فناوری در درمان بکارگرفت تا بتوان بهره برداری موفق تری از نظام سلامت الکترونیک بکار بست.

واژه های کلیدی: متاسنتز، بیماران، سلامت الکترونیک، پیامد ، تحقیق کیفی

INTRODUCTION

The introduction of technology into the life of individuals has changed the way they communicate with others. In fact, it has made the communication, work, and leisure more feasible, and reduced the distances and the physical barriers, especially in the healthcare are, among people (1). Over the past decade, the e-health interventions and other e-health technologies have significantly and globally developed, and consequently, have changed the form of healthcare and clinical research(2). Electronic Health is a kind of information and communication technology software that covers a wide range of healthcare activities, from diagnosis to treatment (1). Naslund et al. found that e-health interventions are highly acceptable among individuals with severe mental illness (3). Van der Kriekle et al. also noticed that individuals with psychosis are able and willing to use e-health, through which have gotten better results in drug management (4). E-health interventions include personalized digital tools, drug tracking tools, home care systems, smartphone applications, SMS and web-based interventions (5). In fact, e-health is closely related to the health services of Mobile Health, which is the use of mobile devices for medical purposes and healthcare functions (1). Therefore, M Health as a subdivision of E Health plays an important role in development of healthcare and improves its quality and effectiveness (6). Statistics show that, with the advent of mobile devices, healthcare professionals, including doctors, nurses, and other professionals, use mobile phone Healthcare systems to improve their efficiency in healthcare (7). Nowadays mobile phones are really helpful in this arena because Mobile Health has eased accessing to healthcare services, especially in undeveloped countries where the provision of services and financial resources have been limited, and the prevalence of diseases is high (8). Meanwhile, World Bank reports that there are 6 billion mobile subscribers around the world, of which approximately 5 billion are living in developed countries (9). In 2015, only 12% of people all over the world did not have a mobile phone, and 43% of them owned a smartphone (10). In our country, Iran, the penetration rate of mobile phones has reached 90% (11) and it is possible to send a message to each user, regardless of the device model and the type of its service provider (12). The traditional health training sessions are such that patients might not be able to attend due to inappropriate time, problems of traveling, or child care issues (13), while SMS services, besides being effective and low-cost, can disseminate health information to people who are out of reach (11). Moreover, sending messages is an applicable way for regions with a shortage of healthcare professionals (14). Therefore, some health care services have transformed from paper form to electronic form (e-health) (15). In related study conducted in India, researchers tried to encourage people to have a healthier lifestyle by sending mobile phone messages. In this study, researchers sent 60 to 80 messages to the intervention group over more than two years, with this content: don't eat while watching TV, it may cause overeating. Eventually, they reported that the incidence of diabetes in tested group was 40% lower than controlled group (16). Zeinab et al. in their study on effects of sending mobile phone messages on the knowledge and practice of diabetic foot care in developed countries showed that this intervention is an economic, practical, and effective way to improve the diabetic foot care (9). Another study conducted by Haghani et al., investigates the effects of distance education programs, here sending mobile phone messages, on the awareness and satisfaction of pregnant women during their pregnancy. Findings of this study showed that this intervention in pregnancy training rises the awareness and satisfaction of pregnant mothers (11). On the other hand, statistics show that today, social media have become online tools which everybody, regardless of time and place, can access, use, and produce information (17). Social media can be used for a variety of purposes such as education, communication with patients, access to health information, healthcare, general health programs, and research (18). Studies show that social media in comparison with old forms of communication are more patient-centric and interactive (13). In this regard, the results of the study by Reich et al. in 2016, which examined the use of social media by patients with inflammatory bowel disease, showed that 62% of patients are willing to use educational programs through social media (19) Since the use of social media is on the rise, a study in the Netherlands showed that one out of every four tends to use social media to communicate with healthcare professionals (20), since people see incoming messages even when they are busy (11). We conducted a meta-synthesis to examine the effectiveness of e-health interventions for patients by calculating the effect size and examining the characteristics of these interventions that may be related to program effectiveness.

