

Primary Healthcare

A health information epidemic: what is fact, what is fiction and how to address misinformation on the frontline?

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Abstract:	The World Health Organisation recently declared an 'infodemic', as a result of increasing health dis/misinformation being shared within the public domain. The need for accurate information has never been more essential and when the world is facing a global pandemic, the sharing of inaccurate or misleading information can result in negative real-world consequences. Healthcare professionals need to be aware of those who are susceptible and be able to have open conversations with patients about what they know. Correcting dis/misinformation can be complex as it is often spun from part truths and if done incorrectly can possibly instil the belief further. This article aims to give healthcare professionals information and resources to address dis/misinformation within clinical practice, as well as highlight the often-ineffective strategies of debunking myths online.
Keywords:	Fake news Misinformation Disinformation Anti-Vaccination Conspiracy theories
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Introduction

The term "fake news" has gained considerable fame in recent times attracting both media and scholarly attention, particularly following the 2016 American presidential election, the UK Brexit Referendum, and the COVID-19 pandemic (Pennycook and Rand, 2021; Wang *et al.*, 2019). While the term "fake news" is not new, a different form of highly misleading or inaccurate information focusing on health is being shared within the public domain, mainly through social media (Wang *et al.*, 2019). The COVID-19 pandemic has intensified the development and sharing of 'fake news' and it has been found to have negative real-world consequences that impact upon health and society (Agle and Xiao, 2021; Depoux *et al.*, 2020).

What is Fake News?

Although the term "fake news" has become popular within the media, it is difficult to define what "fake news" is (Wang *et al.*, 2019). A UK parliamentary committee stated that "the term 'fake news' is bandied around with no clear idea of what it means or agreed definition" and later went on to recommend that the government rejects the term 'fake news' and instead puts forward an agreed definition of the word's misinformation and disinformation (UK Government, 2018). For the purposes of this work, the term "fake news" will be replaced with the terms of misinformation and disinformation. "Disinformation is the deliberate creation and sharing of false or manipulated information that is intended to deceive and mislead audiences, either to cause harm, or for political, personal or financial gain while misinformation refers to the inadvertent sharing of false information" (UK Government, 2018). It is difficult to ascertain as to whether inaccurate information is created and shared deliberately or whether it has been inadvertently shared, this article will therefore determine this type of information as dis/misinformation.

An 'infodemic'

The internet age has given healthcare professionals the unprecedented opportunity to share health information among populations, including knowledge on healthy lifestyle choices, disease prevention and education, which may result in higher rates of treatment and adherence (Suarez-Lledo and Alvarez-Galvez, 2021). However, the same tools used to promote health can also be used to share misleading or inaccurate information, and researchers have found that this type of information

spreads more easily on social media or is more popular than evidence-based information (Vosoughi *et al.*, 2018; Wang *et al.*, 2019).

The World Health Organisation (2021) recently declared an 'infodemic' in response to the increasing risks of health dis/misinformation being spread around the COVID-19 pandemic. This has several consequences, for example Islam *et al.* (2020) found that in the first three months of 2020, nearly 6000 people were hospitalised because of COVID-19 dis/misinformation. They go on to estimate that at least 800 people have died, and 60 people developed complete blindness as a result of drinking methanol as a cure for COVID-19, both of these numbers are likely to have increased throughout the period of the pandemic (Islam *et al.*, 2020).

Dis/misinformation has also amplified controversy about vaccines (Broniatowski *et al.*, 2018) as well as propagated unproven cancer treatments (Gage-Bouchard *et al.*, 2018).

Susceptibility of Misinformation

There continues to be a limited understanding as to why certain people and societies are more likely to believe health dis/misinformation (Guess *et al.*, 2019; Wang *et al.*, 2019). Psychologists have suggested that political ideology can result in individuals being overly trusting of content that is consistent with their political beliefs and that previous exposure to dis/misinformation may result in familiarity of content and therefore increase trust in dis/misinformation that has previously been seen (Greifeneder *et al.*, 2021; Pennycook and Rand, 2021).

