Ellen Thallita Hill Araújo[1]
Camila Aparecida Pinheiro Landim Almeida[2]
Jaiana Rocha Vaz[3]
Edilane Jales Leite Magalhães[4]
Carlos Henrique Lima Alcantara[5]
Eliana Campêlo Lago[6]

Use of Social Networks for Data Collection in Scientific Productions in the Health Area: Integrative Literature Review

Theme: Evidence-based practice.
Contribution to the discipline: This review seeks to promote a broader understanding of the use of social networks in the collection of data in scientific productions in the health area. Data collection in social networks may be challenging due to lack of trust by researchers regarding the credibility of the methodology. It was evidenced that the use of information technologies enables obtaining reliable and rapid data at low cost and with demystifying potential of information for a large number of connected users. However, a great paradigm of use still exists to generate scientific evidence, which results in research still being scarce in this area.

ABSTRACT

Objective: To investigate evidence on the use of social networks to collect data in scientific productions in the health area. **Material and method:** An integrative literature review from primary studies indexed in the SciELO, PubMed, LILACS, *Scopus*, and *Web of Science* platforms. **Results:** 16 scientific articles were selected, of which nine focused on the use of WhatsApp; five, on the use of Facebook; and two, on employing Twitter to collect data in scientific productions. Growth was noted on the number of investigations associated to the use of social networks, although an important paradigm still exists related to the use to generate scientific evidence, resulting in a still low number of investigations on this theme. **Conclusions:** The health area needs to approach evermore the development of research associated to social networks, given that this would enable a viable and rapid intervention in obtaining responses, besides being a low cost and very promising tool for data collection.

KEYWORDS (SOURCE: DeCS)

Social networking; data collection; statistics and numerical data; nursing; health; article; SciELO; PubMed; LILACS; Scopus; Web of Science; WhatsApp; Facebook; Twitter.

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1 orcid.org/0000-0001-5303-5571. Centro Universitário UNINOVAFAPI, Brasil.
2 ✉ orcid.org/0000-0003-4843-4572. Centro Universitário UNINOVAFAPI, Brasil. camila@uninovafapi.edu.br
3 orcid.org/0000-0003-3112-5343. Centro Universitário UNINOVAFAPI, Brasil.
4 orcid.org/0000-0003-1163-8803. Centro Universitário UNINOVAFAPI, Brasil.
5 orcid.org/0000-0003-2132-1180. Centro Universitário Cesmac, Brasil.
6 orcid.org/0000-0001-6766-8492. Universidade Estadual do Maranhão (UEMA) y Centro Universitário UNINOVAFAPI, Brasil.

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Uso de redes sociales para recolección de datos en producciones científicas en el área de la salud: revisión integrativa de la literatura

RESUMEN

Objetivo: investigar las evidencias del uso de redes sociales para recolectar datos en producciones científicas en el área de salud. **Material y método:** una revisión integrativa de la literatura a partir de estudios primarios indexados en las plataformas SciELO, PubMed, LILACS, *Scopus* y *Web of Science*. **Resultados:** se seleccionaron 16 artículos científicos, de los cuales nueve se centraron en el uso de *WhatsApp*; cinco, en el uso de *Facebook*; y dos, en empleo de *Twitter* para recolectar datos en producciones científicas. Hubo crecimiento en el número de investigaciones asociadas al uso de redes sociales, aunque aún existe un gran paradigma relacionado a su uso para generar evidencia científica, lo que resulta en un número aún reducido de investigaciones en esta temática. **Conclusiones:** el área de la salud necesita acercarse cada vez más al desarrollo de investigaciones asociadas a las redes sociales, pues esto posibilitaría una intervención viable y rápida en la obtención de respuestas, además de ser una herramienta de bajo costo y bastante promisoria para la recolección de datos.

PALABRAS CLAVE (FUENTE: DeCS)

Red social; recolección de datos; estadística & datos numéricos; enfermería; salud; artículo; SciELO; PubMed; LILACS; Scopus; Web of Science; *WhatsApp; Facebook; Twitter*.

