



# WhatsApp and Telegram in Medical Education: A Narrative Review of Benefits, Challenges, and Best Practices

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## Abstract

The proliferation of instant messaging platforms has transformed how healthcare professionals engage in continuing medical education (CME) and peer knowledge exchange. WhatsApp and Telegram, owing to their accessibility, multimedia capabilities, and near-universal smartphone compatibility, have gained considerable traction within clinical communities worldwide. This narrative review synthesises peer-reviewed evidence on the educational benefits, challenges, and best practices associated with both platforms across medical education and CME contexts. WhatsApp, with its vast global user base, excels in fostering peer-to-peer case discussions, real-time knowledge dissemination, and informal professional networking. Telegram, though less widely adopted, offers distinct technical advantages including larger group capacities, superior file-sharing, channel-based broadcasting, and native bot integration suited to structured content delivery. Both platforms share challenges related to information overload, quality control, and patient data privacy. The available evidence supports their use as accessible and effective supplementary learning tools when deployed with clear governance, active moderation, and structured content frameworks. Future research should prioritise objective outcome measurement and equity-focused evaluation to guide their formal integration into medical education.

**Keywords:** WhatsApp; Telegram; Continuing Medical Education; CME; Social Media

## Introduction

The rapid expansion of mobile technology has fundamentally reshaped how healthcare professionals access, share, and act upon medical information. Smartphone penetration among doctors and nurses now approaches near-universality in high-income countries and is growing rapidly in low- and middle-income settings [1, 2]. This shift has prompted medical educators and professional bodies to grapple with a core question: how can digital communication tools be harnessed to support lifelong learning and CME without compromising professional standards or patient safety?

Social media and instant messaging platforms have emerged as particularly influential channels in this regard. While early attention focused on platforms such as Twitter and Facebook, more recent evidence has highlighted the educational potential of encrypted messaging applications, most notably WhatsApp and Telegram [3, 4]. These platforms offer features - real-time group communication, file sharing, multimedia support, and near-universal device compatibility - that map well onto the informal learning needs of busy clinical professionals.

Existing literature has begun to document the uses of these platforms in specific contexts: WhatsApp in undergraduate clinical attachments [5], Telegram in surgical education [6], and mobile applications broadly in medical training [7]. However, no recent narrative review provides a side-by-side synthesis of both platforms, accounting for their comparative technical features, differential evidence bases, shared challenges, and a unified set of best practices. This review aims to address that gap.

The primary objectives are: (1) to summarise the evidence on WhatsApp's role in medical education and CME; (2) to evaluate the evidence for Telegram's use in medical education, a comparatively understudied area; (3) to compare both platforms on key technical and pedagogical dimensions; (4) to identify shared challenges; and (5) to propose evidence-based best practices for their use. The review is situated within the broader framework of communities of practice and

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social constructivist theories of learning, which emphasise knowledge construction through dialogue, peer interaction, and shared experience - processes that messaging platforms are well placed to support [8].

## WhatsApp in Medical Education

### Adoption and Background

WhatsApp, with approximately 2.78 billion active users globally as of mid-2023, has achieved extraordinary penetration across professional communities, including medicine [3]. Studies from the United Kingdom have found that the majority of doctors and nurses own smartphones and that a significant proportion use them for clinical and educational purposes [1]. WhatsApp's end-to-end encryption, intuitive interface, and support for text, image, audio, video, and document sharing have made it a natural choice for peer-to-peer professional communication.

In formal surveys of clinicians, WhatsApp use for professional purposes has been reported across a wide range of specialties and geographies, from India and Nigeria to the United Kingdom and Latin America [9, 10]. Its adoption is driven not by institutional mandate but by organic utility - clinicians find it faster and more accessible than email and more media-rich than SMS [9].

### Educational Benefits

**Case-based and peer learning.** One of the most consistently reported educational uses of WhatsApp is the real-time discussion of clinical cases. Groups composed of specialists, trainees, and general practitioners allow members to present challenging cases, seek expert opinions across institutional boundaries, and receive rapid feedback [9]. Singh et al. (2024), in a mixed-methods study of a dedicated CME WhatsApp community, found that participants reported enhanced clinical decision-making confidence and valued the peer-to-peer nature of knowledge exchange, with a response rate of over 70% in their survey component [9]. This aligns with Wenger's communities of practice model, in which shared engagement around problems is central to professional learning [8].

**Knowledge dissemination and currency.** Clinicians use WhatsApp groups to share and discuss recent publications, updated clinical guidelines, emerging drug therapies, and drug alerts [10]. The asynchronous flexibility of the platform means a junior doctor on call can access an important journal summary shared by a senior colleague hours earlier - a form of "just-in-time" learning not readily replicated by traditional CME formats [4, 11].

