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Article

Critical thinking, disillusion, and dissent: Information literacy in a refused knowledge information landscape

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Abstract

This study explores information literacy (IL) within a community organised around contested beliefs, challenging the assumption that IL reduces susceptibility to misinformation. It assumes a sociocultural perspective on IL, conceptualising IL practices as shaped by and taking place within intersubjectively created information landscapes imbued with values, beliefs, and practices that determine what is considered appropriate engagement with information. Employing reflexive thematic analysis to qualitatively analyse social media content (text and images) published by a Swedish network of nurses active in the COVID-19 dissent milieu, the study finds that critical engagement with information is central for shaping the network's information landscape. The types of interrogative questions often found in guides or frameworks for critical thinking and source criticism are shown to be part of how information is approached and evaluated within the landscape. Furthermore, within the network's information landscape, critical thinking is expressed as a moral good and is encouraged both as an approach to truth and as a morally good act. Following this, the study suggests that in this information landscape, belief in contested knowledge may be an effect of IL practices rather than a lack of them. The study contributes to the discussion on the role of IL as a solution for misinformation belief, showing how IL practices can function to sustain, rather than diminish, belief in contested knowledge.

Keywords
COVID-19; critical thinking; information literacy; information landscape; misinformation

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1. Introduction

Information literacy (IL) is often assumed to decrease belief in false or misleading information. It is this assumption that justifies IL initiatives as a form of misinformation intervention (Roozenbeek et al., 2023)—that is, interventions aimed at mitigating belief in and spread of

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various types of disordered information (Wardle & Derakhshan, 2017), including misinformation (false information created without intent to harm) and disinformation (false information created with the intent to harm). For example, based on the premise that a lack of general critical thinking skills contributes to an individual's susceptibility to 'fake news'—fabricated information that mimics legitimate news media (Lazer et al., 2018), categorised as either misinformation or disinformation depending on whether the content is intended to deliberately mislead or merely to entertain (Tandoc Jr. et al., 2018)—boosting such skills has been proposed as a solution to limit their spread and influence (Lutzke et al., 2019).

However, critical thinking skills may lead to very different places depending on how and by whom they are applied. Questions concerning the authority and credibility of the source, the plausibility of the information, and the potential motivations behind its dissemination reflect the content of common and widely accepted guidelines for evaluating information through source criticisms and critical thinking (Blakeslee, 2004; Mandalios, 2013; Psychological Defence Agency, 2024). But, as suggested elsewhere (boyd, 2017; Haider & Sundin, 2022; Hannah, 2023; Hicks & Lloyd, 2024), such interrogative practices may already be part of processes of belief formation and knowledge production in communities formed around contested beliefs. Contributing to this line of research, this paper presents results from an investigation into the IL practices of one such community centred on contested beliefs.

The community in focus of this study is a Swedish network of nurses (Sjuksköterskeuppropet, n.d.-a [English: Swedish Nurses' Appeal]) that challenge accepted truths about COVID-19 and the pandemic. By its own account, the Swedish Nurses' Appeal formed in spring 2020 and comprises approximately 400 nurses from diverse specialties who were brought together by concerns that arose during the COVID 19 pandemic (Sjuksköterskeuppropet, n.d.-b). The network is present on several social media platforms, on which they have voiced strong dissent regarding the Swedish authorities' pandemic response. This dissent has largely focused on government-imposed restrictions, recommendations and guidelines issued by the Public Health Agency (Folkhälsomyndigheten, FHM), the national mass-vaccination program against COVID-19, and the use of PCR tests as diagnostic tools.

The network's dissent is portrayed as stemming from the belief that much of Sweden's pandemic strategy lacked sufficient scientific support and violated medical ethics, particularly autonomy and informed consent. That the dissent is framed as a predominantly science-based critique articulated by health professionals—and that, as the analysis will show, these health professionals operate within a belief system that adheres to the authority of mainstream healthcare and medical science, while simultaneously positioning themselves outside of the currently accepted boundaries of these fields—makes the network and its information landscape compelling for a study of IL practices.

The contested beliefs held by the network, as evidenced through the network's social media content, are understood in the study as representing refused knowledge (Neresini et al., 2024). The concept of refused knowledge, as suggested by Neresini et al. (2024), signifies "knowledge that scientific institutions do not consider as belonging to the one produced within the epistemic boundaries of 'official' science" (Serino et al., 2024, p. 2); it is "knowledge that is not fully compatible – if not entirely incompatible – with prevailing and institutionalised scientific and biomedical paradigms" (Crabu et al., 2023, p. 134). Communities formed around knowledge rejected by institutional science are termed refused knowledge communities (RKCs) (Neresini et al., 2024). Drawing on social media content (text and images) published by the network and through qualitative analysis, the study brings to the fore questions about how IL is understood and enacted by those commonly regarded as being misinformed.

IL is approached from a sociocultural perspective and understood as a situated, social process (Lloyd, 2007). IL practices are further conceptualised as shaped by and taking place within intersubjectively created information landscapes that are imbued with certain values, beliefs, and practices that determine appropriate ways of engaging with information (Lloyd, 2010). By qualitatively investigating how this community within the larger COVID-19 dissent milieu engages with information related to the coronavirus pandemic and its aftermath from this perspective, the study seeks to nuance the view of what it means to engage with information in an information literate way. It explores the question of how IL is constituted and enacted within this particular information landscape, and suggests that belief in refused knowledge may be an effect of IL in this information landscape, rather than a lack of it.

2. Theoretical framework and previous research

2.1 IL as part of information landscapes

IL refers to various abilities connected to how we seek, select, evaluate, create, and generally use information in various contexts (Limberg et al., 2012). Embracing a social constructionist view that assumes information practices as socially and dialogically constituted, the present study approaches IL as a social practice that is shaped by the interactions between members of a community (Tuominen et al., 2005). IL is here further viewed as “a situated sociocultural process which facilitates ways of knowing” (Lloyd, 2007, para. 6). On this view, IL can be understood as learning the language of a practice by becoming knowledgeable about the concepts, theories and beliefs that are central to the practice within a social site (Limberg et al., 2012).