Utilização de redes sociais para coleta de dados em produções científicas na área da saúde: revisão integrativa da literatura

RESUMO

Objetivo: investigar as evidências da utilização de redes sociais para coleta de dados em produções científicas na área da saúde. **Material e método:** uma revisão integrativa da literatura a partir de estudos primários indexados nas plataformas SciELO, PubMed, LILACS, *Scopus* e *Web of Science*. **Resultados:** foram selecionados 16 artigos científicos, dos quais nove apresentaram foco na utilização do *WhatsApp*; cinco, no uso do *Facebook*; e dois, no emprego do *Twitter* para coleta de dados em produções científicas. Houve um crescimento no número de pesquisas associadas à utilização de redes sociais, embora ainda exista um grande paradigma relacionado ao uso para a geração de evidências científicas, o que resulta em um número ainda reduzido de pesquisas nessa temática. **Conclusões:** a área da saúde precisa aproximar-se cada vez mais do desenvolvimento de pesquisas associadas às redes sociais, pois isso possibilitaria uma intervenção viável e rápida na obtenção de respostas, além de ser uma ferramenta de baixo custo e bastante promissora para a coleta de dados.

PALAVRAS-CHAVE (FONTE: DeCS)

Rede social; coleta de dados; estatística & dados numéricos; enfermagem; saúde; artigo; SciELO; PubMed; LILACS; *Scopus*; *Web of Science; WhatsApp; Facebook; Twitter.*

Introduction

The Internet is considered the most-used communication means in the daily life of the global population. It has become commonplace for people to declare that they cannot live without it, whether for the use of social networks, leisure, or work (1-3). Brazil, in 2015, reached the mark of 94.2 million Internet users, making it the fifth country with the largest number of connections to the global computer network and the one with the highest use of social media in Latin America (4-6).

Within the context of the digital culture (or cyber culture), which has been developing since the expanded access to personal computers, online social networks are defined as a social structure integrated by people, organizations, or entities connected to each other through one or several types of relationships (7-9).

This technology is indicated in the scientific literature as a facilitator in teaching. Additionally, processes mediated by digital technologies increasingly articulate labor markets and social relations (10-12).

The use of social networks is a relatively recent phenomenon and is being used for studies in several areas of knowledge (13-14). In this perspective, its use in scientific research is increasing on a large scale, especially in the health area. Specific platforms have been developed for interaction, data collection, and information sharing among researchers (15-19).

In spite of the growing interest from the academic community in social networks as a scientific communication tool, research is still lacking on the profile of this use, and on how this data can be published in journals with scientific impact (20-21).

Given this, it should be noted that social media has been presented as a useful platform for informal discussions on health care, with great potential for research due to its ability to connect users and real-time feedback (22-25).

Increased use of the internet in all age groups has instigated researchers to use social networks as an alternative to obtain innovative answers and results in scientific work (26-29).

Thus, the aim of this study was to investigate the evidence of social network use for data collection in scientific productions in the health area, to synthesize content on the theme and define the literature gap associated with this type of approach.

Data collection in social networks can be challenging due to the distrust from researchers regarding the reliability of the methodology. In this sense, this study is relevant insofar as it makes it possible to highlight innovation in scientific production through tools characteristic of a new digital era, which can contribute to make this process more secure, attractive, flexible, and with greater ease and agility of access to population responses and samples.

Material and Method

To achieve the proposed objective, an integrative literature review was necessary. In the operation of the development of this review, six well-defined stages were covered: 1) Elaboration of the research question; 2) Sampling or search for primary studies in the literature; 3) Data extraction; 4) Evaluation of the primary studies included; 5) Analysis and synthesis of the results; 6) Review submission (21).

In order to guide this integrative review, the following research question was formulated: "What is the evidence on the use of social networks for data collection in scientific productions?"

The search for primary studies was performed according to the criteria and manuals of each database. The following descriptors were used: (*Medical Subject Headings*) — *Social Networking*; *Data collection*; *Article*; *Nursing* and *Health* and the uncontrolled descriptors (keywords) — Facebook, WhatsApp and Twitter, combined with Boolean operators (*AND* and *OR*). The descriptors were researched during the period comprised between January and February 2018, in the following virtual libraries and databases: SciELO, PubMed, LILACS, *Scopus*, and *Web of Science*.

