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A qualitative analysis of online misinformation and conspiracy theories in psoriasis

Running head: misinformation in psoriasis

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Learning points

- Psoriasis is a chronic disease affecting genetically susceptible individuals, with a complex immunopathogenesis rendering it susceptible to misinformation.

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- Misinformation related to psoriasis can mislead the public perception of psoriasis, creating stigmatization, and mislead patients with psoriasis, leading to poorer outcomes.
- Key patterns of psoriasis-related misinformation include 'victim-blaming' (hygiene) and 'vector' (contagion), 'vaccination', 'vilification' of conventional therapy, 'validation' of natural treatments and diet, 'veneration' of cures, and 'vocalization' from celebrities.
- The use of the word 'cure' when discussing psoriasis treatment is a red flag for misinformation, as the genetically predetermined susceptibility to psoriasis is non-modifiable.
- Alternative therapies for psoriasis detract from evidence-based treatment. Given the highly effective conventional therapies available to dermatologists and their patients, there is significant opportunity cost related to ineffective alternative therapies.
- In their role as patient advocates, dermatologists should be aware of the content of misinformation available online and should actively combat misleading health information to optimize health outcomes for patients with psoriasis.

Summary

Psoriasis is a chronic, hereditary disease with a complex immunopathogenesis rendering it susceptible to misinformation. Misinformation related to psoriasis can have negative effects on both the public perception of psoriasis and patients' knowledge of psoriasis. To characterize misinformation related to psoriasis available online, we performed a formal literature review via PubMed and a thematic review via Google. Key themes of misinformation included 'victim-blaming' (hygiene), 'vector' (contagion), 'vaccination', 'villification' of conventional therapy, 'validation' of natural treatment and diet, 'veneration' of cures, and 'vocalization' from celebrities. Misinformation related to psoriasis is pervasive on social media and other websites. Dermatologists, as patient advocates, should be aware of the content of misinformation available online and combat misleading health information to optimize health outcomes for patients with psoriasis.

Psoriasis is a chronic, hereditary disease with a complex immunopathogenesis resulting in cutaneous and systemic manifestations.¹ Complex scientific concepts are at high risk of misinformation.² Public knowledge of psoriasis is poor, and prejudiced attitudes are common.³ People living with psoriasis commonly feel stigmatized,⁴ and misinformation may increase disease-associated social stigma.⁵ Previous research in psoriasis has focused on the quality of information available online, rather than the specific nature and themes of psoriasis-related misinformation.

We performed a literature review via PubMed, using the search terms 'psoriasis' OR 'psoriatic' AND 'misinformation' OR 'disinformation' OR 'conspiracy theory'. D.R. and C.O.C. reviewed 464 abstract results for suitability. Three papers which included specific content of psoriasis-related misinformation were deemed appropriate for inclusion,^{3,6,7} highlighting the paucity of literature available. A Google search was also performed using combinations of the terms 'psoriasis' and 'psoriatic' and 'misinformation', 'disinformation' and 'conspiracy theory'. Further targeted searches were performed on Facebook, Instagram, Twitter, and TikTok. Searches were performed in August 2021. Codes were generated following each search by trained members of the research team (D.R. and C.O.C). Themes were identified, then refined, then developed (Figure 1).

Key themes of misinformation included 'victim-blaming' (hygiene) and 'vector' (contagion), 'vaccination', 'vilification' of conventional therapy, 'validation' of natural treatment, 'veneration' of cures, and 'vocalization' from celebrities (Figure 2). 'Validation' of natural treatment was the most pervasive theme.

'Victim-blaming' – Concerningly, poor hygiene and self-care were falsely identified as causes of psoriasis. Search results identified 'infrequent showering' and 'not looking after your skin' as potential exacerbating factors for flares of psoriasis. Personal accounts of discrimination experienced by patients with psoriasis were common, including refusal of food prepared by patients with psoriasis, and insinuations that psoriasis was sexually transmissible. However, many websites attempted to debunk this misinformation.

'Vector' – Contagion was also incorrectly implicated as a cause of psoriasis. While psoriasis can be flared by infections with organisms such as Streptococcus, psoriasis cannot be transmitted by contact with affected individuals, nor can it be acquired through poor hygiene.

'Vaccination' – vaccine-induced psoriasis was a common point of misinformation. One Californian paediatrician frequently shared disinformation about links between vaccination and psoriasis, and provided medical exemptions (for a fee) for children with a family history of psoriasis. Although there are exceptionally rare reports of transient psoriasis vaccinalis,⁸ there is no evidence that psoriasis can be caused by vaccination. This is especially relevant given the prevalence of vaccine-related misinformation in the COVID-19 era, and resultant hesitancy.

