

BRIEF REPORT

THE PROFESSIONAL USE OF SOCIAL MEDIA AMONG RESEARCH PROFESSIONALS IN THE MEDICAL FIELD. A NATIONAL MULTIDISCIPLINARY SURVEY

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ABSTRACT: Many benefits have been recognized concerning the use of social media in the medical field, especially in oncology and clinical research and can be an opportunity for a better relationship between patients and healthcare professionals. The scope of this project is to investigate the use of social networks for professional purposes among professionals working in clinical research in Italy. A specific anonymous survey was created by the Italian Group of Study Coordinators to explore the use of social media among clinical research professionals. The survey was composed of 13 questions grouped into different investigational sections and the attitudes and perceptions of professionals were assessed using ten-point Likert scales, continuous percentage scale or different answer options. According to respondents the most used social network for business purposes is Facebook (74.7%), followed by LinkedIn (69.0%), with Research Gate particularly appreciated in the 30-49 years range. The evaluation of the respondents with respect to the real usefulness of social networks for work is average (median score 5.93 on a 1-10 scale), without major differences between different age groups (5.90 in 18-29 years' group; 5.93 in 30-49; 5.66 in 50-55). The evaluation of the usefulness by cancer patients is also average (median score: 6.00), with a pessimism that characterizes above all the group of 50-65 years' respondents (5.18 vs. 5.86 in 18-29 years' and 6 in 30-49 years' group). Social media can help break down traditional barriers that prevent interaction among healthcare professionals as well as between providers, scientists, patients, and caregivers. Given the popularity and almost universal appeal of social media, we encourage physicians and institutions to learn and engage more in this ongoing evolution.

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Impact statement: The use of social media by Italian clinical research professionals is quite widespread but characterized by a profound heterogeneity among professional figures and in the different hospitals.

Key words: *social media; clinical research; clinical research professionals; patients; social networks.*

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BACKGROUND

In the last few years, the use of social media has expanded in different fields. Since their creation, social networks have spread with an extraordinary speed and have become a widespread and permanent phenomenon in our society. By establishing social relationship through the network, users give way to a different type of social structure, which in one way or another influences the people involved (1). Availability and preferences of different social networks vary across countries. Facebook is currently the world's largest social network, with more than

2.01 billion users worldwide. Twitter, with more than 330 million of monthly active users, has become essential to scientific conferences, providing publicity via sharing real-time proceedings or live-tweeting. Social network sites provide platforms for users to share their own content, react, or add comments on the content posted by other users. They help strangers to connect based on their common interests, activities, identities, or professions. LinkedIn, with more than 530 million members in over 200 countries and territories, focuses on business connections and industry contacts for employers and working professionals. It

allows users to enhance their connections in their areas of expertise. WhatsApp Messenger provides free of charge, cross-platform communication to more than 1 billion people in over 180 countries (2). Shared networking attracts different users and allows them to communicate based on their needs and interests (3). Because we use in multiple social networks and occupy different social positions in different settings, the relationship between social networks and health encompasses everything from the flow of viruses and information to the sharing of emotions, opinions, behaviors, and resources, all of which may spread in different ways and through different parts of our social networks (4). Over the decades, these connections and interactions through social networks have transferred face-to-face encounters to cyberspace. However, just like the introduction of the telephone, internet communication has not replaced face-to-face contact but has complemented it and personal networks are no longer restricted by geography and physical space (5). Social networks are widely used in health communication and research and provide platforms to the public to access health information and to seek support when needed. A new dimension to healthcare was created to enable the public, patients, and healthcare professionals to discuss on health issues and facilitate the improvement of health outcomes. In a meta-analysis, social network sites' interventions were found to be effective in changing health behavior-related outcomes in which the

predominant health domain was fitness related (e.g., weight loss and physical activity). Emerging evidence supports the use of social network sites among health professionals to develop virtual communities for sharing domain knowledge (2).

