PEDIATRIC INFLUENCERS ON INSTAGRAM: HEALTH COMMUNICATION AND PROMOTION OF CHILD HEALTH

Influencers pediátricos en Instagram: divulgación sanitaria y promoción de la salud infantil

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ABSTRACT

Introduction: Science dissemination has found in social networks an effective tool to adapt to the new interaction habits of young audiences. In this context, influencers play a crucial role in creating and sharing curated content, forging communities of followers and becoming opinion leaders. **Methodology**: The objective of this descriptive research is to determine the extent and impact of health-related dissemination on Instagram by pediatric influencers. The 20 most relevant pediatric influencers' profiles in Spain were identified and analyzed. It was assessed by quantitative and qualitative metrics related to their profiles and content. **Results**: The results indicate that these profiles have a strong relevance and reach on Instagram. Most of the influencers are young women with predominantly female and young followers. A total of 92% of their content is focused on health dissemination, with a clear tendency towards baby care. The profiles analyzed accumulate a total of 1.769.200 followers. **Discussion and Conclusions:** The research supports the importance of pediatric influencers in the dissemination of reliable and accessible health information. Despite their relevance, health experts and agencies do not often speak out about their activity. The work of these influencers is essential to combat misinformation on social networks. The identification and analysis of the profiles of pediatric influencers reveals a high volume of followers and a truthful and reliable work in the dissemination of health. This data can be used by public and private entities in the healthcare sector. Future health promotion plans in social media will be based on the actions of these influencers.

Keywords: influencers, Instagram, children and adolescents, science dissemination, health promotion, digital opinion leaders

RESUMEN

Introducción: La divulgación científica ha encontrado en las redes sociales una herramienta efectiva para adaptarse a los nuevos usos de interacción de audiencias jóvenes. En este contexto, los *influencers* juegan un papel crucial al crear y compartir contenido curado, forjar comunidades de seguidores y convertirse en líderes de opinión. **Metodología:** El objetivo de esta investigación descriptiva es determinar el grado e impacto de la divulgación de la salud en Instagram por parte de *influencers* pediátricos. Se identificaron y analizaron los 20 perfiles de *influencers* pediátricos más relevantes de España, evaluando métricas cuantitativas y cualitativas relacionadas con sus perfiles y contenidos. **Resultados:** Los resultados indican una fuerte relevancia y alcance de estos perfiles en Instagram. La mayoría de los *influencers* son mujeres jóvenes con seguidores predominantemente mujeres y jóvenes. El 92% de sus contenidos están dedicados a la divulgación sanitaria, con una clara inclinación hacia el cuidado del bebé. Los perfiles analizados acumulan un total de 1.769.200 seguidores. **Discusión y Conclusiones:** La investigación confirma la importancia de los *influencers* pediátricos en la difusión de información sanitaria confiable y accesible. A pesar de su relevancia, los expertos sanitarios y organismos no se pronuncian con frecuencia sobre su actividad. La labor de estos *influencers* es fundamental para combatir la

desinformación en redes sociales. La identificación y análisis de los perfiles de *influencers* pediátricos revela un alto volumen de seguidores y una labor veraz y confiable en la divulgación de la salud. Estos datos son útiles para que entidades públicas y privadas del sector sanitario basen futuros planes de promoción de la salud en medios sociales en la acción de estos *influencers*.

Palabras clave: *influencers*, Instagram, niños y adolescentes, divulgación científica, promoción de la salud, líderes de opinión digitales

1. INTRODUCTION

The Internet has become the main resource available to solve all kinds of doubts and concerns with immediacy, among the most important, queries about health and wellbeing (ProPatiens, 2019). In this field, scientific dissemination has found in social networks, on the one hand, a tool through which to adapt to the new uses of a form of social interaction exercised by eminently young audiences (González-Romo, et al., 2020; Lim et al., 2022); on the other hand, a broadcast model of the utmost importance: influencers, people who create and share curated content on social networks (McCorquodale, 2019). Through them, influencers forge communities of followers (Wielki, 2020) and become opinion leaders (Casaló et al., 2020; de Veirman et al., 2016).

In Spain, this phenomenon is widely implemented: there are more than 68.000 influencers with at least 5.000 followers on Instagram (Kolsquare, 2022). In addition, 74% of users follow influencer profiles on Instagram and 47% of Spanish people consider influencers credible (IAB Spain, 2022). This credibility is linked to the influencer's knowledge and experience in the core topics of their content (Sarmiento-Guede, & Rodríguez-Terceño, 2020; Belanche et al., 2021).

Healthcare professionals themselves cannot avoid joining this transformation, given that more and more patients, before going to see a specialist, search social networks for their symptoms, diagnoses and even treatments (Gupta et al., 2022; Stukus, 2019; Zou et al., 2021). In fact, 53% of Spanish people acknowledge using the Internet to solve health issues, with the main sources of information being search engines and platforms such as Instagram or YouTube (AEGON, 2020, p. 86). According to the National Observatory of Communications and the Information Society (ONTSI), 72,8% would like their doctor to recommend online resources such as, for example, websites or forums related to their health problems (ONTSI, 2012, p. 91). Following this line, Instagram is presented as a key platform. It is the one that shows a specialization in the dissemination of scientific information thanks to the prevalence of audiovisual material (Bayo et al., 2019).

All in all, beyond the importance of the digitization of health services, health communication experts have started to pay special attention to these influencers (Burke-Garcia, 2017; Lutkenhaus et al., 2019). Their credibility, impact, and transformative power have been harnessed by healthcare agents at all levels to carry out collaborations for health promotion and prevention (Byrne et al., 2017; Wright et al., 2019).