METHODS

Present study is a systematic review research conducted to examine the effectiveness of e-health app interventions for patients by calculating the effect size and examining characteristics of these interventions that may be related to program effectiveness.

Selection criteria

Only full text, peer reviewed, English published qualitative studies were included in the review; therefore, the present researchers excluded unpublished studies, dissertations, book chapters, and conference abstracts.

In this synthesis, the study aimed: (1) e health: meta synthesis form effect of e health on patient prospective, (2) to discern how e health could be efficient and what is the efficacy dimension in patients' perspective, (3) to elucidate this evidence into the effect of this method in patients' care, education and outcome.

As outlined by Sandelowski et al, our method was meta-synthesis form effect of e health on patient prospective. The systematic method was adapted from Gewurtz et al. The model by Gewurtz et al was subsequently used to conduct this review: (1) identifying relevant research questions, (2) setting inclusion and exclusion criteria, (3) identifying and retrieving studies, (4) assessing the quality of the studies, and (5) synthesizing findings from across the studies (2,21,22).

This review focused solely on academic qualitative studies from January 2000 to 2019, toward e-health: meta synthesis form effect of e health on patient prospective. A preliminary search found no evidence pre-1990. Authors devised their inclusive parameters as follows: studies published in any country, peer-reviewed research, and English-language publications. The participants of the study were patients given e health for care and education and fallow up in wide range of diseases.

As per qualitative meta-synthesis methods, the exclusion criteria were quantitative articles; qualitative, mixed methods articles; review articles; meta-syntheses; literature reviews.

Search Strategy

The search strategy was developed by all authors in conjunction with a librarian and included keywords that would be transferable across a number of databases (in MeSH). Some of these keywords included truncation to allow for a wider gauge of results. Original academic research articles were sourced using the keywords "e health* OR m health * e health AND patients' opinion * e health AND patients' perspective** e health AND patients' satisfaction * e health AND efficacy * * e health AND patients' perspective AND qualitative study or Meta synthesis*. The search terms were input on MEDLINE, EMBASE, PsycInfo, Cochrane, EBSCO, CINAHL, SCOPUS, Web of Science, Academic Search Premier and Google Scholar. Each category consisted of a mixture of medical subject headings (MeSH).

Total 114,000articles were identified as being potentially appropriate for this review. 52,500 articles were appropriate for e-health and patients. Key words limited to 32200 articles related to e health and patients' outcome. 1324 articles were in PubMed. 286 articles were in google scholar, from which 824 articles from PubMed and 230 articles from another search engine were excluded. Full text articles were retrieved for further investigation when their title and abstract appeared to meet inclusion criteria.

Studies screening method

The titles and abstracts were reviewed by researchers. 471 articles were rejected for failing to meet the inclusion criteria. The remaining articles were extracted for full-text review. Duplicate articles were excluded and 23 articles were chosen for the study. Both authors reviewed the reference lists of the 23 articles. A total combination of 23 studies underwent quality appraisal.

Assessment of quality

Methodological quality of included studies was assessed independently by researchers. Also they have used the CASP qualitative appraisal tool to assess the credibility, relevance and rigour of each paper (23).

RESULTS

Table 1 shows the research, type of interventions, and outcome form patients' report (24-43). This table shows different interventions used by electronic intervention in patients in different groups.