The use of social media in medicine has increasingly recognized benefits including its use in oncology and clinical research (6). In oncology practice, the use of social networks can be an opportunity for both patients and healthcare professionals to improve their relationship (7). Therefore, we can see how the approach to clinical research has deeply evolved with positive aspects, particularly ethical and confidentiality aspects (8).

There are many authors who have reported how a correct professional use of social platforms may offer countless advantages in healthcare: facilitating interactions between patients, physicians, and the academic community (9), leading to an enhancement in clinical trial recruitment (10), cancer screening and early diagnosis (11); creating a hub where patients and staff can listen, learn, engage, and co-create to advance cancer care (12). Furthermore, several professionals claim that the social media virtual dimension offers several opportunities for patient education, research dissemination, as well as professional development for health care providers (13).

In the clinical research field, social media is used principally to communicate in order to connect with the public, attract and recruit patients (10), and disseminate clinical trial information (14). **Figure 1**

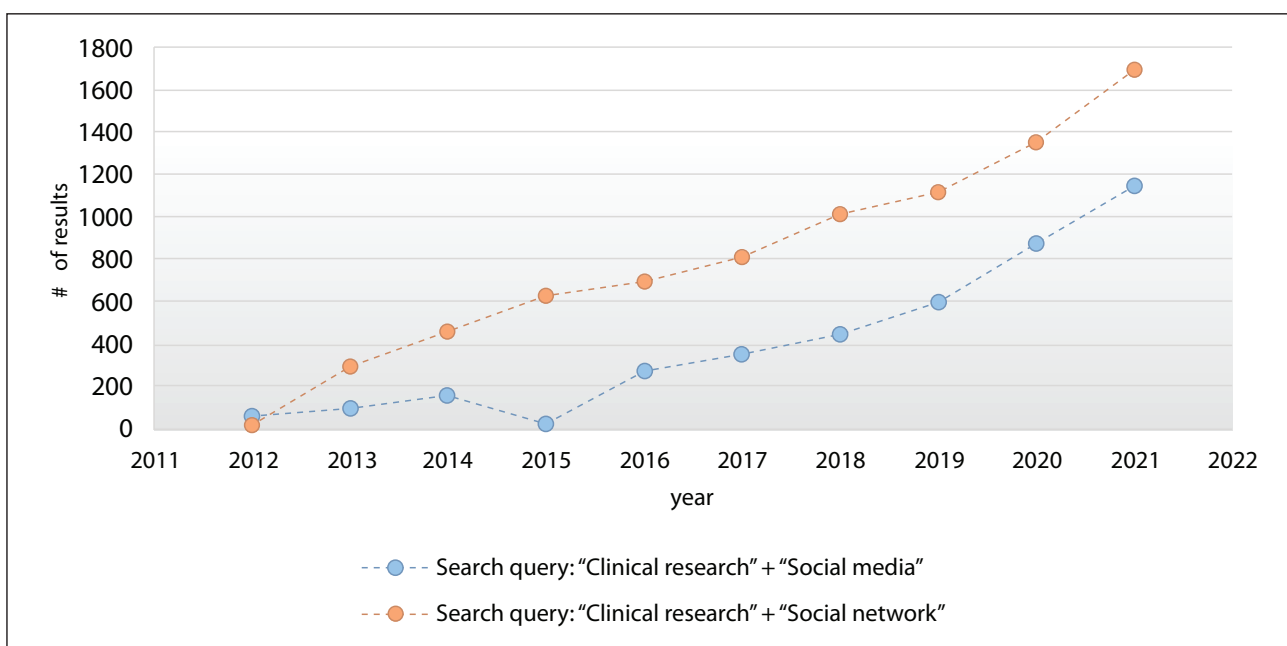


Figure 1. PubMed search of "clinical research" and "social media" or "social network"

shows results from the Pubmed search using the following keywords: “clinical research”, “social media”, “social network”.

