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ORIGINAL ARTICLE

Presence and management of Cuban medical scientific journals across facebook, X, and linkedIn

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ABSTRACT

Introduction: digital social networks are vital for the visibility and impact of scientific production. However, the state of communication management of cuban medical scientific journals on these platforms remains unknown.
Objective: to characterize the presence and management of scientific dissemination of cuban medical scientific journals on facebook, x, and linkedin.
Methods: a cross-sectional, descriptive, correlational study conducted in 2024 analyzed 82 journals from the cuban national registry of serial publications in health sciences. The variables assessed were: presence, updating, number of followers, and dimensions of digital communication (relevance, multimedia use, hypertextuality, and interactivity). Statistical analysis included pearson correlations and heat maps.
Results: a total of 57,32 % (47 journals) had a presence on at least one network. Journals present on all three networks belonged to medical universities (78,57 %). Facebook was the most used platform (46,34 %), followed by x (35,37 %) and linkedin (24,39 %). Updating was low (facebook: 34,09 %; x: 17,24 %; linkedin: 10,00 %). Content quality dimensions showed high values on facebook and x (>80 %), but interactivity was minimal (<3,5 % on facebook and x; 10% on linkedin). Strong positive correlations were found among relevance, hypertextuality, and multimedia use.

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Rev Ciencias Médicas. 2025; 29(2025): e6980

Conclusions: there is a modest presence, but with poorly sustained management and limited interactivity. The urgent need for comprehensive and dedicated communication strategies is evident to harness the potential of digital social networks and increase the social impact of Cuban medical research.

Keywords: Social Network Analysis; Health Communication; Information Dissemination; Social Networking; Electronic Journals.

INTRODUCTION

The publication of research results is an important link in scientific production. It is the space where results are socialized and shared to make them known to the scientific community and society in general. It fosters the production of new knowledge, decision-making, and the generalization of results in all areas of society. Therefore, the research process is not considered complete if the necessary scientific communication actions are not carried out to socialize this process.[1,2]

In the context of the information society, publishing results in scientific journals as the sole means of communicating science is inefficient. These journals maintain high value in the dissemination and transfer of knowledge, but they require integration with other communication channels characteristic of our times.[3] Digital social networks are vital for democratizing access to knowledge, fostering dialogue between the scientific community and society, and enhancing the visibility of research that would otherwise remain confined to the academic sphere.

Dissemination on digital social networks involves positioning oneself as an entity to attract audiences and transform them into essential actors in the process provided by, in this particular case, scientific journals. The creation of relevant and contextualized content; the optimal use of elements such as multimedia and hypertextuality; as well as the analysis of interactivity by communicators for these audiences are essential for the socialization and impact of scientific content. However, it is a process that must be very well planned and structured to fulfill the informational objectives for which it is conceived. [4,5]

There are different types of networks depending on their target audience and objectives. Horizontal networks (Facebook, Instagram, formerly Twitter) are dedicated to the general public or heterogeneous groups with the intention of socializing, but without specific content, although they allow for the generation of content of scientific interest and constitute spaces for disseminating research results. Vertical networks (LinkedIn, ResearchGate, Academia.edu) are aimed at specific groups that share common interests, experiences, and content, and can cover a variety of topics, including scientific and academic ones.[6]

The use of digital scientific and academic social networks for disseminating research eliminates geographical barriers, especially in the era of Open Science. According to Alonso-Flores,[7] in their study, 74,06 % of researchers believe that social networks are a useful tool for increasing public awareness of science by enabling interaction, debate, reflection, and the sharing of opinions. Similarly, for Paz et al.,[8] the visibility of scientific output is vital for increasing opportunities for interdisciplinary collaboration and synergistic interinstitutional relationships.

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From this perspective, academic social networks are considered dynamic agents of scientific knowledge.

Therefore, it is advisable for journals to carry out outreach work that contributes to improving the visibility indicators of both the articles published within them and the authors, institutions, and other stakeholders involved. As noted, mere presence on digital social networks is not enough; constant maintenance, interaction, and coherent management are necessary, guided by the communicative objectives that define the journals' mission.[9]

In light of the theoretical aspects discussed, the need for visibility of scientific output is evident, and the use of scientific and academic digital social networks by journals is vital. In the field of Health Sciences in Cuba, scientific production is high, given the existence of several journals, both multidisciplinary and specialized, dedicated to this purpose. However, no research was found regarding the presence and dissemination of these journals on digital platforms. Based on this perceived need, the objective of this study is to characterize the presence and management of scientific dissemination by Cuban medical journals through the digital social networks Facebook, X, and LinkedIn.

METHODS

A cross-sectional, descriptive study with correlational analysis was conducted to characterize the presence and management of scientific dissemination of Cuban medical scientific journals on the digital platforms Facebook, X and LinkedIn in 2024.

The magazines were selected in theNational Registry of Serial Publications in Health Sciencesbelonging to Infomed. All journals found during the data collection period (January-April 2025) that conduct their evaluations through peer review processes were included in the study. New journals in the process of obtaining an ISSN and those that were inaccessible were excluded. The total study population consisted of 82 journals (N=82).

