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Use of technology for self-care in surgical wound infection surveillance: integrative review

Uso de tecnologia para o autocuidado na vigilância de infecção da ferida cirúrgica: revisão integrativa

Uso de tecnología para el autocuidado en la vigilancia de infección de la herida quirúrgica: revisión integradora

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ABSTRACT

Objectives: to synthesize knowledge about technology for self-care in surgical wound infection surveillance. **Methods:** integrative review conducted in CINAHL, Embase, LILACS, PubMed, *Scopus* and Web of Science databases with the descriptors "surgical wound infection" and "self-care", in addition to manual search in the references of the included studies. The selection and evaluation of the methodological quality of the studies and data collection were performed by two independent reviewers; conflicts were resolved by a third reviewer. **Results:** nine primary studies were included, published between 2011 and 2019. Six are cross-sectional, two are randomized clinical trials, and one is a case report. Mobile, text messaging, and imaging applications, computer software, assessments, and data storage capacity stand out. **Conclusions:** the technologies identified for self-care in surgical wound infection surveillance were the creation and use of mHealth and the use of health apps on mobile devices. Effective technologies in surveillance of surgical wound infection that enable rapprochement with the healthcare team, encourage a greater number of surgical wound assessments, enhance self-care actions, and decrease patient anxiety. Technology is also a monitored and recorded form of patient care, one of the main axes of infection surveillance. **Descriptors:** Self Care; Surgical Wound; Public Health Surveillance; Surgical Wound Infection; Technology.

RESUMO

Objetivos: sintetizar o conhecimento sobre tecnologia para o autocuidado na vigilância de infecção da ferida cirúrgica. **Métodos:** revisão integrativa realizada nas bases de dados CINAHL, Embase, LILACS, PubMed, *Scopus* e *Web of Science* com os descritores "*surgical wound infection*" e "*self care*", além da busca manual nas referências dos estudos incluídos. A seleção e avaliação da qualidade metodológica dos estudos e coleta de dados foram realizadas por dois revisores independentes; e os conflitos, resolvidos por um terceiro revisor. **Resultados:** nove estudos primários foram incluídos, publicados entre 2011 e 2019. Seis são de delineamento transversal, dois ensaios clínicos randomizados e um relato de caso. Destacam-se os aplicativos mobile, de mensagens de texto e de imagens, *softwares* para computadores, avaliações e capacidade de armazenamento de dados. **Conclusões:** as tecnologias identificadas para o autocuidado na vigilância de infecção da ferida operatória foram a criação e utilização de mHealth e o uso de aplicativos de saúde em dispositivos móveis. Tecnologias eficazes na vigilância da infecção da ferida operatória que permitem aproximação com a equipe de saúde incentivam um maior número de avaliações da ferida operatória, intensificam as ações de autocuidado e diminuem a ansiedade do paciente. A tecnologia também é uma forma monitorizada e registrada de atendimento ao paciente, um dos principais eixos da vigilância de infecção.
Descritores: Autocuidado; Ferida Cirúrgica; Vigilância em Saúde Pública; Infecção da Ferida Cirúrgica; Tecnologia.

RESUMEN

Objetivos: sintetizar el conocimiento sobre tecnología para el autocuidado en la vigilancia de infección de la herida quirúrgica. **Métodos:** revisión integradora realizada en las bases de datos CINAHL, Embase, LILACS, PubMed, *Scopus* y *Web of Science* con los descriptores "*surgical wound infection*" y "*self care*", además de búsqueda manual en referencias de estudios incluidos. La selección y evaluación de la calidad metodológica de estudios y recolecta de datos fueron realizadas por dos revisores independientes; y los conflictos, por un tercero. **Resultados:** nueve estudios primarios fueron incluidos, publicados entre 2011 y 2019. Seis son de delineamento transversal, dos ensayos clínicos randomizados y un relato de caso. Destacados los aplicativos mobile, de mensajes de texto y de imágenes, *softwares* para ordenadores, evaluaciones y capacidad de almacenamiento de datos. **Conclusiones:** las tecnologías identificadas para el autocuidado en la vigilancia de infección de la herida quirúrgica fueron la creación y utilización de mHealth y uso de aplicativos de salud en dispositivos móviles. Tecnologías eficaces en la vigilancia de la infección de la herida quirúrgica que permiten acercamiento con el equipo de salud, incentivan un mayor número de evaluaciones de la herida quirúrgica, intensifican las acciones de autocuidado y disminuyen la ansiedad del paciente. La tecnología también es una manera monitorizada y registrada de atención al paciente, uno de los principales ejes de la vigilancia de infección.
Descriptores: Autocuidado; Herida Quirúrgica; Vigilancia en Salud Pública; Infección de la Herida Quirúrgica; Tecnología.

