



State of the art review

Human information behavior during the Covid-19 health crisis. A literature review

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ABSTRACT

The research carried out on human information behavior (HIB) during the Covid-19 health crisis was reviewed, with the premise that HIB and information practices allow humans to adapt to the changing circumstances of existence. A literature search was run on the LISTA and Google Scholar databases from middle March 2020 up to the end of March 2021. After filtering retrieved results, 52 studies were selected. Results are summarized into seven main themes, including the use of traditional and social media, infoveillance of search engines and social media activity, misinformation, disinformation and infodemics, and uncertainty and emotions. Results point to the need to carry out additional research in specific contexts and addressing vulnerable and marginalized groups. Further areas of inquiry include the interplay of emotions, knowledge and behaviors during the information seeking process, a better understanding of local knowledge and experiential knowledge, and the need to comprehend the limitations of ICT.

1. Introduction

The management of the Covid-19 pandemic has been possible thanks to citizens being well-informed about health risks and needed collective actions, highlighting the centrality of information in health crises. Likewise, during the pandemic, people all around the world have witnessed a wide range of information-related phenomena, while confronting daily, problems such as the evaluation and credibility of information (Ashrafi-rizi & Kazempour, 2020; Chen, 2020). At the onset of the pandemic, Xie et al. (2020) contended that any global health crisis should be conceived, also, as a global information crisis and contended that major attention should be paid to information behaviors observed during times of crisis, as much of our knowledge of information behavior is based on research carried out under normal circumstances. The World Health Organization believes that understanding the information behaviors, the circulating narratives, and the changes in information flows in times of crisis is essential to devising appropriate responses (Tangcharoensathien et al., 2020).

1.1. Research purpose

With this premise, the researchers reviewed research carried out on the topic of information behavior during the Covid-19 pandemic, to

establish a more solid knowledge base about information behavior in critical situations as well as define a research agenda that encourages library and information science (LIS) to pay closer attention to pressing problems of today's society such as health crises. The purpose of the research is to identify the specific themes researched and the research methodologies applied under the exceptional circumstances of social distancing of the first year of the pandemic. A secondary purpose is to observe how the research of the scientific community researching information behavior has addressed the topic in the framework of a global pandemic, attempting to understand its contribution to society. The expectation is that the review will allow researchers to better understand information and information behavior during a health crisis, highlighting relevant themes, and outlining future research directions for LIS. The researchers focused on information behavior during a health crisis from the perspective of evolutionary psychology, stressing the human and universal nature of adaptive information behaviors (Spink, 2010; Spink & Cole, 2004; Spink & Cole, 2006). Evolutionary psychology understands that, among the other brain functions that have evolved since the onset of early hominids 3.5 million years ago, the ability to communicate knowledge has increased the species' chances of survival by allowing predictions about events based on the experience of others (Kock, 2009; Kock, 2010). This need for communication has evolved at the same time as an increasingly widespread and complex socialization,

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driven by what is known as “reciprocal altruism” (Small, 2016). In this case, the disposition to share knowledge with others for mutual benefit is a concept that Small (2016) uses to explain citation behavior in scientific communication. These assumptions appear also in Pirolli's (2003, 2007) *information foraging* theory, that conceives of humans as “informavores”, given their dependence on information and their diversified forms of communication. The theory of information foraging appears to be especially relevant in today's information landscape because, unlike more traditional theories such as Bates' (2017) *berry picking* theory, it conceptualizes information seeking as produced by cognitive and external, or contextual, triggers at the same time (Savolainen, 2018). Likewise, in Williamson's (1998, 2005) *ecological theory of human information behavior*, the context that conditions information behavior is both social and biological, and humans are conceived not only as socially constructed entities, but also as *self-creating* entities in complex contexts.

The study of information behavior in the framework of a health crisis produced by natural causes introduces new dimensions in the analysis of contexts and situations of information behavior, that are usually conceived as determined by social, cultural, and professional conditions (Case & Given, 2016; Pang, 2014). Biological and corporeal elements come into play when studying information behavior in the context of illness, though health information-seeking behavior tends to focus on the perspective of individuals; as information practices during a public health crisis is a less researched topic, studies often have looked at it from the point of view of information providers (Jang & Baek, 2019; Lambert & Loisele, 2007). This narrative non-systematic review of the literature is based on the results obtained from the Library, Information Science and Technology Abstracts (LISTA) and Google Scholar (GS) databases, and relies on the assumption that information plays a fundamental role in humans' adaption to changes caused by unexpected events. The empirical studies discussed in the following section are expected precisely to corroborate this assumption. However, a previous terminological clarification is needed. In this paper, the terms information behavior and human information behavior (HIB) are used interchangeably. They are not differentiated in definitional papers, whereas in other contributions the concept of *human* is an intrinsic component of the information behavior definition (Bates, 2017; Bawden, 2006; Wilson, 2000). The choice of HIB in the title and remainder of the paper emphasizes the theoretical premise outlined above, in particular the importance of information in human adaptation processes.