With this total number of magazines, an Excel database was created with three tabs, one dedicated to each platform analyzed (https://zenodo.org/records/17298720); selected according to the criteria of Martínez-Guerrero.[10] For each of the tabs, the following variables were noted: name of the magazine, publishing entity, years of age and update of the magazine; of the social network: number of followers, digital presence, profile update, relevance, multimedia, hypertextuality and interactivity.

For calculating the journal's age, the year 2024 was used as a reference point, and the difference was determined with respect to the year of the first issue available in digital format. The journal's updates were recorded according to its publication frequency. Journals using a continuous publication system were considered outdated when they had not published an article for one month or more.

Profiles on digital social networks were searched through the journals' websites via links provided there, as well as directly on all networks using the exact name under which they appear registered in the National Registry of Serial Publications of Health Sciences. The appearance of groups or personal titles instead of profiles, or the use of acronyms for journal names, was not permitted.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6980

From the profile presentations, the number of followers or potential audience size was extracted, divided into groups of: 1-100, 101-500, 501-1,000, 1,001-2,000, 2,001-3,000 and more than 3,000. The magazines with the highest number of followers per platform were determined based on percentiles and the Pareto principle or 80/20 rule.

The variables corresponding to the social network, with the exception of the number of followers, were defined as binary nominal variables as follows:

- Digital presence: created, verified and official profile of the magazine.
- Profile update: at least one post in the last 30 days.
- Relevance: content that aligns with the health communication objectives and the target audience.
- Multimedia: use of images, infographics and/or videos in 50 % or more of the published content.
- Hypertextuality: use of external links in 50 % or more of the published content.
- Interactivity: at least one comment posted by a follower or a response from the magazine to one of these comments within the last 30 days. Use of surveys and question formulation.

To identify associations between variables, Pearson's correlation coefficient (r) was used, where positive values indicate direct associations, while negative values reflect inverse relationships. The p-value associated with each correlation was also calculated. The construction of the correlation matrices was performed independently for each digital platform in order to respect the unique nature and distinct purposes of each social network. Only correlations with a p-value <0,05 were considered relevant.

In addition, comparative heatmaps were created with the values in each cell to facilitate interpretation. These comparisons analyzed irregularities and structural differences in the correlation patterns. The use of divergent colors, ranging from red tones for positive correlations to blue tones for negative ones, with intensity corresponding to the magnitude of r, allowed for the rapid identification of general patterns, highlighting those that were statistically significant and of greater magnitude. Statistical analyses were performed using Python software: SciPy to calculate each pair of variables, Pandas to construct the correlation matrices, and Seaborn (using Matplotlib) for the heatmaps.

All Cuban medical journals are open access, allowing unimpeded access to their content. Similarly, their social media profiles and content are entirely public.

RESULTS

Analyzing the presence of digital social networks by journal, it was found that 35 journals (42,68 %) do not engage in any type of scientific dissemination through Facebook, X, or LinkedIn pages; that is, out of a total of 82 journals, only 47 (57,32 %) had a presence on at least one of the networks under study. The distribution was as follows: 14 (29,79 %) on three, 18 (38,30 %) on two, and 15 (31,91 %) with only one identified social network. It was observed that the journals with a presence on all three networks belong to medical universities (78,57 %).

Similarly, an analysis was carried out of the presence of Cuban medical journals in the social networks in question, where it was found that 46,34 % of the journals had a presence on Facebook with the representation of 44 journals, followed by X with 35,37 % (29) and LinkedIn with 24,39 % (20) (Figure 1).

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6980

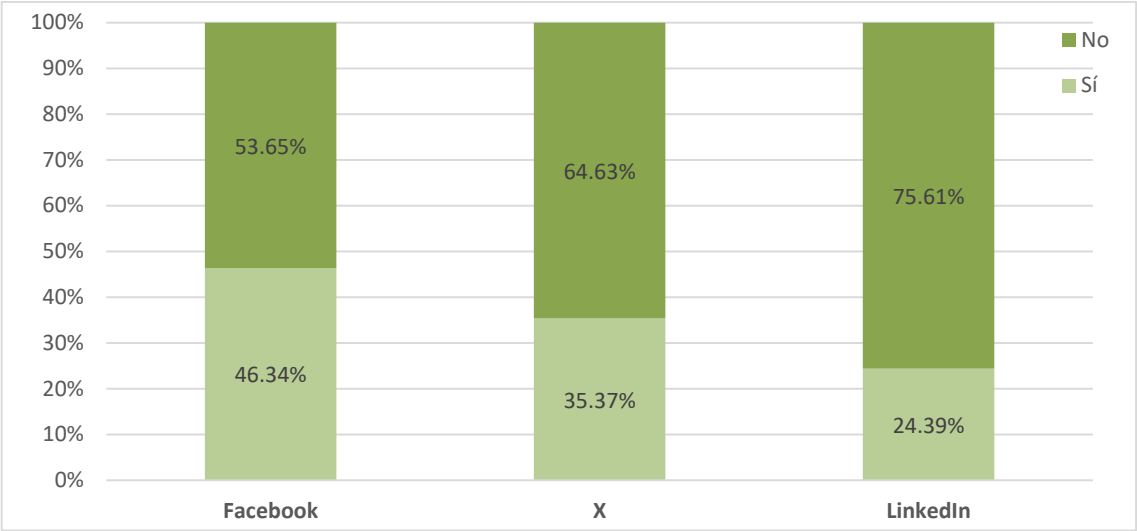

Fig. 1 Presence of Cuban medical scientific journals in the studied digital social networks.