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INTRODUCTION

Surgical site infections (SSI) are infections resulting from a surgical procedure and represent one of the main types of health care-related infection in Brazil, with an incidence in general and specific surgeries ranging from 1.4% to 38.8%[1]. The diagnosis can be made between 30 days and one year after the procedure, depending on some criteria, such as the type of procedure, the presence or not of implants, among others[2].

SSI are classified according to the planes affected: superficial incisional SSI, deep incisional SSI, and organ/cavity SSI. Superficial incisional SSI involves the skin and subcutaneous tissue, occurs within 30 days after the procedure, and the patient presents purulent drainage; isolation of microorganism in culture of secretion or tissue from the superficial incision, or signs and symptoms such as pain, heat, redness, localized swelling and hyperemia[3].

Deep incisional SSI involves the fascia and muscles and can occur within 30 days or up to a year after surgery, depending on whether or not implants are placed. The patient presents purulent drainage; incision dehiscence; fever higher than 38 ºC, localized pain or swelling; or deep tissue infection evidenced by clinical, radiological, histopathological, or reoperation examination[3].

Organ/cavity SSI (SSI/OC) refers to any part of the body excluding the skin, fascia and muscles manipulated in the surgical procedure. It occurs within one year after implant placement and has the presence of purulent discharge from a deep drain; fever, hyperemia, pain, heat, or chills; microorganism isolated in fluid or tissue culture; deep tissue infection evidenced by clinical, laboratory, radiological, histopathological, or reoperation examinatio[3].

Knowledge of the clinical manifestations of a SSI is essential for early detection of this complication in the postoperative period. During hospitalization, health professionals are primarily responsible for this surveillance and diagnosis, but such monitoring should be continued in the post-discharge period through patient self-care actions[3].

One of the axes of the National Plan for Patient Safety of the National Health Surveillance Agency is the involvement of citizens in their safety. This axis is defined by the autonomy and protagonism of the subjects and suggests that patient safety is improved if they are protagonists of their own care, with autonomy to claim their rights, question, discuss their diagnosis and treatment with health professionals, participating as partners of these[4].

In this way, involving the patient in all the links of care leads to their appreciation and turns them into a health promoter. Through educational processes, the patient becomes capable of developing skills and attitudes about their own health, influencing the expected results and making the processes more effective[5].

Currently, the use of technology emerges as an innovative solution for health care, facilitating communication between patients and professionals involved at all levels of care[6-7]. The use of applications in mobile devices has been widely discussed as an efficient tool to help and involve patients and family members in self-care, bringing them closer to the professionals, facilitating communication between them and reducing post-discharge anxiety[8-9]. The increase in the use of smartphones by the population proves the progress in access to information systems and clinical tools and adherence to the use of technologies[6].

The English term "mobile health" (mHealth) is widely used to refer to health-related mobile device applications. Its key benefits include the provision of personalized health advice, the possibility of remote consultation with health professionals, and, in surgical cases, the assessment and measurement of the surgical wound, and the provision of the specific advice required, such as the choice of dressing cover[9].

The mHealth application offers benefits to patients and health professionals by transforming the exchange and storage of information, providing an individualized approach to each patient and family member, with the goal of empowering them for self-care and strengthening self-management of their medical condition[9].

Considering the importance of the inclusion of patients in their own care and the ease and proximity guaranteed by the use of technological tools, the present review proposes to synthesize the knowledge on the use of technologies for self-care of the surgical wound in surgical site infection surveillance.

OBJECTIVES

To synthesize knowledge about the use of technology for self-care of the surgical wound, in surgical site infection surveillance.

