**BRIEF REPORT**

# The untapped potential of Instagram to facilitate rheumatology academia

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## Abstract

Instagram allows for graphical and visual information exchange. This paper aims to explore the current landscape of rheumatology on Instagram and analyse the accounts available based on their objectives and level of engagement. The search term "#rheumatology" reveals 62 results, leaving 55 after careful exclusion. On grouping into "educational", "broadcasting", "support", and a combination of all three, an analysis is carried out using the total number of posts, follower counts, number of caption characters (last 10 posts), likes per post (last 10 posts), archived stories, reels, IgTV (Instagram Television) videos, hashtags, and links in bio. The analysis reveals that 29 accounts (52.7%) disseminate educational content, 36 (65.4%) are run by organisations, and 22 (40.0%) are of an institute or clinic. Character counts (rho 0.44, $p = 0.0006$) and videos (likes for ten posts 149 vs. 54, $p = 0.006$) positively correlate with the number of likes, while hashtag use and post count have no statistical significance with likes. Reels and IgTV videos are infrequently used (18.18%, 3.6%). The rheumatology social media landscape is in its nascency and currently split into educational and broadcasting accounts with a significant overlap between the two. The positive correlation of character counts and videos and the negative correlation of hashtag use and post count with likes lay the case for quality content to improve engagement. Social media editors may ensure quality content for rheumatology education using Instagram.

**Key Points**
• *The current landscape of Instagram use in rheumatology is limited and largely orientated towards educative content.*
• *Likes on Instagram are positively correlated with caption character counts and videos.*
• *Using currently underutilised tools like videos, engaging captions, and infographics may enhance the utility of Instagram in rheumatology education.*

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## Introduction

Instagram is an online, free-of-cost application that allows its users to upload, edit and customise photos and videos. It is the 6th most popularly used Social Media Platform (SMP) globally, recording more than one billion members and over 500 million daily users with 70% of these users being below the age of 35 years [1]. This makes it a promising platform for data collection, to increase visibility, facilitating effective marketing and global reach for all businesses, academics, politics, and networking [2, 3].

Professional medical journals, magazines, and bloggers may have a wider reach, making a greater impact on those professionals who are more active on Instagram [4,

5]. Scholars use Instagram to collect and disseminate recent scientific data [6]. The increasing dependence of students and professionals on social media especially during the coronavirus disease 2019 (COVID-19) pandemic advocated its use for post-publication furtherance and scientific discussions [7, 8]. This exhibits the indispensable role of altmetrics as they help quantify the scientific influence and impact of the literature [9].

Instagram provides for collaborative learning, formation of peer groups, and establishing of mentor–mentee relationships among students globally [10]. Sharing educational information using infographics and short videos on Instagram facilitates foster peer learning, diagnostic inferences, and metacognitive judgement in medical professionals [11]. The largely young userbase of Instagram may also benefit from active participation in international scientific conversations as it helps them gain a better understanding of subjects and keeps them updated with scientific information [12].

The authors recognise the potential of Instagram as an educational tool and analyse the ownership, follower and like count, caption characters, and other variables of 60 rheumatology-associated Instagram accounts. The study focusses on the quality of information, method of dissemination, and acquired engagement rates of the rheumatology-based Instagram accounts.

## Methods

### Search strategy for rheumatology associated Instagram accounts

LG and AB went through Instagram with the search term "#rheumatology" on January 17, 2021, and obtained 62 results. Out of these, accounts that were private or deleted ($n = 7$) at a later date (March 29, 2021) were excluded from the analysis, yielding a total of 55 (Table 2).

The content of each page was analysed and classified into "educational", "broadcasting", "support", and a combination of the above as well (Table 2). "Educational" accounts were the ones that purely focused on posting content aimed at educating physicians, support staff, general public, etc. about rheumatological diseases, treatment, research, etc. "Broadcasting" accounts were the ones that had content mainly aimed at enhancing visibility of an institution, clinic or clinical practice. "Support" accounts were the ones that were associated with support groups, rheumatology communities, etc. Their content focused on providing a safe environment for patients with rheumatological diseases or their caregiver/relatives to share and be heard.