From this point onward, the results described will correspond to the journals with a presence on the networks under analysis. Therefore, of these 44, only 34,09 % (15) showed updated profiles on Facebook. Much lower values were observed on X and LinkedIn, with 17,24 % (5) and 10,00 % (2), respectively (Figure 2). It should be noted that some journals had empty profiles, without a single publication.

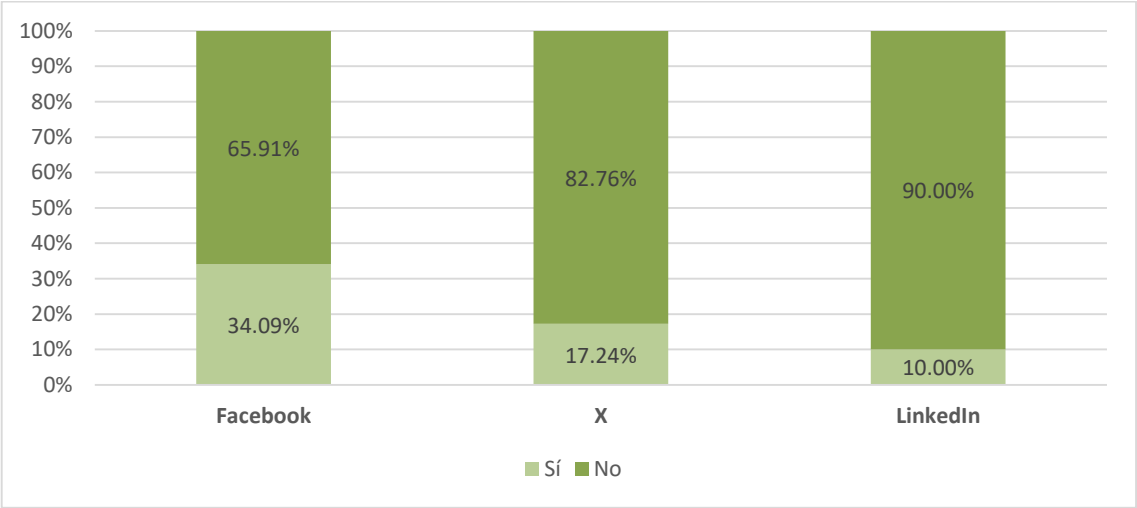

Fig. 2 Update of Cuban medical scientific journals on the studied digital social networks.

Regarding the dimensions of digital communication, the most relevant content, which predominated at 88,63 % (39), aligned with the communication objectives and targeted at the healthcare audience, was found on Facebook. X showed a relevance of 82,75 % (24), while LinkedIn showed 65,00 % (13), as can be seen in Figure 3.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6980

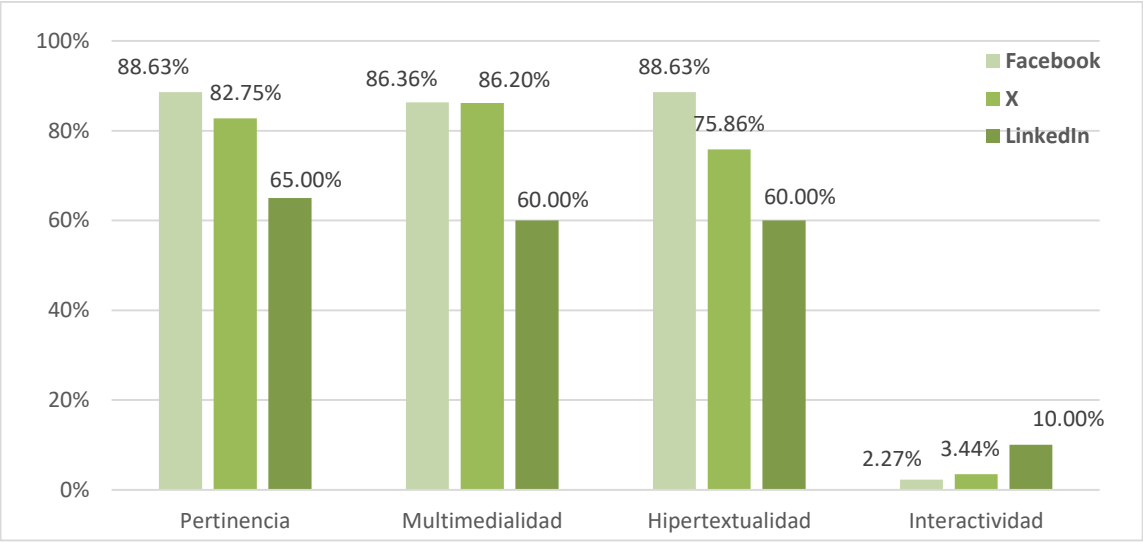

Fig. 3 Dimensions of digital communication of Cuban medical scientific journals in the studied digital social networks.