METHODS

Ethical aspects

Since this is a secondary study, it does not require approval from the Research Ethics Committee (REC). There were no conflicts of interest that could compromise the analysis of the results of this study.

Study design, time and place

This study consists of an integrative literature review (as proposed by Mendes, Silveira and Galvão[10]), which makes it possible to gather and synthesize the production of knowledge, ensuring a theoretical deepening from different perspectives on the same theme. Six steps were followed: identification of the theme, sampling, categorization of studies, evaluation of included studies, interpretation of results, and synthesis of knowledge. The PRISMA Flowchart (Preferred Reporting Items for Systematic Reviews and Meta-Analyzes) was used as a reference to conduct the research and report the results[11]. The search of the electronic databases was conducted on June 29, 2020, with no restriction on publication period.

Inclusion and exclusion criteria

Primary studies, published in Portuguese, English and Spanish, which addressed technologies for self-care of adult patients undergoing elective surgery with surgical wound approximation by first intention were included. Primary studies with children, secondary studies, editorials, letters to the reader, doctoral theses, master's dissertations and abstracts of conference proceedings were excluded.

Study protocol

Guiding question

The question of the present integrative review was: "What is the available evidence on the use of technology for self-care in surgical site infection surveillance?" It was developed based on the PICO strategy[12], where: P - adult patients undergoing surgical procedure; I - use of technologies for self-care of the surgical wound; C - not applicable; and O - surveillance of surgical site infection.

To identify the studies, the electronic databases CINAHL, Embase, LILACS, PubMed, *Scopus* and Web of Science were used. The search strategy was formulated according to the specificities of each database, using the following controlled descriptors and/or keywords associated with Boolean operators AND and OR: *"surgical wound infection", "surgical site infection", "postoperative wound infection", "wound infection", "surgical wound", "incision care",* and *"self-care"*. The search strategies used in each database are shown in Chart 1.

After searching the databases, the results were exported to the online version of the EndNote Basic[13] reference manager to remove duplicate references. Then, they were imported into the online platform Rayyan (Qatar Computing Research Institute), accessed through the e-mail address https://rayyan.qcri.org[14].

On the Rayyan platform, the studies were first assessed by title and abstract by two reviewers (L.P.O. and D.R.F.) independently to verify that the articles met the eligibility criteria. Studies eligible at this stage were selected to be read in their entirety, and in case of disagreement between reviewers, a third reviewer (A.L.S.L.) with expertise in the subject was consulted.

Categorization of studies

The data from the studies were collected using an instrument adapted from Silveira et al.[15], which includes: reference, year of publication and country where the study was conducted, objective, study design, sample size, technologies used and main results.

Evaluation of the included studies

The methodological quality of the primary studies included in the sample was assessed using tools made available by the Joanna Briggs Institute (JBI)[16], also independently, by two reviewers (L.P.O. and L.G.V.). The methodological quality assessment tools made available by the JBI incorporate a process of critique or evaluation of research evidence. The goal is to assess the methodological quality of a study and determine the extent to which it addresses the possibility of bias in its design, conduct and analysis. All primary studies included in the review need to undergo rigorous evaluation by two reviewers and in a masked fashion. The results of this evaluation can then be used to inform the synthesis and interpretation of the study results. The critical appraisal tools were developed by JBI and collaborators and approved by the JBI Scientific Committee after extensive peer review[16].

This evaluation was performed considering the appropriate tool for each type of design included. The third reviewer (D.R.F.) was called to solve the impasses of this evaluation in case of conflict between the first two reviewers.