As Savolainen (2021) notes, a variety of conceptual metaphors connotating spatial contexts in which information practices take place have been developed in library and information science). In IL research, Lloyd’s (2010, 2017) concept of information landscapes has become popular. First developed in studies of workplace information literacies of ambulance officers and firefighters (Lloyd, 2006, 2007, 2009), the information landscape approach has since been employed in empirical studies focused on information literacies in a variety of contexts (Abdelbagi & Literat, 2023; Agyemang et al., 2023; Cloudesley, 2021; Lloyd et al., 2014; Lloyd & Wilkinson, 2019; McKinney et al., 2024; Špiranec & Kos, 2013). An information landscape is a “communicative space through which people develop identities and form relationships based on shared practices and ways of doing and saying things” (Lloyd, 2010, p. 9). It is a space created intersubjectively through interaction—over time it becomes imbued with particular values, beliefs, understandings, and practices that at once “define [the space] to its members and identify the boundaries of the environment to outsiders” (Lloyd, 2010, p. 10). When used analytically to approach people and their information practices in context, the notion of information landscapes successfully illustrates the sociocultural nature of IL, making it an appropriate component of the theoretical framework for this study.

In the landscape approach to IL, being information literate is to know the landscape. IL is thus “predicated on the ability to recognize and enact the practice [in ways that] reflect the ways of knowing which are valued, shaped and agreed upon” (Lloyd & Wilkinson, 2019, p. 253) within the shared landscape of a community. Part of this is knowing which sources of information are sanctioned within the landscape, and how this knowledge is operationalised by the community that inhabits the landscape (Lloyd, 2010).

As different information landscapes are built around and imbued with different values, beliefs, and ways of doing, saying, and knowing things, what is considered a contextually appropriate IL practice will differ between landscapes. In sociocultural terms, learning IL thus becomes “a question of learning norms, doings, and values of information literacy within a particular practice or context” (Haider & Sundin, 2022, p. 58). It also includes learning who the cognitive authorities (Wilson, 1983) within the information landscape are. Cognitive authority, as proposed by Wilson (1983), builds on the assertion that most of what we know about the world comes to us ‘second-hand’ from others; for knowledge beyond our own personal experience, we are led by necessity to seek out people whom we believe know things we do not and that can tell us how it is. Cognitive authority thus figures in the theoretical framework as part of the landscape approach applied.

2.2 Refused knowledge communities and IL

The concept of refused knowledge refers to knowledge that is wholly or partially rejected by scientific authorities and institutions; refused knowledge communities (RKCs) refer to communities that engage with and share such knowledge (Bory et al., 2023; Crabu et al., 2023; Neresini et al., 2024; Serino et al., 2024). Moreover, refused knowledge represents “a body of knowledge around which some segments of society find a common space for action and sensemaking by bringing together their issues of mutual concern” (Neresini et al., 2024, p. 10). Rather than framing contemporary science-contesting communities as simply engaging in “generalized anti-science campaigns or a current deviant irrational ‘zeitgeist’” (Neresini et al., 2024, p. 16), Neresini et al. (2024) suggest a more helpful approach is to treat refused knowledge “as a specific way of knowing the world and of producing specific claims in a complex relationship with prevailing epistemic institutions” (p. 16). This approach to knowledge—refused and not—aligns with sociocultural understandings of IL, which emphasise that information and knowledge practices are shaped by the contexts in which they occur. It also resonates with Lloyd’s (2010) conceptualisation of IL practices as being formulated and enacted in ways that are sanctioned within the information landscapes where they take place. Using the information landscape and refused knowledge concepts complementarily, the IL practices explored in this study are approached as part of a refused knowledge information landscape.

As communities motivated by a shared issue of concern rooted in refused knowledge, RKCs centre much of their activity on defining and strengthening the knowledge claims that unify their members: by asking questions and seeking answers, community members “[engage] in efforts to negotiate and resist prevailing scientific discourses and produce knowledge offering new meanings and options for addressing everyday life to members” (Neresini et al., 2024, p. 56)—they ‘do their own research’. To do your own research, understood in its guise as a slogan predominantly associated with—but not indigenous to—internet culture and counter-consensus beliefs, represents “a method for forming beliefs” (Ballantyne et al., 2024, p. 303) which centres individual inquiry; it involves not taking information at face value and promote critical assessment of information when forming opinions and making decisions (Chinn et al., 2024). To do your own research, despite sometimes being dismissed as a sign of information illiteracy (Badke, 2025), implies an engagement with information that is not too dissimilar to what in other contexts would be considered ‘good’ IL practice. As an example of this, Hannah (2023) finds that the approaches to information and knowing in conspiracy communities centred on ‘doing their own research' are very similar to principles found in established IL frameworks such as the one advocated by the Association of College and Research Libraries (ACRL). As Hannah (2023) notes of the ACRL framework, its core principles aim to "inculcate skepticism toward received authority, to recognize and assess the production of information and to position research within a broader scholarly conversation" (Hannah, 2023, p. 206 –207); however, similar approaches to information may already be present in communities organised around beliefs deemed controversial, conspiratorial, or widely considered false—only as a "perverted form" (Hannah, 2023, p. 208) of IL, where the principles and values that inform existing IL frameworks have been weaponised.

Rather than pointing to a general lack of IL being the root cause of conspiracy beliefs—or refused knowledge—these findings give weight to danah boyd's (2017) suggestion that IL has backfired. Looking at IL practices among people who are hesitant about the COVID-19 vaccines, Hicks and Lloyd (2024) also find that IL skills "that would be recognized by teaching librarians and institutional guidelines alike" (p. 1567) are employed by vaccine hesitant individuals to inform themselves and make decisions about vaccination. In their study, it is not a lack of information nor a lack of information skills that leads to vaccine hesitancy, but rather the use of these skills for—arguably—unintended ends (Hicks & Lloyd, 2024). A similar sentiment is expressed by Haider and Sundin (2022), who note that "media and information literacy can be turned around or reverse engineered in ways that invite it to be reappropriated to do the opposite of what was originally intended" (p. 129). On this view, the problem is not necessarily an absence of IL, but what may be viewed as a misappropriation of IL principles. Likewise, Neresini et al. (2024) note regarding the RKCs they study that rather than being fostered by scientific illiteracy, adherence to refused knowledge often correlates with a high educational level. Further, many individuals who embrace refused knowledge have current or previous experience of working in scientific fields—medical doctors and researchers with strong credentials are dominant figures in many RKCs.