The largest number of followers was found on the Facebook platform with 27,281, while LinkedIn was followed by 4,980 and, closely behind, X by 4,096 people (Figure 4). Three magazine profiles on LinkedIn had no followers. Regarding their distribution, the 1-100 follower group predominated on both X and LinkedIn, with 62,06 % in 18 magazines and 65,00 % in 13 magazines, respectively; while on Facebook, the 101-500 follower group was more prominent (27,27 %; 12 magazines).

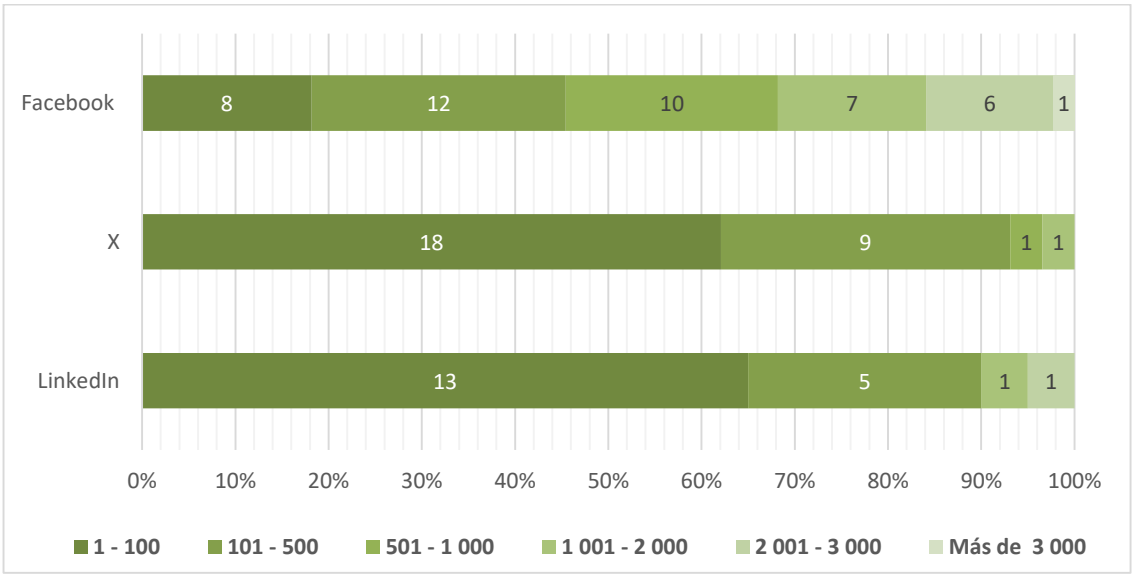

Fig. 4 Number of followers of Cuban medical scientific journals on the studied digital social networks.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6980

The use of images, infographics, and/or videos in more than half of the published content was observed with very similar values on Facebook and X (86,36 %, 38; 86,20 %, 25), while on LinkedIn it did not exceed 60,00 % (12). Similarly, the analysis of hypertextuality showed decreasing values on Facebook, X, and LinkedIn, with figures of 88,63 % (39), 75,86 % (22), and 60,00 % (12), respectively. The opposite occurred when studying the interactivity of followers with the magazines' profiles, where it was considered almost nonexistent. Interactivity was lowest on Facebook at 2,27 % (1), while slight increases were observed on X and LinkedIn at 3,44 % (1) and 10,00 % (2), respectively.

The journal with the largest number of followers across all the studied networks was the Cuban Journal of Neurology and Neurosurgery, published by Editorial Ciencias Médicas (Ecimed), with 10,000 followers, and was found on Facebook. CorSalud led the X platform with 1,250 followers, while Revista Información Científica led on LinkedIn with 2,377. It is worth mentioning the participation of Revista Habanera de Ciencias Médicas, which ranked first on both Facebook and X; as well as the University of Medical Sciences of Guantánamo, which completely dominated the LinkedIn platform (Table 1).

Table 1. Cuban medical journals and publishing entities with the largest number of followers on the studied digital social networks.

Cuban medical scientific journal	Publishing entity	Followers
Cuban Journal of Neurology and Neurosurgery1	ECIMED	10,000
Progaleno1	UCM Camagüey	2,783
Havana Journal of Medical Sciences1	UCM Havana	2,700
CorSalud2	CCECG	1,250
Cuban Journal of Military Medicine2	UCM Armed Forces	502
Havana Journal of Medical Sciences2	UCM Havana	370
Scientific Information Magazine3	UCM Guantánamo	2,377
Student Medical Gazette3	UCM Guantánamo	1031

Grades:1 (Facebook); 2 (X); 3 (LinkedIn); ECIMED (Medical Sciences Publishing House); UCM (University of Medical Sciences); CCECG (Ernesto Che Guevara Heart Center)

The analysis of the correlation matrices revealed statistically significant associations between the dimensions of scientific communication in the journals under study. On the Facebook platform, strong and positive correlations were observed between relevance and hypertextuality ($r\approx0,77$; $p<0,001$) and, between the latter, and multimediality ($r\approx0,71$; $p<0,001$). The correlation between relevance and multimediality was considered moderate ($r\approx0,48$; $p<0,01$), while a moderate negative correlation (moderate blue cell) was identified between journal age and multimediality ($r\approx-0,42$; $p<0,005$) (Fig. 5A). For its part, in figure 5B, it can be seen that the strongest correlations were denoted on the X platform.