The total number of posts, follower count, number of caption characters in the last 10 posts, and the likes per post for the last 10 posts were recorded to identify trends in engagement (Table 2). The use of diverse content and post type such as archived stories, reels, and IgTV (Instagram Television) videos by each account was also recorded (Table 2). The use of hashtags and links in bio were assessed. Further, conclusions on the content of the profile, intent, and level of engagement were drawn based on the above data.

Mean likes per post were calculated by averaging the likes of the 10 latest posts. Similarly, the mean caption characters per post and mean hashtags used per post were also calculated reflecting the current status of engagement. Posts beyond the latest 10 were excluded since it is expected that engagement rises disproportionately over time and their inclusion would skew the results towards older engagement rates which may not be relevant now.

### Data extraction

The details of the data extracted are expanded upon in Table 1.

## Results

The analysis of 55 Instagram accounts was carried out recording their aim, owner, number of followers, and number of posts (Table 2). A total of 471 posts (and captions) out of 4972 from these accounts were analysed by identifying the last ten posts. This number is less than the expected 550 since around 12 accounts had less than 10 posts in total. The analysis of reels and IgTV videos made a negligible impact on the study as they are infrequently used (18.18%, 10 of 55 accounts use IgTV; and 3.6%, 2 of 55 accounts use reels).

### Analysis based on the focus of the account

A total of 16 pages of the 55 (29.0%) dedicatedly disseminate educational content only (Table 2) while 13 accounts (21.7%) provide both educational and broadcast content. Most of these accounts focus on educating healthcare workers and students about common rheumatic diseases, symptoms and signs, management algorithms, and other academic information (Supplementary Table 2). The total number of posts shared by these accounts (4972) is much larger than the total number of "highlights" (87). Twenty-two accounts of the 55 (40.0%) are fully dedicated to the enhancing visibility of the institute or clinic (Fig. 1).

### Analysis based on the use of features provided by Instagram

Over a quarter of rheumatology-related accounts (29.0%, 16/55) have more than a hundred posts. The extent of use of

**Table 1** Data extraction

| Data | Details |
|---|---|
| Caption Characters | Caption including the hashtags replacing regular words in the caption and excluding those following the caption, in the footer or separated from the main body |
| Likes, posts and followers ($n$) | Using the like counter under the post (10 latest posts) of each account, the post counter on top of the profile page and the follower counter on top of the profile page |
| Hashtags ($n$) | Referring to the 10 latest posts of each page including those in main body, footer and separate from the main body |
| Date of latest post | Using the date stamp at the bottom of each post |
| Type of organisation | Determined using the flare under the account or the bio. If unclear, referred to the description on their official website (using link in bio), or from content of posts if website is untraceable |
| IgTV and Reels views ($n$) | Referring to the 10 latest IgTV and Reels videos of the accounts in the IgTV and Reels tabs |
| Archived stories ($n$) | The total number of "highlights" on each page representing the total number of collections archived on each page |
| Link in bio | Manual entry on perusing the profile page of each account |
| Linktree hyperlink | As it is provided to share links with followers, it has been recorded in the dataset under "links in bio" |
| Purpose of page | The pages are divided into research/educational and broadcasting content. Metrics considered to determine the type of organisation (use of phone numbers to manage profiles, uploading clinic/hospital-specific information (e.g. appointment slots, holiday schedule), uploading personal/institutional awards, use of educational images, diagnostic criteria, quizzes, updates about research, and others.) |

the features provided by Instagram by the analysed accounts is provided in Table 2.

The analysis of characters for every post caption correlated with total likes for ten posts (rho 0.44, $p = 0.0006$). Notably, the character count also correlated with the total number of followers on the account, albeit a weak correlation (rho 0.3, $p = 0.043$) but not the total number of posts. Expectedly, the total number of posts correlated with follower count (rho 0.4, $p = 0.001$). Notably, the use of hashtags was not correlated with followers in rheumatology-related accounts.