However, it should be noted that many of these health collaborations involve influencers with a non-scientific profile. This is a potential danger because, as described by Tsubokura et al. (2018), information on social networks is not only limited to scientifically correct information, and eye-catching and emotionally charged content tends to spread more effectively. In fact, there have been numerous cases in which influencers, consciously or unconsciously, have shared misinformation, contributed to the spread of hoaxes or amplified conspiracy theories (Abidin et al., 2021), being of particular importance the health misinformation during COVID-19 (Castro-Higueras et al., 2021; González-Romo et al., 2020), and the risks derived from the recommendation of drugs by non-health influencers (Jiménez et al., 2021).

In any case, even with its potential risks, errors and misinformation, the effect of health influence in social networks is globally positively valued thanks to the increase in scientific influencers: profiles dedicated to training on YouTube; to mental health on TikTok; scientists on Twitch; health professionals on Instagram, (Buitrago, & Ortiz, 2022; Alonso, & Ortiz, 2022; Pretorius et al., 2022). In addition, the activity of these influencers increases the interest of younger people in scientific content (Donhauser, & Beck, 2021). The appearance of this type of influencers focused on scientific dissemination in Spain also has its own economic development. Companies representing health influencers such as Sanitalent, the only agency representing professionals focused exclusively on the health, wellness and science sector, have been created (Valero, 2022).

1.1. Pediatric influencers

Although the impact of health influencers spans a variety of domains, one area of particular concern is child protection and child welfare. Many are the studies that show concern about children's digital consumption in the health domain: the promotion of junk food (Coates et al., 2019), digital addiction (Kardaras, 2016), risky sexual behaviors in adolescents (Caldera et al., 2013), drug and alcohol consumption (Moreno, & Whitehill, 2014).

Along with this audience, parents are also affected. Considering that this is the first generation of digital native parents (Fishel, 2012), the role of influencers in the health of their children is of paramount importance. In addition, parents and guardians are responsible for the health of minors, so the influence exerted on them is key (Byrne, 2017; Stukus, 2019).

For new parents, influencers offer emotional support, an accessible community, and a relatable experience in which motherhood and fatherhood can be shared with peers (Baker, & Yang, 2018). Despite the emotional benefits of influencers for pregnant women and new parents, the study by Chee et al. (2023) warns that interaction with influencers of this nature presents a marked non-beneficial or even detrimental potential.

In this context, in which parents and children are exposed to misinformation, a key figure for scientific dissemination and the creation of quality health content is presented: pediatric influencers.

In the field of pediatric care and child health, it is relevant to highlight that, although pediatric influencers target parents as their primary audience, the end users are ultimately children (Khoo et al., 2008). Pediatric influencers have a dual target audience: parents as health care providers and children as patients. However, it should be noted that from the user's perspective, health information seeking, and consumption behavior varies when the research is for oneself rather than for a child (Kubb, & Foran, 2022).

There is currently little research studying pediatric influencers and parents' experience when faced with consuming content from professionals on Instagram (Egmose et al., 2022), and the resources and guidelines available to pediatricians for managing their social networks are limited (Lamas et al., 2022; Otero, 2022). Nevertheless, experts agree on the need for pediatric health content to be co-created and controlled by healthcare professionals, both for parents' mental health (Wu et al., 2021) and for avoiding the spread of misinformation. Likewise, it has been shown that mothers value positively that information from credible sources is presented in an engaging way (Lupton, 2016; Virani et al., 2020).

The pediatric influencer is essential to create or reinforce communities based on the doctor-patient relationship as well as to combat and overcome some of the most profound challenges posed by the networks: the spread of hoaxes and misinformation (Tamminga, & Lipoff, 2020), the antivaccine movements (Jenkins, & Moreno, 2020) and the idealization of motherhood posed by the so-called Instamums (Garrido et al., 2023; Moujaes, & Verrier, 2021; Coyne et al., 2017; Ouvrein, 2022).

Therefore, it is necessary to deepen the knowledge of the communicative strategies used by pediatric influencers, in order to be able to understand their influence on the perception and behavior of the users of these networks. Identifying behavioral patterns and strategies used by these influencers can be very useful for health and communication professionals interested in improving their communication options in this field. Understanding the techniques used by pediatric influencers in the child health sector can provide a basis for the design of more effective and targeted health strategies.

2. OBJETIVES

This research intends to contribute to a deeper understanding of the communicative dynamics of healthcare in social media with a descriptive study whose purpose is to determine the extent and impact of healthcare outreach on Instagram by pediatric influencers (General Objective, GO). The research aims to shed light on this new influencer through the following specific research objectives (SO):

SO1: to identify and classify the most representative influencer profiles involved in pediatric dissemination on Instagram in Spain.

SO2: to analyze the Instagram strategies and tools used by pediatric influencers in order to build their credibility in digital environments.

SO3: to examine how far these influencer profiles reach millennial users -first digital native parents (Fishel, 2012), as well as heavy users of Instagram-.

SO4: to learn about the content creation patterns of these influencers in order to understand the strategies, topics and formats used by pediatric healthcare influencers on Instagram.

SO5: to delve into the key healthcare topics consumed by parents about childcare in the digital environment by using influencers in the digital environment.

3. METHODOLOGY

This research has followed a two-phase process: the first phase to identify and select profiles; and the second phase to select metrics for content and account analysis.

3.1. Profile identification and selection

In order to identify pediatric influencer profiles, it was taken into account the definition of reference influencers coined by Abidin (2015, p. 1): "Influencers are ordinary Internet users who accumulate a relatively large number of followers on blogs and social networks". Likewise, a scientific health communicator is considered to be the person who focuses on sharing information based on scientific evidence, professional experiences and usefulness for patients and the general public (Com Salud, 2022). These communicators are characterized by using understandable and accessible language for their audience on social networks (Llorca, & Ballesteros, 2012). Therefore, a pediatric influencer is considered to be an individual with a degree in medicine and a specialization in pediatrics who accumulates a massive number of followers thanks to the use of their social networks to transmit information on children's healthcare to the general population.

