Original Article

Social networks: A quality tool for health dissemination?

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Abstract:

BACKGROUND: Social networks are integrated in our lives and, amongst other functions, they are a means of dissemination. There are numerous social network accounts dedicated to health that could be used as an educational resource. The aim of this study was to evaluate the quality of accounts dedicated to health in different social networks, assessing their content and didactic and technological effectiveness and accessibility.

MATERIALS AND METHODS: Observational cross-sectional descriptive study in which an analysis of social networks related to health was carried out from April to June 2021 in Spain. Twenty-eight accounts were analysed using a mixed qualitative-quantitative methodology. Content analysis of the speeches disseminated through the selected accounts was performed. In addition, the quality of the accounts was assessed with the Instrumento de Evaluación de Recursos Educativos Digitales (#IE_RED) (Digital Educational Resources Evaluation Instrument [#IE_RED]).

RESULTS: Four categories were identified according to the content: student-focused profiles, specific professionals' profiles, current health issues and profiles promoting a healthy lifestyle. In addition, the quality of the accounts obtained a score that indicates they meet the requirements to be validated as a good educational digital resource but could be improved. Instagram social network accounts and those managed by nurses scored significantly higher.

CONCLUSIONS: The analysed accounts were revealed as a quality tool for health dissemination, with varied content and applicable to teaching. Their use could be applied both to the training of health professionals and to the promotion of the population's health.

Keywords:

Health, health education, health promotion, primary prevention, public health, social networks

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Introduction

Social networks have revolutionised the way of communicating and getting informed by making it possible to be constantly and quickly updated and to be able to contrast a multitude of opinions.[1] A social network is a service that allows people to build a public or semi-public profile within a delimited system, creating a list of other users with whom they share a connection, being able to see and go through the list of their own connections and those made by others within the system.[2] The use of social networks is widespread; 3.2 billion people use social networks in the world, equivalent to 40% of the total population.[3,4] These platforms are used by 90% of the young population, 75.3% of whom admit using them very frequently.[3,5]

Amongst the functions of social networks, the following stand out: ease of communication, since they enable the exchange of information; community building, as they make finding groups of like-minded people and joining them easier;

and working together, thus providing the opportunity to carry out common activities. These functions could be used for educational and dissemination purposes.[6] Young people have incorporated social networks into their way of life, making them an easy means of disseminating content.[7] With their use, and as a result of society evolution, we are faced with the possibility of a new way of teaching and learning, since new forms of learning are established, which can be satisfactory and beneficial for both parties.[3,8]

Social media has introduced the term influencer. Influencers are a new type of independent communicators who shape the attitudes of the audience through publications on social networks. The influencer phenomenon has brought about a true revolution in the lifestyle habits of millions of people internationally. Influencers have an effect on their followers, which can be positive or negative depending on the content they offer. In the field of health, there are experts who disseminate their knowledge, impressions and useful advice to the general population through the media, whether classical media or social networks and have become leading figures in health.[9] More and more health professionals are playing an active role in social networks, sharing their knowledge with the aim of improving the health and comfort of their followers and promoting healthy lifestyle habits.[10] Through social networks, healthy experiences and advice are shared, creating a support network between professionals and users. Sharing evidence-based health promotion content prevents the damage that hoaxes and fake news can cause to the health of followers.[11] Health professionals find in social networks a channel for health dissemination, on the one hand, for the prevention and promotion of healthy habits, sharing advice, debunking myths and encouraging the interest of Internet users in health, and on the other hand, facilitating the training of health professionals by offering resources that favour learning and interest in improving the practice of their work.[12]

Instagram and YouTube digital platforms are two of the most widely used worldwide today, where content is shared, viewed and read by thousands of people. Instagram has more than 1,221 million active users and is one of the fastest growing social networks. It is a platform widely used by young people; its audience ranges from 13 to 24 years old. YouTube has more than 2,291 million active users in a month and its users' age range extends up to 44 years.[13] These two platforms include a large number of health-related accounts, which share the same health promotion purpose. They provide information, are low-cost and fast as well as effective in transmitting knowledge, although not all of them are reliable. Sometimes the authors of the videos and sources of evidence are not provided, or opinions are

included that diminish the quality of the publications, something that is often not appreciated by many of the users. Despite all the information provided, if it is not adequate, it can lead to adverse effects on the health of the population, misinforming and triggering negative consequences. Furthermore, inappropriate use of networks can lead to addictions and negatively interfere with interpersonal relationships.[14]

The universality of social networks, their proximity to all types of viewers (more specifically to young people) and their role in facilitating healthy lifestyle habits make them an ideal tool for the dissemination of scientific health information. However, there is very little evidence on the effectiveness of the interventions that incorporate social networks in their methods.[15] The present work aims to evaluate the quality of accounts dedicated to the dissemination of health on the social network platforms of Instagram and YouTube, assessing their level of following, content and their didactic and technological effectiveness and accessibility.

