Social Media in the Time of a Pandemic

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Abstract Social media has evolved from being a set of rudimentary tools to a complex instrument that has had both positive and negative consequences, often leading to widespread circulation of misinformation impacting societies and institutions. The COVID-19 pandemic, significantly, is the first health crisis, witnessed globally in the age of social media and amidst unprecedented connectivity. Throughout the pandemic, the world has witnessed a widespread use of social media. The medium has not only enabled isolated people to remain connected with their friends and families but also to communicate with medical experts. At the same time, myths about COVID-19, its treatment, and effects have circulated on the same platforms leading governments to issue guidelines in several countries including India. While social media has enabled a regular flow of information, it has also led to unverified content circulating on platforms such as Twitter and Facebook, fueling panic in people about the virus and the vaccines. This chapter explores the role social media platforms (Facebook, Twitter, Instagram, and others) have played in enhancing and delivering evidence, connecting communities and also in circulating myths and unverified content during the COVID-19 pandemic. Through quantitative analysis, it encapsulates trends being witnessed in different geographies. It will conclude with learnings that we have gathered on leveraging this medium which can be used going forward in instances of future health crises.

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Introduction

Miriam-Webster describes social media as 'forms of electronic communication through which users create online communities to share information, ideas, personal messages, and other content'.[1] In a relatively short period of modern electronic history, social media has changed from a convenient means of communication to a virtual gathering space, retail platform, and a vital marketing tool [1]. The authors look at the ongoing social media evolution and the pros and cons of its use for public health, with a specific focus on the COVID-19 pandemic.

And so It Begins: From Phreaking to WhatsAppitis

The New York Times' obituary on Steve Jobs in 2011 credits the 'spark that ignited the partnership' between Jobs and Apple co-founder Steve Jobs, to an article by Esquire columnist Ron Rosenbaum in 1971 [2]. In the article titled 'Secrets of the Little Blue Box', Rosenbaum details the activities of a group of people who were into phone 'phreaking' (a combination of phone, free and freak)—an elaborate manipulation of phone lines that allowed phreaks to make free long-distance calls and even use it as a channel to conduct discussions between different users [3]. That article subsequently led Jobs and Wozniak to track down one of the phreaks.

'Mr. Wozniak, and Mr. Jobs later collaborated on building and selling blue boxes, devices that were widely used for making free- and illegal- phone calls' [2]. Possibly the first *avatar* of social media, phreaking became popular in 1950 among technologically savvy individuals who made home-made devices that allowed them access to telephone systems which, in turn, hosted online discussions among users [4].

Fast forward to April, 2014: A Spanish doctor writes to The Lancet about his patient, a 34-year-old physician who woke up one morning with unbearable wrist pain [5]. The patient, also a physician, had been working during the night of December 24th. The following morning, on Christmas, she had spent a reasonable amount of time—a total of six hours—responding to messages received through WhatsApp on her phone. The doctor, Inés M Fernandez-Guerrero, explains in his letter to The Lancet, 'The diagnosis for the bilateral wrist pain was WhatsAppitis.'

Clearly, we are witnessing a rapid and precipitous growth of a formidable sociological and commercial force. Social media platforms, networking sites, and messaging applications are an inseparable part of our lives today. So much so that it's difficult to remember what the world was like before information was available at the tap of a touchpad or the click of a button. However, that world did exist—not too long ago.

Some say social media began with the Morse Code—the electronic dots and dashes complete with OMG and LOL. "What God hath wrought", Samuel Morse's first message in 1844 was a harbinger of things to come [6]. However, most contemporary

[1] Hunt Allcot, Matthew Gentzkow, Chuan Yu. Trends in the diffusion of misinformation on social media. May 9, 2019.

accounts of today's social media origins point to the Advanced Research Projects Agency Network—the AFRANET, that was developed by the US Defense to help scientists of four interconnected universities to share software, hardware, and other data [6].

And then, of course, was the email. Its predecessor—an electronic message was first created at the Massachusetts Institute of Technology (MIT) as recently as in 1965 and was used to post messages and files by users at MIT that could be accessed from a common system—much like a social networking site. The email as we know it today was invented a few years later in 1971 by the American programmer, Ray Tomlinson [7]. From 1990, social media platforms started emerging with enormous speed and regularity. Very few of the initial pioneers such as Napster, ThirdVoice, Six Degrees, Lunarstorm, and Ryze still exist till from today.