The study was categorized as "high risk of bias" when the score of "yes" answers was below 49% on the JBI tool; "moderate" when the score of "yes" answers reached 50% to 69%; and "low" when it reached a score of "yes" answers above 70%[17]. Thus, it is clarified

Chart 1 – Search strategies performed in each database, Ribeirão Preto, São Paulo, Brazil, 2020

Database	Search strategy	Total of identified studies
CINAHL	*("surgical wound infection" OR "surgical wound infections" OR "surgical site infection" OR "surgical site infections" OR "postoperative wound infection" OR "wound infection" OR "wound infection" OR "wound infections" OR "surgical wound" AND "incision care" OR "self care" OR "self care")*	150 studies
EMBASE	*("surgical wound infection" OR "surgical wound infections" OR "surgical site infection" OR "surgical site infections" OR "postoperative wound infection" OR "wound infection" OR "wound infection" OR "wound infections" OR "surgical wound" AND "incision care" OR "self care" OR "self care")*	43 studies
LILACS	*("surgical wound infection" OR "infección de la herida quirúrgica" OR "infecção da ferida cirúrgica" OR "surgical site infection" OR "infección del sitio quirúrgico" OR "infecção do sítio cirúrgico" OR "postoperative wound infection" OR "infección de la herida postoperatoria" OR "infecção pós-operatória da ferida" OR "wound infection" OR "infección de heridas" OR "infecção dos ferimentos" OR "surgical wound" OR "herida quirúrgica" OR "ferida cirúrgica" AND "incision care" OR cuidado de la incisión OR "cuidados de incisão" OR "self care" OR autocuidado)*	13 studies
PubMed	*("surgical wound infection"[MeSH Terms] OR "surgical wound infection" [All Fields] OR "surgical wound infections" OR "surgical site infection" OR "surgical site infections" OR "postoperative wound infection" OR "wound infection"[MeSH Terms] OR "wound infection" OR "wound infections" OR "surgical wound") AND ("incision care" OR "self care"[MeSH Terms] OR "self care"[All Fields])*	83 studies
Scopus	*("surgical wound infection" OR "surgical wound infections" OR "surgical site infection" OR "surgical site infections" OR "postoperative wound infection" OR "wound infection" OR "wound infection" OR "wound infections" OR "surgical wound" AND "incision care" OR "self care" OR "self care")*	309 studies
Web of Science	*("surgical wound infection" OR "surgical wound infections" OR "surgical site infection" OR "surgical site infections" OR "postoperative wound infection" OR "wound infection" OR "wound infection" OR "wound infections" OR "surgical wound" AND "incision care" OR "self care" OR "self care")*	26 studies

that the greater the number of "yes" answers to the items evaluated in the tool, the higher the methodological quality of the study.

Analysis of the results

The data was analyzed qualitatively, and the primary studies were summarized descriptively.

RESULTS

In the databases, 624 studies were identified, 169 of which were excluded for being duplicates in at least two databases, totaling 455 studies screened for reading by title and abstract. Of these, 393 were excluded after reading the titles and abstracts, totaling 62 studies for reading in full. After that, nine studies were selected to compose the review. Then, a manual search of the references was performed, but no new articles were identified, leaving nine primary studies in the final sample of this integrative review. The flowchart illustrating the selection of studies is shown in Figure 1.

Table 2 shows the narrative synthesis of the selected articles with the main characteristics and results of the studies included in this review. The primary studies were published between the years 2011 and 2019, with the majority being in the English language (8/9), all published in international journals. Of the total, six are characterized as being of cross-sectional design[18-23], two randomized clinical trials[9,24] and a case report[25].

The main technologies identified were mobile applications, text and image messaging applications, and computer software with various functionalities, including sending and receiving messages, exchanging images, evaluations, and data storage capacity.

Regarding the methodological quality of the included primary studies, four were classified as low risk of bias and therefore have a higher methodological quality. Three studies presented moderate risk of bias, with moderate methodological quality. Finally, two studies were classified as "high risk of bias", with low methodological quality.