Materials and Methods

Study design
An observational, descriptive cross-sectional study was conducted. A mixed methodology combining qualitative and quantitative analysis was used.[16]

Study participants and sampling
The study population consisted of the profiles of Instagram and YouTube social networks, which have the purpose of disseminating health-related knowledge. These social networks were chosen because they are amongst the most used and, between the two, they cover a wide range of the population with Instagram being more popular amongst young people and YouTube more popular amongst the more mature population.

To identify health communicator profiles, a search was conducted on both platforms using the following keywords: nursing; nurse; doctor; health; health promotion. The sample was selected according to the following inclusion criteria: profiles belonging to the Instagram or YouTube social network; managed by health professionals; with more than a thousand followers; dedicated to health dissemination, including infographics, videos or publications; written in Spanish. Following these criteria, 28 accounts were selected, of which 20 were Instagram profiles and 8 were YouTube channels.

Procedure
The selected profiles were analysed by direct observation to extract the analysis information through two procedures. On the one hand, from a qualitative

perspective, a content analysis was performed with the intention of extracting and interpreting the meaning of the discourses given in these accounts.[17] On the other hand, a quantitative analysis was performed by means of guided and triangulated direct observation of each of the digital resources with the help of an analysis tool designed to measure their quality.

For the quantitative analysis, the Digital Educational Resources Evaluation Instrument (#IE_RED) designed by *Conecta 13* (Supplement 1) was used. This is a tool designed to evaluate the quality of digital educational resources.[18] that includes 42 items structured in 3 dimensions. The pedagogical dimension (14 items) refers to the improvement of teaching and learning, and evaluates aspects such as the didactic description, the quality of the contents, or the capacity to generate learning. The technological dimension (13 items) refers to whether the resource is robust, interoperable, usable and scalable, and aspects such as adaptability, interactivity, format and design, and reusability are evaluated. The design dimension (16 items) is related to accessibility and whether it is suitable for the intended recipients, regardless of their different skills, considering technical stability, navigation and accessibility of audio-visual and textual content. The degree of compliance for each item is rated from 0 to 3, being 0 not applicable, 1 not met, 2 partially met and 3 fully met. The total standardised score of the scale can range from 0 to 100; if the score is lower than 60, then the interpretation is that the educational resource does not meet the minimum requirements; between 60 and 90, it could be improved; and between 90 and 100, it meets the requirements.

The analysis was performed by three investigators in a blinded and independent way. Discrepancies were resolved by consensus, and if needed, a fourth investigator was called in.

Data analysis
The analysis of the qualitative data was performed by means of deduction and inference. Related topics with semantic coherence were grouped, identifying four units of analysis: profiles containing health-related study materials; profiles dedicated to the training of health professionals with specific techniques; profiles on current health and entertainment; and profiles that promote healthy living and answer frequently asked questions on health.

For the quantitative analysis, absolute and relative frequencies of sociodemographic characteristics and scores were calculated. For the comparative analysis of hypothesis contrast, Student's t-test for independent samples and analysis of variance were used. Statistical significance was considered $P < 0.05$.

Ethical considerations
The study focuses on public social network accounts and the analysed contents were freely shared by the authors of these accounts. The evaluation tool is licenced under Creative Commons, so it can be used freely.

Results

In relation to the qualitative results, after the content analysis of each of the accounts included in this study, four categories were identified in which the 28 studied profiles were grouped in an exclusive manner by the affinity of their discourses.

Profiles containing materials for the study related to health
The profiles grouped in this category are aimed at students of health sciences and contain diagrams, infographics, and summaries to facilitate their study by encouraging logic and critical thinking. The subject matter is varied and includes common pathologies, human anatomy and the functioning of the human body. The study material is collected in manuals that can be downloaded or purchased.

Profiles dedicated to the training of health professionals on specific techniques
This category includes accounts that offer training to health professionals to improve their professional practice. They are mainly directed by nursing professionals and provide theoretical technical training on very specific procedures such as portable ventilator use, subcutaneous infusion, haemofilter use and sutures, amongst others. The contents are available in various formats such as clinical simulation videos, explanatory videos, podcasts, publications, infographics and videos with information in the form of lectures, interviews, conferences and other informative activities.