Facebook, Twitter, YouTube, LinkedIn, and Instagram entered the social networking universe post-2000, touching billions of people and altering the way the world communicates. Recent data shows that Facebook has 2.853 billion monthly active users. WhatsApp has around 2 billion monthly active users. In terms of revenue, YouTube's potential advertising reach is 2.291 billion and Instagram's is 1.386 billion [8].

As of July 2021, there were 4.48 billion social media users globally—approximately 57% of the total global population [8]. Data Reportal's Global Social Media Stats report compiled in July 2021 states, "Social media user numbers have surged in the past 12 months too, with 520 million new users joining social media in the year upto July 2021.That equates to annualized growth of 13.1%, or an average 16 1/2 new users every single second". The report further explains, when online, people usually visit an average of 6.6 social media platforms every month and spend close to 2 1/2 h every single day on social media sites. 'Assuming that people sleep for 7–8 hours per day, these latest figures suggest that people spend roughly 15% of their waking lives using social media. Added together, the world spends more than 10 billion hours using social platforms each day, which amounts to nearly 1.2 million years of human existence.'

In India, according to numbers presented by the government at a press conference in February 2021, 530 million people use WhatsApp, and 448 million use YouTube. Facebook has 410 million users [9]. Twitter has 15 million users.

Modern social media outlets

Today's social media landscape is populated by a suite of services that jockey for the attention of more than 5 billion mobile device users worldwide. Here is an overview of the most prominent social media networks of 2020.

Overview of the most prominent social media networks of 2020
Facebook
Launched in 2004 by Mark Zuckerberg, who was studying at Harvard, Facebook has nearly 1.7 billion users—including almost 70% from the US, according to Pew Research
Reddit

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Overview of the most prominent social media networks of 2020
Launched in 2005 by Steve Huffman and Alexis Ohanian as a news-sharing platform, Reddit with 300 million users is a combination of news and social commentary. Its popularity is based on the ability to 'up-vote' and 'down-vote' user posts
Twitter
Founded in 2006 by Jack Dorsey, Evan Williams, Biz Stone, and others as a microblogging site, its popularity soared immediately, leading by 22% of adults from the US logging on by 2020, according to Pew Research
Instagram
Founded in 2010 by Kevin Systrom as a photo-sharing site, it was bought by Facebook in 2012. Instagram today has more than 1 billion users worldwide
Pinterest
Founded in 2010 by Ben Silbermann who created apps for Apple, Pinterest was conceived as a visual 'pin board'. It has more than 335 million active monthly users
Snapchat
Founded in 2011 by Evan Spiegel, Reggie Brown, and Bobby Murphy, all from Stanford—this video-sharing platform started the concept of 'stories', or chronological short videos and 'filters', to enhance photos
TikTok
Founded in 2016 by ByteDance in China, the video-sharing platform became popular with young Americans when it was merged with the U.S.-based app Musical.ly in 2018. As of 2020, it had more than 800 million users worldwide

Source Reference [1]

Free Speech: Who Has the Freedom to Speak?

With billions of people finding a voice online, free speech has taken on an altogether different meaning. As trolling, anger, and abuse among users become commonplace, battle lines have been drawn between social networking sites and governments across the world.

The issue of privacy or the lack of it has been a constant tussle between governments, citizens, and social media platforms. In 2018, the Cambridge Analytica scandal opened a can of worms that led to global concerns about safety and privacy. The New York Times along with The Observer and The Guardian acquired documents from the data firm, Cambridge Analytica that showed that the company had used personal user data from millions of Facebook users, without their knowledge or permission, to create voter profiles and collect personal information—which in turn, helped undertake targeted political campaigning, based on a person's location, likes, posts, etc. The fallout of this scandal led to several high-profile celebrities deleting their Facebook accounts, and Facebook CEO Mark Zuckerberg being called to testify before Congress in the United States where he said, "It's clear now that we didn't

do enough to prevent these tools from being used for harm [10]. That goes for fake news, foreign interference in elections and hate speech, as well as developers and data privacy".