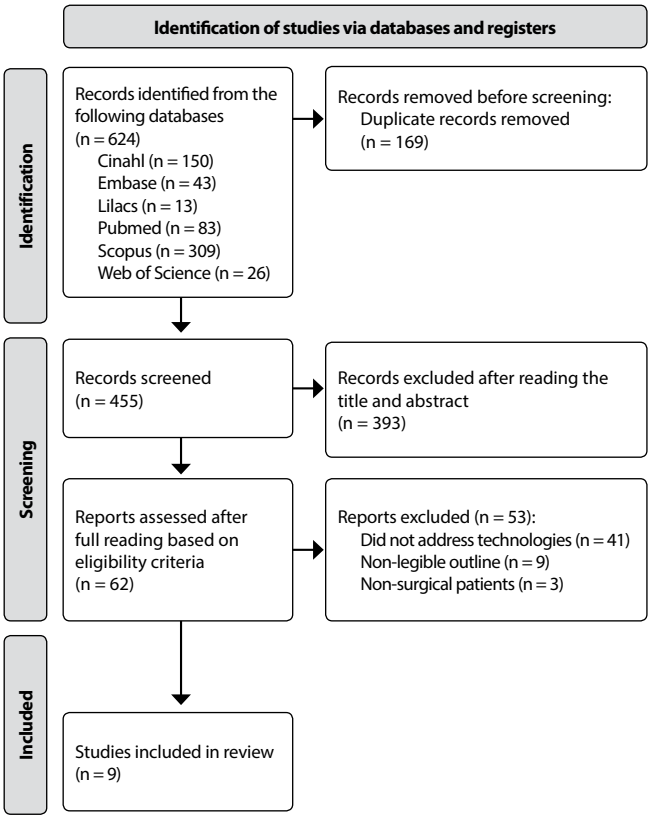

Figure 1 - Flowchart of the study selection process, according to adaptation of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)[11] model, Ribeirão Preto, São Paulo, Brazil, 2020

DISCUSSION

Nowadays, the use of health technologies is a growing innovation to improve health care. This study allowed us to synthesize information about the use of technology for self-care in surgical site infection surveillance. Thus, it was identified the use of mobile devices with access to camera, voice recorder, text messages, memory capacity,

Chart 2 – Synthesis chart of the studies included in the final sample of this integrative review, Ribeirão Preto, São Paulo, Brazil, 2020

Reference	Objective	Study design	No. of patients	Technological interventions used	Main results	JBI* Bias Risk
Abelson et al., (2017)[18] United states of America	Verify the public's willingness to engage with mobile health technology in the post-operative environment and identify the specific variables associated with that willingness.	Cross-sectional study	A total of 3,230 individuals were contacted, of whom 1,184 were eligible. Of those eligible, 800 completed the final survey.	mHealth: trackers, fill out daily surveys, send photos, and share updates with selected family and friends.	Of the patients, 80.6% reported greater willingness to wear a tracker on their wrist; 74.3%, fill out a daily survey; 66.3%, send photos; and 59.1%, share updates. Older age was not associated with less willingness to use mHealth. Hispanic ethnicity was associated with lower likelihood of using a tracker on the wrist. Higher education, internet trust, and preexisting smartphone use were all independently associated with willingness to engage with various mHealth components.	Moderate

To be continued

Chart 2

Reference	Objective	Study design	No. of patients	Technological interventions used	Main results	JBI* Bias Risk
Avery et al., (2019)[19] England	To describe the development of an ePRO system integrated with a hospital's electronic health record to improve the detection of complications and adverse effects after discharge from cancer-related surgery (major abdominal surgery).	Cross-sectional study	Among the patients, 59 accessed the ePRO system.	ePRO system	Incorporating ePRO data into clinical practice may bring broader benefits to patients in relation to surgical wound care in cancer-related surgeries and also to the healthcare system by standardizing care practice, streamlining and improving clinical consultations, and optimizing patient-centered care.	Moderate
Chang et al., (2019)[9] Taiwan	Evaluate the effectiveness of an mHealth app on patients' or caregivers' and family members' knowledge about wound care, dressing change skills, and anxiety.	Randomized Clinical Trial	A total of 70 patients (or family members) were contacted at a 1,500-bed university hospital. They were randomized into an experimental (n = 35) or a control group (n = 35).	mHealth developed on the Android platform	Participants in both groups (intervention and control) showed significant improvement in wound care between pre-test T1 and post-tests T2 and T3, but especially between T1 and T3. They also significantly improved their levels of wound care skills, being higher for the experimental group than for the control group. With regard to wound care anxiety, there was a greater decrease in anxiety in the experimental group than in the control group.	Low
Chen et al., (2020)[20] Taiwan	Propose a surgical wound assessment system for self-care.	Cross-sectional study	46 patients	Superpixel (high resolution) image capture tool)	The implementation of this superpixel-cropped imaging tool has enabled surgical wound assessment to be performed as reliably (90% accuracy) as that performed by medical professionals.	High
Holt, Flint, Bowers, (2011)[25] United States of America	To demonstrate whether using audiovisual technology to support a patient through discharge education can promote adherence to self-care instructions, increase patient autonomy, and reduce poor quality outcomes.	Case report	One patient	Camera and voice recording from the patient's cell phone	The intervention employed represents an innovative way to use the existing cell phone technology to provide more effective, patient-centered discharge education, resulting in patient compliance with all the processes required for dressing changes, patient satisfaction and autonomy in the self-care process, no infection or other morbidities, and no need for readmission.	Low
Sanger et al., (2014)[21] United States of America	Exploring the patient experience of opening an mHealth wound monitoring application as a solution for SSI.	Cross-sectional study	Seventeen eligible patients were identified. Of these, 13 participated and 4 were willing to participate but faced time constraints or had psychiatric illness.	mPOWEr	Three main themes emerged during the interviews regarding patients' self-care for post-discharge wound complications, which were knowledge for self-care and self-monitoring, efficacy for self-care and wound monitoring at home, and communication with providers. While considering the acceptability, perceived benefits, and potential limitations of an mHealth solution, participants perceived that this solution can address post-discharge challenges by enabling more frequent, comprehensive follow-up, leading to less anxiety and fewer unnecessary visits to the health care facility.	Low