The descriptors were combined in different manners to guarantee a broad search, whose combinations are described in Table 1.

Inclusion criteria of the primary studies defined were scientific articles portraying the use of social networks for data collection in scientific productions in the health area, published from January 2013 to July 2018. These had the following classifications: Individual study with experimental design, study with nonexperimental design, as correlational and qualitative descriptive research or

Table 1. Cross references among descriptors used in the databases SciELO, PubMed, LILACS, Scopus, Web of Science, 2013-2018

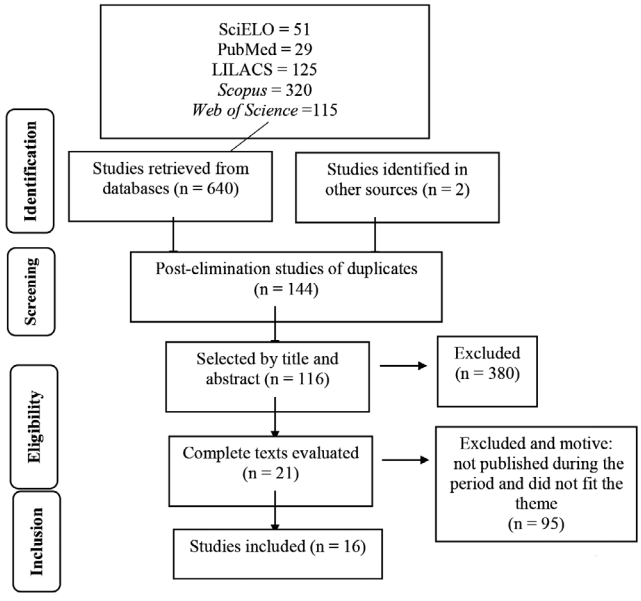
Databases	Cross references	Nº
SciELO	Social Networking AND Data collect AND Article	2
PubMed	Nursing AND WhatsApp AND Health	5
LILACS	Social Networking AND Data collect OR Health	92
Scopus	Social Networking AND Data collect	1
Web of Science	Social Networking AND Data collect OR Nursing	81
SciELO	Social Networking AND Article AND Facebook	8
PubMed	Social Networking AND Nursing AND Article AND Twitter	20
LILACS	Social Networking AND Nursing AND Article	1
Scopus	Social Networking AND Data collect AND Nursing	318
Web of Science	Social Networking AND Health	23
SciELO	Data collect AND Article AND Social Networking OR WhatsApp OR Facebook OR Twitter	41
PubMed	Data collect AND Health AND Nursing AND Social Networking	4
LILACS	Social Networking AND Nursing AND Article OR Social Networking AND Article	32
Scopus	Social Networking AND WhatsApp AND Facebook	1
Web of Science	Social Networking AND Article AND Health	11

Source: Own elaboration.

case studies, case reports or data obtained systematically, of verifiable quality, or evaluation data of programs published in Portuguese, English, and Spanish. Therefore, levels of evidence 2, 3, 4, and 5 were considered (30-31). The exclusion criteria established included informal case reports, book chapters, dissertations, theses, reports, news items, editorials, nonscientific texts.

From the results obtained after complying strictly with the inclusion and exclusion criteria, the title and summary of each scientific article were read to verify their suitability to the guiding question. The flow diagram, according to the Main Items for Reporting Systematic Reviews and Meta-Analysis (Prisma) model, is shown in Figure 1 (32).

Figure 1. Flow diagram of the article search, exclusion, and exclusion process



Source: Own elaboration.

Two independent reviewers selected the studies according to the eligibility and inclusion criteria and developed the study concordance method and selection process.

The 16 articles were analyzed in descriptive manner, which allowed evaluating the level and quality of the available evidence on the use of social networks for data collection in scientific productions in the health area, besides identifying knowledge gaps for future research.