3. Method

3.1 Data collection

This study explores IL as expressed by a network of nurses brought together by their dissenting beliefs about the COVID-19 pandemic, particularly the beliefs that much of the pandemic response lacked sufficient scientific evidence and violated medical ethics. It draws primarily on textual material disseminated by the network on the social media platforms Instagram and Telegram. The choice to collect data from these platforms was motivated by the position each occupies in the social media landscape, with Instagram being regarded by many individuals in the COVID-19 dissent milieu as censorious due to its community guidelines and use of misinformation interventions, while Telegram, being more lenient in its terms of service, is often regarded as a free speech alternative. Collecting data from both enabled a broad range of material to be captured.

The Instagram data, gathered manually, comprises 142 posts (text only) saved in tabular format with associated metadata. The Telegram data were obtained by exporting the channel's chat history as HTML documents. Images were also exported from the chat history. The HTML files were parsed using the Beautiful Soup Python library (Richardson, n.d.) and saved in tabular format as individual posts with associated metadata, including the filename of connected images when applicable. This yielded 814 text posts and 389 images. The full dataset covers the period from January 2022 to September 2024 on both platforms and includes all available posts at the time of collection. The original content published by the network is in Swedish. The analysis was performed on the material in its original language, and excerpts selected for inclusion in the article were translated during the writing process.

The network's accounts on the chosen platforms, and thus the content they post, are publicly accessible. While accessibility does not automatically mean data are public (boyd & Crawford, 2012), the fact that the network is an advocacy group that seeks to influence through its social media presence precludes reasonable expectations of privacy. Consequently, consent for participation in the study was not sought from the network.

3.2 Reflexive thematic analysis

The full dataset was analysed using reflexive thematic analysis (TA). TA is a qualitative method used for exploring and interpreting patterns of meaning across a dataset through the development of analytic codes and themes. Central to the reflexive approach to doing TA is the recognition of researcher subjectivity as a resource in knowledge production, positioning the researcher not as a neutral observer but as actively shaping the analytic process (Braun & Clarke, 2022).

The analysis loosely followed Braun and Clarke's (2022) six-phase process of familiarisation, coding, generating initial themes, developing and reviewing themes, refining themes, and writing up. With part of the social media data being collected manually, familiarisation with the data started before formal analysis. The familiarisation phase also stretched into the early coding. Since the question driving the analysis concerns situated information practices and enactments of IL within an information landscape, initial coding focused on understanding the shape and boundaries of said landscape. Although coding is not typically part of the familiarisation phase in TA, 'locating the landscape' through codes served that purpose here. The codes generated in this phase were primarily semantic and aimed to conceptually map the landscape's entities (people, organisations, information sources) and central topics of discussion. Both text and images were coded. In the subsequent stages of the analysis, however, attention turned fully to the textual data.

Following familiarisation/early coding, focus shifted from the semantic content toward exploring latent meaning. While the codes did not reference theory explicitly, the analysis was deductively oriented throughout the analytical process, and the latent-level codes were consciously shaped by the sociocultural perspective of this study. The processes of generating, reviewing, and refining themes were likewise informed by the theoretical framework, with both the concept of information landscapes and the notion of RKCs influencing the analysis.

In addition to the conceptual mapping of the network's landscape, the final analysis builds on three themes that, during the analytical process from coding to writing, developed as central for understanding IL in this information landscape (Table 1). In the analysis, these three themes are located within the network's refused knowledge information landscape and are, to some extent, constitutive of one another.

Table 1: Themes

	Refused knowledge information landscape	**The contextual setting for the subsequent themes; describes the network's information landscape through its content and boundaries.**
Theme 1	Being a part of the healthcare system	The network's relation to the healthcare system, explored through the interpreted friction between ideals of nursing and the experienced reality of Swedish healthcare.
Theme 2	Creating community, producing knowledge	(Re)production of refused knowledge as part of creating a sense of community and developing a community identity.
Theme 3	Becoming disillusioned	Critical engagement with information as an antecedent for loss of trust in the previously taken for granted and reframing of beliefs.

4. Analysis

4.1 Topography of the refused knowledge information landscape

If IL is context-dependent, the first step towards understanding it as a practice must be to understand the context in which it is enacted. The context of this study is the refused knowledge information landscape that the network of nurses this study concentrates on both shapes and inhabits. In an elaboration of the landscape metaphor, Lloyd (2010) notes that similar to how landscapes in the natural world “are structured and characterized by different topographies, climates and complex ecologies” (p. 138), so too are information landscapes structured by discourse, social order, and a range of practices that shape the landscape and the “agreed ways of performance” (p. 138) within it. Building on this metaphor, the analysis begins by mapping the form and features of the network’s refused knowledge information landscape.

4.1.1 Social media content

The platform type—including its affordances and constraints, and its position in the social media landscape—contributes to some differences between the two social media accounts that the analysis builds on regarding the type of content that is published and how. The network’s own views on the purpose of each account further contribute to these differences: Instagram is primarily used “to keep everyone's spirits up and to be a support in seeing the light in the darkness” (Instagram, 2022-08-14), while Telegram is used to engage more deeply in the broader topic of COVID-19. Reflecting this, the analysis relies more heavily on the latter.