**Conference and continuing education outreach.** For clinicians unable to attend conferences due to geographic, financial, or workload barriers, WhatsApp groups serve as a channel for real-time or retrospective sharing of conference highlights, slide summaries, and speaker insights [9]. This substantially extends the reach of formal CME events and is particularly valuable for practitioners in resource-limited settings [4].

**Accessibility and equity.** Traditional CME - conferences, workshops, journal clubs - is unequally distributed geographically and financially. WhatsApp, requiring only a smartphone and internet access, democratizes access to peer learning for clinicians in remote regions or those with demanding on-call schedules [4, 11]. Raiman et al. (2017) demonstrated that WhatsApp messenger used as a supplementary tool for medical students on clinical attachment led to increased engagement with learning materials and improved

perceived accessibility of teaching [5].

**Global networking.** Cross-institutional and international WhatsApp groups foster a global perspective that is difficult to achieve through local CME alone [9]. Clinicians in lower-resource settings have reported gaining access to subspecialist knowledge through international group membership that would otherwise be structurally inaccessible [4].

### Challenges and Limitations

**Information overload.** Active clinical WhatsApp groups can generate dozens to hundreds of messages per day. Masoni and Guelfi (2020) identify information overload as one of the primary hazards of professional messaging group use, noting that important clinical updates can be buried beneath tangential discussion or off-topic content [10]. Selective attention and cognitive fatigue become real concerns for clinicians already operating under high workloads.

**Quality control and misinformation.** Unlike peer-reviewed journals or formal CME content, information shared on WhatsApp undergoes no formal vetting process. The accuracy of clinical information, particularly links to online articles or informal case summaries, is highly variable [2, 9]. The COVID-19 pandemic highlighted the speed at which inaccurate clinical information could propagate through professional messaging networks [10]. Quality control is, therefore, heavily dependent on moderator vigilance and the professional norms of individual groups.

**Patient privacy and data governance.** The sharing of clinical images, patient histories, and investigation results - even when anonymised - raises significant ethical and legal concerns. Martínez-Pérez et al. (2015) highlight that many clinicians are unaware of or inconsistent in applying data protection requirements (such as those under GDPR in Europe or HIPAA in the United States) when using consumer messaging applications [11]. While WhatsApp's end-to-end encryption protects content in transit, metadata is collected and storage practices vary by jurisdiction [11]. The World Medical Association has issued guidance emphasising that professional social media use must at all times protect patient confidentiality [2].

**Pedagogical limitations.** WhatsApp's design is conversational, not educational. It lacks built-in learning management features such as assessments, progress tracking, spaced-repetition prompts, or credentialled learning records. Its informal register can undermine the structured delivery of educational content, and the absence of searchable archives makes knowledge retrieval from past discussions unreliable [10, 12]. Gon and Rawekar (2017) note that while students and professionals report high satisfaction with WhatsApp-based learning, objective improvements in knowledge scores are less consistently demonstrated [13].

## Telegram in Medical Education

### Platform Profile and Adoption

Telegram, founded in 2013, remains considerably less prevalent than WhatsApp in general clinical use but has attracted growing interest in medical education for its technical feature set. Unlike WhatsApp, Telegram is cloud-based, supports groups of up to 200,000 members, offers a separate broadcast "channels" feature, permits file sharing up to 2GB per file, and provides a more robust API for both integration and automated content delivery [6]. These properties render it particularly suitable for large-scale educational dissemination.

Adoption in medical contexts has been documented in several countries, including Iran, Malaysia, and the United Kingdom, and its use surged notably during the COVID-19 pandemic when the need for scalable remote education became acute [14].

### Educational Benefits

**Large-scale group learning.** Telegram's group capacity far exceeds WhatsApp's current limit of 1,024 members. This makes it feasible to run national or international CME groups as a single, moderated community rather than fragmenting the audience across multiple groups, which is a significant logistical limitation of WhatsApp in high-volume educational settings [6]. Soon et al. (2022), in an exploratory study of Telegram in surgical education, found that its large group functionality enabled a diverse surgical community to engage in case discussions and guideline updates in a single shared space, with participants reporting high levels of engagement and utility [6].

**Superior file-sharing and multimedia content.** The ability to share large files — high-resolution imaging studies, surgical videos, procedural demonstrations, and comprehensive slide decks - without compression artefacts or file size restrictions gives Telegram a meaningful advantage for specialties that depend on visual learning [6, 7]. Iqbal et al. (2020), studying Telegram's role in supplementing online medical education during COVID-19, found that its file-sharing capabilities were rated as the most valued feature by medical students using it for examination preparation [14].