While demographics have been found to be inconsistent when used as identifiers of susceptibility of health dis/misinformation, those aged over 65 are associated with higher susceptibility as well as exposure to dis/misinformation on social media (Brashier and Schacter, 2020; Roozenbeek *et al.*, 2020; Grinberg *et al.*, 2019; Guess *et al.*, 2019). It has however been argued that this is linked to lower digital literacy, usually due to a misunderstanding about how social media content populates within their news feed or that a sharing implies endorsement of content (Brashier and Schacter, 2020). Other reasons cited include the ability to differentiate between truth and falsehood, there is also evidence that suggests that those who are more reflective are less likely to believe dis/misinformation (Greifeneder *et al.*, 2021; Pennycook and Rand, 2021). Interestingly, a study completed by Oxford University

found that out of 225 items of dis/misinformation that were fact-checked during the first couple of months of 2020, 59% were misconfigured (spun or twisted) from the truth, with only 38% of the 225 items being completely fabricated, highlighting the issues around correcting such information when it is based on part truths (Brennen et al., 2020).

While there is limited literature exploring who is susceptible to health dis/misinformation in general, more recent research has explored this concept around COVID-19. Uscinski et al. (2020) found that those who believe in conspiracies relating to the virus are more likely to reject evidence-based information and be more trusting in dis/misinformation. However, literature does show that those with a high tendency to endorse conspiracy theories also endorse unrelated conspiracy theories, suggesting the belief of a conspiracy theory is more of a trait than based on the evaluation of evidence (Bode and Vraga, 2018; Bruder *et al.*, 2013). This does raise questions as to whether these individuals would believe evidence-based information that was presented to them by a healthcare professional as well as follow public health guidance.

It is widely reported and understood that dis/misinformation is usually driven by emotions, particularly fear, making challenging these inaccuracies more difficult and studies have found that those with health anxiety are more likely to accept health dis/misinformation (Bode and Vraga, 2018; Sylvia Chou *et al.*, 2020; Zucker, 2020; Pan *et al.*, 2021). Understanding these psychological drivers is critical in developing interventions to begin to tackle health dis/misinformation as healthcare professionals, and further research is required to explore how emotions drive dis/misinformation within the UK. Staying up to date with dis/misinformation that is circulating in the public domain can be difficult, particularly for those working in general practice where a range of health conditions and treatment options are discussed with patients. It is important for healthcare professionals to be aware of health dis/misinformation that is circulating within their patient population, therefore discussing dis/misinformation with colleagues can inform them of potential questions that may be raised when patient care is being provided. Using resources such as Full Fact, enables healthcare professionals to discuss the origins of inaccurate information and then sign post and discuss evidence-based information. Where dis/misinformation is regularly occurring, for example in vaccination centres, it would be constructive to

discuss responses in a staff briefing and provide a prompt sheet with further information. Nurse managers should also be encouraging patient centred care that focuses on supporting patients to feel empowered about asking questions regarding treatment options as well as facilitate discussions with staff members regarding possible health dis/misinformation that is circulating within the public domain.

Health care professionals are the most reliable source of health information and would be presumed to be in the best position to understand hesitancy issues and respond to patient worries and concerns while explaining the benefits of interventions (Abdul Kadir *et al.*, 2021). However, studies have shown that health care professionals themselves give out the wrong information. Verger *et al.* (2015) found that healthcare professionals have given the wrong information and advice to patients regarding vaccination, suggesting there is confusion within the medical profession regarding the information given to patients. This was seen at the beginning of the COVID-19 pandemic when there were incoherences and contradictions within the scientific community, resulting in confusion about public health guidance (Agle and Xiao, 2021). Understanding how healthcare professionals' signpost of medical evidence when they are unaware of the topic is critical in developing effective strategies to combat health dis/misinformation. It is therefore crucial that health care professionals feel empowered to ask questions regarding treatment options that they are unaware of and have adequate training and support to provide evidence-based information.