‘Vilification’ of conventional treatment – Several ‘functional medicine’ doctors dismissed conventional treatments for psoriasis by highlighting potential side effects, and downplaying evidence of efficacy. Topical steroids were frequently referred to as ‘toxic’, ‘skin-thinning’, and ‘adrenal-suppressing’; methotrexate referred to as a ‘chemotherapy drug’; and biologic agents referred to as ‘horrible immunosuppression injections that cause cancer’. Several posts recommended discontinuation of immunomodulatory treatment to mitigate the risk of COVID-19 disease. Although this was a reasonable consideration during the initial surge when little was known about SARS-CoV-2, it is now clear that biologic use for psoriasis is not associated with adverse COVID-19 outcomes.⁹

‘Validation’ of natural treatments and diet – Proposed ‘natural’ treatments/remedies included vitamin and mineral supplementation. One functional doctor described how ‘heavy metals’ cause psoriasis, and sold magnesium salts (\$40 per month) to ‘correct the imbalance’. Vitamin D supplementation, much-hyped for COVID-19 and regarded as a panacea by many charlatans, was often promoted by naturopaths, despite an absence of evidence for vitamin D in the aetiology or treatment of psoriasis. Interestingly, topical vitamin D was rarely mentioned, despite calcipotriol being widely used in conventional medicine. ‘Mycotoxins’ and overgrowth of gut *Candida*, maligned by ‘wellness practitioners’ for decades, was mentioned by several alternative practitioners, who sold herbal remedies to ‘optimize gut health’. Fad diets were also postulated to treat or cure psoriasis. One recommended ‘cure’ was the alkaline diet, which contends that replacing acid-forming foods with alkaline foods can improve health. The obvious scientific flaw of this diet is that any food entering the stomach is subject to the gastric pH of 1-3, not to mention the tightly-regulated homeostasis that maintains blood pH at 7.35-7.45. Other promoted diets included the ‘anti-inflammatory diet’, which encourages the ingestion of whole plant-based foods and fish. While these foodstuffs are nutritious, they are unlikely to have any significant direct impact on psoriasis. Many articles discussed the autoimmune link between psoriasis and coeliac disease, falsely inferring that gluten should be avoided in all patients with psoriasis.

‘Veneration’ of cures – The word ‘cure’ was a significant red flag in online forums. Since medieval times, the peddling of ‘cures’ has been a blight on public health and evidence based medicine. Psoriasis is a chronic, hereditary, immune-mediated disease for which remarkably effective treatments are available, but unfortunately disease-ending cures are

not. A variety of simple 'cures' were identified including herbal remedies, sunbed use, and sea swimming. Sunbed use, harnessing dangerous broad-spectrum ultraviolet radiation, can induce short-term remission, but does not cure psoriasis. Sea swimming, embraced as a nostrum by the 'Dryrobe' masses during COVID-19, may reduce hyperkeratosis but does not cure psoriasis.

'Vocalization' by celebrities – Numerous prominent public figures who have psoriasis disseminated misinformation and promoted ineffective treatments. Kim Kardashian recently wrote an article on her psoriasis journey, discussing treatment with celery juices, herbal teas, and sea moss smoothies. Although relatable public figures or celebrities can have positive ramifications for people with psoriasis, especially younger patients, misinformation spread by these figures can be far-reaching and dangerous.

Psoriasis is not immune to the misinformation culture war being waged in healthcare and society. While some of the alleged treatments or cures are relatively innocuous, ineffective treatments detract from the efficacious and generally well-tolerated evidence-based therapy prescribed by dermatologists. It is important to remember that psoriasis is a common systemic disease, and undertreatment of systemic inflammation can lead to significant co-morbidities such as cardiovascular disease.¹⁰ This study was limited to accessible online media and therefore may have missed some content.

Dermatologists should confront misinformation by correcting falsehoods, stating facts, and providing evidence-based guidance.

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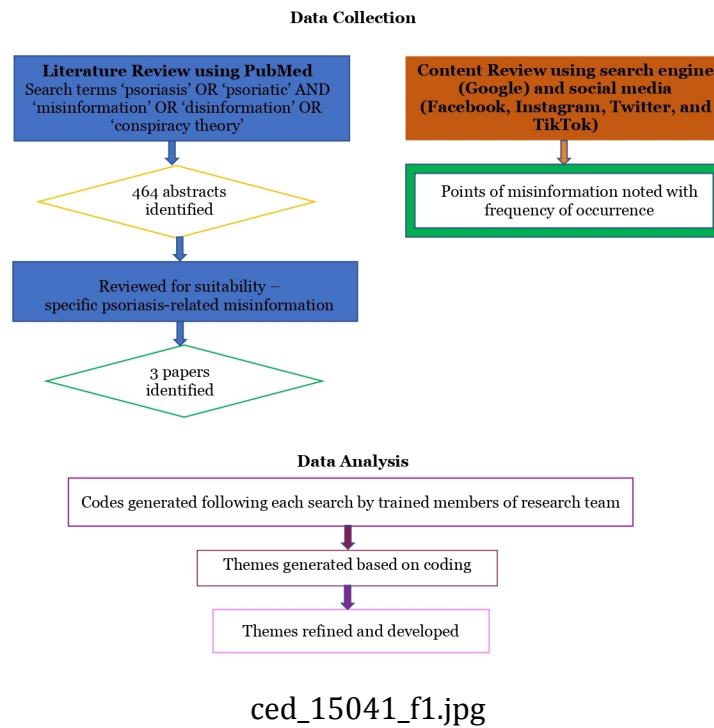
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Figure Legend

Figure 1. Flowchart diagram showing methodology of qualitative data collection and analysis.

Figure 2. Flowmap diagram showing content of online misinformation related to psoriasis.

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