To be continued

Chart 2 (concluded)

Reference	Objective	Study design	No. of patients	Technological interventions used	Main results	JBI* Bias Risk
Tofte et al., (2018)[22] United States of America	To explore the safety, efficacy, and patient convenience of using a new smartphone app for postoperative care after carpal tunnel release.	Cross-sectional study	16 patients	Mobile Application	All patients successfully completed the removal of the dressing. Overall, ten of 16 patients (63%) were able to successfully remove their sutures. Fifteen patients (94%) captured wound photos, although one photo was deemed too blurry for analysis. For the 14 patients who had a clinically adequate wound photo and clinical documentation of symptoms available, the authors classified the wound as 'uncomplicated', 'macerated', 'open' or 'infected'. With the exception of a single patient with mild wound maceration, no other significant wound complications were identified at the 10- to 14-day postoperative personal visit or during the review of the wound photographs.	Moderate
Yahanda et al., (2019)[24] United States of America	Evaluate the use and patient satisfaction of text and voice telemonitoring interventions to prevent and identify SSI after joint replacement.	Pilot clinical trial	1,392 patients were enrolled in EpxDecol and 1,753 patients in EpxWound.	EpxDecol and EpxWound (text and voice messages)	The proportion of patients who responded daily on ExpDecol was 91% and of those who responded on ExpWound was 77.7%. The response percentage decreased by 5% during each intervention. In final analysis, 88.4% of EpxDecol patients and 67.8% of ExpWound patients responded to 80% of all messages. For a survey of satisfaction with the interventions, a cohort of 1,246 post-intervention patients was used: the average response of how patients rated the care was 9/9, that is, 8/9 for enhanced communication and 5/9 for the number of messages received.	Alto
Anthony et al., (2018)[23] United States of America	To describe a method of communicating with patients postoperatively outside of the traditional healthcare setting, using an automated software and cell phone messaging platform; and to evaluate the first week postoperatively.	Cross-sectional study	47 patients	Automated software and cell phone messaging platform	The trend of pain decreased daily in the first postoperative week, with the highest levels of pain reported in the first 48 hours after surgery. Patients reported an average use of 15.9 tablets of prescribed opioid analgesic. The use of a cell phone messaging software robot allows for effective data collection on postoperative pain and analgesic use.	Low

** JBI – Joanna Briggs Institute.*

software with ability to download applications and internet access, as well as trackers and a messaging software robot[18,23].

Mobile apps, the main technologies identified in the literature, can contribute to individuals in managing their own health and well-being, as well as promoting a healthier lifestyle. Data from the Food and Drug Administration (FDA) in the United States showed that in 2018, about 2 billion individuals with smartphones and tablets were using some type of health-related app[26].