Last year, Australia passed a bill that required organizations like Google and Facebook to pay media houses for the news content that is posted on their platforms, including pieces that come up through search engines. The Financial Express explains, 'The Bill that has been passed by the Australian Parliament and has now effectively become a Code, is called the News Media and Digital Platforms Mandatory Bargaining Code [11]. The Code aims to help news providers earn by directing services like Google and Facebook to pay for using their content on their websites.'

With news organizations dependent on online resources including social media platforms and search engines, for readers to connect with their content, this move by Australia is meant to smoothen out the power and financial imbalance in news consumption, largely dominated by social media platforms and search engines. What's more, these platforms will now also have to inform news outlets, should they change the algorithms, or the methods of search—which would affect news pieces from showing up when users search for specific content.

Closer home in India, laws such as section 69A of India's Information Technology Act 2000, gives the government 'power to issue directions for blocking public access of any information through any computer resource where the Central Government or any of its officer specially authorized by it in this behalf is satisfied that it is necessary or expedient so to do, in the interest of sovereignty and integrity of India…' [12].

In February 2021, the Indian government announced a new set of regulations for social media platforms, messaging applications, online news sites and Over the Top (OTT) platforms or streaming sites, functioning in India. The Information Technology (Guidelines for Intermediaries and Digital Media Ethics Code) Rules, 2021 (Rules) sets down clear rules for tech companies to function—chief among them, companies must have a physical presence in India, identify the source of a message that is considered unlawful and remove such messages. The new guidelines also emphasize that social media platforms must always co-operate with the government, especially in investigations.

A Tool for Public Health

Brownson et al. have rightly commented that "the gap between discovery of public health knowledge and application in *practice* settings and policy development is due in part to ineffective dissemination" [13]. While COVID-19 has spotlighted the role of social media in public health communications and messaging, the public health community has recognized for several years now, the immense value of digital platforms for information sharing and awareness building. It was abundantly clear that presentations in consensus conferences and in prestigious journals were important but did not necessarily get the message across to the broader public or even critical

decision-makers. Traditional media (TV, print, and radio) platforms were effective in communicating in-depth information but were expensive.

Social media emerged as a much more cost-effective and accessible option for the public health community to disseminate information, increase the reach of communications during emergencies, and even respond to health queries in real-time. However, these platforms often came with their own set of unique challenges in the public health space. First, information shared by private medical practitioners was often in conflict with views shared by the larger public health fraternity—leading to contradiction and confusion among people. Unverified information posted on messaging apps ostensibly by doctors often led to inaccurate, unverified and even wrong facts being paraded as truth. Second, issues such as sexual and reproductive health and rights, mental health and stigma associated with various diseases have rarely been addressed by reputable public health institutions and personalities in the past. Third, the scientific and public health community has traditionally been media-shy which has spilled over into social media as well. They continue to be uncertain of how best to use social media channels to get their opinion or data or research out at the right time. As a result, their voices and opinions have largely remained soft on issues where they needed to be outspoken and quick, especially to counter myths, rumors, and misconceptions.

At the same time, it is important to note that increasingly social media is seen as critical and has been used by institutions and organizations to deliver public health messages rather effectively. Between 2009 and 2010, the Burnet Institute started the FaceSpace Project—a sexual health promotion intervention targeting young people and men who have sex with men (MSM). This pilot project, which aimed to find out whether social media could be used for health promotion, used fictional characters to interact with users and post content on sexual health across different social media channels. The findings of this project showed that the messages reached a significant number of youth and MSM [14]. Innovative methods were used often by different institutions to target the young demographic. For instance, to educate 12–24-year-olds on the harms of using tobacco, the New Zealand Health Sponsorship Council developed online anti-tobacco games that were played and shared virtually by young people [15].

Infodemic 2.0

As with so many issues, COVID-19 has brought focus on the role of social media in public health communications and messaging. Given the challenges in communicating to the public about a crisis that has been constantly evolving, international health organizations, medical practitioners, and governments have often struggled to allay the fears of people and counter the rush of misinformation propagated through social media platforms by various individuals and groups.