Using this definition, a systematic manual search process was carried out based on the use of specific keywords in Instagram search engines. Likewise, lookalike profiles were cross-referenced with Shinebuzz, an influencer profile analysis tool developed by the specialized influencer marketing agency SamyRoad, which has mapped more than 160 million content creators. The tool gathers information from social network APIs by accessing influencers' profiles, analyzing their content and extracting audience information and key metrics. In order to further refine the search and overcome the limitations of automated searches, the followers of key healthcare influencers have been manually examined. Finally, healthcare talents from influencer representation agencies have also been reviewed. The task of identifying profiles took place between January 23 and April 22, 2023.

Based on the profiles identified, the final selection requires that the accounts analyzed meet the following requirements:

- To have more than 10.000 followers -excluding nanoinfluencers with between 0 and 10.000 followers according to the notoriety metric established by Campbell, & Farrel's (2020), since the SO1 of this study focuses on the most representative pediatric influencers.
- To be legally authorized in Spain by the General Council of Official Medical Associations and have a specialty in Pediatrics.
- To be a scientific disseminator on pediatric healthcare and generate healthcare content on Instagram for Spain in an active and regular manner.
- To have a minimum engagement rate of 1% according to the formula established by Sehl, & Tien (2023), which is the result of adding the interactions of the sample of publications and dividing it by the number of followers.

In order to analyze the influencers' accounts and their content, a specific taxonomy designed for this study was used (table 1) based on Gräve (2019), & Castro-Higueras et al. (2021) and adapted to the configuration and specificities of Instagram. This taxonomy is divided into four categories composed of qualitative variables with dichotomous and polytomous response options, as well as discrete quantitative variables. Data extraction for the variables took place on February 7, 2023.

3.2. Analysis of the accounts and their content

For the content analysis, there was a representative sample of the publications to be analyzed. The population size, considering the totality of the contents published by the influencers (N=20) is 11.382 publications. The sampling unit was established by selecting the 20 most recent fixed-format contents on the extraction date. Thus, a total of 400 publications made up the content sampling unit (n=400). The record unit is the image or video of the content itself, as well as the text or caption accompanying the image.

In relation to the content analysis, the contents of the publications were classified taking as a reference the positive aspects of the dissemination of information by physician influencers proposed by Cifuentes (2023). In addition, a category that was not included has been added: "Promotion of informative activities". This category corresponds to the very nature of the social network and the reality of the contents and is especially relevant due to the importance of medical advertising in social networks ("Comisión Central de Deontología de la Organización Médica Colegial Española", 1996). The four main categories for the classification of publications are:

- "Healthcare promotion and prevention": contents related to pediatrics aimed at increasing control over health factors, environments and healthy lifestyles such as physical activity, sleep, nutrition, prevention of alcohol and tobacco consumption, first aid, among others ("Ministerio de Sanidad Consumo y Bienestar Social", 2021).
- "Health information": content on pediatric pathologies, symptomatology and treatments.
- "Promotion of informative activities": visibility of the influencer's informative work in other media such as workshops, books, podcasts, etc.
- "Professional experience and patient care": pediatricians' roles, as well as their working life from an insider's perspective.

The contents of each category have been divided into subcategories according to the subject matter of each post; the subcategories are shown in Table 1.

Table 1

Taxonomy and metrics of the profiles, content and audience under analysis.

CATEGORÍAS / VARIABLES	DESCRIPCIÓN / OPERACIONALIZACIÓN
1. - Métricas de la cuenta	
Número de seguidores e *Influencer Tier*	Microinfluencer (10K–100K) / Macroinfluencer (100K-1M)/ Megainfluencers (+1M)(Campbell y Farrell's 2020)
Número de publicaciones	Número total de contenidos creados por el perfil hasta la fecha de extracción
Engagement total	Promedio de la suma de las interacciones con las publicaciones
Localización de la audiencia	Procedencia de la audiencia del influencer
Género de la audiencia	Hombre / Mujer / ns-nc
Rango de edad de la audiencia	13-17 / 18- 24 / 25-34 / 34-44 / 45- 64 / +65
2. - Descripción de la cuenta y biografía	
Insignia de verificación	Insignia que reconoce oficialmente la cuenta como auténtica y perteneciente a una personalidad pública
Biografía	Breve descripción sobre el usuario y/o los contenidos que ofrece este perfil.
Etiqueta de categoría en Instagram	Etiquetas de categoría predefinidas para las cuentas de Instagram
Username or handle	Nombre que aparece después de la "@". Mención o no de su profesión
Fotografía de perfil	Imagen principal del perfil de Instagram y referencia o no a su profesión
Enlaces y redirección	URL, linktree o handle de otras redes sociales, servicios o plataformas
3. - Aspectos psicodemográficos de los influencers	
Identidad del influencer	Anónima / Manifiesta
Género	Hombre / Mujer / ns-nc
Rango de edad	13-17 / 18- 24 / 25-34 / 35-44 / 45- 64 / +65
Experiencia como pediatra	Años de experiencia como médico especialista en pediatría
Subespecialidad	Subespecialidad dentro del área de la pediatría

4. - Análisis del contenido	
Formato de publicación	Vídeo/ Imagen
Formato de Instagram	*Post / Reel / Live / Carrousel*
Presencia del influencer	Presencia o ausencia de la imagen del influencer en el contenido
Contenido de las publicaciones	Relación con la divulgación científica pediátrica o no
Categorías	Promoción de la salud y prevención/ Información sanitaria / Promoción de actividades divulgativa / Experiencia profesional y trato con el paciente
Subcategorías temáticas	Agrupación de contenidos dentro de las categorías según temáticas similares