The results of this review showed that patients were willing to use mobile technologies and mHealth apps, as seen in the studies by Abelson et al.[18] and Yahanda et al.[24]. In the latter, this willingness was evidenced by the proportion of patients who responded daily to the EpxDecol and EpxWound apps, 91% and 77.7%, respectively. The willingness to use technology was considered a concern, especially among older populations, since they are more likely to present difficulties arising from lack of familiarity with technology, fear and insecurity in handling electronic devices, visual, motor, memory and attention difficulties. In contrast, guided by motivation and commitment to learn more about their own health, they showed great interest in using

the Internet and electronic devices[27]. According to the results of this review, they are willing to use these mechanisms thinking about their own well-being and postoperative improvement.

Considering the important role that technologies can play in patient education, selfmanagement of health, and remote monitoring by health care professionals, their use has received increasing prominence and influence[6]. This is supported by the study of Chang et al.[9], which evaluated the efficacy of an mHealth app in increasing the knowledge of patients or their caregivers and family members about wound care while using the app: a significant improvement in surgical wound dressing change skills was identified, as well as a decrease in anxiety and negative feelings related to surgical wound care in the experimental group. Similarly, the study by Tofte et al.[22] explored the safety, efficacy, and convenience of using a new smartphone application for postoperative care and demonstrated that all patients involved were able to successfully complete dressing removal, and some were even able to remove their sutures using the information on the application.

In addition, a study with breast cancer patients showed that, like the study by Chen et al.[20], who proposed a surgical wound assessment system using a superpixel (high-resolution) image capture tool, the implementation of technologies has allowed an assessment as reliable as the face-to-face evaluation. This indicates that involving health care professionals in remote monitoring through applications may be a cheaper and more effective alternative for improving health outcomes management[28]. The study by Sanger et al.[21] identified that patients considered the application of mHealth positive due to more frequent, close and complete follow-up, with fewer visits to the health service; and ratified another study, in which it was pointed out that follow-up through apps can help reduce unplanned visits and hospital readmissions, with a consequent reduction in anxiety and fear among patients[29].

Health support based on web technologies and mobile apps, with the involvement of health professionals, is of paramount importance to ensure quality communication between patients and health care team, empowering patients to increase adherence to self-care, quality of treatment, level of confidence, and promotion of emotional well-being[30-31]. This is also demonstrated by the study of Holt, Flint and Bowers[25], in which the intervention consisted of using audiovisual resources (camera and voice recorder) as an innovative way to provide discharge education more efficiently and centered on the patient's demands, ensuring better adherence to treatment and greater patient autonomy in self-care.

In this sense, mobile health technologies are increasingly gaining space in clinical care and can provide significant informational potential. However, more research is needed to confirm the benefits for patients and health professionals, as they are often introduced into the health care setting without quality scientific evidence.

Study limitations

The use of technologies for surveillance and self-care of the surgical wound depends on factors other than the technologies themselves. Education level and age of patients can be determinants for the choice and proper functioning of the technology to be used.

Moreover, the development, the confirmation of the potential benefits for patients and health professionals, and the implementation of these technologies in health care require time and often high costs. Therefore, they need to be carefully evaluated through quality and efficacy research.

Because this review presented a relatively low number of included studies, it cannot be said that all existing and applied technologies for this purpose were addressed here, being a limitation of this study.

Contributions to the field of Nursing, Health or Public Policy

The use of technology through smartphones and mobile applications by the general population can positively assist in the provision of safe health care, because it allows greater proximity to the health professional, as well as easy and quick access to questions and resolution of doubts. This review shows that the use of apps in health care is a growing reality, with effective and satisfactory results for patients who have used them. These results may motivate professionals to create other apps for health care in different areas other than postoperative surveillance.

CONCLUSIONS

The technologies identified for self-care in the surveillance of surgical wound infection with primary closure were the creation and use of mHealth and the use of health apps on mobile devices. Such technologies are effective in surveillance of surgical wound infection, as they allow proximity to the healthcare team. In addition, they encourage a greater number of surgical wound assessments, which intensifies self-care actions and decreases patient anxiety. The technology is also a monitored and recorded form of patient care, meeting one of the main axes of infection surveillance.

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