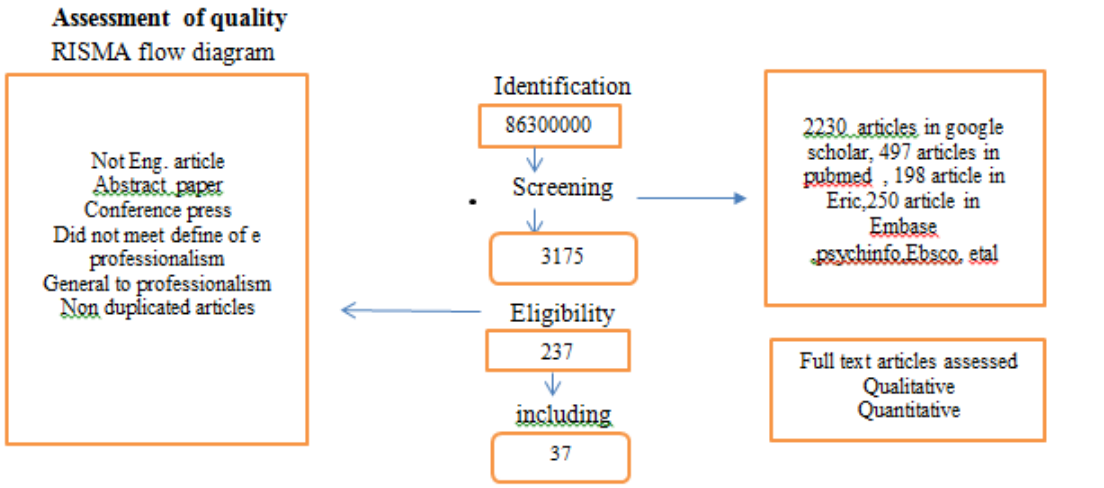

Figure 1. PRISMA flow diagram

Table 1. Paper extracted themes for e health intervention and outcome

Results	Sample	Type	Researcher	Intervention
Participants reported intervention: The feasibility and efficacy of the intervention. Support from group members and moderators, feasibility and acceptancy by users	women with sexual distress due to gynecologic cancer	A qualitative study	Wiljer D,etal , 2011	An internet-based support group for women with sexual distress due to gynecologic cancer

Table 1. Continued

Results	Sample	Type	Researcher	Intervention
An emerging techno social service ,empowerment of patients,improve administrative efficiency	Clinical Videoconferenc ing as e-health	A Critical-Realist Review and Qualitative Meta-Synthesis	Ekeland, Hansen, Bergmo,2018	Clinical videoconferencing
Increased involvement, empowerment, and security, as well as concerns such as ambivalence and uncertainty.	Persons With Type 2 Diabetes	Qualitative Study	Öberg U, etal. 2018	Using e-health Services for Self-Management Support
Support and improve their care b privacy and data security, accessibility, the loss of necessary visits, increased social isolation, provider burden, downloading responsibility onto patients for care management, entry errors, training requirements, and potentially confusing interfaces. Challenges/barriers to using e-health mobile apps to collect the information.	Patients With Complex Chronic Disease and Disability	Narrative review	Gray CS, Miller D, Kuluski K, Cott C, 2014	Tying e-health tools to patient needs
Critical for self-care, e-health support needs to be placed within the context of community A complete feedback loop is needed to assure productive Technology-based interactions between the patient and provider.	Chronic illnesses	a theory	Gee PM, etal .2015	The e-health
Determining their health status Providing adequate information Support and feedback on self-management behavior. Positive attitude toward using mHealth and an mHealth intervention Attractive, rewarding and safe.	patients with chronic obstructive pulmonary disease	a qualitative study	Korpershoek YJ, etal 2016	E health for self-management in patients with COPD
Increased awareness of the variability of their symptoms (Monitoring (continuity of care).	COPD(chronic obstructive pulmonary disease)	a qualitative study	Williams V,etal 2014	Mobile health
Engage and support Extend existing relationships Acting as a partial substitute for the role of health professionals. Those that can be well integrated into everyday life and health care routines Easy to use, compatible with patients' existing environment, Dont significantly disrupt patients' lives and routines. Capacity to improve knowledge, motivation, and a sense of empowerment; Engage network members; and reinforce positive behaviour change, prompts for action and surveillance.	COPD, heart failure, diabetes	a realist review qualitative	Vassilev I, etal 2015	tele-health interventions
Facilitate an experience of personalized care and reassurance Engagement promotes Benefit rather than burden.	adult cancer survivors aged 18 years and over	A Systematic Review and Thematic Synthesis	Cox A, etal 2017	tele-health
Support patients with their self-care management both sharing of medical and nursing knowledge, and recognition of the value of patient's knowledge and experiences Improve the management of a patient-practitioner encounter. Patient-orientated interventions iImprove health care outcomes.	adults with physical chronic illness	A systematic review and content analysis	Rees S,Williams A. 2009	E health.
Reduced length of stay without any associated adverse effects on discharge destination, morbidity or mortality. Effective in changing professional behaviours	adult patients who had suffered a stroke	A systematic review and content analysis	Allen DRixson L. 2008	E health/ Erehabilitation
Providing in-person support for making healthy behaviour changes Online reassurance and procedures for managing concerns)	hypertension	a theory-, evidence- and person-based approach	Band R, etal 2017	Digital intervention for self-management
Positive for the professional nurse role, and is evidence-based Understanding of the intervention IT infrastructure and support Negative organizational included: -added workload, competition with existing programs, implementation length, and -limited available nurse staff time; contacting patients and the logistics of integration into -existing workflow -inadequate staffing	blood pressure	Content analysis	Shaw RJ, etal 2013	Telemedicine