	Subcategoría temática: Promoción de la salud y prevención	Revisiones y Vacunación/ Sueño/Alimentación y Lactancia/ Salud Mental/Maltrato y Violencia/Crianza y Educación/Primeros Auxilios/Tabaco, Alcohol y Drogas/ Cuidados e Higiene/Hitos de Crecimiento: Lenguaje, Movilidad, Dentición/ Uso de Medicamentos/ Salud Sexual
	Subcategoría temática: Información sanitaria	Respiratorias / Digestivas / Infecciosas/ Otorrinolaringológicas/ Traumatológicas / Oftalmológicas y afecciones visuales / Dermatológicas y afecciones cutáneas/ Neurológicas/ Sintomatología y tratamiento/ Multiespecialidad y varias
	Subcategoría temática: Promoción de actividades divulgativas	Libro / Talleres y cursos / Redes sociales / Blog /Clínica / Pódcast
	Subcategoría temática: Experiencia profesional y trato con el paciente	Condiciones laborales / Trato paciente/ Actividad científica e investigación/ Ética y deontología/ Formación / Ambiente laboral

Source: Elaborated by the authors.

4. RESULTS

4.1. Metrics and audience of pediatric influencers

After identifying the profiles and applying all the selection criteria set out in the methodology, the 20 pediatric influencer profiles with the greatest notoriety on Instagram in Spain were obtained (Table 1). The twenty accounts add together a total of 1.769.200 followers. The initial classification based on the number of followers according to Campbell, & Farrell (2020) indicates that 16 of the profiles are microinfluencers, having between 10.000 and 100.000 followers, while 4 profiles are macroinfluencers, with 100.000 or more followers. These four influencers, who represent a minority of the sample, reach more than half of the gross mass of followers, accumulating 69% of them (1.222.000 followers).

The content creation capacity of pediatric influencers stands at a total of 11.382 publications. The profile with the most prolific content creation is @luciamipediatra - also the pediatric influencer with the most followers-, with a total of 4.453. On the other hand, @pediatriaconblanca is the profile with the lowest number of posts, reaching 24. In terms of the level of interaction generated by its content-an indicator of follower response-the engagement rate stands at 1,78%, which Sehl, & Tien (2023) consider to be an average engagement rate. It should be noted that seven of the accounts analyzed are above this average percentage, with figures ranging between 2% and 3%, the highest percentage being that of @marlopez_pediatrician (3,67%). Eight influencers are around the average with percentages between 1% and 2%, and the remaining three accounts have a low level of engagement, less than 1%.

Table 2

Key metrics and data from pediatric influencer profiles.

Instagram handle	Seguidores	Instagram handle	Seguidores
@luciamipediatra	784.000	@raquelvelascopediatra	30.700
@marlopez_pediatra	202.000	@mama_y_pediatra	26.000
@lapediatralaura	128.000	@dragarinpediatra	23.300
@dospediatrasencasa	100.000	@mi_pediatra_en_casa	22.500
@nerea_pediatra	92.800	@drarebeccaordovas	20.900
@pediatra.annaestape	62.300	@pinarboledasgonzalo	18.700
@pediatracarmendelatorre	51.000	@carloscasabona	17.300
@doctoradipediatra	49.000	@anadelavegapediatra	17.300
@cuidar_mi_bebe	45.900	@pediatragentile	13.000
@pediatriaconblanca	38.800	@pediatra_jesus_garrido	12.800

| 🧑 SEGUIDORES		⊕ PUBLICACIONES		♡ INTERACCIÓN	
1.769.200	Total NÚMERO DE SEGUIDORES	**11.382**	Total NÚMERO DE *POSTS*	**1,7%**	Promedio *ENGAGEMENT RATE*
88.460	Promedio SEGUIDORES POR PERFIL	**569**	Promedio DE *POSTS* POR PERFIL	**611.416**	Total Interacciones (n=400)

Source: Elaborated by the authors.

4.1.1. Demographic profile of the audience

Regarding the characteristics of the audience of pediatric influencers (Figure 2), it should be noted that it is an eminently female audience: women represent 93,7% of the followers while men represent only 6,30%. With regard to the age of the audience, slightly more than half are between 25 and 34 years of age (50,75%), followed by users between 35 and 44 years of age (24,4%) and the 18 to 24 age group (17,6%). The lowest percentages of the audience are between 45 and 64 years of age (5,2%), 13 and 17 years of age (1,9%) and, lastly, 65 years of age and over, with just 0,15%.

In terms of audience origin, most of the followers of pediatric influencers are Spanish accounts, with an average audience share of 76,5% in Spain. Spain is followed by other Spanish-speaking countries such as Mexico, Venezuela, Colombia and Chile.

Figure 2

Demographic analysis of the audience of pediatric influencers.
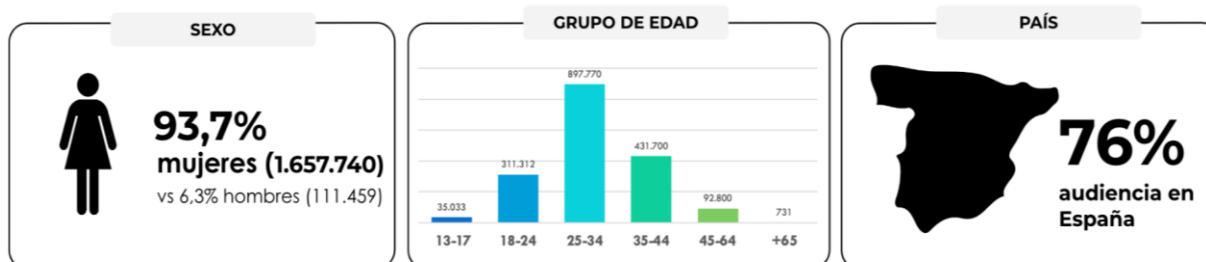
Source: Elaborated by the authors.

