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Editorial

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Instant Messaging in Cancer Care

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Instant messaging has revolutionized communication across the globe, particularly through mobile applications like WhatsApp® (www.whatsapp.com), Telegram® (web.telegram.org), and others with billions of users. These platforms have unique business models based on data management and minimal expenses for users. In contrast to the past, where older-generation smartphones allowed only for text-based short message service (SMS), often incurring charges from telecom operators, the rise of smartphones with affordable and unlimited Internet connectivity has paved the way for the remarkable capabilities of mobile apps like WhatsApp. These apps enable users to send unlimited messages, including multimedia content and files, to anyone with the same application installed. This paradigm shift has not only expanded the scope of communication but has also ushered in benefits like enhanced privacy, as opposed to traditional voice calls that may breach confidentiality. One of the significant limitations of voice calls is their synchronous nature. They reflect the immediate availability and necessity of the caller rather than the recipient. Missed calls from unknown numbers can be challenging to decipher and may often be confused with spam calls. In contrast, instant messaging offers the advantages of asynchronous interaction, enabling users to share a more extensive array of data compared to voice calls.

The potential of instant messaging in patient care is substantial, particularly in cases where synchronous interactions are impractical or inconvenient, such as

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chronic or long-term medical conditions like diabetes, cardiovascular disease, and cancer. This is especially relevant in clinical situations that necessitate continuous monitoring, testing, and therapy adjustments. One crucial distinction in the realm of instant messaging is between unidirectional and bidirectional communication. Unidirectional instant messaging has been demonstrated to be effective in various medical conditions as it does not require individual responses from healthcare providers. In the realm of cancer care, the utilization of unidirectional instant messaging, particularly through SMS-delivered interventions, has demonstrated its significance for prevention. A study sought to test the impact of a theory-based, SMS-delivered behavioral intervention called "healthy text," focusing on sun protection and skin self-examination behaviors. Over a 12-month period, 546 participants were randomized into groups receiving 21 text messages related to their assigned topic. The results were striking, revealing the profound effect of text messaging on behavioral change. The groups receiving text messages related to sun protection and skin self-examination displayed significantly greater improvements in their respective habits compared to the attention control group. Notably, the skin self-examination group exhibited a substantial increase in the proportion of participants engaging in skin self-examination, highlighting the efficacy of text messaging in promoting preventive behaviors. This study underscores the importance of text messaging as a valuable tool in cancer prevention efforts, offering a convenient and accessible means to deliver interventions that can lead to tangible improvements in patient behaviors and, ultimately, health outcomes [1]. Another smaller study explored the potential of text messaging as a valuable tool to improve clinical outcomes, focusing on colorectal cancer screening. It involved 26 adults aged 50 to 75 and assessed their perspectives on receiving text messages from their healthcare providers. The findings revealed that older adults are receptive to receiving cancer screening text messages, particularly when the messages are personalized, positive, and reassuring. Participants expressed initial reluctance but responded favorably when shown sample messages. This suggests that supportive, tailored text messaging reminders could enhance patient self-efficacy and encourage completion of colorectal cancer screening tests, underscoring the importance of text messaging in promoting preventive health services in older adult populations [2]. Another research demonstrated that personalized smoking cessation support through mobile phone text messaging, as exemplified by Txt2stop, offers both health benefits and cost savings to the healthcare system under various conditions [3].

Bidirectional communication through instant messaging holds significant potential in cancer care to enhance the patient-doctor relationship. It can serve as a versatile tool for improving the management of adverse events, medication compliance, and providing a direct channel that is not intermediated by bureaucracy or other personnel. Additionally, it has the potential to reduce unnecessary emergency room visits, aid in managing unexpected or serious clinical situations, mitigate the urge to search for answers on Google, and decrease the need for seeking second opinions. In a prospective study conducted at a local cancer center, Yap and colleagues [4] assessed the feasibility and acceptance of a pharmacist-run tele-oncology service to monitor chemotherapy-induced nausea and vomiting in ambulatory cancer patients. The study achieved an accrual rate of 37.6%, with 60 patients completing the monitoring through SMS. Overall adherence was 73.3%, and most patients expressed comfort with the duration of SMS monitoring. The study found that a pharmacist-run tele-oncology service for real-time monitoring of chemotherapy-induced nausea and vomiting is feasible in ambulatory cancer patients, with the potential to enhance its value and acceptance for post-chemotherapy symptom management, particularly by incorporating the monitoring of other side effects.