Approximately 36.36% (20 out of 55 accounts) of the accounts analysed have archived stories (Table 2). These are available as highlights on the page of the account and make stories available even after 24 h of being posted. Archived stories are most commonly seen on pages catering to both education and enhancing practice visibility. Accounts with videos gathered greater traction than those who did not (likes for ten posts 149 vs. 54, $p = 0.006$), while the presence of stories did not demonstrate this effect.

Sixty percent (33 of 55 accounts) had a hyperlink in their bio although the number of likes in the last ten posts did not differ for this group. Two of these accounts which happened to belong to journals have Linktree hyperlinks providing a landing page on which multiple links can be accessed.

## Discussion

To the best of our knowledge, this is the first study exploring the minimally present rheumatology landscape on Instagram having only a few organisations presenting largely educative

and marketing content. Analysis suggests that comprehensive and informative captions garner viewer interest and increase the number of likes on the posts.

We found that the character count of captions impacts the number of likes while the number of hashtags does not. This may be due to the small and self-selected rheumatology community presenting a lack of a significant statistical relationship between hashtag use, post count, and the number of likes as they may be actively seeking out quality content instead of depending on the algorithm-driven feed. Thus, quality content may play an important role in determining outreach.

Infographics improve outreach and are used by a majority of the educational accounts but seem to be unexplored by rheumatology-oriented accounts. JoVE, a world-leading producer and provider of science videos to improve scientific research and education, helped establish the importance of infographics and video mediums for the publication of research [13]. Due to the image-heavy focus of Instagram, it is important to prepare visually appealing data by ensuring a narrative flow in the infographic using colours (restricted to three to five) and fonts (maintain constant to prevent busy looking infographic) [14, 15]. Headline graphics and catchy images unrelated to the subject are rarely used by accounts to gain traction.

Posts of clinical vignettes usually as a series of images (characteristic clinical features, or laboratory, serological or radiological findings) receive engagement on educational accounts (Fig. 2). These posts are accompanied by an explanatory text or a question as a caption. The answers to these questions are generally revealed after a certain period, ensuring continued engagement with the follower.

**Table 2** Results of use of features by accounts

| Intent of account | No. of accounts | Posts | Likes/post | Story highlights | No. of story highlights | IgTV videos | Views/IgTV video | Reels | Views/Reel |
|---|---|---|---|---|---|---|---|---|---|
| Education | 17 | Total 1309; 2 (>1000), 11 (100–1000), 5 (50–100) | 3 (>20), 2 (12) | 10 Yes, 11 (<10) | 8 (1 to 5) | 3 Yes | 2 (>450); 54 | 1 / | 1 / |
| Broadcast | 25 | Total 1220; 6 (<25), 10 (>100), 7 (25–55) | 21 (<15), 3 (25–50) | 4 Yes, 1 (>50) | 4 (1 to 4) | 3 Yes | 2 (>40 to 75); 14 | 1 / | 1 / |
| Both (E+P) | 13 | Total 2205; 5 (<50), 5 (>100), 3 (>50) | 4 (>50), 3 (20–50), 6 (<20) | 7 Yes | 7 (1 to 5) | 3 Yes | 2; 75 | 2 | 1; 46, 670 |
| Others | 4 | Total 2205; 3 (<10), 1 (>100) | 2 (<10), 2 (>10) | 1 Yes | 1 (2) | 1 Yes | 1; 140 | / | / |

Such captions facilitate discussions in the comment section and act as mutual benefit.

Reels and IgTV feature on Instagram help provide a large amount of information easily in a video format. These are seen to be associated with higher engagement rates as the Instagram algorithm is said to push this content and may also enhance familiarity with the creator (on appearance in the video). IgTV videos are longer in length compared to reels, allowing for detailed educational and marketing content.