4.2. Account description and biography

The Instagram account and biography help influencers to define their accounts; it is a space dedicated to establishing their credibility and engaging with potential followers. Regarding their username, 16 of the 20 accounts analyzed include the term "pediatrician" in the handle. Two of the four remaining accounts that do not do so are composed of the real names of the professionals creating the profiles @carloscasabona, @pinarboledasgonzalo), and another two include terms related to their profession such as "doctor" or "baby" (@drarebeccaordovas, @cuidar_mi_bebe). Only four influencers use pseudonyms to introduce themselves on Instagram (@cuidar_mi_bebe, @mama_y_pediatra, @dospediatrasencasa, @mi_pediatra_en_casa), while the remaining 16 accounts include their real first or last name in the handle.

Only three influencers (@luciamipediatra, @dospediatrasencasa and @marlopez_pediatra) have an account verified by Instagram with its corresponding blue badge from the platform. As for the category tags accompanying this nominal submission, 13 accounts are using them. The most repeated tag is "Pediatra" (Pediatrician), used by 6 accounts, while the remaining influencers have made a more fractional selection, such as, for example "Entrepreneur", "Health/Beauty" "Blogger" and "Author". However, in the self-description criteria, it was found that the vast majority (18 accounts) accurately mentioned their professional activity through the word "Pediatrician".

Another interesting result that should be noted is that the mention of family is recurrent in the profiles, with half of the influencers using "Mom of..." or "Dad of..." in their biographies. Finally, seven influencers make explicit reference to subspecialties: sleep consultant, nutripediatrician, lactation consultant, pediatric nephrology. As for the choice of their profile picture, 16 of them chose photographs showing elements related to their profession (white coat, stethoscope...).

In relation to other resources used in the biography, it should be noted that 16 accounts, through different formats (direct links or Linktree) redirect their followers to their own website. In addition, nine influencers insert their contact information in the self-description and eight of them refer to monographic works they have written. All pediatric influencers make use of different strategies to give visibility to their profiles and professional activity; even though they are in the minority, they also include links to their blogs, podcasts, assessment sites (Doctoralia), workshops, courses and other services. All these resources can serve as strategies that provide credibility, as well as an opportunity to monetize their digital activity and facilitate the contracting of their services.

Figure 3

Key data on the pediatric influencers' account and biography.
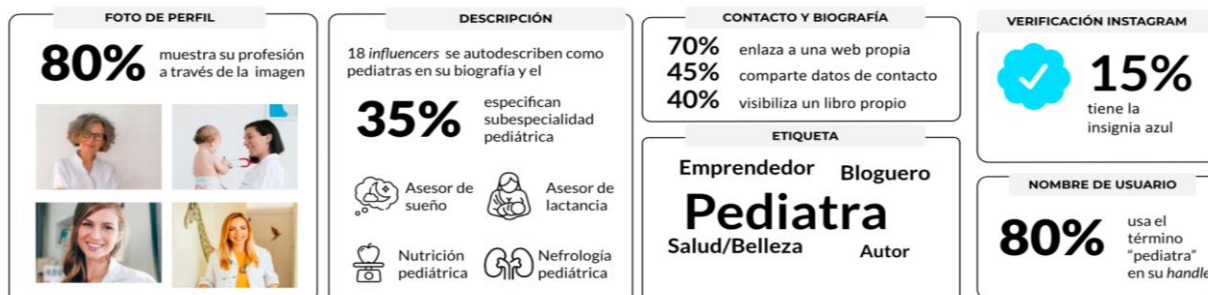
Source: Elaborated by the authors.

4.3. Psychodemographic factors of pediatric influencers.

Regarding the psychodemographic profile of the pediatric influencers, 19 of them use an overt identity, while only @mama_y_pediatra uses an anonymous identity. Due to the impossibility of extracting psychodemographic data from this account, a full collection of personal information could not be carried out. In addition, the @dospediatrasencasa profile is formed by a married couple, so the results are individualized for each psychodemographic factor, each person's data separately.

Among the pediatric influencers with the highest visibility on Instagram, there is a female majority: 14 female influencers compared to 7 male influencers. Most of the pediatric influencers are between the ages of 35 and 44 (10); five of them are between 25 and 34, and four profiles fall into a more mature age group, between 45 and 64; a single profile is above the age of 64. In terms of pediatric experience, nine of them have between 10 and 20 years of experience since they specialized as Physicians specializing in Pediatrics and its specific areas; seven influencers have between 5 and 9 years of experience, with 5 years being the lowest figure recorded of the total; and the remaining four influencers have between 21 and 40 years of experience.

Concerning subspecialties, lactation, nutrition and sleep are the most common, and can be found in 13 accounts; pediatric emergencies have a presence in 2 influencers, while subspecialties such as neonatology (1), pediatric primary care (1), dermatology (1), cardiology (1), and nephrology (1) are punctual.

4.4. Analysis of the posts

In relation to the content of the 400 analyzed posts from these profiles, 92% (367) are content related to pediatric healthcare dissemination. The remaining 8% are publications not related to pediatric activity, and in all cases are personal content related to the influencer's private life. They range from travel and family photos to readings, among others. In this context, it should be noted that nine influencers presented 100% of their content exclusively related to health, and that all the analyzed influencers dedicate at least 50% of their publications to informative content. It should also be noted that the influencers themselves appear in 44% of the publications (177).