This type of communication could lead to a greater participation in clinical trials offering patients the best therapeutic options available. Achieving target rates for study recruitment and accrual remains a challenge. Inability to reach eligible patients for recruitment ultimately reduces the statistical power of studies, incurs economic costs, and may jeopardize funding. Evidence suggests that as many as 19% of clinical trials close without meeting at least 85% of target accrual rates, highlighting the need to investigate new methods to implement novel approaches for research recruitment. Study participants report their interest in being involved in the design and implementation of recruitment approaches for clinical research studies. The application of patient-driven platforms and social media could aid in the evolution of clinical research practices for the recruitment of both rare and common diseases, where patient-centric approaches can help create targeted messages designs that participants can pre-test and support (15).

Another positive aspect of this communication is Adverse Events (AE) reporting in clinical trial. The AEs are often reported by patients in specific social groups or networks to share safe information to be discussed: a study has investigated the level of concordance between AE reported through Twitter posts and those received by regulatory agencies. The study concluded that reports on twitter were more accurate, which could be an important consideration to be taken into account in the post marketing safety phase (15).

The international scientific literature is very poor in publications on the use of messaging applications in the health sector. Although its impact on the clinical setting has been poorly investigated, WhatsApp is among the most widely used communication tools, which may also be valuable in favoring the communication and relationship between patients and physicians. Healthcare providers should be trained to use modern web-based communication systems with accurate assessment of indications and contraindications. That said, virtual means should be prevented from replacing real interactions (15). In fact, if the use of social media allows immediate availability and spread of information discussed between different categories, the risk of spreading sensitive data and violating ethical and legal aspects must not be underestimated. The spread, for example, of clinical trial data due to an exchange of information between patients or the

share of patient sensitive data could be avoided with guidelines and good practices.

As social media have grown, a gradual, yet extensive-overlap with the medicine field has occurred and continues to evolve. Clinical research has seen extensive social media exposure over the last 5 years, and it is important to understand the implications of this growth (16).

The vast majority of published papers feature investigations conducted among clinicians, while other professional figures are neglected. For this reason, the Italian Group of Data Manager and Clinical Research Coordinator (GIDMcr), a scientific society that operates in the field of clinical research with a particular focus on oncology, has decided to conduct a project aimed at the various professional figures operating in the field of clinical research.

The project aims to explore, through a questionnaire, the use of social media for working purposes by clinical research professionals and their impressions about the real usefulness of such use.

We also aimed to explore the inclination of patients to contact their physician through social channels and the trend of clinical centers to an institutional use of these means.

MATERIAL AND METHODS

In February 2020 all CRC members of GIDM, at that time accounting for about 200 members, were invited to participate in an anonymous survey, via an email containing the link to complete the questionnaire; all invitations were sent simultaneously, through a mailing list. At the same time, the link was published on the social channels of the GIDM (Facebook and LinkedIn), to reach research professionals other than clinical research coordinators (CRC)/data managers. A copy of the questionnaire is available in **Appendix 1**. The original version of the questionnaire, shared nationally, was Italian. Participation was voluntary; no reward was offered, nor a fee was requested, for completing the survey. The participation link was active for 40 calendar days and required 15 minutes to complete. The survey was composed of 13 questions grouped into different investigational sections:

1. demographic and working information (questions 1-3);
2. attitudes toward social media usage (questions 4-6);
3. perceptions on the real usefulness of social media in clinical research (questions 7-8);

4. experience toward the use of social media during their work (questions 9-13) activities.

The attitudes and perceptions of research professionals were assessed by ten-point Likert scales (from “not at all satisfied/strongly disagree” to “extremely satisfied/strongly agree”), by continuous percentage scale or by different answer options.

Before producing the final version, an initial draft (version 0) was delivered as a preliminary test to 15 clinical research professionals: 5 CRC, 5 study nurses (SN) and 5 medical doctors (MD). The comments and corrections collected were implemented giving way to a new version (version 1) delivered to 6 more clinical research professionals with homogeneous distribution among the different types of institutes. This new test represented the final version of the questionnaire used in this project.