"We're not just fighting an epidemic; we're fighting an infodemic," Tedros Adhanom Ghebreyesus, Director-General of the World Health Organization

(WHO) famously said in February 2020, as false information about possible remedies and cures for COVID-19 began circulating online immediately, as cases started surfacing across the world. Authors of a scoping review on social media during COVID-19 analyzed over 2 million online queries between February and May 2020 and found that as interest in information around COVID-19 intensified, the infodemic grew side by side [16].

While the word 'infodemic' gained prominence post-2020, in the aftermath of an information overload during the COVID-19 pandemic, Merriam-Webster points out that the word existed well before SARS-COV-2 [17]. Coined by David Rothkopf for a Washington Post column in 2003, infodemic is defined as 'a blend of 'information' and 'epidemic' that typically refers to a rapid and far-reaching spread of both accurate and inaccurate information about something, such as a disease. As facts, rumors and fears mix and disperse, it becomes difficult to learn essential information about an issue.'

WHO further explains "an infodemic is termed as a situation when there is too much information including false or misleading information in digital and physical environments during a disease outbreak. It causes confusion and risk-taking behaviors that can harm health [18]. It also leads to mistrust of health authorities and undermines the public health response".

For instance, during the COVID-19 pandemic, false claims such as inhaling steam, cleaning nostrils with salt water and even drinking disinfectants as possible remedies to COVID-19 quickly garnered traction on social media, leading to several people falling ill after consuming massive quantities of disinfectants such as Dettol and Lysol [19, 20]. In India, similar claims for immunity-boosting tablets and potions were quick to find their way on social media platforms, online forums and messaging applications—with some of these being attributed falsely to the medical and scientific community.

That myths, misconceptions, and rumors via social media have damaged public health efforts is not new. In 2019, a teenager from Ohio who was repeatedly removed from classes because he was not vaccinated, got vaccinated despite strong opposition from his mother. The child blamed 'anti-vax' pages on Facebook for making his mother a staunch critic of vaccination [21]. The same year, The Atlantic conducted an analysis that found that between 2016 and February 2019, just seven pages that were against vaccines generated nearly 20% of the top 10,000 posts on vaccination during that time frame [22].

The Ebola crisis in the Democratic Republic of Congo was made worse by fake news, often on social media platforms—which originating as early as 2014 in the United States. A study published by the BioMed Central (BMC) Public Health in 2020 found that 10% of tweets on Ebola were partially or completely false, and that 28% tweets provoked readers to respond or promoted discord and 42% of such posts contained 'risk elevating' messages [23].

> We're adding a label on posts that discuss the safety of COVID-19 vaccines that notes COVID-19 vaccines go through tests for safety and effectiveness before they're approved—Mark Zuckerberg, Founder, Facebook.

In India, a small but vocal anti-vaccine group has for long demonstrated against vaccines, especially for children. As recently as in 2017, when the government launched the vaccination campaign against measles and rubella, several states struggled to get parents to bring their children for the vaccination, after rumors against the vaccine circulated through WhatsApp.

After the outbreak of the global COVID-19 pandemic, the United Nations recognized the importance of addressing and arresting the sudden and overwhelming onslaught of wrong information, hate and stigma around COVID-19. Following this, in April 2020, the UN Secretary-General launched the United Nations Communications Response Initiative to combat the spread of mis- and disinformation [24].

However, despite all efforts, the infodemic has only grown since the start of the pandemic. SARS-COV-2 was a novel pathogen and every new information and study was posted on social media almost in real time. While this helped many medical personnel and scientists, it also at times fueled panic, kick-starting debates on the harm of such platforms. The negative posts and tweets increased exponentially as vaccine development progressed and vaccines against COVID-19 entered the public health system. Vaccine hesitancy was prevalent even before COVID-19 vaccines were developed and as mentioned earlier, negative messages have a way of attracting higher engagement. More than two years into the pandemic, anti-COVID-19 messaging on online forums questioning its safety and efficacy continues to threaten parts of the world that remain unvaccinated.

In July 2021, US President Joe Biden blamed forums like Facebook (which he later toned down) for 'killing people' because of the misinformation on these platforms. Facebook, on its part strongly objected to the statement saying they would "not be distracted by accusations which aren't supported by the facts" [25]. Even though social networking platforms have been working since the start of the pandemic to remove users propagating false information on COVID-19, much more remains to be done. Despite rigorous monitoring and measures to block accounts which are spreading lies and rumors, it remains a challenging and daunting task for platforms like Facebook, Twitter, and YouTube. The algorithms built into their systems are aimed at boosting content to engage users no matter what these posts or tweets say. Therefore, it is almost impossible for these platforms to identify all accounts propagating misconceptions around the pandemic [26].