With regard to the target audience, 90% of the content (380) is aimed at an adult audience, while the remaining 10% is content in video Reel format in which the pediatrician, through metaphors and comparisons, explains medical pathologies or the functioning of the human body to children. Not only is this content intended for children, but also for parents to show it to children. Instagram has a 13-year age limit, but, as mentioned in the content itself, it is the parents who ask the influencer to create a content explaining a specific pathology to their children.

4.4.1. Content and subject matter of healthcare related posts

The 367 posts focusing on pediatric healthcare dissemination were classified into four categories and thematic subcategories (Figure 4). Most of the pediatric healthcare dissemination content by pediatric influencers falls into the category "Healthcare promotion and prevention", gathering 202 posts and representing 55% of the total. The category "Health information" represents 25% of the contents with 93 publications. The "Promotion of informative activities" category has 55 posts, representing 15% of the content. Finally, the category with the least representation (5%) is "Professional experience and patient care", with 17 publications.

Regarding the topics of the 202 content items on "Healthcare promotion and prevention", most of the content items deal with feeding and breastfeeding, accounting for 32% of the content items in this category. These 64 content items on feeding and breastfeeding include support for maternal breastfeeding and advocacy of exclusive breastfeeding up to 6 months, nutritional recommendations, warnings on the effects of sugar, proposals for balanced recipes, advice on complementary feeding, among others. The next topic, which represents 15% of this category, is parenting and education, in which, through 30 posts, pediatricians share advice for the management of infancy, dismantle myths and outdated beliefs and advocate positive parenting in a unified way. Sleep represents 12% of the subject matter, with 25 posts exclusively focused on the management of children's rest, sleep routines, insomnia and wake windows.

In the "Health information" category, to which pediatric influencers dedicate a total of 92 posts, the main topic is symptomatology and treatment (25%). This topic, in addition to being the majority, is characterized by representing the only health information content that is not linked to specific pathologies, but rather gives part of the general symptomatology. Pediatric influencers help parents to identify and treat different general symptoms in their 23 contents: identifying wheezing and coughing sounds, dealing with mucus, managing febrile convulsions, identifying when a fever is a reason for emergencies, differentiating the color and consistency of stools, among others. The next most recurrent topic in this category is respiratory diseases, with 19 posts (20%) dealing with catarrhal processes, bronchitis, bronchiolitis, asthma or flu. The subject of infectious diseases brings together 12 posts (13%) on various infectious pathologies such as herpes, mononucleosis or Streptococcus Pyogenes. These had a high incidence during the period of data collection. Digestive diseases, with 11 posts (12%) focus on gastroenteritis, gastroesophageal reflux disease (GERD), food intolerances, celiac disease, infant colic or hernias, among others.

In the category "Promotion of dissemination activity" it should be noted that the intention of scientific dissemination of the influencers goes beyond the borders of Instagram and is developed in traditional media, workshops and other social networks. With this promotional intention, 5 pediatric influencers dedicate a total of 16 contents to give visibility and promote their book. Blogs, workshops and other social media promotion also receive special promotion in the influencers' profiles.

Finally, "Professional experience and patient care", although the minority category, presents a wide variety of topics. Pediatric influencers dedicate 17 content items to bringing their profession closer to audiences through patient care, gratitude, real statements, showing their practice, talking about the pediatrician's profession and competencies, reporting on the management of consultation time or attendance at medical congresses.

Figure 4

Categories of health informative content and thematic subcategories.
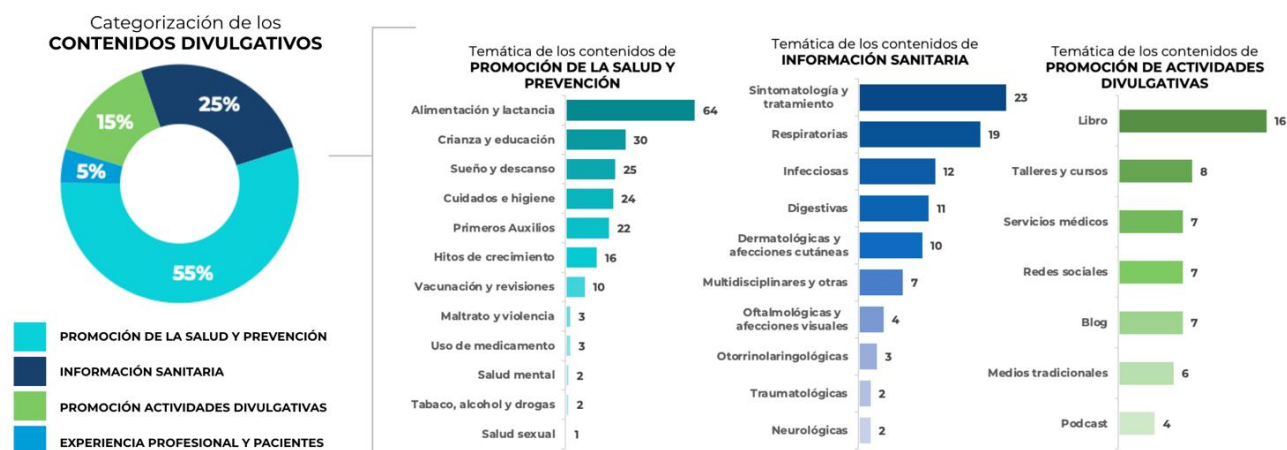
Source: Elaborated by the authors.