A very strong correlation was found between relevance and hypertextuality ($r\approx0,81$; $p<0,001$), and a strong correlation between relevance and multimedia ($r\approx0,61$; $p<0,01$). Of particular note is the very strong and statistically significant negative correlation between journal updates and the number of followers ($r\approx-0,87$; $p<0,001$), highlighted by its dark blue cell, which distinguishes it from the other matrices. On the LinkedIn platform (Fig. 5C), most correlations were positive, although with lower values than those for Facebook and X. No statistically significant negative correlations were detected. The most prominent correlation was between relevance and hypertextuality ($r\approx0,69$; $p<0,01$). While moderate associations were found

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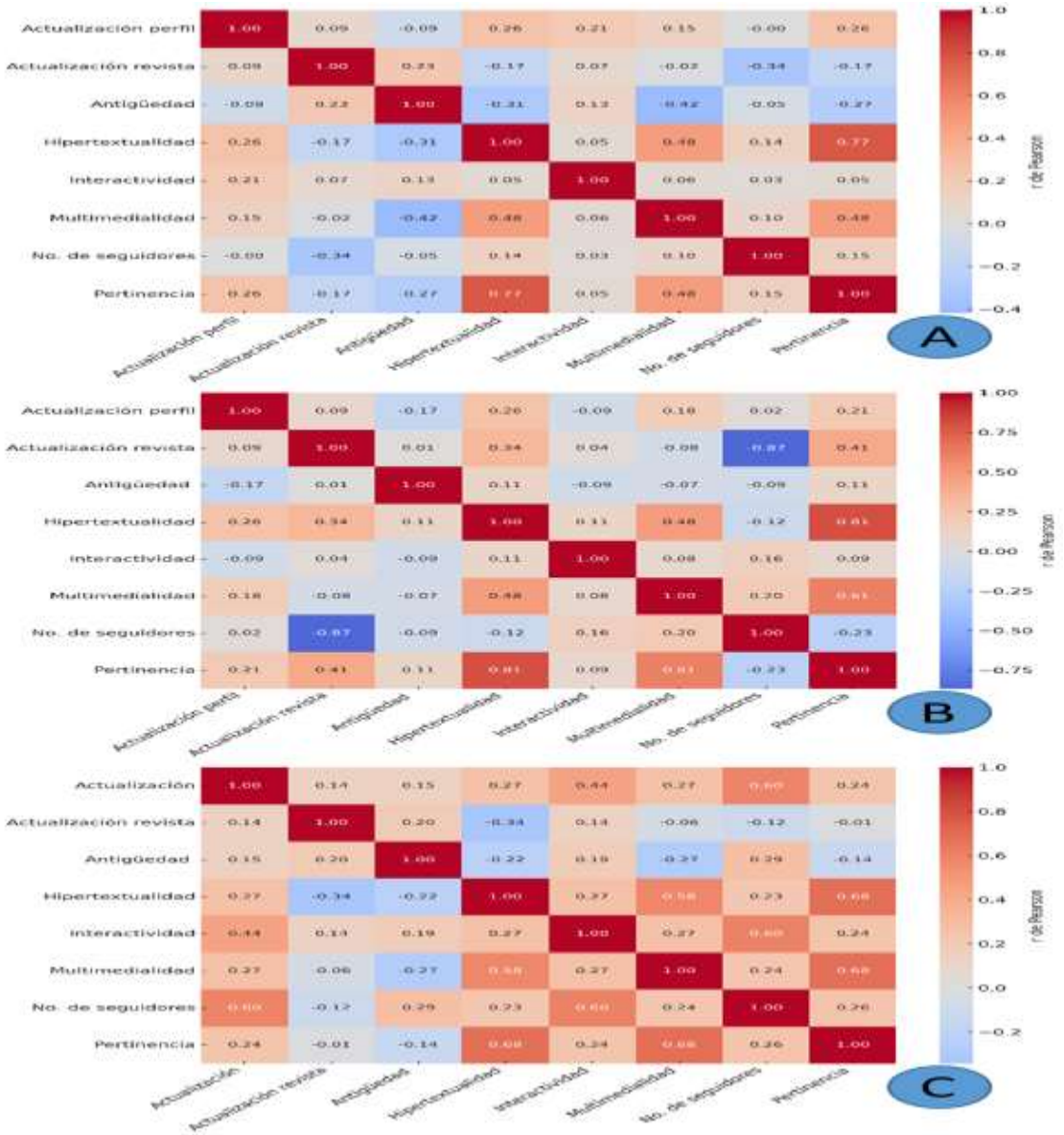
between relevance and multimedia (r≈-0,58; p<0,05) and between hypertextuality and multimedia (r≈-0,63; p<0,01), no negative or noteworthy values stood out in the corresponding figure, which explains the less saturated tones.