The survey did not include fields for identification of participants, including information on specific age (only age range) and sex, or their specific institution. Collection of surveys, calculation of results, and data entry on a password-protected electronic database were performed by a third operator who had no access to information regarding GIDM members' emails addresses or identities.

Characteristics of stakeholders who participated were analyzed using descriptive statistics and results were reported as the absolute number of respondents for each answer option on the total number of people responding to that specific question. When more than one option was allowed, the sum of percentages for each given answer was >100%. Data were analyzed in January 2021 and as per national law, the project was not evaluated by an ethics committee.

RESULTS

On 15 April 2020, 100 research professionals completed the survey (**table I**), mostly clinical research coordinators (n = 52, 52%), physicians (n = 23, 23%) or nurses (n = 20, 20%) (**figure 2**).

The most represented age group is 30-49 years (n = 79, 79%), with only one respondent over 65 years of age (**figure 3**). The respondents' average work experience is 11 years, with a considerable share of professionals with experience over 5 years (n = 66, 66%). Only a small proportion of stakeholders (n = 13, 13%) said they do not use social media to search and/or share information while the majority use them often (n = 33, 33%) or sometimes (n = 34, 34%).

Table I. Characteristics of respondents.

CHARACTERISTICS	N (%)
Age (years)	
18-29	8 (8%)
30-49	79 (79%)
50-65	12 (12%)
>65	1 (1%)
Profession	
Clinical Research Coordinator/Data Manager	52 (52%)
Physician	23 (23%)
Nurse	20 (20%)
Other	5 (5%)
Years of profession	
≤5	34 (34%)
6-24	56 (56%)
≥25	10 (10%)

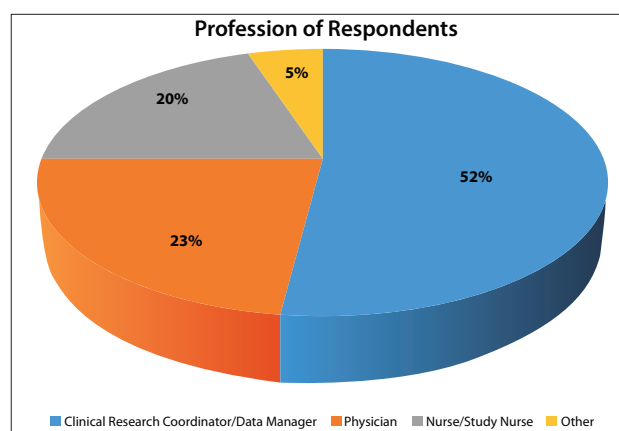


Figure 2. Question 2 - Profession of respondents (total # respondents: 100).

Among the social networks proposed by the authors, the one best known / used for business purposes by the total number of respondents is Facebook (n = 65, 74.7%), followed by LinkedIn (n = 60, 69.0%).

The “supremacy” of these two social networks is seen in all age groups while Research Gate seems to be particularly appreciated in the 30-49 years range (n = 22, 32.8% vs. 12.5 in 18-29 years and 25.0% in the 50-65 years' groups). On the contrary, Instagram is not very appealing to the 30-49 age range (19.4%) while it seems to be more appreciated by respondents aged 18-29 (37.5%) and even more so by those aged 50-65 (41.7%) (**table II**).

Stratifying by professional figure, Facebook remains the preferred social network for CRC and SN (n = 42, 80.7% and n = 15, 75% respectively) while clinicians seem to prefer ResearchGate, albeit slightly (n = 12, 52.2%) (**table III**).