While acknowledging the platform’s role as a contextual factor, the network’s social media activity is approached here as a cohesive, cross-platform practice. The social media accounts can thus be understood to serve several functions. In addition to advertising the existence of the network by increasing its visibility online, the accounts are also used to spread awareness about refused knowledge regarding the pandemic, advocate for societal change, facilitate discussion, and build community. Typical posts concern the pandemic and COVID-19 vaccines from a critical perspective, often invoking appeals to scientific ideals to substantiate their critique. Appeals to civil liberties such as freedom of thought and speech are also common, as are appeals to medical ethics. A frequent feature of the posts is the use of questions to disseminate their message:

> *What does medical freedom mean to you? Should politicians without medical knowledge be able to vote through legislative changes that affect personal medical decisions? How are potential conflicts of interest assessed? There are many ethical question marks here [...] As nurses, we completely oppose this attempt to violate personal integrity and medical freedom.*
> *(Telegram, 2022-03-15)*

A substantial portion of the network's posts feature personal accounts detailing experiences with Swedish healthcare and the pandemic. These stories are shared by nurses in the network as well as unaffiliated supporters, and when published, are often accompanied by some additional commentary:

> *Where should one turn if the healthcare isn't listening and doesn't take your problems seriously? Here comes a new story:*
> *Hello, got sick ca. 5h after the second injection of Pfizer […]*
> *(Telegram, 2022-04-05)*

Many of the network's posts make use of material from other external sources, too, usually as quotations, paraphrases, or screenshots. On Telegram, at least one hyperlink to a source typically accompanies this type of content. On Instagram, where links in posts are not clickable, instructions for how the original source can be found are frequently used as substitute. The type of external sites that the network engages as informational spaces in this way comprises both 'mainstream' and 'alternative' social media platforms and media outlets, as well as a diverse collection of miscellaneous websites ranging from official government sites to scholarly journals and personal blogs. Moreover, the original sources are varied in format and include textual, visual, and audiovisual information.

While the immediate function of these posts is to disseminate information about issues they are concerned about, the content of the posts also serves to position the network in the COVID-19 dissent milieu. By linking, quoting, and paraphrasing the information and information sources that they do, they are establishing tangible connections to a broader sphere of refused knowledge created and occupied by a plethora of networks, groups, initiatives, and influential individuals. At the same time, through similar engagement with information and information sources tied to the world of mainstream healthcare (trade press, trade union, trade-specific Facebook group), they are also explicating their ties to the domain of accepted healthcare knowledge. As such, the network's information landscape is not created in isolation from more mainstream knowledge domains, but by drawing opportunistically on both 'mainstream' and 'alternative' (or refused) information and knowledge.

4.1.2 Legitimised information sources

The diversity of both information formats and information sources in the network's social media posts evidences a certain openness to where credible information may be found, and what forms it may take. Still, while mainstream information sources are engaged in the landscape—in agreement, and to show fault—the information sources that most define the network's information landscape are those that occupy the role of cognitive authority (Wilson, 1983) in the COVID-19 dissent milieu and the broader refused knowledge sphere. Justifications for allowing oneself to be influenced by one's chosen cognitive authority include appeals to their experience and training, their previous accomplishments, their reputation among peers and among one's other cognitive authorities, intrinsic plausibility of views, and personal trust in the authority (Wilson, 1983). While all of these are present in the representation of authoritative information sources in this landscape, the base of authority most appealed to is the credibility infused in academic degrees and the expertise such credentials imply—the network routinely mentions whether the referenced information source and cognitive authority has a degree, and they refer to them using their academic titles.

Since the network's advocacy largely concerns scientific grounds for and practical applications of healthcare in relation to COVID-19, it is no surprise that the cognitive authorities relied on are allowed authority predominantly based on academic merit. Other valued information sources in the landscape include community members and supporters sharing their personal experiences, as well as witness testimony from international whistleblowers working in healthcare and the medical industry. As singular accounts, these may not have the same cognitive authority within the landscape as the titled experts. Taken together, however, they are no less important for providing pieces of information that shape a narrative.

4.2 Being a part of the healthcare system

The first theme concerns the network's relation to the healthcare system. With their professional identities and their professional grievances with the healthcare system being the starting point for the pandemic-related critique that led to the network's creation, how the members relate to and view the healthcare system is central for understanding how they envision themselves both as nurses and as an advocacy group. This self-image includes beliefs and values that at once shape and are shaped by their refused knowledge information landscape related to COVID-19 dissent, while also connecting to the more general information landscape of professional nursing. As such, to understand the network's IL practices within their refused knowledge landscape, it is imperative to approach these practices as co-constituted with their experiences of working as nurses in Swedish healthcare.

4.2.1 Frustration with the healthcare system

Throughout the dataset, a feeling of frustration permeates the experience of working in Swedish healthcare. The frustration targets both high-level organisational problems and the intangible values that are produced—or not produced—in the current system. Government authorities are viewed as over-involved in decisions that should be left to medical professionals. Politicians are likewise seen as micromanaging the healthcare system, leading to politics being prioritised above scientific evidence and healthcare workers' expertise being dismissed. But this is not a situation wholly imposed from above. People working within healthcare are regarded as complicit in this development, too:

> *When will our medical profession begin to take its medical responsibility instead of handing it over to politicians who lack the necessary understanding and knowledge to make complex overarching medical decisions?*

> *How far are you willing to let the dismantling of healthcare go and at what cost? How many must be harmed and die before your limit is reached?*
> *(Telegram, 2024-05-29)*

The criticised influence of non-medical authorities on healthcare largely concerns the type of care that is offered and how that care can be performed. Politically motivated cost-savings and rationalisation efforts are felt to contribute negatively to both work environment and patient care by increasing workload while restricting resources, resulting in a healthcare system that is bad for the patients as well as for the workers. For doctors and nurses, insufficient time to adequately deal with tasks is felt to contribute to an untenable work environment; for patients, the same lack of time is understood to result in care that does not centre individual needs:

> *In our training to become nurses, there is a lot of talk about holistic health, a holistic approach and seeing each person as unique, but what happens after training? Do we look at what has led to the unique person developing an illness, pain, mental illness, etc.? To some extent, absolutely, but our entire healthcare system has become focused on creating care processes that increasingly resemble a production line in a car factory rather than focusing on the individual person's unique problems.*
> *(Telegram, 2022-12-18)*

This perceived disregard for the patient as an individual is foundational in the network’s critique of modern healthcare and the members’ frustration with the healthcare system. Swedish nursing education emphasises a holistic, person centred approach to healthcare—one in which “the patient and their family are seen and understood as unique individuals with their own needs, resources, values, and expectations” (Svensk sjuksköterskeförening, 2017, p. 7, author’s translation). However, in the experience of the nurses in the network, this approach is largely absent in clinical practice. In their experience, what should be central values for practicing healthcare—like compassion, care, and showing respect for the individual patient’s wishes and beliefs—are set aside for a more streamlined care that does not always fit the patient.