Health and entertainment news profiles
The accounts included in this category focus on health news and use humour to attract users. Updated content is provided on controversial topics of popular interest, news, curiosities, clarifying frequent doubts, debunking hoaxes and encouraging reflection. Information is shared in the form of videos, interviews, podcasts, tweets, debates or reflections. They are very popular accounts, with highly influential content.

Profiles that promote healthy living and answer frequently asked health questions
This category includes profiles that offer information, tips and clarifications to lead a healthy lifestyle and improve quality of life and physical and mental well-being. Topics include natural medicine, physical exercise, diet, anxiety and sleep hygiene, amongst

others. They also share motivational comments that encourage self-care.

In terms of quantitative results, the sample mainly consisted of Instagram accounts (71.4%), led by male (56.0%) nurses (44.4%). The sociodemographic data of the sample are collected in Table 1.

In relation to the #IE_RED scale, the scores obtained by the analysed accounts ranged from 66.6 to 83.7 points, with a mean of 77.7 ± 4.6 final points. According to the scale classification, all accounts belong to the medium range. The most highly rated dimension was the pedagogical assessment as summarised in Table 2.

The descriptive analysis of the items summarised in Table 3 revealed that the most highly rated item was *Its functioning is correct and does not fail during use* (3.00 ± 0.00). The lowest rated was *It is created in free, mainstream or standard formats* (0.119 ± 0.450).

Instagram accounts were found to be of higher quality than YouTube accounts, although no significant differences were found between the #IE_RED scores, except in the technology assessment dimension, where Instagram accounts scored significantly higher than YouTube accounts [Table 4].

In relation to the professional profile, the accounts managed by nurses showed higher quality than those managed by other health professionals, although significant differences were only identified in the pedagogical assessment dimension, as shown in Table 5.

Table 1: Sociodemographic data of the analysed social network accounts

	n	%
Sex		
Female	11	44.0
Male	14	56.0
Social network		
Instagram	20	71.4
YouTube	8	28.6
Professional profile		
Nurse	11	44.0
Physician	8	32.0
Other	6	24.0
Followers		
M (SD)	412273.2 (748748.3)	

Table 2: #IE_RED scores

	Minimum	Maximum	Mean	Standard deviation
Pedagogical assessment	21.7	30.7	26.8	2.1
Design evaluation	20.7	31.3	26.2	2.6
Technological assessment	20.3	28.0	24.4	1.9
Total	66.6	83.7	77.7	4.6

Discussion

The social network accounts included in the study showed good quality, especially the Instagram accounts managed by nursing professionals, and could therefore be considered a good means for health dissemination. The results obtained coincide with those by Ross *et al.*[19] in considering social networks as an ideal channel for disseminating knowledge and healthy practices, and reaching younger audiences. The variability offered by social networks makes them a suitable means for disseminating the health knowledge of different professionals to all types of recipients, as they allow health promotion and prevention interventions, interaction with users and colleagues, dissemination of scientific knowledge, facilitation of research, rapid dissemination of information to a large number of people and territories, and in different languages.[1]

In line with our results, social networks have been used to promote healthy diets in adolescents, young people and adults by facilitating communication, relationship building and social support amongst peers, and enhancing the exchange of monitoring and gamification activities.[20] The review conducted by Klassen *et al.*[21] on the use of social media for nutrition-related outcomes in young adults concluded that young adults are receptive to recipe and healthy eating advice via social media. However, they have reservations about sharing personal weight-related information. Interventions have also been published in which social networks have been shown to be useful in promoting exercise and fitness improvement by allowing users to share their progress and use standardised features to achieve their goals.[22] Vandelanotte *et al.*,[23] after analysing fitness promotion apps and websites, identified that the use of self-monitoring, goal setting, and provision of feedback was relatively low. However, generating social networking content and components was very frequent and valued by users. In relation to smoking cessation, the study by Kim *et al.*[24] identified that social network participation and social support significantly predicted smoking reduction. Naslund *et al.*[25] reviewed social networking interventions for smoking cessation and concluded that personalised content, targeted reminders and moderated discussions were the main strategies to promote user engagement. In addition, active participation by posting comments or liking content may be associated with better outcomes. On the other hand, the review by Maher *et al.*[15] on the effectiveness of interventions to change health behaviour, using social media, revealed that the studies reported some behaviour change in participants, but overall these were not significant, and engagement and loyalty were relatively low.