The silver lining

On April 30, 2021, India became the first country in the world to record over 0.4 million COVID-19 infections in 24 h. On the same day, close to 3,500 people died. The second wave of COVID-19 in India brought about a never before collapse of the public health system.

As the country saw steep shortages of oxygen cylinders, medicines, hospital beds, and basic medical infrastructure, scenes of absolute and complete helplessness became the norm rather than the exception. With the health infrastructure in India completely overburdened and overwhelmed, citizens struggled to keep their loved ones from dying. Social media platforms like Twitter and Facebook and messaging

applications like WhatsApp surfaced as forums to send out SOS cries. They were flooded with desperate pleas from people seeking everything from oxygen cylinders and medicines to hospital beds, ambulances, and even food. According to The Wire, between March, 1 and April 21, 2021, more than 519,000 individual accounts were in touch with users on Twitter to help provide information or medical-aid [27].

Ordinary citizens joined celebrities and influencers to become the messiahs that India needed in those months of unrelenting horror. Crowdsourced information and listservs on availability of beds, oxygen and critical medicines became the lifeline of thousands of online users who were seeking services and information that would ordinarily be offered by state infrastructures. These were extraordinary times. India was facing an unimaginable public health crisis that had completely spiraled out of control.

Online personal accounts of untold misery relayed the story of India's COVID-19 crisis with thousands of requests for help posted. Those at the frontline of organizing relief were quick to respond, others further re-tweeted every post and tweet they came across to get the attention of those who could help. An incredible public response emerged. Strangers turned up at homes with oxygen cylinders. They organized ambulances for those that had to be rushed to hospitals and procured medicines that were running in short supply. Across neighborhoods in India, WhatsApp groups run by resident welfare organizations kept track of people who needed help and ensured that essentials were delivered at the homes of people affected by the virus.

"The most beautiful part of social media is that you trust strangers," said Nikhil Jois, a technology executive in an interview to The New York Times on May 3, 2021 [28]. Nikhil was just one of the hundreds of people who came forward to assist people who flooded Twitter with a cry for help. According to the news article, along with his team of volunteers, Nikhil got in touch with organizations that supplied oxygen, food, and even sanitary napkins. Others like Abhishek Murarka from Mumbai say "they searched for words like 'verified' 'confirmed' and 'available' to find authentic information that could be useful to others". 'Hundreds of miles away, Praveen Mishra who is 20 years old and runs a start-up in the southern city of Bangalore, studied Murarkas video and applied his own filters to search for beds, oxygen, and medicine. He was able to get a particular medicine to a patient in Delhi after confirming that it was available in Hyderabad.'

Such was the state of emergency across the country that even diplomatic missions turned to Twitter to seek help. On May 2, a tweet by the New Zealand High Commission in New Delhi tagged a youth opposition leader, asking for an oxygen cylinder. This created a diplomatic flutter [29]. The tweet was subsequently deleted even after the oxygen cylinder was delivered but the tweet had been seen enough times to drive home the fact that everyone was vulnerable and in need of help. Twitter meanwhile also set up a COVID-19 resources page which provided real-time updates on the availability of medical resources.

These tweets were also a way of documenting what was happening across the country. However, on April 23, Twitter blocked over 50 tweets from politicians, film-makers, and others criticizing the mishandling of the pandemic. "These tweets mention rising cases and deaths, a shortage of medicines, accompanied by photos

of political events, even as the COVID-19 wave became uncontrollable, scores of funeral pyres, and patients struggling outside hospitals" reported Quartz [30].

> We'll continue to take enforcement action on content that violates to elevate credible, reliable health information,—Trenton Kennedy, Twitter spokesperson

However, even as appreciation and gratitude flowed in from different quarters, with many people pointing out what ordinary citizens had done, Quartz reported that several tweets and posts were blocked by the government. In an interview to Deutsche Welle, an un-named official from the Ministry of Electronics and Information Technology justified the action by saying, "This decision has been taken to prevent obstructions in the fight against the pandemic and a breakdown of public order due to these posts" [31].