Of the 6 social media suggested by the authors, a minority of respondents know/use only one (n = 23,

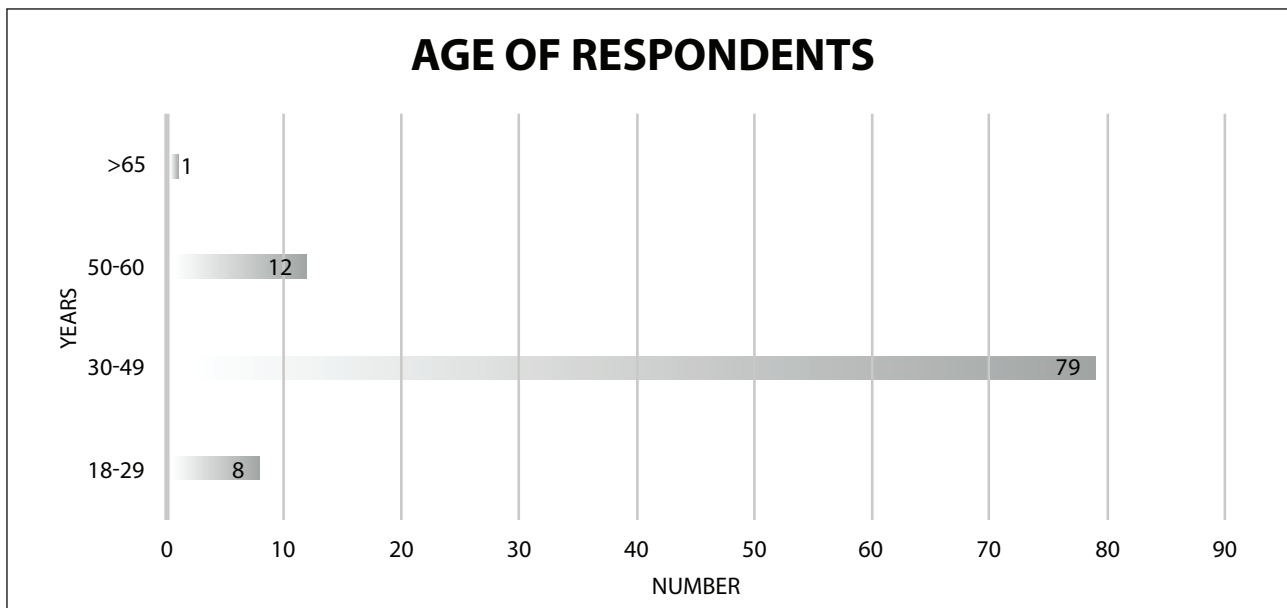


Figure 3. Question 1 - Age of respondents (total # respondents: 100).

Table II. Social media used for age groups.

KNOWN/UTILIZED SOCIAL MEDIA	ALL AGE GROUPS (SAMPLE: 87) N (%)	18- 29 YEARS (SAMPLE: 8) N (%)	30-49 YEARS (SAMPLE: 67) N (%)	56-65 YEARS (SAMPLE: 12) N (%)
Facebook	65 (74.7%)	4 (50.0%)	55 (82.1%)	5 (41.7%)
LinkedIn	60 (69.0%)	4 (50.0%)	50 (74.6%)	6 (50.0%)
Instagram	20 (23.0%)	3 (37.5%)	13 (19.4%)	5 (41.7%)
Research Gate	26 (29.9%)	1 (12.5%)	22 (32.8%)	3 (25.0%)
Twitter	18 (20.7%)	2 (25.0%)	14 (20.9%)	4 (33.0%)
YouTube	15 (17.2%)	2 (25.0%)	9 (13.4%)	4 (33.0%)
Others	2 (2.3%)	0 (0%)	2 (3.0%)	0 (0%)

23%) or two ($n = 27$, 27%). Two respondents communicated that they also use social networks other than those proposed (1 Google and 1 WhatsApp). The interviewed stakeholders declared that they use social media mainly to find information ($n = 37$, 37%) or to find and share it in equal measure ($n = 36$, 36%) (figure 4). The same trend is confirmed if the data is stratified by professional figure, with a very slight preference in the search for information rather than sharing for CRCs and MD. The evaluation of the respondents with respect to the real usefulness of social networks for professional purposes is average (average score 5.93 on a 1-10 scale), without major differences between the different age groups (5.90 in 18-29 years' group; 5.93 in 30-49; 5.66 in 50-55) and professional categories (5.93 CRC, 5.51 SN, 5.97 MD).