2. Literature review

2.1. Information and change management

The function of information in promoting adaptation to changing circumstances and environments appears in empirical studies, that draw on such notions as “transition”, “behavioral change”, “search for normality”, “coping” or “management of situations of uncertainty” (Baillergeau & Duyvendak, 2016; Barahmand, Nakhoda, Fahimnia, & Nazari, 2019; Genuis & Bronstein, 2017; Gomula, 2019; McKenzie & Willson, 2019; Naveh & Bronstein, 2019; Perttilä & Ek, 2010; Stutzman, 2011). These ideas underscore the function of information as a tool to manage changes intrinsic to human existence, in contexts such as natural disasters or illness. During natural disasters, information is a vital resource to share and look for within affected communities. Natural disasters are non-routine events that force a suspension of daily activities by raising unusual demands for individuals. They require adjustment to a landscape in which information sources or channels, and information practices, change dramatically (Pang, Karanasios, & Anwar, 2020). Natural disasters produce loss of communication, high levels of uncertainty, and collective stress by depriving a large portion of the population of expected routine conditions and, under these circumstances, information exchanges may occur in different, sometimes

unpredictable ways (Simon, Goldberg, & Adini, 2015). Lopatovska and Smiley (2013) discuss the changing functions of information at different stages of a natural disaster, emphasizing the role of information from personal contacts and experiences as strengthening the sense of belonging to the community in later stages of the crisis. Interpersonal information exchanges complement government communications and centralized information sources, and may occur via social media (Burke, Spence, & Lachlan, 2010; Simon et al., 2015). However, sometimes, the use of social media during natural disasters may be more helpful for authorities and public health agencies than the general public, because it allows authorities to track user activity on different platforms, to locate groups most in need, and to locate areas that are most in need (Muniz-Rodriguez et al., 2020). However, Abedin and Babar (2018) find that non-institutional social media messages posted by individuals can be the most valuable in some instances, whilst in other cases, social media may play only a secondary role in emergency situations (Ryan, 2018). More than the media itself, according to Maldonado (2017), is social networks that afford devising strategies of response, recovery, and adaptation to natural disasters. Information may often flow through channels that are hard to imagine, such as an older individual sitting on their porch (Maldonado, 2017). These channels are largely determined by the social fabric, including relatives, but also all other links among community members.

2.2. Everyday adaptation

Even in routine everyday life, HIB plays a role in adapting to the changing circumstances of existence, such as transition to college or coping with unemployment (Perttilä & Ek, 2010; Stutzman, 2011). We live in fast changing environments that require searching for information to cope with and attach sense to new situations, deal with stress and anxiety, and make decisions (Fourie & Julien, 2014). Unlike natural disasters, hassles of daily life depend on individuals' perceptions and subjectivity (Barahmand et al., 2019). According to McKenzie and Willson (2019), social interaction and information exchanges help to redefine oneself and a personal situation during “transitions”, including situations of substantial change in a person's life, such as development of disease. In the context of illness, diversified information sources, experiences, and communication channels enable individuals to build the capacity to cope, while individual coping strategies allow individuals to deal with health situations through different information practices (Sen & Spring, 2013; Theis et al., 2021). The search for normality after a traumatic event, such as the diagnosis of a chronic disease, appears to be an information-based process in several studies (Genuis & Bronstein, 2017; Patel, Blandford, Stephenson et al. Steinerová, 2019). Exchanging information on social platforms allows individuals to obtain information and social support at the same time, improving psychological well-being and the ability to face the challenges of chronic diseases (Erfani, Abedin, & Blount, 2017). In social media interactions, the notion of normality is re-negotiated by the community through shared experiences and personal information (Gomula, 2019; Naveh & Bronstein, 2019).

2.3. Behavioral change

Information supports adaptation by facilitating behavioral changes and, in the biomedical literature, the idea that information practices support “adaptation” to changed health conditions is often defended. Active HIB appears to be positively related to greater responsibility for one's health, such as the ability to implement beneficial changes in lifestyle, like increasing fruit and vegetable consumption or physical exercise; the intention to undergo preventive diagnostic tests; or the intention to quit smoking (Chen, 2016; Gibson et al., 2016; Moldovan-Johnson, Martínez, Lewis, Freres, & Hornik, 2014; Ramírez et al., 2013; Swoboda, Walker, & Huerta, 2019; Upadhyay, Lord, & Gakh, 2019; Wigfall & Friedman, 2016).