Table 1. Continued

Results	Sample	Type	Researcher	Intervention
Easy to use, compatible with patients' existing environmentskills, and capacity Do not significantly disrupt patients' lives and routines. Capacity to improve knowledge, motivation, and a sense of empowerment;Reinforce positive behaviour change, Prompts foraction and surveillance	supporting patients with long-term conditions (LTCs)	Narrative , realist review	Vassilev I, et al 2015	Tele-health interventions
Anxiety by doing measurement themselves and uncertainty about follow-up Many participants worried about the implementation of e-health being a consequence of budget cuts in care.	patients with a chronic disease diabetes COPD cardiovascular condition	Qualitative Narrative review	Huygens MW, et al 2016	e-health for self-management purposes.
Easy to useAbility to self-manage, Sense of Responsibility over their care, and improved patient-centered care Helped focus conversations on goal setting workflows Monitoring questions were not adequately tailored to Individual patient needs, and daily reporting became tedious and Time-consuming for patients.	Patients With Complex Chronic Disease and Disability in Primary Care Settings(CCDD)	A 4-week pilot study	Gray CS, et al 2016	Mobile app / m Health
A high volume of information, visits, and self-care Need to coordinate, synthesize, and reconcile health information Self-advocacy and expertise	patients with multiple chronic conditions (MCCs)	screening survey standard content analysis methods	Zulman DM, et al 2015	e-health technology
Help Needs to develop (information, engagement of somaticsymptoms), management of psychosocial Providing supportive care services	Neck Cancer Patients	A Qualitative Study With Content analysis	L Li Y, Li J, Zhan Q, He Q 2018	Internet Informational Support
Acceptability of the intervention Acceptability of the study The perceived active ingredients of the intervention The suitability of the intervention to adolescents' lives	Adolescents With Cancer Related to a Pain	Qualitative Study Nested Within a Multicenter Pilot Feasibility Study	Jibb LA, et al 2018	Management app
Endorsement of the system The need for a clinical expert The need to individualize the systemImprove potential clinical effectiveness.	adolescents with cancer	literature review, i	Jibb LA, Cafazzo JA, Nathan PC, et al 2017	mHealth.
Feelings of support and connectedness Someone was taking the time to send them messages Poor access to cell networksLanguage issues as well as skills in reading, writing, and using mobile phones Privacy and confidentiality	Health care team		Ames HM,etal).2019	Digital communication via mobile devices

Table 2. Themes extracted from meta-synthesis and main researches (25-29; 40,39,36,35,33,32,31)

	Ames (2019)	Wiljer, et al (2011)	Ekeland, et al 2018	Öberg, et al 2018	Steele 2014	Gray, et al 2014	Gee, et al	Korpershoek, et al 2016	Williams, et al 2014	Brunton, et al 2015	Cox,et al 2017	Rees Williams 2009	Band,etal 2017	Shaw,et al 2017	Vassilev 2015	Huygens, 2016 -	Gray,et al 2016	Zulman, et al 2015	Li,etal 2018	Jibb, et al	Jibb ,et al
Efficacy	*	*	*		*					*		*	*								
Feasibility		*				*	*							*		*				*	*
Benefit	*	*		*	*		*	*	*	*	*	*			*		*	*	*	*	*
Challengeable	*															*					

Table 2 shows the themes extracted from meta- synthesis and common results by researchers. This themes conclude efficacy, feasibility, benefit, and challenges.