The evaluation of the usefulness of social media reported by cancer patients is also average (average score: 6.00), with a pessimism that characterizes above all 50-65 age-range group of respondents (5.18 vs. 5.86 in 18-29 years' and 6 in 30-49 years' group). No significant differences emerged between the different professional groups, with a median score of 6.0 for CRC, 5.68 for SN and 5.9 for MD. Almost half of the respondents ($n = 43$, 43%) have been contacted by patients through social networks. The preferred method by patients is Facebook ($n = 26$, 60.5%), followed almost equally by WhatsApp ($n = 16$, 37.8%) and e-mail ($n = 18$, 41.9%). In addition, three professionals said they had been contacted by their patients through LinkedIn. As regards the position of the Clinical Centers with respect to the official use of social net-

Table III. Social media used for professional figure.

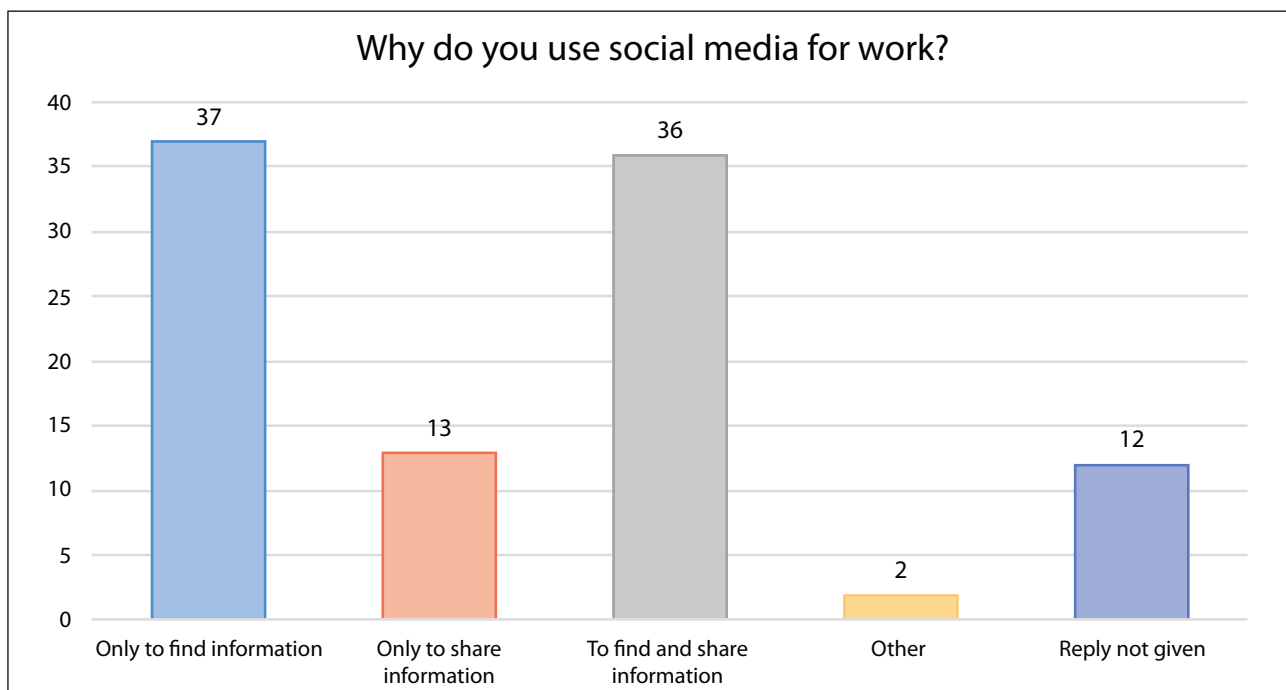
KNOWN/UTILIZED SOCIAL MEDIA	CLINICAL RESEARCH COORDINATORS (SAMPLE: 52) N (%)	MEDICAL DOCTORS (SAMPLE: 23) N (%)	STUDY NURSES (SAMPLE: 20) N (%)	OTHERS (SAMPLE: 5) N (%)
Facebook	42 (80.8%)	11 (47.8%)	15 (75.0%)	3 (60.0%)
LinkedIn	39 (75.0%)	11 (47.8%)	6 (30.0%)	5 (100%)
Instagram	5 (9.6%)	5 (21.7%)	9 (45.0%)	2 (40.0%)
Research Gate	13 (25.0%)	12 (52.2%)	4 (20.0%)	2 (40.0%)
Twitter	4 (7.7%)	11 (47.8%)	4 (20.0%)	1 (20.0%)
YouTube	5 (9.7%)	3 (13.0%)	6 (30.0%)	0 (0%)
Others	2 (3.9%)	0 (0%)	0 (0%)	0 (0%)