To classify the level of evidence of the works, the study used the categorization of the Agency for Healthcare Research and Quality (AHRQ). The quality of evidence is classified in six levels, namely: Level 1, meta-analysis of multiple controlled studies; level 2, individual study with experimental design; level 3, study with a quasi-experimental design as study, without randomization with single pre- and post-test group, time series or case-control; level 4, study with nonexperimental design, such as correlational and qualitative descriptive research or studies; level 5, case report or data obtained systematically, of verifiable quality or program evaluation data; level 6, opinion by reputable authorities based on clinical competence or opinion by expert committees, including interpretation of non-research based information (31).

The study adhered to national and international ethical precepts governing research, with absence of conflicts of interest.

Results

Of the 16 articles selected in the thematic area of this study, five (31.2 %) were published in 2018; four (25 %) in 2016; three (18.7 %) in 2014; two (12.5 %) in 2017; and one (6.2 %) in 2015 and 2013. Regarding the study site, three (18.7 %) were carried out in Brazil, followed by two (16.6 %) in the United States of America and Italy.

In relation to the databases, PubMed stood out with 56.2 % of the publications. Regarding the design of the studies selected, non-experimental studies were highlighted with 11 (68.7 %) publications. Therefore, considered as scientific evidence level 4 (31).

From the 16 studies selected and included in this integrative review, a summary of primary studies is presented in Table 2, according to title, year of publication, place of study, design and level of scientific evidence. To better identify each study selected, articles were organized in alphanumeric sequence starting from A1 to A16.

Furthermore, to analyze and discuss the use of social networks for data collection in scientific productions, the studies selected were organized into categories by thematic adhesion of each research, namely: "Use of WhatsApp for data collection in scientific productions"; "Use of Facebook for data collection in scientific productions"; and "Use of Twitter for data collection in scientific productions" (Table 3).

Use of WhatsApp for data collection in scientific productions

In relation to the category "Use of WhatsApp for data collection in scientific productions", five scientific articles were selected. Each study was related to a differentiated area of instruction, but all used the WhatsApp social network to aid in the data collection of the articles.

Among the publications, one of the studies analyzed the testimonies of people with Human Immunodeficiency Virus (HIV) during health follow-up through the WhatsApp application, which promoted the patient's accessibility to health professionals and provided an open and immediate communication channel (33).

Other studies analyzed the WhatsApp groups to analyze the experiences of nurses and health professionals to improve education in primary care. The experiences of the discussion groups by using the social media application favor teaching and learning (34-35).

Another research presented experiences and results of a plastic surgery team at CHU Amiens Picardie who used instant messaging as part of medical transmissions for almost three years. This research showed improvement in the fluidity and lucidity of communications and transparency in patient management during hospitalization (36).

Different studies have proposed evaluating progress in telemedicine with the possibility of sending case images to professionals for assessment via WhatsApp. The use of this mobile technology supported communication about health conditions between physicians and patients (37-39).

The latest research analyzed experiences of WhatsApp as a communication tool among team members as a positive effect through the application on the quality of the work of nurses (40-41).

Use of Facebook for data collection in scientific productions

In the category "Use of Facebook for data collection in scientific productions", five studies were selected that contemplated the use of said social media in the collection of information and dissemination of evidence. This social network was used to disseminate three pain management interventions during painful

Table 2. Characterization of the articles selected according to title, author, year of publication, place of study, database, and level of scientific evidence, 2013-2018