However, few can deny that many more lives would have been lost in India's second wave had it not been for social media platforms like Facebook and Twitter. As Atish Padhy from Bangalore's *Takshashila* Institution summarized in an article, "In many ways, Indian social media's altruistic response to the COVID-19 crisis gives us adequate reason to be optimistic about human psychology, communication and, above all, social media" [32].

The Way Forward

Blessing or bane—the jury is still out on the role of social media in public health. As the India case study shows, the medium made information more accessible and saved countless lives, because of good Samaritans in the online community. It also gave rise to newer, more diverse voices. But the cons often stack up against all things good on social media platforms. The inherent unregulated nature of these sites has caused an equal amount of damage, and free speech—often misinformation and anti-science rhetoric—has set back efforts to combat public health emergencies, including the ongoing COVID-19 pandemic.

Further, the pandemic has taken a toll on mental health—often linked to doomsday scrolling on social media sites. An online survey conducted among 4,872 Chinese citizens above the age of 18 concluded that 'frequent social media exposure increased the odds ratio of anxiety, showing that frequent social media exposure is potentially contributing to mental health problems during the COVID-19 outbreak' [16].

To weigh the pros and cons of social media, the impact it has on public health and arrive at any conclusion is far too simplistic an exercise. While there are benefits and pitfalls, it is perhaps far more constructive to look at where we are today, learn from mistakes made and plan for the road ahead, so that if and when the next pandemic arrives, we as public health professionals, as communicators and as social media users are better informed and equipped to tackle a public health crisis. While COVID-19 is often referred to as the 'once in a lifetime pandemic,' public health experts have warned us time and again, that this may not be the last pandemic we live through.

Much like everything available online, it is important to remember that not every word we read, every photo and video we view on social media will be accurate. With news television's 'breaking news' syndrome stretching to social media as well, often the first tweet we see is not necessarily accurate. Similarly, when it comes to matters of public health one needs to question the information on undocumented, unverified remedies and cures—even from social media influencers or those with a large follower base. While credible sources like international health organizations or government bodies may take longer to pass on evidence-based, data-backed information, they remain more trustworthy.

The role and art of communications in public health has been slowly evolving over the past decade, and these mediums have now had to completely re-invent themselves. While public health officials and institutions have a greater role to play as information-bearers, storytelling and narratives have also changed drastically. With most people turning to online news sources, including social media for immediate answers to their queries, the time has come for institutions to invest in communications, especially online communications to be able to connect better with the public. Similarly, communications professionals attached to public health bodies must rise above jargon and the usual narratives and formats to pass on information faster and make the messages succinct but clear.

Social media platforms have moved beyond being places to connect with friends and families. Even sites like Facebook and Instagram which may seem like more private channels compared to Twitter—given that they remain platforms for people to share photos and personal content—have today become forums of debate, dissent, and marketing. Further, with social media having become a legitimate source of 'media' or a means to inform the public—it is time the medium is treated with the seriousness it deserves. Therefore, the ambit of communications needs to expand to include social media—whether it is in including how to use it effectively and responsibly in curriculums across journalism institutes or higher education, or to train spokespeople and those in positions of leadership on how to leverage these platforms.

Lastly, given the unregulated nature of social media sites, the onus falls on us to be responsible users and consumers of information. This means, being accountable for content one puts out and checking the veracity of that content on our timelines before further amplifying it. While this might be the hardest task of all, it is by far, the most critical. Even with countries, including India, today penalizing users for putting out false information on social media sites, much more remains to be done. An unverified or un-authenticated post or tweet by a user is often viewed by millions and duplicated or re-posted or re-tweeted. This often leads to myths and misconceptions being paraded as the truth. False information on these sites and on messaging apps have caused too much damage to people, including claiming innocent lives.

Kevin Systrom, the founder of Instagram is quoted to have said, "I like to say that the one thing that all people who succeed in changing the world have in common is that they at least tried". While the lessons learnt through the life of this pandemic will inform governments and leaders to prepare better for the next pandemic such as building stronger health infrastructures and committing to greater investments in

health, the role of communications and that of the media, especially social media—needs to be accounted for as well. As the world tries to build back better and stronger, so should social media.

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