The prioritisation of economic productivity above human-centred values is understood to be an effect of the system. Many of the preventative measures introduced to mitigate the spread of the coronavirus are likewise viewed as motivated by economic and political gain, placing blame at a system level rather than at the level of individual doctors or nurses. Still, as the disapproval levelled against the medical profession shows, individuals are not believed to be without fault: the network expresses criticism against medical professionals working in healthcare who do not question this development, viewing them as not caring about the patients as people and thus contributing to what they perceive as a disregard for medical ethics. In particular, the network is concerned that the patient’s right to self-determination is disrespected when healthcare workers encourage people to get vaccinated without adequately informing about potential risks, undermining the consent given for receiving the treatment.

Entwined with the criticism of the system and people in it for not treating patients right—medically and morally—is an equally foundational criticism of the overarching culture in which this can persist. Criticism of the healthcare system rooted in worry that patients might be harmed, both generally and in regard to specific treatments or procedures, is experienced as routinely dismissed due to a pervasive culture of silence:

> *Questioning when something does not seem to be right with prescriptions or when we see something that could potentially harm our patients or undermine public health in general is one of our most important tasks […] however, an extremely heavy and wet blanket of silence and peer pressure has been placed over us to stop all forms of critical examination within healthcare.*
> *(Telegram, 2023-07-08)*

Ultimately, for some nurses in the network, experiences of not feeling able to speak up about problems and the lack of time to care for patients in a compassionate way have led to a loss of pride in working in healthcare. As one nurse concludes after relaying the events of a bad night shift: "I can't stand behind what we do in healthcare anymore. I'm ashamed. I get so angry and so incredibly sad. When I started twelve years ago, I was proud!" (Telegram, 2023-01-08).

Discussing what makes people embrace refused knowledge, Volonté (2024) observes that while "disruptive biographical events appear to act as triggers for the turn to refused knowledge" (p. 63), the event itself is not what drives people to join the social world (Clarke & Star, 2007) of an RKC. Rather, the drivers are typically experiences of trying to deal with the disruptive event. For followers of refused medical knowledge, negative experiences of the healthcare system are common drivers: the increased specialisation of modern medicine, the bureaucracy of healthcare, and perceived lack of empathy in medicine are possible contributing factors for embracing refused knowledge (Volonté, 2024). Looking to the frustration the network expresses toward the healthcare system, all three of these carry explanatory power for how members in the network try to understand the perceived failings of Swedish healthcare.

4.2.2 The role of a nurse

Juxtaposed with the frustration over the current state of Swedish healthcare is the network's idealised vision of how it should be. What better healthcare entails can be gleaned in direct references to the holistic approach to healthcare referenced above as well as alternative and integrative medicine, but also in requests for healthcare that is based on 'proper science' and 'facts'. When the discussion about healthcare and science that is dispersed across the dataset is seen as a whole, better healthcare can be interpreted as more patient-centred than contemporary western medicine, focusing on 'the whole person' rather than individual problems in isolation, while simultaneously being more scientific due to a return to scientific ideals that seemingly have been abandoned:

> *We in Swedish Nurses' Appeal have consistently called for and strived toward an open scientific debate regarding the health risks and health problems we observe in the population […] We believe that we need to deepen and broaden our understanding of what it means to be human to comprehend how health can be achieved and maintained, as well as how health problems can be solved from different perspectives.*
> *(Telegram, 2024-02-01)*

Similar to other RKCs, this merge of viewpoints is indicative of the network's "ambivalent relationship with science" (Crabu et al., 2024, p. 8), where the community contests parts of established science while accepting others as part of their knowledge claims. Arguably, the position and type of knowledge favoured is central for how the network envisions the role of a nurse: experience and professional knowledge should lead the way for care, but this must include the holistic approach that they, as they say, "were taught in nursing school" (Telegram, 2022-12-18) while also being scientifically sound. In general terms, what the network seeks is evidence-based practice—even if the evidence they deem credible diverges from what is contemporarily accepted. Notably, previous research shows IL in nursing as closely associated with evidence-based practice and the information skills required to make decisions and provide care based on relevant scientific evidence (Hicks et al., 2023). While the network often disagrees with the majority opinion of institutional medicine on what counts as relevant evidence regarding COVID-19, as will be discussed further along (see 5.4 Becoming disillusioned), they arguably use information skills typically associated with IL when evaluating both science and non-science information and judging its credibility.

The network's view of ideal healthcare is also visible in how the nurse-identity is portrayed in the dataset, particularly in expressions of what it means—or should mean—to be a nurse. This is conveyed primarily through moral values visible in descriptions of the nurse-patient relation. Two aspects of this relation are of importance here: being on the patient's side and ensuring patient safety. Being on the patient's side means listening to and speaking up for patients, especially in situations where their experiences are perceived as ignored or brushed aside by the machinery of the healthcare system. This becomes particularly visible as an important aspect of the nurse-patient relation through the network's criticism of how 'vaccine-injured' patients are treated.

The criticism is expressed both as questions insinuating wrongdoing—asking if the healthcare system is aware of the side-effects that many people have been affected by, and if there is preparedness to take care of this group of patients—and as prescriptive statements about what nurses should do when meeting these patients. Recommended behaviour includes to "stop and listen when people suffer from side effects" (Telegram, 2022-04-20), to speak up when things seem wrong, and to be an advocate for patients who may find it difficult to assert themselves, all of which is expressed as closely entwined with the professional requirement (as determined by the Swedish Patient Safety Act [Patientsäkerhetslag (2010:659)]) to report risks of medical harm and events that have, or could have, resulted in such harm:

> *Nurses have a duty to report if something doesn't seem right, we must have critical thinking and we are often the patient's last barrier between strong economic forces, the feeling of powerlessness, etc. We must take this responsibility very seriously. (Telegram, 2023-01-03)*

Through references to ethical guidelines and moral obligation, the network expresses a strong connection to the professional code of ethics. Further, messages directed towards colleagues pointing out unethical behaviours of others imply that, in their view, they are the ones who are following the code of ethics, while many of their colleagues have left it behind:

> *Dear colleague* 💚
>
> *We know you've been told that we who question these injections are "dangerous". We've been given every epithet in the conspiracy book but now you actually have to start using your common sense, critical thinking and not least reading up on the facts that exist on the topic.*

> *To help give babies (and pregnant women) these experimental injections, which have been shown to have so many and severe side effects, including type 1 diabetes, is deeply unethical.*
> *(Telegram, 2024-06-19)*

Undoubtedly, moral duty and the obligation of nursing ethics are important for the nurse identity expressed in the dataset. Moral considerations are visible, too, in the aspect of the patient-nurse relation that regards patient safety. The nurse is portrayed as positioned between patients and the healthcare system, acting as safety against possible harm. Part of this is providing patients with adequate information so that they can make their own informed decisions about the medical care they do or do not want—like vaccines. To ensure the safety of the patients in the context of the coronavirus pandemic and mRNA vaccines, then, is to “give [patients] complete information about the medical decisions that need to be made” (Telegram, 2022-08-30), including possible adverse effects of treatments or that something does not work as advertised. Considering this, the moral duties expressed as part of the nurse-identity concern not only care practices, but information practices as well. IL as an ethical aspect of care has previously been reported by Forster (2015), who finds that achieving ‘best practice’ involves “[developing] an information supported ethical focus to care” (p. 198) by exploring what defines compassionate care, facilitating patient safety, and “achieving optimum and so ethically defensible care” (p. 198).

In addition to how information should be dealt with in encounters with patients, personal dealings with information are also part of moral considerations tied to the nurse identity. The duty of nurses is frequently articulated with references to critical thinking—either overtly, as in the latter two excerpts above, or by referencing what may be viewed as the contents of critical thinking, such as being reflective, analytic, and questioning of things that seem implausible. In this way, critical thinking emerges not only as an important IL practice within the network’s information landscape, but also as a moral good that is encouraged in the landscape.

4.3 Creating community, producing knowledge

The second theme concerns the creation of community and the production of (refused) knowledge this involves. The network operates based on a belief system created both within the accepted boundaries of mainstream healthcare and science and outside of them. The foundation of the network’s perspectives on the pandemic and their motivation to advocate for different healthcare is shaped by Western medicine and rationalist ideas about science. Yet, they simultaneously integrate alternative beliefs into their healthcare practices that, at times, put them at odds with contemporarily accepted scientific knowledge and the institutions that uphold it. It is through this conflict, and the conflicting approaches to knowledge creation and acquisition it displays, that the network creates itself as a community and develops its identity as an RKC. The creation of community and development of a community identity are closely entwined with how information is made sense of and used by the network, making this theme an important component for understanding how IL is constituted and enacted in the network’s information landscape.

4.3.1 Knowledge from shared experiences

Knowledge claims refused by healthcare authorities and institutional science concerning proper treatment of COVID-19, benefits and risks of mRNA vaccines, reliability of PCR tests, effectiveness of face masks for reducing coronavirus transmission, and general pandemic and health policy are all part of the accepted knowledge within the network’s information landscape.

While much of the refused knowledge embraced by the network is received from cognitive authorities recognised as such within the landscape, that is not the only knowledge source. Knowledge originating in the network's own activities is treated as equally valuable for making sense of what is going on in the world, particularly social media posts dealing with personal experiences of the virus and the pandemic:

> *Woman, 49 years old*
> *June 2021, vaccination Pfizer Corminaty, dose 1, batch FA4632*
> *The room is swaying, I feel dizzy. Seasick, as if I were drunk on a boat […] The nurse leads me to an examination table where I get to rest. My face flushes. The blood vessels spread like a spider's web across my face. My left arm goes numb. I drift away. Stroke alarm. Ambulance. CT scan.*
> *— Don't worry, it's an allergic reaction to the vaccine, says the Stroke Unit.*
> *— Rubbish diagnosis, not an allergy, says the allergologist months later. Refers me elsewhere, but the referral is rejected.*
> *(Telegram, 2023-03-31)*
>
> *I've worked as a nurse for 17 years. Since the start of COVID I've been working in the A&E department, and I knew from day one that I wasn't going to take the vaccine. A colleague was called in to the manager because she was considered "disloyal to her employer" after sharing links on her Instagram. I never dared to say anything, but eventually it still "came out" that I hadn't taken the jabs. To avoid being named and shamed at work, I took two doses. A few months later I began to experience heavy vaginal bleeding and low abdominal pain. It has continued, and various investigations have been carried out, but no explanation has been found.*
> *(Telegram, 2023-01-25)*

Posts such as these, in which pandemic experiences are shared, as well as posts spotlighting stories about pandemic adversity published on personal social media accounts and in newspapers, are all narratives of personal experience that contribute to establishing a shared experience of the pandemic. This shared experience, grounded in both first-hand experiences and testimonial experiential expertise, becomes part of the network's narrative and is subsequently incorporated into the landscape as common knowledge. In this way, refused knowledge—concerning, for example, vaccine side effects—is (re)produced as part of the creation of a sense of community.

Like in the quoted posts above, many of the shared stories tell of hardships, with descriptions of vaccine injuries and bad experiences with healthcare being the most common. In these stories, which come both from nurses who are identified as members of the network and from people without clear affiliation, fear of finding oneself as a social outcast for voicing concerns emerges as a pattern. Most broadly, it is visible as a reoccurring theme of feeling dismissed and ignored: at work, colleagues are not listening when the connection between COVID-19 injections and onset of symptoms in patients seeking medical care are brought up; when seeking care, doctors are not taking the symptoms seriously; and in the public sphere, attempts to talk about what is happening is met with either silence, censoring, or insults.