Nº	Title	Author	Year	Place	Database	Level of evidence
A1	*Use of the Facebook social network in data collection and dissemination of evidence*	Vieira AC, Harrison DM, Bueno M, Guimaraes N	2018	Pelotas, Brazil	SciELO	4
A2	*Use of the WhatsApp application in health follow-up of people with HIV: a thematic analysis*	Lima ICV, Galvão MTG, Pedrosa SC, Cunha GH, Costa AKB.	2018	Fortaleza, Brazil	SciELO	4
A3	*Mobile instant messaging for rural community health workers: a case from Malawi*	Pimmer C, Mhango S, Mzumara A, Mbyundula F.	2017	Malawi, East Africa	Scopus	4
A4	*Undergraduate nurses reflections on WhatsApp use in improving primary health care education*	Willemse JJ	2015	Western Cape, South Africa	PubMed	4
A5	*WhatsApp: improvement tool for surgical team communication*	Sidhoum N, Dast S, Abdulshakoor A, Assaf N, Herlin C, Sinna R.	2016	Amiens, France	PubMed	3
A6	*Mobile phone use among medical residents: a cross-sectional multicenter survey in Saudi Arabia*	Jamal A, Temsah MH, Khan SA, Al-Eyadhy A, Koppel C, Chiang MF.	2016	Riyadh, Saudi Arabia	PubMed	4
A7	*WhatsApp use in the evaluation of hematuria*	Sener TE, Butticè S, Sahin B, Netsch C, Dragos L, Pappalardo R6 Magno C.	2018	Messina, Italy	PubMed	2
A8	*Effectiveness of positive thinking training program on nurses' quality of work life through smartphone applications*	Jahromi MM, Fereidouni Z, Dehghan Z.	2018	Fasa, Iran	Scopus	3
A9	*Experiences of Indian health workers using WhatsApp for improving aseptic practices with newborns: exploratory qualitative study*	Pahwa P, Lunsford S, Livesley N.	2018	Delhi, India	Web of Science	4
A10	*WhatsApp: a telemedicine platform for facilitating remote oral medicine consultation and improving clinical examinations*	Petruzzi M, De Benedittis M	2016	Bari, Italy	PubMed	3
A11	*Using information technology and social networking for recruitment of research participants: experience from an exploratory study of pediatric Klinefelter syndrome*	Close S, Smaldone A, Fennoy I, Reame N, Grey M.	2013	New Haven, The United States of America	PubMed	4
A12	*Facebook use and adolescents emotional states of depression, anxiety, and stress*	Labrague LJ	2014	The Philippines, Asia	LILACS	4
A13	*Social networking as a learning tool: nursing students' perception of efficacy*	Tower M, Latimer S, Hewitt J	2014	Nathan, Australia	PubMed	4
A14	*Twitter as a tool to enhance student engagement during an inter-professional patient safety course*	McKay M, Sanko JS, Shekhter I, Birnbach DJ.	2014	Gables, The United States	PubMed	4
A15	*Introducing Twitter as an assessed component of the undergraduate nursing curriculum: case study*	Jones R, Kelsey J, Nelmes P, Chinn N3, Chinn T, Proctor-Childs T.	2016	Bristol, England	PubMed	5
A16	PrEP Forum: an on-line debate on the use of pre-exposure prophylaxis in Brazil	Queiroz AAFN, Sousa AFL	2017	Ribeirão Preto, Brazil	SciELO	4

Source: Own elaboration.

Table 3. Classification of the studies into thematic accession categories, 2013-2018

Categories	Articles selected
Use of WhatsApp to collect data in scientific productions	A2, A3, A4, A5, A6, A13, A14, A15, and A16
Use of Facebook to collect data in scientific productions	A1, A7, A8, A9, and A12
Use of Twitter to collect data in scientific productions	A10 and A11

Source: Own elaboration.

procedures and evaluate prior knowledge, scope, dissemination, and intention to use strategies in the future (42).

Social media platforms, among them Facebook, have the potential to increase students' self-efficacy in learning and conduct learning at a deeper level (43).

Another paper described the strategy of using information technology through social networks to improve access to difficult pediatric research participants. Other research demonstrated the effects of using Facebook on emotional states of depression, anxiety, and stress in adolescents (44-45).

In the same thematic category, the last scientific article found identified health promoters focused on HIV/AIDS prevention in posts linked to a Facebook group for discussions on the use of pre-exposure prophylaxis (PrEP), which exposed a situation of vulnerability and alerted to a potential public health problem (46).

Use of Twitter for data collection in scientific productions

Lastly, two scientific articles were selected according to their main emphasis in the category "Use of Twitter for data collection in scientific productions". This category found a publication exploring the social network as a method to promote student involvement during an inter-professional patient safety course (47).

In the research, this form of social media has successfully captured behind-the-scenes conversations and students' experiences that otherwise would not be achieved. In addition, students gain broader perspectives and better comprehension of social media as a whole (48).