Table 3: Digital Educational Resources Evaluation Instrument (#IE_RED)

	Mean	Standard deviation
Pedagogical assessment		
Didactic description		
1. Data such as objectives, competences, target group, prior knowledge and learning time are clearly specified.	1.309	0.514
2. There are instructions or suggestions on possible didactic uses for the teacher and/or the learners.	1.214	0.493
Quality of the contents		
3. The contents are coherent with the didactic objectives and offer support elements to facilitate their understanding and the development of activities.	2.536	0.590
4. The content is presented in a clear and comprehensible way. Key ideas are highlighted and clear instructions are given in the activities.	2.631	0.533
5. The content is either up-to-date or timeless (no updating is required).	2.631	0.576
6. The content is presented in an attractive or innovative way.	2.667	0.567
7. The content respects intellectual property rights if other materials are used.	2.798	0.404
Ability to generate learning		
8. Promotes meaningful (and autonomous) learning for learners.	2.667	0.474
9. There is a relationship between what has been learned and professional performance.	2.631	0.576
10. Creativity and innovation are encouraged, so that students generate new ideas and ways of applying them.	2.667	0.522
11. There are activities in both digital and analogue formats, encouraging different ways for learners to express themselves	0.476	0.768
12. Both individual and collaborative learning are made possible.	2.619	0.535
13. Actions to plan and review learning are contemplated, even by the students themselves.	0.119	0.361
Design assessment		
Adaptability		
14. The content/activity can be easily modified to suit different types of learners or training activities.	0.202	0.533
15. Different content/activities or different content/activity pathways are proposed according to levels of knowledge and learning possibilities.	2.440	0.700
16. The materials can be used independently of the teaching and learning method.	2.631	0.533
Interactivity		
17. Encourages learner participation while reading, viewing or interacting with the resource.	0.405	0.661
18. Control and learning management is facilitated to learners.	0.202	0.510
19. It is possible to obtain the performance history of the learner's activity.	2.178	1.121
20. The typology of interactive activities is varied.	2.345	0.570
Format and design		
21. The design is well organised, clear, concise and intuitive.	2.607	0.601
22. The design is simple, relevant and attractive, with a user-friendly interface.	2.643	0.573
23. It includes multimodal formatting (variety of formats): text, image, audio and/or video.	2.667	0.499
24. Audio-visual content facilitates and/or reinforces learning. They are not embellishments that hinder or slow down the process.	2.663	0.547
25. The images, audios and videos are of high quality.	0.440	0.750
26. The interface is customisable.	0.083	0.278
Reusability		
27. It is modularly organised so that it is scalable or allows for the creation of new materials.	2.417	0.748
28. It is created in free, mainstream or standard formats (e.g. txt, odt, pdf, html, xml, wav, mp3, mp4, png, etc.).	0.119	0.450
29. Can be used on any device (with or without Internet connection).	2.131	0.818
Technological assessment		
Technical stability		
30. It works correctly and does not fail during use.	3.000	0.000
31. Help functions on common user problems and their solutions are provided.	2.405	0.852
Navigation		
32. Navigation is cross-platform and cross-device compatible, with links opening correctly in a new window.	1.000	0.269
33. Users are provided with information about where they are at all times.	2.655	0.549
34. Learners are aware of their progress in executing the content.	0.155	0.364
35. Forced steps through repetitive content elements are avoided.	2.536	0.629
36. It includes navigation personalisation options.	2.571	0.699
Accessibility of audio-visual content		

Contd...

Table 3: Digital Educational Resources Evaluation Instrument (#IE_RED)

	Mean	Standard deviation
37. There is sufficient contrast between the colour of the images and the background colour for them to be properly seen	0.607	0.892
38. All audio-visual content has an alternative textual description.	2.595	0.623
39. In audio-visual content, the learner has control over the management of the playback, audio and its textual alternatives	0.333	0.567
Accessibility of textual content		
40. The text is legible and/or can be adjusted in size.	2.536	0.629
41. There is contrast between the text colour and the background colour for clear and effortless reading.	2.452	0.629
42. Homogeneous fonts.	1.405	0.661

Table 4: Student's *t*-test of the quality of the accounts according to the type of social networks

Network	Mean	Standard deviation	t	P
Pedagogical assessment				
Instagram	26.8	2.1	−0.044	0.96
YouTube	26.8	2.2		
Design assessment				
Instagram	26.6	2.6	1.171	0.26
YouTube	25.4	2.4		
Technological assessment				
Instagram	24.9	1.8	2.828	0.01*
YouTube	23.0	1.5		
Total				
Instagram	78.3	4.7	1.169	0.26
YouTube	76.2	4.1		

*Statistical significance

Table 5: ANOVA test of the quality of the accounts according to the type of social networks