Through the shared stories, the bad treatment—described in one post as "closed doors and harsh words" (Telegram, 2023-05-01)—becomes part of the network's narrative. And as part of the narrative, bad treatment is feared as much as it is expected. It is felt in how some people, from colleagues to family and friends, have distanced themselves in a silent way. It is also felt in more vocal criticism of COVID-19 dissent that depicts sceptics as unintelligent, unscientific, and influenced by extremist politics:

> *Those who have chosen to forgo vaccines are as usual seen as less intelligent and unscientific. Nurses and doctors who are critical are resistant to facts and, not entirely unexpectedly, right-wing extremist and anti-Semitic forces are also involved.*
> *(Telegram, 2023-07-11)*

They are labelled as conspiracists, and as the members of the network understand themselves to be normal people with legitimate concerns, such descriptions are expressed to be both annoying and hurtful. Worse still, they are understood as clear signs that neither their lived experiences nor their concerns are being taken seriously:

> *Our authorities, politicians and healthcare professionals have done their utmost to brush aside reports of damage and scientific facts and instead call those who have been affected or tried to warn conspiracists.*
> *(Telegram, 2024-05-22)*

In addition to negative experiences with the healthcare system, another driver in the turning process is social relationships (Volonté, 2024). RKCs are often joined through social relations, and social relations are what make people stay. As Volonté (2024) writes regarding a community of electro-hypersensitivity sufferers, feeling abandoned by the healthcare system “drives people into the arms of [the RKC], which not only provides emotional support but also urges them to take an interest in the refused knowledge itself” (p.65). Grodzicka (2021), too, shows that feeling badly treated and uncared for—by the healthcare system, but also by wider society—can be a central factor in people’s turn toward vaccine hesitancy and doubt. Seeing the narrative that forms in this landscape from the shared stories, negative experiences of healthcare and of attempts to voice concern appear inseparable from an understanding of oneself as marginalised. The sense of community that the network creates builds on this marginalisation—as does the refused knowledge they produce.

4.4 Becoming disillusioned

Together, the two previous themes show the network members’ relation to the healthcare system and their roles in it as shaping their engagement with refused knowledge and how such knowledge is integrated into the network’s information landscape. Another factor that can be understood to shape the network’s information landscape is disillusionment. The notion of disillusionment describes a sense of disappointment from discovering the truth, a loss of trust in the previously taken for granted and a reframing of naïve beliefs. To become disillusioned implies critical engagement with information that enables a change in how something is understood. The sense of disillusionment expressed by the network thus becomes another key for understanding IL within this landscape.

4.4.1 From dissonance to disillusion

That pandemic politics and healthcare policy have no basis in science is a recurring sentiment in the dataset. Further, the network frequently articulates requests for an ‘open scientific debate’ and suggests that if only such a debate had taken place—had been allowed to take place—things would have turned out differently, better:

> *What was unanimously called dangerous horse medicine could have ended the most recently declared pandemic before it even became a major problem if we had had an open scientific debate and an exchange of experiences instead of censorship. (Telegram, 2023-08-15)*

Neither what science nor what public officials say can really be trusted, as it is not ‘truly scientific’ due to the lack of this scientific debate. As the excerpt above suggests, a truly scientific debate is understood to be characterised by ‘openness’, something which the network finds missing in discussions about the pandemic both in the public realm and in institutional science. Additionally, ‘openness’—as in “daring to ask the at times uncomfortable questions” (Telegram, 2022-06-04) and not believing oneself to “be in possession of the whole truth” (Instagram/Telegram, 2022-03-22)—is imagined as a scientific ideal unto itself, further disqualifying policy based on science that is perceived to not uphold this ideal.

While sceptical of the institutions currently producing scientific knowledge, the network is clearly not sceptical of science as a cognitive (or epistemic) authority and base for policy, and they see no fault in epistemic institutions seeking credibility for their claims on truth by referring to science (Harambam, 2020). The problem, rather, is the science: that there is not enough science in the public debate anymore, and that the science that is present is not truly scientific as it lacks the ‘openness’ that characterises ‘real science’, making it more akin to slogans that have taken on the unquestionability of religious dogma than credible scientific claims:

> *For some reason, there is no longer any room in healthcare, the media, politics and the public to discuss a preparation if it has been designated a vaccine. There seems to be no understanding that there may be a difference in content, number of side effects and effect between different preparations? These preparations have instead been given some kind of star status and the effect is described in almost magical formulations which are more reminiscent of a religious belief than scientific observations. Everyone “knows” that it is “safe and effective” without even looking at what the research results show. (Telegram, 2023-07-09)*

Wishes for ‘real science’ to ‘return’ signal at once a belief in science and disappointment in its current state. Evidently, while the network is critical of contemporary institutional science and frequently discusses its failings, this critical stance is not borne from anti-scientific attitudes but rather, as is typical of RKCs, a belief that institutional science has lost its credibility (Volonté, 2024). Returning to reasons for embracing refused knowledge, Volonté (2024) finds that the turn in part “originates from a profound distrust in the honesty of scientists and the impartiality of their institutions, rather than distrust of the scientific method per se” (pp. 70 –71), and indeed, this simultaneous distrust of (scientific) institutions and belief in objective science is present in how the network engages with topics surrounding the pandemic. Much of the network’s concerns about mRNA vaccines evidence an understanding of ‘real science’ as rigid in following rules and procedures, and perceived breaks against this format, signalling wrongdoing on the part of the scientist, become reason not to trust the experts and their research:

> *Those of us who have tried to find scientific support for the recommended measures during the most recently declared pandemic have been constantly told to listen to the experts and trust the research. However, we dare to state without hesitation that those*

> *who say this have never looked at the research supporting these measures. For example, we have not found a single randomized double-blind placebo-controlled study that has investigated whether these injections reduce hospitalizations and death. (Telegram, 2022-12-15)*

In the mind of the public, ideal science is imagined as “skeptical, objective, rational, disinterested, and truthful” (Harambam, 2020, p. 182). It is on this public image of science that RKCs premise that modern science has lost its credibility. For the network here, too, the perceived loss of credibility is contingent on this view:

> *COVID-19 vaccines are now among the most widely distributed medicines in world history. Yet, results from the pivotal clinical trials cannot be verified by independent analysts […] Transparency, reproducibility, and replication are cornerstones of high-quality science. It is time for Pfizer and Moderna to allow independent researchers and physicians to access the original data and replicate the analyses.*
> *(Telegram, 2022-10-18)*

The notion of the independent researcher referenced above is central to the belief system of RKCs. In fact, the named and titled cognitive authorities that the network defers to are frequently described as ‘independent’. That they are independent does not necessarily mean that they are unaffiliated—some of the key figures work in traditional academia and hold positions at universities. Rather, being independent is understood as a mentality, an approach to science that ensures that the work is ‘pure’: the independent researcher is disinterested in anything but the scientific truth, lending them the capability to produce knowledge that is “untroubled by dogma, religion, politics, and material interests” (Harambam, 2020, p. 182). Like the discrepancy between what the network believes healthcare and nursing ideally should be and their professional experiences of what it currently is, the scepticism of institutional science can similarly be understood as resulting from a perceived dissonance between an idealised vision and reality. In both areas, seeing the discrepancy and feeling the dissonance is sufficient grounds for becoming disillusioned.