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What is Fact & What is Fiction?

Full Fact is an independent fact checking service within the UK; the aim is to counter dis/misinformation and, as a charity they have a legal obligation to uphold impartiality and be transparent with funding. Full Fact were launched by a cross-party group and have a diverse board from different political parties and viewpoints. As this type of information is often built on part truths, it becomes very difficult for even healthcare professionals to know what is fact and what is fiction. The Full Fact (2021) database has a collection of dis/misinformation that can be searched, offering an evidence base to the origins as well as information for which dis/misinformation can be disputed.

<https://fullfact.org>

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Improving the population's health is a fundamental aspect of nursing, and health dis/misinformation threatens to negate some of the progress made within recent decades to improve health and wellbeing (Zucker, 2020), as well as vaccine acceptance for preventable diseases (Loomba et al., 2021). The spread of such content should therefore be of significant concern to all healthcare professionals. Nurses need to explain and correct misleading and inaccurate information within their daily practice; however, without sufficient knowledge and skills, correcting such information can be highly complex and result in **the** reinforcement of the belief. This is known as the backfire effect (The World Health Organisation, 2017), although this has been disputed as empirical evidence of such an effect is scarce (Ecker *et al.*, 2020).

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Myth-Busters!

The World Health Organisation has created a web-based resource which is designed for the public. This highlights a wide range of regularly circulated dis/misinformation focused on health, from UV Lamps to inaccurate reporting of the effects of hydroxychloroquine. The website uses videos to explain the origins and corrects dis/misinformation. It is a good resource to give to patients.

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/mythbusters>

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Vaccination

Preventing antivaccine messages or conspiracy theories from reaching the general population could be a better intervention when compared with debunking myths among vocal vaccine deniers. Social media and tech companies have recently announced policies to begin to regulate dis/misinformation on their platforms, however academics have argued many are hesitant to remove such content as it is too difficult to identify reliably (Donovan, 2020). The World Health Organisation (2017) distinguishes between vocal vaccine deniers and vaccine refusers. Those that refuse vaccines are regarded as hesitant and could be convinced by scientific evidence and well-presented guidance from healthcare professionals, the smaller subgroup of vaccine deniers will adhere to a belief that is thought to be near impossible to change (The World Health Organisation, 2017).

Interestingly, research focusing on parental attitudes to the MMR vaccine found that while corrective information reduced misperceptions, it decreased the intent to vaccinate among patients who had the most negative attitudes towards vaccination, hence the backfire effect (Nyhan et al., 2014). This is an essential concept as when tackling health dis/misinformation, particularly those focused on antivaccine messages, the target should be those who are hesitant or refuse vaccines rather than vaccine deniers **who have a belief that is thought near impossible to change**. However, identification between these groups is complex and there are potential ethical implications with such an approach (MacDonald, 2020). **While as healthcare professionals we should be directing communication to those who are vaccine hesitant, social media companies must also take responsibility for the content being shared on their platforms, ensuring that vaccine deniers are not further exposed to inaccurate health information and go onto share such information within the public domain. Patient-practitioner interaction is an integral part when discussing evidence-based decisions and when evidence for multiple interventions is available, clinicians are expected to communicate evidence, clarify and elicit patients' values and support patients in making an informed values congruent choice (Politi et al., 2013; The Nursing & Midwifery Council, 2018). These conversations are often facilitated through processes such as shared decision making (Elwyn et al., 2009; Politi et al., 2013) and despite pre and post registration curricula having adopted more patient centred models over the last few decades, practitioners still struggle to incorporate patient needs and preferences into decision making (Philpott et al., 2017).**

Leask *et al.* (2012) has developed a framework for healthcare professionals to consider when addressing parental vaccination concerns. The framework emphasises a stance that offers parents assistance in decision-making rather than attempting to persuade parents directly or discredit specific information sources. The framework discusses how conversations should be addressed, what to include within conversations as well as ensuring a tailored approach to addressing concerns. It is however important to bear in mind that the framework specifically addresses concerns from parents in relation to childhood vaccination and may not be applicable to adult patients addressing other concerns regarding medical information.