works, the answers show that less than half ($n = 48$, 48%) use e-mails or other messaging systems (e.g.: WhatsApp) for patient communication and/ or appointment management. The management of these services is very heterogeneous in the different Centers, but often involves the direct involvement of clinicians ($n = 16$, 33.3%) or support staff (nurses: $n = 11$, 22.9%; Clinical Research Coordinators/Data Managers: $n = 9$, 18.7%). There was also a case of implementation of a specific communication office responsible for this service.

DISCUSSION AND CONCLUSIONS

In this article, we attempted to examine the use of social media among professionals involved in clinical research. Social media is flawed, but at its best it offers a way to navigate an ever-shifting cultural climate (16) and this was especially clear in the era of the COVID-19 pandemic (6).

Through this survey, we were able to examine the current attitudes of clinical research professionals – not only clinicians – toward social media in many different aspects. Although our target audience were mostly clinical research coordinators (half of participants), the survey also included physicians,

**Figure 4.** Question 6 - Use of social media for work purposes (total # respondents: 100).

nurses and other professionals involved in clinical research, giving a good insight into the multidisciplinary groups operating in the field of clinical research. Almost 80% of these respondents have been practicing for at least 10 years, with a considerable share of professionals with experience over 25 years, between the age of 30 and 49 years.

Our data confirm the trend already highlighted by literature for clinicians: social networks are valued and their use for professional purposes is growing and is destined to expand. The survey highlights that Facebook (75%) and LinkedIn (69%) were the preferred platforms and most professionals use social networks only to search for information (37%) or both to find and share information (36%). Interestingly, we were not expecting the low percentage of use of Twitter; in our experience, in fact, Twitter is a very valued media used by physicians as a means for sharing abstracts/posters presented during the most esteemed international congresses. This data should, however, be interpreted taking into consideration the low percentage of clinicians among the respondents, compared to other professional figures.

In general, clinicians and researchers can use social media professionally for two purposes. Firstly, social media serves as an information aggregator, helping users stay up to date on relevant advances in the medical field. Secondly, social media serves as an engagement tool, helping users to connect with others who have similar interests, to foster collaboration, and to gain support for personal and professional growth (13).

The widespread use, that in part seems to clash with the perception of real usefulness, reaches average scores (no more than 6 points out of 10) even by stratifying by age and professional categories. Very similar is the impression as regards the usefulness of social media reported by patients: also, in this case the answers of the professionals are very cautious.

This probably reflects the awareness that, net of the potential, social media still have numerous critical issues: ethical concerns (17), low communication barriers, limited privacy, and security issues (18), professionals' unawareness of workplace policy on the use of social media (19) and a real risk of misuse by physician (20).

Even more worrying are those issues regarding the use of social media by patients, who are unfortunately still often victims of rumours and misinformation (21, 22). Patients are also exposed through

social media to the destructive phenomenon of fake news, which was especially evident in the last two years during the Covid-19 pandemic.

Despite this, we are inclined to recommend that clinicians and researchers follow a diverse set of reputable health organizations, established scientists, or journal clubs to stay current with reliable research and participate in scheduled live-chats, where users discuss health-related topics (23).

Social media can help break down traditional barriers that prevent interaction between healthcare professionals as well as between providers, scientists, patients, and caregivers (13).