Grades: A (Facebook correlation matrix); B (X correlation matrix);C (Correlation matrix_LinkedIn)

Fig. 5 Comparison of correlation matricesof the digital social networks studied, with colorimetry.

In general, a common pattern was observed in the correlations between the dimensions of relevance, hypertextuality and multimedia of the three platforms studied, which can be seen in the red "brick" colored cells; similar trends in the Facebook and LinkedIn platforms with positive and significant correlations, although with moderate intensity in LinkedIn and the presence of the most marked negative correlation of the study in X, as stated above.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6980

DISCUSSION

The presence of Facebook, X, and LinkedIn in Cuban medical journals was minimal, as demonstrated by the fact that 42,48 % of the journals did not use any of the three analyzed networks for disseminating scientific activity. These results were higher than those obtained by Martínez-Guerrero,[10] in a study published by the University of Costa Rica.

The predominance of journals belonging to medical universities, related to the presence of the three networks in question, can be attributed to the knowledge and role that medical universities currently have in this area. They use digital social networks to disseminate science in an accessible and bidirectional way, strengthening their image and social connection. This proximity makes them reliable sources in the face of misinformation, promoting critical scientific literacy. In this way, they build an active bridge between academic knowledge and collective needs, unlike scientific societies.[11]

The analysis also revealed the low number of Cuban medical journals on social media, with overall presence falling below 50 % across all platforms. While 46,34 % had identified profiles on Facebook, this proportion decreased as the analyzed social media platforms became more specialized (X, 35,33 %; LinkedIn, 24,39 %). These results coincide with those of Oliveira da Silva and Pereira de Medeiros,[12] Those who, in 2024, characterized the presence of journals in the field of Information Science with Open Access models, found that only 38 % made use of digital social networks. This study by Brazilian authors even includes Instagram and YouTube as additional networks under study. Similarly, the order of frequency by network is similar to that of the present study, with Facebook standing out at 33 %.

In a more specific context, lower results were found at the University of the Andes, where only 22,30 % of its 90 journals had a presence on at least one social network (including YouTube), but where the previously mentioned frequency pattern was also repeated. Facebook predominated with 48,15 %, and none of the journals were found on LinkedIn.[10]

Given the Cuban context, a study conducted by Alonso Galbán et al.,[13] in the National Health System in 2018 already warned about the small number of Cuban health institutions with profiles on Facebook or other social media platforms. However, after several years, this trend has increased, but remains unsatisfactory. Creating profiles as a sign of modernization without a well-conceived and sustained strategy severely limits the true potential of digital networks as tools for effective scientific communication.

It is also argued that Facebook, due to its familiarity and massive reach, becomes the preferred option for non-specialized scientific communication, as is the case with 89,23 % of Cuban Dentistry students who use it in the development of their academic activity, as reflected in a study by Corrales-Reyes et al.,[3] This could be justified as the leading platform for the case of Cuban medical journals.

On another note, the gap between creating profiles and updating and maintaining a sustained communication strategy was highlighted. This could suggest a possible lack of digital skills, resources (human, energy, technological), and/or a lack of planning and understanding of the long-term commitment required for communication work on these digital platforms. This point is reinforced by what was stated by Viera Savigne and Stable-Rodríguez,[14] who in a recent study demonstrate theThere is little utilization by journals indexed in SciELO Cuba; where health journals constitute around 50 % of that collection. It also constitutes a challenge commonly

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Rev Ciencias Médicas. 2025; 29(2025): e6980

recorded in the literature for Open Access journals with budgetary limitations such as the journals in analysis, affirm Sanchez Tarrago,[15] and Tejedor et al.,[16]

This problem is not new, in the study ofRodríguez RuibalandSantamaría Cristino,[17] They report that 100 % ofSpanish universities have their own profiles on Facebook and X, with different structures.Regarding participation and other aspects, such as profiles that have been created but not updated**.**De la Paz,[18] points out a certain degree of spontaneity and empiricism in the practice of communication through digital social media, while Cueva Estrada,[19] argues with statistical evidence that managing digital social networks is a task requiring time and dedication. The authors of this research are in complete agreement with both approaches.

Numerous studies,[10,12,18,20] suggest a lack of dedicated staff for effective and up-to-date scientific communication in social media, as their absence is noticeable in editorial sections. This could also be attributed to a lack of digital skills and problems with the technological infrastructure. These are all potential causes considered by the present authors. Based on observation and experience, they are aware of the multitasking nature of their current staff, who lack anyone specifically dedicated to this communication task; as well as the age of the members of many Cuban journal teams, who are generally older individuals without sufficient digital skills and who also face problems with technological equipment.