Behavioral change has become a topic of great relevance because the achievement of the sustainable development goals set by the United Nations depends on societies' capacity to implement changes in peoples' routine behaviors (Hagger, Cameron, Hamilton, Hankonen, & Lintunen, 2020). So far, actions to change behavior have been inspired by the "information deficit" paradigm with the understanding that reasoning enlightened by information and education is sufficient to change human behavior and that the provision of scientific information must necessarily lead humans to change (Luetz, Margus, & Prickett, 2020). Recently, attention has also been paid to the role of harmful information spread through technologies in consolidating social epidemics (Magarey & Trexler, 2020). However, years of research in the health sector show that human behavior tends to be irrational, governed by social norms and driven by motivations that do not necessarily and exclusively derive from access to scientific and authoritative information (Kelly & Barker, 2016). Changes in habits such as smoking, alcohol consumption, and physical activity are not produced by the availability of information, but processes and practices strongly conditioned by non-rational reasons and integrated into social life and human relationships. Rationality alone may fail because humans act or change because they are *emotionally* charged to do so, and affective states may be better predictors of behaviors, including HIB, than cognition and knowledge (Luetz et al., 2020; Myrick & Willoughby, 2019). Disaster preparedness appears to be positively affected when accessible, comprehensible, and tailored information is integrated into a framework of community participation; research on health information-seeking behavior shows that the search and use of information can lead to changes in behavior when it takes place in a social framework of mutual support and interaction (Abunyewah, Gajendran, Maund, & Okyere, 2020; Meadow-brooke, Veinot, Loveluck, Hickok, & Bauermeister, 2014; Wolf & Veinot, 2015). In social interactions, information exchanges are often combined with emotional support and allow the sharing of experiential knowledge, such as peers' personal experiences. Intertwined with social support, experiential knowledge allows individuals and communities to attach meaning to new situations, and to cope with situations of uncertainty, complementing expert knowledge (Baillergeau & Duyvendak, 2016; Barbarin, Klasnja, & Veinot, 2016; Rubenstein, 2015).

According to published research, and in line with evolutionary theories of HIB, information appears to support human adaptation to changing, evolving, and uncertain environments, promoting behavioral changes especially in social contexts. In non-routine conditions, from natural disasters to critical events such as disease, and even new situations within daily life, adaptive information practices may require using more information sources like social networks to exchange information and support, providing an example of identifying specific strategies suitable to different and changing circumstances. Our understanding of HIB during crisis can be meaningfully improved by research on HIB carried out during the Covid-19 pandemic, contributing to a more detailed picture of situations and practices that occur in unusual and often unpredictable ways.

3. Methodology

A narrative non-systematic review of the literature on HIB during the Covid-19 pandemic was carried out with the purpose of better understanding HIB during a health crisis, exploiting all the nuances that this specific crisis has brought about and, in this way, becoming better equipped to face future challenges and crises. The literature search was carried out in the LISTA database and in GS from the inception of the pandemic up to the 31st of March 2021. GS was used for its interdisciplinary nature and to retrieve preprints and more updated literature, while LISTA was chosen for its specialization in LIS. The search question in LISTA was (information behavior or information behaviour or information seeking) AND (covid19 or covid-19 or coronavirus) in all fields. The term "human" was omitted, so that documents simply addressing "information behavior" could be also retrieved, and to keep the search

question as simple as possible. Thirty-five results were retrieved from LISTA and, after filtering opinion papers, guidelines, and articles dealing with HIB, though not in relation to the pandemic, or simply mentioning the notion without producing relevant research, a set of 25 articles was finally selected. A similar search was run in GS returning approximately 200 results, 85 of which were published since 2020 onwards. After filtering irrelevant results, including those published before 2020, those that simply mentioned HIB without addressing it as a main topic, and those that did not even mention HIB, the final set of documents retrieved exclusively from GS included 27 contributions. The selection process relied on the information contained in the title, the abstract, and, sometimes, in the full text of the paper. In total, 52 contributions were selected. Because the focus was on emerging themes and methodologies, and considering the wide range of the literature retrieved from LISTA and GS, it was decided not to include additional potentially relevant databases. In particular, PubMed was not searched for its specific focus on health sciences. However, the themes and methodologies identified in this review will make it easier to approach new literature corpora and carry out follow-up research on this topic. Retrieved contributions were all research articles; written mostly in English (49) and secondarily in Spanish (2) and Portuguese (1); and appeared in academic journals (47) or in repositories (5).