Discussion

The data analyzed demonstrated, through the scientific articles published, that the use of social networks for data collection in scientific productions in the health area is a new field and with a perspective of increasing magnification. Studies conducted between 2013 and 2018 have greater concentrations in 2018, with five publications. Timid expansion is noted of publications on this theme over the years and it is felt that this number may increase due to the popularization of using information technologies.

One survey observed rapid and growing reach of the interest group during a short period, reaching several municipalities in different states of Brazil, at a relatively low cost, when compared to other studies involving the application of questionnaires in person, and showed the geographical coverage potential of social networks (33-34, 38).

The ease of the data collection method in the digital age can be attributed or probably related to the attractive and flexible mode and ease of access and response through smartphones, compared to computers and laptops, which permits rapid dissemination among the virtual network of contacts (38).

Thus, social networks can be quite useful as research tool due to the great popularity of use in Brazil and the world, with possibility of broad reach because of the number of connections established among the people who use it. In addition, it is an easy-to-use, low-cost, and rapid-dissemination method (33, 38).

Studies with this approach in the methodology may offer aids to identify information needs, from the perspective of those involved, and favor expansion of health communication and research tools (35-36).

Research analyzing the testimonies of people living with HIV during a health follow-up showed that the use of *WhatsApp* is favorable as a care tool for virus carriers and has been shown to be a potential pathway to clear doubts and promote adherence to treatment (33).

It is worth highlighting that the global use of mobile devices with their connectivity capacity, integrated with the possibilities of social media networks, also provides a platform rich in resources for innovative scientific experiences in student-led learning (34).

A research in Italy described the use of a WhatsApp based smartphone to share clinical information about oral medicine. Thus, it has been shown that telemedicine applications can support communication between physicians and patients. Consultation through social networks reduced geographic barriers and significantly encouraged patients to undergo specialized clinical examinations (37).

Another study in the United States of America has revealed that registering pediatric samples for research is challenging due to parental mistrust, privacy concerns, and family time constraints. From this perspective, information technology strategies with social networks were used to improve access to pediatric research participants, obtaining simpler engagement through Facebook (40).

An additional scientific study explored the use of Twitter as a mean to promote involvement of university students during an inter-professional course on patient safety. The tool increased participant engagement, attention, and interaction, as well as helped guide future inter-professional educational programming in medical and nursing schools (43).

Despite the promising benefits these unique technological advances offer, such as social capital and articulation of friendship, growing concerns have emerged about their negative impacts on people's well-being. Still from this perspective, research using social networks would identify users who at risk of developing negative emotional states and would increase awareness about the issue (41).

According to a research in Malawi, despite some challenges and constraints, implementation of WhatsApp was received positively by professionals in the basic health care network and was considered a useful tool to support the work of these professionals in the rural community (35).

According to a study on experimental design, it is possible to evaluate hematuria and the unnecessary costs of light clinical services by using tele-medicine. WhatsApp provides valuable help to tertiary hospitals where a urologist is not always present (39).

In this sense, it can be said that social networks are configured as an important interaction setting that offers a convenient platform to share information, circulate speeches, and transmit information. In the health field, it is felt that said potential should be explored further (46-50).

However, despite growth in research associated with the use of social networks and popularization of communication technologies, a great paradigm prevails of their use to generate scientific evidence, and the amount of research focusing on this subject is still minimal.

Conclusion

Analysis of the scientific articles selected in this integrative review permitted highlighting a methodological innovation by using social networks in data collection in scientific research, which made it possible to demonstrate a new contribution to multidisciplinary knowledge.

For the most part, studies involving the use of WhatsApp relied on mobile technology as support in team communication, which contributed to improved health education. Likewise, Twitter served as a tool to promote student involvement and knowledge.

The use of information Technologies permitted obtaining reliable, rapid, and low-cost data with potential to demystify information to a large number of connected users.

As a limitation, we highlight the lack of studies with data collection using elderly populations because this is a type of user with less frequency of use of social networks. Furthermore, the need to train health professionals and researchers is emphasized, so that they feel comfortable and secure in the process of using information technologies to conduct scientific research.

It is expected of this paper to become a basis for future studies related to using social media platforms as research tools or methodological strategies.

Conflict of interests: None declared.

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