Equally numerous are the studies that reveal the significant correlation between activity on digital social networks and the citation level achieved by a journal. Examples of this are the studies carried out on journals of Internal Medicine,[21] Pulmonary Medicine,[22] Endocrinology,[23] and Physical Medicine and Rehabilitation;[24] in contrast to Cuban journals in these specialties. The only journal found to use Facebook was the Cuban Journal of Medicine, while journals specializing in the aforementioned fields were not. Therefore, adopting scientific marketing practices on social media, especially those related to Open Access, is of vital importance.

Examining the dimensions of digital communication revealed, particularly on Facebook and X, a remarkable performance in terms of content relevance. This finding is encouraging, as it indicates alignment with objectives and a correct approach to targeting the healthcare audience. Within the contemporary digital ecosystem, creating engaging content has become a cornerstone of any effective communication strategy. In addition to being relevant, this content must be truthful, innovative, impactful, and memorable.[25] All of this is based on the premise of offering content that is understandable to the audience, taking into account the specialized language of the Health Sciences, and sufficiently captivating and stimulating to encourage readers to engage with it and consume more information.

Furthermore, the high use of multimedia on Facebook and X (over 86 %) aligns with current best practices in digital communication, which emphasize visual content to increase attention capture and information retention. The lower results seen on LinkedIn in this dimension (60 %) could be due to a perception of the platform as a more formal space and less conducive to dynamic multimedia formats, such as videos, interactive figures, and podcasts.

The intentional use of visual materials has become essential in the face of the immediacy of information in a saturated, hypertextual environment. This is why the inclusion of mind maps, infographics, podcasts, audio recordings, interviews, videos or documentaries, animations, and tips on all types of content have become the most widely used resources for scientific communication online.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6980

The current digital landscape is marked by the rapid expansion of the digital video advertising market, which validates users' preference for this format. Social platforms inherently favor short, visual formats. The success of multimedia in scientific dissemination is conditioned by adaptation to mobile devices and the speed of consumption.[26]

Similarly, infographics offer a more concise approach than videos, a more narrative approach than a diagram, and a more engaging approach than data tables.[27] Their impact is significant for learning and synthesizing complex concepts, increasing reader motivation and engagement. They are ideal for LinkedIn or for visual summaries on journal websites.

Hypertextuality, essential for guiding users toward primary knowledge (the scientific article), also showed decreasing values from Facebook to LinkedIn. The high values on Facebook (88,63 %) reflected an effective use of the link to connect the social conversation with formal scientific production; a fundamental practice for alternative metrics, such as website visits and article downloads.[10]

In general, the content quality dimensions (relevance, multimedia, hypertextuality) showed consistently high and encouraging values on Facebook and X, exceeding 80 % in most indicators. This finding suggests that when journals decide to participate in social networks, they prioritize relevant and well-structured content, aligning with the best practices described by Torres-Salinas et al.,[28] for digital scientific communication. However, the gap observed on LinkedIn (where these values did not exceed 65 %) indicated that this professional platform remains underutilized for specialized scientific communication in the Cuban context.

When compared with the 2018 national reference study,[13] where the absence of relevant web content to support publications on digital social networks, scarce use of multimedia and hypertextual resources in publications and use of low resolution images is noted, a notable advance in the quality of content in the journals under study can be seen.

The most critical finding was the almost complete lack of interactivity. The minimal percentages of profiles that encourage interaction (2,27 % on Facebook and 3,44 % on X) revealed a predominantly one-way or broadcast communication model. The magazines are "transmitting" information, but they are not "conversing" with their audience.

This one-way communication significantly undermines the potential of journals to generate real altmetric impact, understood as the degree to which studies are applied, discussed, or affect individuals and groups within or outside the academic community. Low interaction, therefore, not only represents an inefficiency in engagement management but also compromises the measurement of the social impact of disseminated research.[29,30] However, here the pattern of behavior seen so far was reversed, as LinkedIn showed the highest number of interactions.

This result is consistent with the work of Tejedor et al.,[16] who identify the lack of dialogue as one of the major weaknesses of scientific communication on digital social networks, even in high-impact journals; as well as with that of Capriotti et al.,[31] where a low interest in managing communication from a dialogic perspective on the social network is shown, not only because a greater predisposition to interaction is required, but also because the interaction generated is very low. Gertrudix et al.,[32] in their study also assert that scientific communication in this medium is characterized by its mostly unidirectional orientation, with little evidence of genuine dialogue.

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The authors of this article assume that the reversal of this pattern, where LinkedIn showed the highest number of interactions, could be explained by its nature as a professional network, which ensures that specialized medical content reaches its target audience with an explicit intention of online collaboration and career development. Unlike mass networks that value virality and passive consumption, LinkedIn's culture rewards substantial content and technical debate, so its greater interactivity is not only quantitative but also qualitatively superior, reflecting professional validation and meaningful engagement (quality over quantity) that is a more robust predictor of the effective use of research than mere social reach.