4.4.2 Critical thinking to see the truth

To arrive at the understanding that there is a discrepancy between positions requires critical engagement with information. And arguably, an expression of critical thinking—as careful and reflective thought, with the aim of forming a judgement or belief (Hitchcock, 2024)—does in fact appear as a precursor for many of the knowledge claims that the network holds as true. The interrogative approach to information that characterises communities that ‘do their own research’, often recognised at first sight by an unusually abundant use of question marks (Hannah, 2023)—as seen, too, in how this network communicates—can be understood as one way in which such critical thinking is expressed.

The centrality of critical thinking as an IL practice in the network’s information landscape is visible both in stories telling of how members engage with information they find reason to be sceptical about, and in how they talk about it in explicit terms—like how critical thinking is referenced in relation to the (moral) duty of nurses, as a way to ensure the safety of patients. In both cases, critical thinking becomes a way to see through false beliefs and lies that are promoted as truth by health authorities, institutional science, and the mainstream media. A story shared by a surgical nurse exemplifies how critical thinking is expressed as part of IL in the landscape:

> *In my education, which is of course based on research into the spread of infection and how to protect yourself and the patient from infection, there was never any doubt that our standard surgical face masks were primarily intended as a pure drip/splash protection […] since last May we have suddenly seen a lot of studies popping up showing that face masks of all kinds (including bandanas) protect against viruses. Very strange, and especially since it is also the same type of face mask that has been used before. If you try to show an image of the manufacturer's own information where it clearly states that it does NOT protect against viruses, we quickly get help from Facebook's own fact-checkers to censor this image as false.*
> *(Telegram, 2023-01-24)*

This excerpt showcases a process of critical thinking that results in disagreement with contemporaneous truth claims about the purpose and effectiveness of face masks. To arrive at this conclusion, information is not just taken as true—but neither is it dismissed outright. It is interrogated in ways similar to how guidelines for critical thinking propose information and sources be approached. The conclusion is not wholly unreasonable as a result of asking oneself the type of questions that such guidelines (Blakeslee, 2004; Lutzke et al., 2019; Mandalios, 2013; Psychological Defence Agency, 2024) often recommend as means for avoiding being deceived by false or misleading information: Does the information seem believable? Based on the nurse's previous knowledge from nursing school, no; Do other sources say the same thing? Pre-pandemic medicine and the manufacturer say one thing, new studies of (perceived) questionable quality and Facebook's fact-checkers say another; Is the information politically motivated? Undoubtedly—face mask recommendations and mandates are an issue of public health policy, and within the network's information landscape, masks and the debate about them are also political in the values they symbolise in science, in healthcare, and in society. Furthermore, the encounter with fact-checking is understood as political both in content and manifestation—within the network's information landscape, fact-checking becomes yet another way that their concerns are dismissed, and their dissent is censored. Whether the conclusions are correct or not, in instances like above it is by employing critical thinking—inside the bounds of their refused knowledge information landscape—that the members of the network arrive at them.

5. Conclusion

Embracing refused knowledge, including claims classified as misinformation, is not necessarily a sign of poor IL skills. On the contrary, as this study shows, expressions of IL can be central for the turn towards and continued adherence to refused knowledge. Consistent with previous research showing active use of IL techniques and skills in groups often presumed to be lacking in this regard (Hannah, 2023; Hicks & Lloyd, 2024), critical thinking emerges in this study as a central IL practice in the refused knowledge information landscape explored; it is a necessity for shaping the information landscape, and it is continually important as a value for the landscape's inhabitants.

An interesting feature of these results is the connection between the ideal nurse identity as expressed by the network and the ways IL is negotiated within the landscape. Resonating with previous research showing that IL in nursing encompasses an ethical dimension of care (Forster, 2015), critical thinking emerges here as an imperative for nurses, perhaps even a moral obligation, that travels from the professional nursing context into the refused knowledge information landscape and, in doing so, becomes justification for rejecting institutional knowledge in favour of the refused kind.

The results of this study reinforce the notion that IL is a social practice enacted within a particular social site or context, conceptualised in this study as an intersubjectively created information landscape where what counts as legitimate questioning, trusted authority, and responsible evaluation and use of information is negotiated socially in relation to shared norms, values, and beliefs (Lloyd, 2010). That the inhabitants of said landscape might re-evaluate their belief in refused knowledge through critical thinking is, of course, not impossible, but if they do, it is not because they did not think critically before—even if, from a normative view, that critical thinking may be regarded as a reverse-engineered or even perverted form of IL (boyd, 2017; Haider & Sundin, 2022; Hannah, 2023). Thus, as a solution for misinformation belief—at least in communities of this type, where refused knowledge is central—IL initiatives focused on boosting generic critical thinking skills are unlikely to succeed in the way intended.

The findings of this study are based on a specific community within the COVID-19 dissent milieu, limiting the generalisability of the results. Still, it contributes to the growing argument that IL cannot be applied as a panacea against false or misleading information—in some cases, enactment of IL may even lead to the belief it was supposed to prevent.

Declarations

Ethics approval

The study was approved by the Swedish Ethical Review Authority as part of the project Oliktänkare på sociala medier: informationspraktiker i möten med ingripanden mot misinformation relaterade till Covid-19-pandemin, ref. 2024-03921-01.

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AI-generated content

Perplexity (free version) and Microsoft Copilot (Umeå University institutional instance) were used to provide suggestions for sentence- and paragraph-level revisions of the text, including word choice and grammar. Suggestions provided by the AI tools were reviewed and selectively incorporated into the text by the author.

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