**Channels as broadcast CME.** Telegram's "channel" feature permits administrators to broadcast content to subscribers without enabling group replies, creating a structured, low-noise environment analogous to a newsletter or podcast feed. This is well suited for regular dissemination of curated literature summaries, clinical guidelines, or quiz-based revision content to large audiences without the information overload associated with group chats [6, 15]. Alizadeh (2018), evaluating Telegram in English for Specific Academic Purposes (ESAP) programmes for medical students, found that channel-based content delivery was associated with better retention of structured material compared to open group discussion formats [15].

**Bot and automation integration.** Unlike WhatsApp, Telegram supports native bot creation without requiring third-party services. Educational bots can deliver scheduled content, conduct automated quizzes with feedback, send reminders, and compile responses — functions that bring Telegram closer to a lightweight learning management system [6]. Ghaffari et al. (2017) demonstrated successful use of an automated Telegram-based educational intervention for mothers on infant nutrition, with significant knowledge improvement in the intervention group, suggesting transferability to clinical staff education programmes [16].

### Challenges and Limitations of Telegram

**Lower baseline adoption.** The primary barrier to Telegram's uptake in clinical settings is simple: far fewer clinicians use it by default compared to WhatsApp [7]. Transitioning a professional community to a new platform requires coordinated effort and is frequently resisted, meaning that educational communities on Telegram must be actively built rather than organically emerging from existing user bases [6].

**Moderation complexity at scale.** The same large-group capacity that is Telegram's strength also presents moderation challenges.

Maintaining quality, professionalism, and clinical accuracy across thousands of members requires sophisticated moderation infrastructure that most informal educational groups lack [14].

**Privacy perceptions.** Despite Telegram's optional end-to-end encryption (available in "Secret Chats" but not in standard cloud-based group chats), many clinicians perceive it as less secure than WhatsApp, which encrypts all communications by default [11]. This perception - whether or not fully justified technically - can deter uptake in privacy-sensitive clinical environments.

**Limited evidence base.** The evidence base for Telegram in formal medical education remains considerably smaller and less diverse than that for WhatsApp. Most studies to date are single-institution, observational, and focused on subjective satisfaction rather than objective learning outcomes. This limits the strength of recommendations that can currently be made [6, 14].

## Comparative Analysis

The two platforms share a common purpose in medical education but differ meaningfully in technical architecture, adoption patterns, and use cases. Table 1 provides a structured comparison.

From an educational design perspective, the two platforms are not direct competitors but complementary tools suited to different pedagogical functions. WhatsApp is better suited to small-to-medium peer learning communities where conversational engagement and relationship-based learning are priorities. Telegram is better suited to large-scale broadcast CME, multimedia-rich content delivery, and structured automated learning programmes. Institutions and educators designing digital CME strategies would benefit from considering both in tandem rather than treating the choice as binary [6, 7, 9].

## Best Practices for Use in Medical Education

Drawing on the synthesised evidence, the following evidence-informed practices are recommended for educators and administrators deploying messaging platforms in medical education contexts.

**Establish clear governance frameworks.** Groups should operate with explicit membership criteria, content standards, and codes of conduct established prior to launch. The World Medical Association's guidance on professional social media use provides a relevant baseline for such frameworks [2]. Singh et al. (2024) found that the presence of clearly communicated group guidelines was significantly associated with participant satisfaction and perceived educational value in CME WhatsApp communities [9].

**Invest in active and expert moderation.** The quality of messaging-based CME is directly dependent on the quality of its moderation. Moderators should be subject experts who can validate clinical content, redirect off-topic discussion, curate high-quality resources, and enforce community standards [9, 10]. Passive moderation or reliance on self-regulation is insufficient for maintaining educational standards at scale.

**Structure content delivery deliberately.** To counter the inherent informality of messaging platforms, educators should organise content around recurring themes (e.g., weekly case of the week, journal club summaries, clinical question of the day) and signal clearly when content is educational versus social [4, 12]. Gon and Rawekar (2017) found that structured content delivery was the factor

**Table 1:** Comparative features of WhatsApp and Telegram in Medical Education.

| Feature                            | WhatsApp                     | Telegram                            |
|------------------------------------|------------------------------|-------------------------------------|
| Global user base (2023)            | ~2.78 billion                | ~800 million                        |
| Clinical adoption                  | Very high                    | Moderate                            |
| Group size limit                   | 1,024 members                | 200,000 members                     |
| File size limit                    | 2GB (increased 2023)         | 2GB                                 |
| Encryption                         | End-to-end (all chats)       | End-to-end (Secret Chats only)      |
| Broadcast/channels                 | Broadcast lists (limited)    | Channels (unlimited subscribers)    |
| Bot/automation support             | Limited (third-party)        | Native bot API                      |
| Content searchability              | Limited                      | Superior (cloud-based)              |
| Evidence base in medical education | Substantial                  | Emerging                            |
| Primary educational strength       | Peer discussion, networking  | Mass dissemination, file sharing    |
| Primary educational limitation     | No structured learning tools | Lower adoption, moderation at scale |

most strongly associated with improvements in learner engagement and self-reported knowledge gain [13].