Posts to increase employee morale, broadcast important updates, educate employees on policy changes, and provide information on hospital setups, infrastructure, and facilities help improve practice visibility. A survey among the social media activity managers of corporate-level hospitals found that they recognise the importance of social media and use Facebook, Twitter, and Instagram commonly, primarily for sharing health-related information and infrastructural and economic developments [16]. Various social media websites have been utilised across the world by academia to enhance outreach, like Facebook (multiple media options, shared via posts), YouTube (exclusively video sharing platfom), WhatsApp (instant messaging service), and Weibo (microblogging site) with dominant use varying country by country [17].

Journals may improve engagement and facilitate post-publication furtherance with the help of infographics with hyperlinks in the caption and bio of their Instagram account [18]. This contributes to increase the journal impact factor and its citation indicators. Social media editors concoct a mix of good content, leveraging algorithms, videos, and infographics helping journals maximise engagement rates and improving journal recognition and global visibility using effective outreach strategies [19].

Brief, engaging captions with hashtags help increase outreach and bring scientific papers of interest to a defined audience substantially contributing to the impact of scientific information [18]. The digital editors of peer-reviewed journals from non-Anglophone countries advocate the use of five to ten relevant and diverse hashtags, to enhance the visibility of posts, the most widely used being #rheumatology. Tagging other relevant accounts in the caption and using software like Hootsuite to identify appropriate times to share posts help to maximise engagement [18].

Notably, other medical specialties use Instagram to further medical education and record a greater number of followers than rheumatology-focussed accounts [20, 21]. Our results possibly attribute this to the rare use of all the features of Instagram providing an avenue for improvement while growing its online presence. The disparity in followers and the large number of people affected by rheumatic disease-associated morbidity acts as an incentive for the academic community to be trailblazers and establish
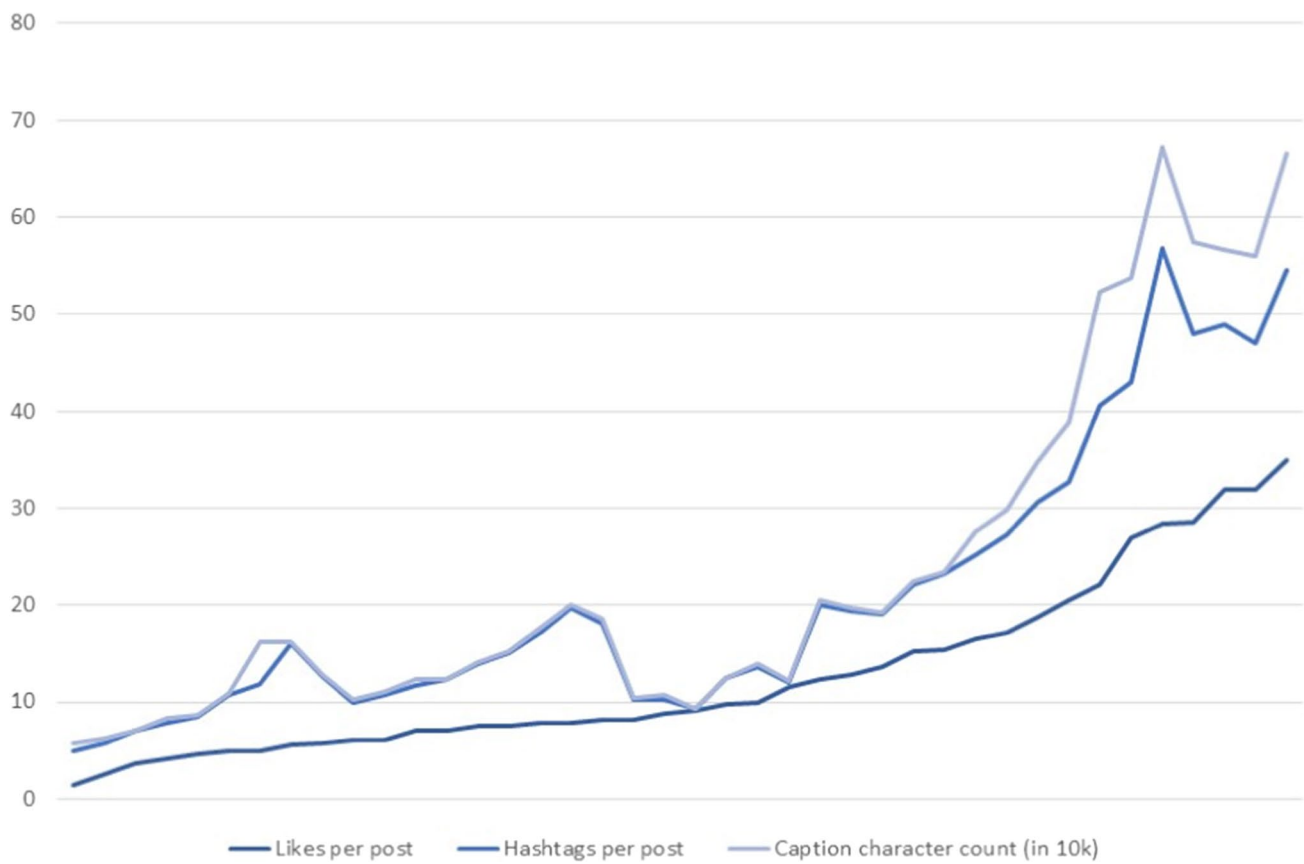
**Fig. 1** Association between number of likes, hashtags used, and caption character count per post