In the study led by Tang and colleagues [5], 431 patients diagnosed with advanced pancreatic ductal adenocarcinoma were included. These patients had received first-line chemotherapy at Peking Union Medical College Hospital between January 2015 and October 2022. The researchers categorized the patients into two groups based on their use of WeChat-based instant doctor-patient communication. In this trial, a total of 431 patients were enrolled, with a median age of 61 years. Most patients had an ECOG performance status score of 0. The overall response rate to first-line chemotherapy was 10.7%, with no complete responses and 46 patients achieving partial response. WeChat-based instant doctor-patient communication did not show a significant correlation with overall response rate (14.1% vs. 8.6%, p = 0.074). The median progression-free survival (PFS) of first-line chemotherapy was 7.1 months, and the median overall survival (OS) was 14.3 months. Univariate Cox regression analysis identified several indicators of PFS, with multivariate analysis highlighting liver metastases, ECOG performance status, and radiotherapy as independent predictors. WeChat-based communication did

not significantly impact PFS or OS in all enrolled patients (p = 0.170 for both). Nevertheless, in patients experiencing grade ≥3 adverse events (n = 231), WeChat-based communication was an independent predictor of better OS (HR: 0.63, p = 0.020). Safety analysis showed comparable incidences of grade ≥3 adverse events in patients with and without WeChat-based communication (66.9% vs. 65.7%, p = 0.814). The completion rate of chemotherapy was higher in patients who received WeChat-based communication (42.0% vs. 30.7%, p = 0.020). Overall, these findings suggest that while WeChat-based communication did not directly impact chemotherapy response or OS in all patients, it emerged as a positive prognostic factor in individuals experiencing severe adverse events, potentially influencing their OS and treatment completion rates. In a recently published systematic review, Zou and their team investigated the impact of WeChat and WhatsApp mobile applications on the physical and psychosocial well-being of oncology patients. They conducted a comprehensive literature search and included 20 studies with a total of 3,110 participants. The interventions involving WeChat and WhatsApp aimed to share educational information, support post-surgical care, and facilitate clinical communication. The results revealed significant improvements in various health outcomes, such as reduced pain, enhanced medication adherence, increased self-efficacy, improved quality of life, and decreased depression when comparing the intervention groups to control groups or baseline measurements. While outcomes related to sleep and rehospitalization rates also improved, they did not reach statistical significance. However, findings related to anxiety, fatigue, and adverse drug reactions were inconsistent among the included studies [6].

These results underscore the potential benefits of instant doctor-patient communication in addressing adverse events promptly and effectively, ultimately prolonging the survival time of patients with cancer. While the use of commercially available instant messaging apps like WeChat and WhatsApp for clinical care can offer significant benefits, such as enhancing doctor-patient communication and potentially improving patient outcomes, it also presents several noteworthy challenges. One of the primary concerns is the absence of waiting lists for services, which can lead to a constant influx of messages and notifications. This lack of structure can result in physicians feeling constantly on call, blurring the boundaries between their professional and personal lives. The perpetual state of being available can be incredibly stressful for healthcare professionals, increasing the risk of burnout. Moreover, these apps do not provide a way to quantify a physician's workload, making it challenging to assess and manage their productivity effectively. The absence of a clear system for tracking and scheduling patient interactions can lead to inefficiencies in providing care and responding to patient needs promptly.

To address these issues, innovative solutions like the Esperto in Chat® (www.espertoinchat.it) platform have emerged. This novel app-based platform, available in Italy, offers a structured approach to doctor-patient communication. It allows registered physicians to charge for their services and accounts for the time spent on consultations. By introducing this financial aspect, it provides a means to quantify a physician's work, making it a fair and sustainable model for both doctors and patients.

In conclusion, while instant messaging apps have revolutionized doctor-patient communication, they bring new challenges in terms of managing physicians' work, availability, and patient waiting lists. Innovative solutions are needed to create more structured and sustainable models of healthcare communication while ensuring the well-being of healthcare professionals. As we navigate the digital transformation of healthcare, it is essential to strike a balance between accessibility and protecting the mental and emotional health of healthcare providers.

Conflict of Interest Statement

Dr. Buonerba discloses a consultancy relationship with Medical Assistance SRL, the entity that owns Esperto in Chat. Giuseppe Imperioso serves as the CEO of Considera SRL, the firm responsible for the development of Esperto in Chat. All other authors affirm that they have no conflicts of interest pertaining to the content presented in this article.

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Author Contributions

Carlo Buonerba conceived the original idea for the article, wrote the first draft of the manuscript, and contributed significantly to its intellectual content. Alessia Nunzia Calabrese, Giuseppe Imperioso Arianna Piscosquito, Antonio Verde, Angelo Vaia, Luca Scafuri, Felice Crocetto, Davide Leopardo, Bernardo Rocco, Francesco Del Giudice, Antonio Tufano, Beniamino Casale, Francesca Cappuccio, Francesco Chiancone, Rossella Di Trolio, and Giuseppe Di Lorenzo contributed to important intellectual content and revised and edited the paper. All authors approved the final version of the paper.

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