An increasing number of studies are reporting that 'bots' (an computer algorithm that automatically produces content and interacts with humans on social media, possibly trying to emulate and alter their behaviour) are sharing dis/misinformation around COVID-19 (Himelein-Wachowiak *et al.*, 2021). A study conducted in 2018 found that twitter accounts associated with Russia were sharing antivaccine messages and eroding public consensus on vaccination (Broniatowski *et al.*, 2018), although the extent of their effect is not fully understood (Ferrara, 2020; Kouzy *et al.*, 2020). In addition, there are reports that global disinformation campaigns, run by individual nation-states have continued throughout the COVID-19 pandemic, with some academics labelling the phenomena as a type of cyber warfare (Bernard *et al.*, 2021). Interestingly, a report published by the Centre for Countering Digital Hate (2021) found that 65% of antivaccine content is attributed to 12 individuals dubbed the 'disinformation dozen'. The report analysed a sample of content that was shared 812,000 times between 1st of February and the 16th of March 2021, these individuals produced high volumes of antivaccine messages and had rapid growth of their social media accounts. The report later goes on to explain that further research has found that social media platforms fail to act on 95% of COVID-19 and vaccine dis/misinformation that is reported to them (Centre for Countering Digital Hate, 2020). However, since this report, new laws have been set by the UK Government that requires social media platforms to address harms such as dis/misinformation that relates to vaccines (Department for Digital Culture Media & Sport, 2020). One of the most effective ways to stop dis/misinformation across social media platforms is to remove content from these platforms as well as those sharing it.

Health literacy

Enabling people to make informed decisions about their health increases health outcomes and decreases health inequalities; however, understanding and using **health** information can be difficult for certain patients (Public Health England, 2015). A report published by National Voices found that "the strongest correlation to ill health - stronger than education level, deprivation, age or ethnicity – is health literacy" (National Voices, 2017). Health literacy is the ability of an individual to evaluate and apply health related information (Rolls and Massey, 2021). Public Health England (2015) estimates that 42% of working-age adults cannot make use of and understand health information, a problem exacerbated by the pandemic (Abdel-Latif, 2020). Individuals need to have the skills required and social resources to understand, appraise and use information and services to make decisions about their health. A relatively new concept is eHealth literacy which extends to using online media i.e., social media to access information and health services. Improvements in health literacy can help enable patients to distinguish between accurate and inaccurate information through empowering them to make informed health decisions based on reliable sources (Okan et al., 2020).

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Health Education England (2021) offers a health literacy tool kit for health care professionals to improve health literacy within the public **domain**.

<https://www.hee.nhs.uk/our-work/knowledge-library-services/improving-health-literacy>

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'The infodemic' has resulted in access to an expanse of health related information that can often cause confusion and possibly risk-taking behaviour that impacts on health (The World Health Organisation, 2021). When communicating health messages, there is the expectation that the population understand the message being delivered; however, this is not always the case (Public Health England, 2015). Patients should feel empowered to have conversations and raise ideas about topics they believe health care professionals may feel are controversial or problematic (Southwell *et al.*, 2020a). Nurses must be able to initiate conversations about

potential dis/misinformation, inviting them to share the decision making behind possible treatment choices through asking open ended questions such as “what have you already heard or learned about your treatment/ condition?”. This allows for dis/misinformation to be addressed through patient encounters by using opportunities to listen to patients and guide them towards an enhanced understanding of peer reviewed medical evidence.

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The UK Government has created a social media tool kit for healthcare practitioners and focuses on COVID-19, it is a best practice guide on how to communicate with others via social media with the aim of sharing accurate information from trusted individuals.