**Implement privacy-by-design protocols.** Groups handling any clinical information - even in anonymised or hypothetical forms - should establish and enforce explicit anonymisation protocols, obtain informed consent from group members regarding the storage and use of shared content, and avoid platforms for data that is governed by identifiable patient records [2, 11]. Institutions should develop formal social media policies that address the specific use of messaging apps and provide staff training.

**Facilitate active rather than passive learning.** The evidence most supportive of learning outcomes derives from groups that use messaging platforms for interactive activities: case presentations requiring responses, multiple-choice questions with explanatory feedback, debates on clinical controversies, and reflective discussion of adverse events [9, 13]. Passive broadcast of content, while valuable for information currency, has weaker evidence for knowledge retention.

**Use as supplements to formal CME, not replacements.** Across the available literature, the consensus is that messaging-based learning should complement - not displace - accredited CME, formal mentorship, supervised clinical training, and peer-reviewed self-assessment tools [4, 12, 14]. Coleman and O'Connor (2019), in their scoping review and instructional design model for WhatsApp in medical education, argued specifically for structured hybrid models in which messaging platforms serve as the social and informal learning layer within a broader CME framework [12].

**Align platform choice with educational objective.** As detailed in the comparative analysis above, platform selection should be deliberate. Educators should choose WhatsApp for interactive peer communities and Telegram for large-audience dissemination or automated content delivery, rather than defaulting to the most familiar tool regardless of fit [6, 9].

## Theoretical Framework

The observed benefits of WhatsApp and Telegram in medical education are well accounted for by established theories of learning. Vygotsky's social constructivism holds that knowledge is co-constructed through social interaction and dialogue - precisely the mechanism operative in peer-to-peer case discussion groups [17]. Wenger's communities of practice framework provide a further

lens: medical WhatsApp and Telegram groups function as informal communities in which participants develop shared repertoires of practice through joint engagement around clinical problems, mutual accountability, and collective identity as professionals committed to ongoing learning [8].

These theoretical underpinnings are practically significant: they suggest that the educational value of messaging platforms is not incidental but structural, arising from the social architecture of the groups themselves. They also imply that isolated use of messaging platforms for passive content consumption - without the relational and dialogic elements — is unlikely to yield the same educational benefits as active community participation.

## Future Research Directions

The evidence base supporting messaging platforms in medical education, while growing, remains limited in several important respects. The following research priorities are identified:

First, rigorous experimental or quasi-experimental designs - including randomised controlled trials where feasible - are needed to establish whether participation in educational messaging groups produces objective improvements in clinical knowledge, clinical performance, or patient outcomes, beyond self-reported satisfaction.

Second, validated outcome measurement instruments specific to messaging-based CME need to be developed and tested. Current literature relies heavily on bespoke, unvalidated survey instruments that limit cross-study comparability.

Third, the evidence for Telegram in medical education remains at an exploratory stage. Well-designed prospective studies across clinical specialties and geographic contexts are needed to characterise its efficacy relative to WhatsApp and to formal eLearning platforms.

Fourth, the regulatory and governance dimension warrants dedicated research attention. Studies examining institutional policy responses to clinical messaging use, and the effectiveness of different privacy frameworks in preventing data breaches or patient confidentiality violations, are largely absent from the current literature.

Fifth, equity implications deserve investigation. While messaging platforms hold promise for democratising CME access, differential smartphone access, data costs, and digital literacy across geographic and socioeconomic contexts may limit the reach of these benefits.



Equity-focused research is needed to ensure that digital CME does not inadvertently replicate existing educational inequalities.

## Limitations of this Review

This review has several limitations that should be noted. As a narrative rather than systematic review, the literature synthesis reflects the authors' interpretive judgements in selecting and weighting sources and may be subject to selection bias. The breadth of specialties, geographic settings, and learner populations represented in the included literature varies considerably, which limits the generalisability of specific findings. Additionally, the rapidly evolving technical features of both platforms mean that some platform-specific observations may be superseded by subsequent updates. Finally, publication bias may mean that negative or null findings regarding messaging-based CME are underrepresented in the available evidence.

## Conclusion

WhatsApp and Telegram have demonstrably established roles in the informal CME ecosystem, offering clinicians accessible, real-time, and socially embedded opportunities for knowledge exchange and peer learning. Their strengths - ubiquity, multimedia support, low cost, and community formation - are real and supported by a growing body of evidence. So too are their limitations, particularly around information quality, data governance, and the absence of structured pedagogical scaffolding. As the digital transformation of medical education accelerates, messaging platforms will remain important nodes in the broader learning ecosystem. Investing in rigorous research, institutional policy, and educator training in the appropriate use of these tools is essential to realising their potential while safeguarding professional standards and patient safety.

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