Half of the interviewees were contacted by patients looking for information or for managing their appointments. However, all this is done without specific training. If patients, healthcare professionals and researchers were informed and instructed on the correct use of social network, there could be benefits for research, such as faster recruitment timelines in clinical trials, involvement of patients in the study design, and sharing of trial results.

Given the popularity and almost universal appeal of social media, we encourage physicians and institutions to learn and engage more in this ongoing evolution. Protection of patients as well as physicians is critical. Further research, collaboration, and funding are needed to improve the evidence base to determine how we can effectively leverage social media to engage patients, providers, and communities to improve health behavior and outcomes. The protection of the institution's and physicians' reputations as well as patient privacy needs to be carefully safeguarded. Physician protection would extend to the separation of personal and professional use of social media. In addition, the importance of transparency cannot be overestimated. Any involvement by physicians in social media, whether it is personal or professional, if not entirely transparent, can lead to repercussions on institutions or professional reputations. Even though a number of uses for social media have come to the forefront, it is undeniable that new and unforeseen uses, benefits, and potential concerns will arise in the future (24).

It is evident that a steadfast commitment (and investment by the institutions) is necessary for the technological training of citizens and workers, which in some countries, such as Italy, is very weak. Probably in the future, as proposed by some authors, specific guidelines will also be needed (25).

Certainly, our research has several limitations, such as the small sample and the national diffusion. Another important limitation is the fact that it is not possible to estimate total number of professionals reached with the invitation to reply to the survey. In addition, there might be a discordance between the respondents and the actual sample, meaning that the professionals responding to the survey might correspond mostly to those with a greater interest in social media, as opposed to others less familiar with these tools. These are limitations commonly seen in literature for this type of research/investigation modality.

That said, we think it represents an important point of view in the world of clinical research and leads us to believe that social media engagement may be a valuable tool to advance healthcare professionals' own growth and foster patient engagement and education.

COMPLIANCE WITH ETHICAL STANDARDS

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There were no institutional or private fundings for this article.

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The Authors have declared no conflict of interests.

Availability of data and materials

The data underlying this article are available in the article.

Authors' contributions

ST, CC: conceptualization; ST, CC: methodology; VF, FM: validation; CC: formal analysis; ST, CC, VF; ST, CC, RC: writing/review and editing.

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Human studies and subjects

N/A.

Animal studies

N/A.

Publications ethics

Plagiarism

The contents of the article are original and any overlaps with other articles are by the Authors themselves and appropriately cited.

Data falsification and fabrication

N/A.

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APPENDIX 1

When research becomes “social”: not only fake news

Questionnaire

1) What is your age range?

- 18-29
- 30-49
- 50-65
- >65

2) What is your profession?

- Doctor
- Nurse
- Clinical Research Coordinator/Data Manager
- Other:.....

3) State your professional experience in years:

-

4) How often do you use social media to search/share information concerning your professional activity?

- Never (skip to question 7)
- Rarely
- Sometimes
- Often

5) Which of these social media are you familiar with and use to this end?

- Facebook
- LinkedIn
- Instagram
- Researchgate
- Twitter
- Youtube
- Other:.....

6) When using social media for professional purposes, your primary aim is to:

- Gain information
- Share information
- Gain and share information to the same extent
- Other:.....

7) From 0 (not at all) to 10 (very), how useful do you rate social media to be in your professional activity?

-

8) From 0 (not at all) to 10 (very), how useful do you rate social media to be for patients with cancer?

-

9) Have you ever been contacted by a patient through social media?

- Yes
- No

10) If yes, via:

- E-mail
- Whatsapp
- Facebook
- Other:.....

11) Does your institution use e-mail or other messaging service (whatsapp or other) to communicate with patients and/or schedule visits?

- Yes
- No

12) If yes, who carries out this task?

- Doctor
- Nurse
- Data Manager/Clinical Research Coordinator
- Other:.....

13) At your institution, have specific courses/training sessions on social media been held for healthcare and research personnel?

- Yes
- No