<https://www.who.int/publications/m/item/a-social-media-toolkit-for-healthcare-practitioners---desktop>

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The World Health Organisation has created a best practice guide on how to respond to vocal vaccines deniers in public. **The guide focuses on individuals who are unlikely to change their mind** despite scientific evidence and is based on psychological research. It is specifically designed for individuals attending public events, however, may also be useful for certain situations within clinical practice.

https://www.who.int/immunization/sage/meetings/2016/october/8_Best-practice-guidance-respond-vocal-vaccine-deniers-public.pdf

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Conclusion

Health care professionals can play a crucial role in addressing health dis/misinformation, however, attempts in effectively addressing dis/misinformation

requires more than attempts to simply discredit misperceptions. Addressing such misperceptions requires health care professionals to address patient held dis/misinformation with empathy and curiosity, as well as learn about patient values, preferences and comprehension (Southwell *et al.*, 2020b).

COVID-19 has been the perfect storm for the development and spread of health-related dis/misinformation. The many unknowns about a new and emerging virus regrettably caused inconsistencies and sometimes contradictions within the scientific community, resulting in confusion about public health guidance (Agle *et al.*, 2020). Unfortunately, confusion paired with fear fuelled the spread of dis/misinformation being shared, particularly on social media. Nurses need to be aware of dis/misinformation within the public domain and be willing to have open discussions with patients about what pre-existing information they know about a health condition, while being willing to sign post to credible sources of information.

That said, debunking myths online may result in an increase in spread through engaging and sharing with the information on social media. It is of benefit to focus health messages towards the public through sharing evidence-based information rather than challenge dis/misinformation among those who are vocal about inaccurate or misleading information. However, nurses do need to be able to recognise the appropriate time to correct misperceptions and do it in a sensitive way that doesn't amplify confusion or instil misperceptions while remaining empathetic and non-judgemental to the concerns of patients.

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Reviewer #1: A timely and interesting article.

A little clarity on whether disinformation and misinformation are the same thing. Disinformation is defined but misinformation isn't. At times they are used interchangeably. – Thank you for raising this point, I have hopefully clarified this with explaining the terminology used within the article.

Tension between scientists and the wider population –

Can you link this to any part of the NMC code? Is it useful to add how nurses are consistently regarded as the most trusted profession in the UK, therefore could have a role here? Particularly relating to where you say 'Nurses need to explain and correct misleading and inaccurate information'- I have included the NMC code within this work, thank you for raising this point. I feel that the role of patient centred care plays an important role within this and have tried to include The Code at this point.

Is there a need to revisit Beauchamp and Childress ethical principles? Perhaps working through the options if you have a parent refusing to vaccinate their child.-

I was a little unclear on why you would not target vaccine deniers here - This is an essential concept as when tackling health dis/misinformation, particularly those focused on antivaccine messages, the target should be those who are hesitant or refuse vaccines rather than vaccine deniers, however identification between these groups is also complex and there are potential ethical implications with such an approach (MacDonald, 2020). – I have hopefully clarified this point with further details.

Possibly beyond the scope of the article but any tools that can work here from health promotion - TTM, social marketing or other approaches. – This is something that I would like to cover in future publications however thank you for raising these points. I feel that social marketing and particular behaviour psychology should play a key role in the development of health information, however looking at preliminary research this is a broad topic to include within this piece.

Reviewer 2

Thank you for asking me to review this work. The article deals with a very current and important issue.

Just a couple of comments - the work uses frequent short paragraphs which tend to disrupt the flow of the discussion, where possible group topics together in one paragraph – **Thank you for pointing this out. I have tried to edit this within the article to improve flow.**

The article would benefit from a little more in the main body on how nurses can support people who are the victims of mis-information, how can nurses stay up to date given how busy they are in their working day, what's the role of nurse managers and setting managers in helping staff stay current on the rapid changes in knowledge and research. – **Thank you, I have hopefully addressed the points within my revised submission.**

Some missing words. Use et al rule consistently. **Thank you, I have hopefully made the correct adjustments**