**Fig. 2** A post from IJR (@ijrheum) showing the image and highlighting the essential feature briefly in the text next to it ( reproduced with permission from IJR)

themselves with quality content, enjoying a first-mover's advantage.

This outreach is sustained by increasing followers and viewership of the profile by making it look aesthetic and welcoming. Alignment of the common goals of journals and medical societies allows for mutual benefit and follower exchange by collaborations and tagging of profiles. Consistent posts, updates, and interaction with followers

may also help increase and sustain engagement rates. There are various aspects of engagement amplification through Instagram tools (Supplementary Table 1).

While maintaining social media presence, it is important to call out misleading, false information and handle personal attacks with professionalism. Handling differences of opinion in a positive, civil manner helps maintain a professional image and reputation. Consistent posting schedules must be followed irrespective of any possible setbacks while achieving set targets. Maintaining a professional stance and striving towards developing diverse, accurate, and unique content may allow for growth in the long term.

## Limitations

Although *#rheumatology* is a popular hashtag which links to approximately 50,000 posts, the majority of these are not significantly associated with rheumatology and cause a "hashtag soup" which prevents it from being a reliable advocate for rheumatology on Instagram. Thus, its use for assessing the rheumatology landscape is unclear. Hence, the sample in this study might be only a partial representation of the rheumatology landscape on Instagram.

Since Instagram is accessible, a large majority of the rheumatology community may appreciate its potential and we might record its exponential use which may call for further research in this field. An avenue for future studies may open which focuses on the accuracy and ethics of information dissipation due to the possible advent of predatory journals.

## Conclusion

Instagram is seen to be an underutilised resource for research, education, and increasing visibility in the clinical practice of rheumatology. Optimal cultivation of a niche on Instagram can yield lasting dividends. Journals have a great opportunity at this time to appoint dedicated social media editors and establish a presence. Emphasis on quality content, videos, and interactive posts which spur discussion is the best way to increase outreach. A mixture of educative information and stealth advertising can yield great outcomes for the improving visibility of clinics and hospitals.

**Supplementary Information** The online version contains supplementary material available at https://doi.org/10.1007/s10067-021-05947-6.

**Code availability** Not applicable.

## Declarations

**Conflicts of interest** LG, EN, and OZ work as social media editors for several rheumatology journals and organisations. PG is a DMSC member of @RheumJnl. The other authors have no conflicts of interest.

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