Table 3 shows the themes concluding efficacy, feasibility,

benefit, and challenges and main indicators by research samples.

DISCUSSION

The result of studying various articles about patients' attitudes towards the use of electronic health interventions included positive effects, challenges, and different barriers. Based on present analysis, the effects of electronic health on consequences of diseases were classified into three positive and two negative components. Positive components included efficiency of the method, utility, and practicality, and negative components were barriers and challenges of using intervention.

Table 3. Research results related to specific themes (24-29;31,40, 36)

	Themes	Main indicators	Sample of order construct results	
		Shaw, et al 2013	Ekeland, et al 2011	Kuluski & Cott 2016
Efficacy	Supportive method for assist patient care & education, training and fallow up	Alignment with the existing site environment Improved patient outcomes Evidence-based; understanding of the intervention	Emerging techno social service to interactive and community discussion	Ability to self-manage, catalyzed a sense of responsibility over their care, and improved patient-centered care delivery.
Benefit	of intervention with empowering patients treatment through supportive networks Changing the traditional therapeutic algorithms in inducing a successful and influential treatment	Wiljer, et al 2.11 Receiving support from group members and moderators increased emotional well-being, Comfort in discussing online	Gee, et al 2015 Benefits of the e Community or virtual communities	Vassilev, et al 2015 The potential to reshape and extend existing relationships
Feasibility	Feasibility of intervention from successful outcomes with the ability to perform, Flexible and attractive	Wiljer, et al 2011 Active ingredients of the intervention The suitability of the intervention to adolescents' lives	Vassilev 2015 . Increased involvement, empowerment, and security efficacy Active ingredients of the intervention, The suitability of the intervention to adolescents' lives	Li, et al 2018 E Easy to use, compatible with patients' existing environment, Skills, and capacity do not significantly disrupt patients' lives and routines.
Challenges	Negative effect of intervention by parallel, Unreal and halo effect and non-replaceable with face to face teaching	Öberg et al 2018 Challenge ambivalence and uncertainty.	Steele, et al 2014 The loss of necessary visits Increased social isolation, provider burden, work loading responsibility onto patients for care management, entry errors, potentially confusing interfaces. Challenges	Gray, et al 2014 Barriers to using e-health mobile apps to collect the information.

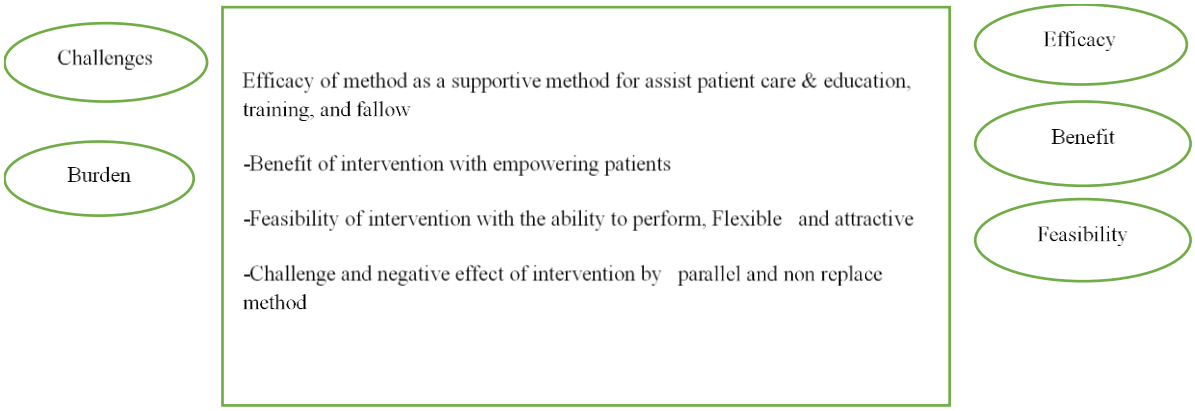

Figure 2. Summary of Meta synthesis

In terms of efficiency of the method, electronic health intervention exposed its competence through support, empowerment, informing, and skill training. In another perspective, the effect of electronic health on disease is identified through its use in empowering patients. Besides getting proper information, patients can handle their own problems with self-care and take necessary measures. In terms of the functionality of the method, availability, attractiveness, and suitability could be pointed out, since having the proper functionality can provide an effective field of application.