Professional profile	Mean	Standard deviation	F	P
Pedagogical assessment				
Nurse	27.0	1.5	3.513	0.047*
Physician	28.0	2.1		
Other	25.2	2.4		
Design assessment				
Nurse	26.7	2.4	0.240	0.789
Physician	25.9	2.4		
Other	26.1	3.7		
Technological assessment				
Nurse	24.9	2.2	0.525	0.599
Physician	24.0	1.5		
Other	24.5	1.8		
Total				
Nurse	78.9	4.4	0.875	0.431
Physician	77.8	3.9		
Other	75.8	6.0		

*Statistical significance

In the present study, the highest rated dimension was the pedagogical one, which reinforces its consideration as a didactic resource. This dimension includes aspects such as didactic description, quality of content and ability to generate learning. It has been studied that the incorporation of social networks in the teaching-learning process improves autonomy and teamwork, and diversifies information, giving young people the opportunity to actively participate in their own learning.[26] Social networks are a tool that is fully embraced by learners, it is highly accessible, and allows for interactive and dynamic learning. One of the reasons for their acceptance and popularity could be the technological improvement of mobile phones, as they are the most frequently used device for accessing social networks through applications that are regularly optimised, thus facilitating their use at any time.[3] Some authors show that students, particularly university students, have a very favourable attitude towards the didactic use of social networks.[19] This is why both teachers and professionals, dedicated to the dissemination of science using networks, have at their disposal this active and participative work resource, which can serve as a learning tool for both parties.

Nursing students of what is known as Generation Z are recognised as great consumers of technology and avid for the digital world and have expressed a preference for online tutorials or videos, interactive games and virtual learning environments as learning strategies.[27] According to O'Connor *et al.*,[28] learning through social networks about nursing and midwifery is made possible with the interactive nature of the platforms that allow information to be shared and discussed dynamically in near real time as well as enhancing social support and a more learner-centred environment, which favours collaborative learning.

Other authors noted that the use of social networks in medical education stimulates reflection and actively integrates students in the construction of their knowledge, thus acquiring skills they need in both their social and professional lives.[29] Social networking has been identified as an educational tool for health professions that enhances collaboration and peer-to-peer connections. They foster communication and teamwork amongst their users and these collaborations promote peer-to-peer learning, increase levels of trust, improve psychological well-being and reduce professional isolation. In addition, they provide an instant source of information from official bodies by breaking down geographical barriers, which fosters professional development in the health field.[30]

Although social networks offer great advantages in education, we face the challenge of maintaining the interest of both teachers and students to make them part of the basic tools in teaching.[8] According to Scott *et al*.[30] the educational opportunity of social networks is enormous, but the challenge lies in awakening the interest of institutions, teachers and students to integrate them as basic teaching tools. O'Connor *et al*.[31] concluded that the potential and usefulness of this new technology in the classroom are promising, as long as it is delivered by an involved instructor who is skilled in the application. The use of social networking by health professionals raises concerns related to privacy and confidentiality and professional ethics.[30] It has also been identified as a barrier to health knowledge management in social media the unwillingness of professionals and institutions to interact with the public and fear of negative patient comments.[31] Some health professionals have difficulty differentiating between their professional and personal roles and may behave inappropriately on their social networks.[32] Inappropriate networking behaviour by health professionals could affect the social image building of the profession and damage digital professionalism.[33] Better education and training on how to communicate effectively on networks can help prevent these problems.[32]

The novelty of this study lies in highlighting the quality of social networks as a tool for improving and promoting health. This means of communication and health education could be especially useful in times of a pandemic such as the current COVID-19, in which attendance and personal contact are forced to be reduced and telematic means become more important.[34]

Limitation and recommendation

As limitations to the present study, the moderate size of the sample and the restriction to the Spanish language must be recognised. A larger sample would allow a greater representativeness of the accounts on social networks dedicated to health promotion. By analysing only accounts in Spanish, the impact of the results is limited to the Spanish-speaking population. Considering these limitations, prudence is recommended in the generalisation of the results. It is also suggested to continue with similar studies with larger samples that include English-speaking social network profiles to analyse the international impact. Despite these limitations, our results support the use of social networks as a valid way to disseminate health content and promote healthy lifestyles.

Conclusions

Social networks, more specifically accounts dedicated to health dissemination, have shown to be a good resource for teaching young people and could be included as a didactic resource for the teaching-learning process and for scientific outreach, thus increasing knowledge and disseminating evidence-based information. The results suggest that social networks are a valid resource for health dissemination, proving to be a quality tool in terms of didactic, technological and accessibility aspects, and with a high degree of followers and varied content. The use of social networks in health education would represent a revolutionary change in current study methods, and an advance in the form of teaching, ensuring that the consumption of networks amongst young people has an educational and also entertainment purpose.

Conflicts of interest
There are no conflicts of interest.

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