During analysis, special attention was given to the methodology used in each contribution; the elements of HIB analyzed (information sources, information evaluation, etc.); and the other variables considered, including behaviors (e.g., preventive behavior), knowledge, or other situational elements (e.g., relationships). Other criteria were also considered in order to arrange the selected articles into meaningful themes, including topics (i.e., disinformation), settings (i.e., educational settings), and participants (i.e., citizens, elderly, etc.). Grouping of selected articles by themes was carried out inductively and cyclically, reading and contrasting the selected articles several times, and identifying relevant passages, until results acquired a coherent structure. In the results section, the 52 contributions are presented in seven tables for each of the seven themes identified, though some articles may appear under two different themes. The identification of the most relevant contributions for each theme and the availability of many of them in open access should guarantee transparency and reproducibility of results.

4. Results. Information behavior during covid-19 health crisis

Table 1 below presents a summary of the 52 contributions covered in the remainder of the paper. Most contributions referred to survey results (27); 13 applied automatic methods of analysis to massive data from search queries for topic analysis of posts on social media; seven, including two mixed-methods contributions, employed some type of qualitative research method; and five were purely theoretical. Almost all surveys (twenty-four) were conducted online. The empirical research that was carried out on HIB during the first year of the health crisis appears to be, in most cases, of a quantitative nature.

Table 1
Summary of the reviewed studies grouped according to the research method].

	No.	%
Database		
LISTA	25	48.1%
GS	27	51.9%
Total	52	100.0%
Research methodologies		
Surveys	27	51.9%
Automatic, semiautomatic and statistical analysis	13	25.0%
Theoretical contributions	5	9.6%
Qualitative research studies	5	9.6%
Mixed-method research studies	2	3.8%
Total	52	100.0%

In the following sections, the selected contributions are summarized under seven main themes: (1) information behaviors in educational contexts; (2) traditional media and social media use; (3) infoveillance of search engines and social media activity; (4) misinformation, disinformation, and infodemics; (5) uncertainty and emotions; (6) information in daily life during lockdown; and (7) the “dark side” of information and communication technologies.

4.1. Information behaviors in educational contexts

The abrupt change to online teaching and learning activities during the first months of the pandemic is analyzed in several studies (Table 2) pointing to challenges related to information, such as supporting students' digital skills, especially from the perspective of students, mostly in university contexts (Dadaczynski et al., 2021; Händel et al., 2020; Murphy, 2020). However, whilst Händel et al. (2020); Esiebo, Ogugua, Amaechi, and Unegbu (2020); and Murphy (2020) address specific educational issues, Dadaczynski et al. (2021) focuses on health digital literacy, and Kecojovic, Basch, Sullivan, & Davi, 2020 (2020) and Wang (2020) center on more general implications of lockdowns on students and their families, dealing with educational issues to a limited extent. Händel et al. (2020) look at digital skills and competencies of German university students during lockdown, pointing to different ways to handle distance learning among the surveyed population. Additional research, they argue, should be carried out on students struggling to cope with the situation (Händel et al., 2020). Dadaczynski et al. (2021) web survey with German university students, highlights difficulties in assessing the reliability of health-related information. The crisis toll on students' mental health is documented in the Kecojovic et al. (2020) survey, with 162 college students in Northern New Jersey. Specifically, the authors found higher levels of anxiety among participants who spent more than one hour a day searching for information about the pandemic. Teachers as well as students may have new information needs in the context of the pandemic; Esiebo et al. (2020) concludes that the 155 Nigerian teachers from Oguta LGA, Imo State, need information about Covid-19, independent of the subject they teach, to keep themselves updated with new developments in society. Murphy (2020) reflects on the impact of the pandemic over the information behavior of studio art and design students, faculty, and practitioners, and wonders whether the increased use of digital images, at the expense of print and physical materials for image research, will persist in the long term, affecting creative processes. Finally, Wang (2020) describes the HIB of nine American families with PreK and elementary school children, drawing on data from diaries and interviews. School closures and the need to monitor children closely while attending to work and other obligations contributed to create a series of negative or conflicting emotions in most families (Wang, 2020).

4.2. Traditional media and social media use

Research on traditional media and social media use focuses on the intensity and volume of different media use, and the relationship between media use and different emotional and cognitive results for users (Dreisiebner, März, & Mandl, 2021; Liu, 2020; You & Lee, 2021). The web surveys reported in this section (Table 3) emphasize the effects of

Table 2
Contributions summarized under 4.1 *Information behaviors in educational contexts*.