4.4.2. Formatos de Instagram utilizados por los *influencers* pediátricos

In terms of formats, the majority of posts used static images, with 230 content posts (57%), compared to video, with 170 content posts (43%). Considering the formats specific to the Instagram platform, the most used by pediatric influencers among the 400 publications analyzed are Reels, with a total of 164 posts (41%); the fixed post, with 116 posts (29%); carousels, with 115 posts (29%); finally, Live -stored as Reels- with 5 posts (1%) (Figure 5).

In terms of videos, pediatric influencers use different content creation resources, such as the use of music and overprinted text in order to dynamize the audiovisual narrative, and often combine different formats and audiovisual resources in the same Reel. In this respect, there are 111 content pieces that make use of the Vlog format, in which the influencer is recorded in close-up speaking directly to the camera with a simple band accessible language. In addition, 55 videos make use of audiovisual editing, often interspersing images and videos of symptomatology and real cases. There are also 9 videos that follow Tiktok's Duet or Reaction trend, in which the

influencer reacts, comments or gives an opinion on another user's video. As a minority, 4 choreographed content pieces were found that follow the TikTok trend, in which music and text overlaid on the video are used to dance in order to explain something or tell a story. Among the 170 videos analyzed there are 5 Lives or Instagram Live and, in 4 of them, the influencer is accompanied by other healthcare workers specialized in different fields. The influencer appears in 75% of the analyzed video content.

As for the 230 image pieces of content, 75 are photographs and 155 are infographics or posters in which the influencers combine text, images, data and illustrations. In these infographics, and unlike in the videos, the image of the pediatrician takes a back seat, appearing only 12% of the time. The 155 infographics have common characteristics: simplicity and clarity with the aim of facilitating the understanding of the concepts addressed; consistency and visual coherence, which allows establishing a homogeneous style and format in the published content and establishing the pediatrician's personal brand; timeliness and accuracy of the information, which allows parents to trust the information provided and be certain that they are receiving accurate and updated information; finally, the inclusion of visual resources such as drawings or images, which facilitate the understanding of abstract concepts.

Figure 5

Content formats of posts by pediatric influencers.
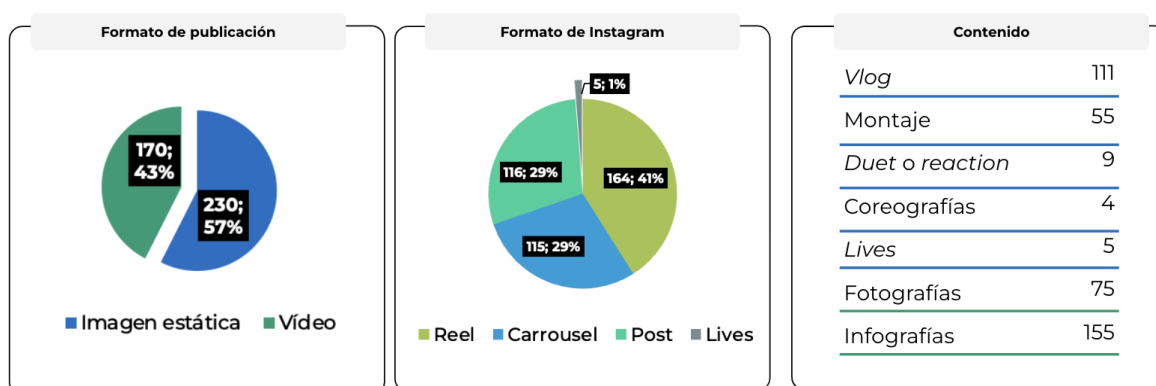
Source: Elaborated by the authors.

Finally, photography is the format least used by these profiles, being present in a total of 75 publications. Pediatric influencers appear in 37% of the photographs analyzed. The photographic content ranges from images for the identification of common diseases and medical conditions in children; image bank photographs of babies and children in everyday situations in order to have visual support for the textual explanation; family photographs or photographs of the pediatric influencer's children; images in which the pediatric influencer promotes their services, such as the presentation of their books, workshops, conferences or talks. All these images are accompanied by an explanatory text in the post copy to provide additional information to the image; early identification of possible diseases in their children; illustrate information about healthy habits; convey messages about childcare; show the pediatricians in their role as parents; or encourage the participation of users in the different resources offered by the pediatrician.

5. DISCUSSION

As seen in the results, pediatric influencers are gaining the attention of Instagram users and have the ability to generate large communities around a single topic: children's healthcare. Their ability to gather followers establishes their position as digital opinion leaders for parents and directly impacts their popularity, appeal, and credibility (De Veirman et al., 2016; Jin, & Phua, 2014). As demonstrated by Zhou et al., (2023) in the "sheer number effect," the accumulation of followers alone can lead to attitude changes and build credibility. Likewise, engagement metrics are fundamental indicators of the persuasive power of influencers (Gräve, 2019). Findings indicate that pediatric influencers on Instagram maintain an engagement rate of 1,7%, which, while favorable according to Sehl, & Tien (2023), is slightly below the industry average of 2,28% in the health and wellness sector (Mikolajczyk, 2023). This discrepancy in engagement rate raises questions about the motivation of the followers of pediatric healthcare influencers, as despite the follow support these profiles have, users may be merely consuming and being informed by this content, but not interacting with it.

The importance of these influencers for public health lies in the fact that, according to the content analysis, a considerable 92% of their posts are dedicated to pediatric science outreach, making them the true advocates of pediatric health on Instagram and creators of quality, truthful and scientific content. Their content is predominantly focused on health promotion and prevention, highlighting the educational impact of these influencers on their audience. The most recurrent content topics respond to situations that parents usually face on a daily basis, such as symptomatology, feeding and breastfeeding, or infant sleep. It should be noted that sexual health, tobacco, drugs and alcohol were topics with very limited visibility, leaving the problems of adolescents in the background even though they are the responsibility of pediatrics. A greater tendency towards contents oriented to babies can be concluded. In general, these contents are presented in a wide variety of formats, generating simple and visual infographics and with an accessible code and close tone that facilitate the understanding of medical concepts, coinciding with the research of Lupton (2016), & Virani et al., (2020).