When analyzing the number of followers, Facebook once again stood out as the most preferred platform with the largest number of followers; LinkedIn followed, not X, as observed in the other dimensions. This result is consistent with previous observations regarding the presence of this social network in the digital environment, and therefore also coincides with the studies by Oliveira da Silva and Pereira de Mederos,[12] and Martínez-Guerrero.,[10] Similarly, strong correlations were found between the number of followers on Facebook and X with the SJR index in journals of Internal Medicine,[21] and Rheumatology.[33]

A high number of followers lends a certain legitimacy, accompanied by increased visibility for brands, individuals, and organizations—in this case, medical journals. The explanation given earlier for interactivity also applies to the number of followers. On general-interest social media platforms like Facebook and X, strategies focus on increasing followers at a popular level. However, on more specialized academic social media platforms geared toward a specific audience, strategies focus on the exchange of ideas, feedback, collaboration, and recognition. The journals studied reflect a limited potential for generating relevant interaction on the three platforms analyzed.

The distribution of followers, predominantly in the 1-100 range for both X and LinkedIn, reflected niche audiences, a characteristic of specialized scientific communication. However, the small size of these communities limits the potential for broad social impact.

Among the journals with the largest number of followers, those published by medical universities stood out (Progaleno, Revista Habanera de Ciencias Médicas, Revista Cubana de Medicina Militar, Revista Información Científica, and Gaceta Médica Estudiantil). It is worth noting that journals from medical universities also predominated, with a presence on all three platforms analyzed; however, it was the specialized journals (Revista Cubana de) that were most prominent. Neurology and Neurosurgeryand Corsalud) the leaders on Facebook and X, respectively. This corresponds to what was previously stated by Kelleher and Sweetser.[11]

The fact that Revista Habanera de Ciencias Médicas appeared among the most followed on both Facebook and X could be due to the fact that, regardless of being a journal from the Cuban capital and the first to be indexed in Scopus of those corresponding to medical universities in the country, it is the first Cuban health journal to appear in the Google Scholar ranking in Spanish in the current year 2025.

One element worth highlighting is the presence of the Scientific Information Journal (RIC) and the Student Medical Gazette, both from the University of Medical Sciences of Guantánamo. These journals carry out commendable work, particularly RIC, with a communication strategy that, in addition to archiving the most outstanding articles, includes photos of the authors, attracting many followers and, at the same time, giving them public recognition.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6980

Multidisciplinary medical journals have the potential to reach broad audiences. However, their shallow focus, stemming from the need to publish articles on diverse topics, can discourage readership, unlike specialized journals where the higher citation rate can be explained by the greater ease with which most readers can use a single scientific language.

The correlation analysis provided a more in-depth perspective. The common pattern of strong, positive correlations between relevance, hypertextuality, and multimedia across the three platforms revealed remarkable intrinsic dynamics, suggesting that journals implementing best practices in one dimension tend to do so in the others. This points to the existence of a comprehensive, albeit nascent, strategic approach in some editorial teams, as opposed to a more intuitive or haphazard approach in others.

The very strong and significant negative correlation found in X between profile updates and the number of followers ($r \approx -0,87$; $p<0,001$) warrants further investigation. It could be interpreted as magazines with fewer followers being the ones that strive harder to update constantly in an attempt to grow, while those that have already achieved a considerable follower base (possibly acquired in the early days of the platform) may have entered a phase of disuse or abandonment. Another possible explanation could be a strategy of constant but low-quality updates that could lead to a loss of followers, although this would require a qualitative analysis of the content to be confirmed.

The above contrasts with the findings of Cueva Estrada et al.,[34] who suggest that although there is a positive correlation between publications in X and citations obtained in Google Scholar, as well as a clear increase in followers, scientific journals in the Latin American region are not establishing an effective presence on digital social networks, or at least not in X for the purposes of this study. Therefore, they suggest the development of a strategic communication plan to achieve visibility objectives. In this regard, the authors consider that a sound communication strategy on these digital platforms is almost mandatory for journals from developing countries with connectivity and infrastructure limitations, especially if their policies align with the principles of Open Science.

Finally, the moderate negative correlation on Facebook between magazine age and multimedia ($r \approx -0,42$; $p<0,005$) suggested that more established or traditional magazines might offer more resistance to adopting modern communication formats compared to younger magazines.

Among the limitations of the research, the following should be considered: Technical limitations such as internet connection and full access to all data collection, as the groups or use of acronyms were not considered.for the naming of the magazines. Similarly lThe dynamics of social media are constantly changing, so the results will only reflect the situation at a specific moment.

CONCLUSIONS

There is a modest presence in the adoption of digital social networks and slight progress in the basic quality of content published by Cuban medical journals; however, comprehensive strategic communication management is still in its early stages. Explicit communication planning, resource allocation, and the development of digital skills are required to transform this presence into genuine engagement, thereby maximizing the altmetric and social impact of Cuban medical research.

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Authors' contributions
LYDCh: conceptualization, data curation, formal analysis, research, methodology, project management, supervision, validation, visualization, original draft writing, revision writing and editing.
YRS: conceptualization, formal analysis, methodology, validation, visualization, original draft writing, revision writing and editing.
AECG: formal analysis, research, methodology, original draft, writing, revision and editing.
CRAI:data curation, formal analysis, research, visualization, original draft writing, revision writing and editing.
EEChM:data curation, formal analysis, research, writing, revision and editing.

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