Regarding the efficiency of the method, it is important to mention the use of this intervention in development of psychological well-being, improvement of self-image, positive feeling of online discussion and its usefulness for those who are sexually distress (21). Other considerable outcomes of e-health are: empowering patients and their involvement in treatment and improvement, reducing mental dichotomy, reducing distrust in the treatment process (22), two-way communication, information sharing, promotion of support and balance in care (23), necessity and importance of e-health care in health care (24), assuredness of monitoring, increasing awareness of symptoms and examination of hidden issues (25), replacing the role of therapists (26), facilitating personal experiences in confronting with obstacles (27), improving the consequences of the diseases (28), positive relationship between patient and therapist, reducing the duration of hospitalization and the importance of timely rehabilitation (29), understanding the interventions of the stability of nurses' professional roles is understandable (30) , redefining communication and relative coverage of the role of therapists (26), complementary therapy (31), increasing knowledge and self-care (32), providing physical and psychosocial information, and a way to work with the application in an IT platform and supportive care (33).

In regard to utility of method, evidences suggested that health-based electronic interventions are useful for following reasons: supporting peer groups (21), increasing the sense of security (34), creating positive perception of the disease in peer group with the same problem, reducing the transportation and its expenses, responsibility and commitment to the disease control and self-care (23), providing interventions to tackle the root of problems in a society (24), self-management in obtaining necessary information and supporting health care decisions (35), managing work and action towards obstacles or capabilities (25), formation of communication and positive interaction between patients and medical team, power of networking and change in professional behaviors of medical team (26), knowledge sharing and patient-centered care, consolidation and stabilization of medical services (28), creation of virtual trust to manage concerns (36), effective use of technology (30), receiving information on interventions (37), and improvement of potential clinical effectiveness (38).

In terms of practicality, this method can be called practical due to simplicity and ease of use, attractiveness, and acceptability(26), use of available infrastructures and technologies(30), ability to perform in different situations (37), and fulfilling adult's needs (38).

Two other aspects consisted of challenges and barriers of the method and intervention on the disease consequences. Challenges included the need to pay attention to the importance of patients (23), need to get feedback on the use of technology between patient and medical team and service providers (24), the need for a positive attitude towards the use of electronic technology services, importance of protecting individuals' security and privacy (35), lack of trusting in adequate follow-up care and anxiety about using this type of treatment, concerns about reducing the treatment budget by using virtual methods (31), not considering individual differences (39), and the need for doing careful information analysis in various situations (32).

Other negative aspects included obstacles to the use of these methods which consisted of evidences about lacking individuals' knowledge in how to collect information through applications (23) and electronic interventions, how to adapt them to their personal needs, how to have sufficient control over the side effects of drugs (36), the fact that the use of this method takes time for the medical team and may intervene in their work shifts (30).

The use of technology in medical fields is increasing. Examining its positive and negative consequences can help health policymakers in planning to ensure effective dimensions and managing its effects and consequences to help more efficient in e-health and services. Due to the recent use of technology in the field of health, it is necessary to do more research on its negative and positive effects and update the results of the analysis. Also it needs more research about users' attitude as a meta-analysis to extract more meaning of e health in users.

Finally, after investigating patients' attitude towards the role of electronic health toward the outcome of illness, advantages and disadvantages of this method and a way to uses it, it can be argued that this method with positive features such as applicability, usefulness, and efficiency, can overcome obstacles and challenges, and has an effective role in creating positive outcomes in patients' attitudes.

Ethical considerations

Ethical issues including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc. have been completely observed by the authors.

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