Most pediatric influencers, despite being opinion leaders with endorsed studies in the field, lack the verified Instagram badge. Considering the numerous cases in which influencers have spread misleading health information (Abidin et al., 2021) and the challenges faced by the Instagram platform against fighting fakenews, verification of pediatric health disclosers' profiles may be a crucial need to protect public health. In the absence of official verification, influencers resort to other strategies of their own to establish their credibility, including "pediatrician" in their handle, or through their profile picture related to their medical work. In addition, pediatricians use their self-description to redirect to other content and sites, and thus complement the authority of their profiles; or they work the bias towards affinity (Turner, & Tajfel, 1986) by referring to their role as parents, indicating in their biographies that they are "Mom of…" or "Dad of…", which helps them to establish an emotional connection with their audience and sharing the same experiences and concerns about their children's health and well-being. This duality, whereby the influencer's self-representation is between two roles (content creator and pediatrician) has already been pointed out by Atef et al. (2023).

It is worth noting that pediatric influencers are mostly young women, and that these accrue the largest audiences and the greatest number of contents. This finding coincides with the data on the feminization of the profession provided by the Spanish Association of Pediatrics (2022), but contrasts with the lower recognition of female pediatricians and the disparate promotion between men and women. This analysis demonstrates that this trend is reversed on Instagram, where female pediatricians achieve greater credibility, supported by indicators such as the number of followers (Zhou et al., 2023). These results warn of the existence of a gender bias in the system of healthcare institutions that is not supported by social network users. Health institutions highlight that "young women dedicated to pediatrics do not receive the same recognition of authority as their male peers" ("Asociación Española de Pediatría", 2022). Nevertheless, Instagram users, through following and interaction, strongly recognize and support the work of female pediatricians.

In relation to the age of pediatric influencers on Instagram, there is a clear clustering in the 25-44 age group, with a total of 15 profiles in our sample, while only 5 profiles were found to be over 45 years of age. This age disparity among influencers highlights a significant digital divide in pediatric dissemination on networks. This digital divide could have a negative effect on network dissemination. This is due to the fact that, if users were able to consume content created by more experienced pediatricians, they would benefit from a perspective based on a long professional trajectory. However, it should also be considered that younger pediatric influencers could have beneficial implications, as they may be more generationally connected with the audience (Turner, & Tajfel, 1986) as well as more in touch with the latest digital and social trends.

By analyzing the impacted audience, one of the most notable findings of this research has been achieved. It reveals that the majority of the followers of these influencers are women (97%) at the age of maximum fertility (18-35 years old), and it can be

inferred that most of them are mothers. This finding is far from the data of the average Instagram user, which is mostly female, but at 51% and falls between the age ranges of 27-55 (IAB, 2022, p. 7). However, they do support existing evidence indicating a higher degree of engagement by women in relation to the health and care of their children (Lacasa et al., 2012). Furthermore, despite the transformations in parenting roles (García-Faroldi, & García, 2022), these data agree that women are primarily responsible for childcare.

However, the absence of men among the followers opens a question that deserves future attention in order to clarify whether fathers do not consume information on childcare and health, and if they do, what other media or networks they use. On the other hand, also in relation to the audience, almost a quarter of international followers have been identified, mostly from Spanish-speaking countries. This globalization of the consumption of pediatric informative content calls for the need for standardization of deontological practices and management of social networks for universal use (Bayo et al., 2019; Gupta et al., 2021; Lamas et al., 2022; Zengïn, 2023). It is worth noting a result that was not a preliminary part of the study, since it was assumed that the audience was adults, however, it was found that 5% of content was aimed directly at children and aimed at interacting with children, adapting the tone and messages for their understanding.

Finally, as this is a topic with limited background, there is a great deal of room for research development. The authors of this study consider it interesting to investigate the factors that provide credibility to pediatric influencers, as well as to the information they share. The aim is to understand the mechanisms of trust that parents provide to content on social networks; other topics of utmost concern are the identification of health misinformation and the avoidance of its negative impact on children's health.

6. CONCLUSIONS

This study has examined the dissemination of health information and the creation of quality pediatric content by professional digital opinion leaders. To this end, the 20 most relevant pediatric influencers' profiles in Spain and their content were identified and analyzed. After analyzing the quantitative and qualitative metrics of the profiles and contents, this study concludes the great reach of these profiles, which accumulate 1.769.200 followers and confirms the pediatric health dissemination in 92% of the contents. These results show the importance of social networks in the dissemination of quality and truthful information and, in particular, highlight the importance of these profiles that organically promote health. In addition, the study confirms that the main objective of pediatric influencers is to encourage better child health care and promote a healthy lifestyle for children through the dissemination of quality content, making them reliable and accessible sources of information for parents seeking guidance on children's health issues. Despite their relevance, experts and organizations have not commented on them, nor are specific deontological guidelines provided. The limitations of the study lie in the fast-paced nature of social networks; the data on profile metrics could vary over very short periods of time due to the fluctuations of

social networks. It is also recommended that future research should delve into the internal motivations of mothers and fathers when following and interacting with these profiles and the key factors that they consider to lend credibility to these profiles and their content. It is also recommended to delve into the gender gap that causes 93,6% of the audience of pediatric influencers to be women. The identification and analysis of these profiles and their contents is a starting point for the development of future health promotion plans, as well as an opportunity for public and private healthcare companies when it comes to pediatric profiles.

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