Contributions	Research method	Sample size
Dadaczynski et al. (2021)	Web Survey	14,916 students
Esiebo et al. (2020)	Survey administered by hand	155 teachers
Händel et al. (2020)	Web Survey	5563 students
Kecojovic et al. (2020)	Web Survey	162 students
Murphy (2020)	Web Survey	57 respondents
Wang (2020)	Diaries and interviews	9 families

Table 3
Contributions summarized under 4.2 *Traditional media and social media use*.

Contributions	Research method	Sample size
Al-Hasan et al. (2020)	Web survey	482 respondents
Dreisiebner et al.'s (2021)	Web survey	308 respondents
Grunderath et al. (2020)	Web survey	952 respondents
Liu (2020)	Web survey	511 respondents
Moreno et al. (2020)	Web survey	385 respondents
Tang et al. (2021)	Web survey	240 respondents
Xu et al. (2020)	Web survey	8158 respondents
You and Lee (2021)	Web survey	990 respondents

information use and different information sources in terms of preventive behavior, knowledge about the virus, and trust in governments' interventions. The methodological choice of the web survey allows researchers to reach quite large convenience samples of participants distributed in loose contexts, sometimes even in different countries (Al-Hasan, Yim, & Khuntia, 2020). In general, media use and information consumption increased as a consequence of the pandemic. The Dreisiebner et al. (2021) survey, with 308 participants from German-speaking countries, shows that the reported use of information from public organizations, public television, international sources, as well as national and local newspapers significantly increased. Several research studies show the effect of media and information consumption on both behavior and knowledge as mediated by different pre-defined emotions, such as perception of threat, worry, or concern (Grunderath, Sondermann, Martin, & Merkt, 2020; Liu, 2020). The Liu (2020) survey, with 511 Chinese participants, revealed a connection between digital media consumption and a greater predisposition for preventive behaviors, including hand washing, use of face masks and avoiding places with many people, which was mediated by worry. Grunderath et al. (2020) studied the effect of traditional and social media use on knowledge about the pandemic, in a sample of 952 German participants. People who perceived themselves more threatened used a smaller breath of means, but more often. However, higher media use frequency was related to higher perceived knowledge though not actual knowledge, that by contrast increased when the breath of media consumed was smaller (Grunderath et al., 2020). In You and Lee (2021), the effectiveness of text SMS messages for supporting preventive behaviors was measured, indicating that preventive behaviors, such as wearing masks or avoiding crowds, were higher for people reading text messages, especially for females and older persons.

A group of studies focused on government communication with citizens, and searched for evidence of communication effectiveness on social media, often understood as trust in governments' response. In general, these studies are designed for evaluating governments' information initiatives more than citizens' actual HIB. In a Spain-based survey, trust in government crisis response grew as a consequence of multiple types of media consumption (Moreno, Fuentes-Lara, & Navarro, 2020). In a cross-country survey, the intensity of information sources use, social media use, and knowledge about the COVID-19 were positively associated with citizens' adherence to government recommendations about social distancing measures (Al-Hasan et al., 2020). In the Xu et al. (2020) survey, the vast majority of respondents pointed to government websites, government apps, and public media as the most authoritative sources. Tang, Miller, Zhou, and Warkentin (2021) find a positive response of WeChat users following Chinese government accounts as a part of their information security behavior associated with Covid-19 scams.

4.3. Infoveillance of search engines and social media activity

The impressive increase of activity on social media and the Internet at the beginning of the pandemic, and in following stages, has converted citizens' HIB into the object of surveillance, or infoveillance, with different purposes. Surveilling information activity on social media not

only enables individuals to act promptly based on current data, but also to discover in advance possible patterns in the evolution of the pandemic (Husnayain, Shim, Fuad, & Su, 2020; Shen et al., 2020; Singh et al., 2020). Methodologically, most studies opt for topic analysis of massive corpora of search queries, tweets, or posts, sometimes combined with network analysis (see Table 4), while a couple of studies monitor users' activity on digital platforms (Perlman et al., 2020; Utunen et al., 2020). Once again, the study of online HIB appears to be *instrumental*, affording predictions of related phenomena, but also making other phenomena visible, such as the greater responsibility put on women regarding exchange of health relevant information, or the anticipation of mental health problems in certain individuals based on the analysis of search queries after lockdown (Cleverley, Cousins, & Burnett, 2021; Thelwall & Thelwall, 2020). Some subthemes emerge that will be discussed in Section 4.6 and that corroborate results of research more directly focused on people, in particular women's role in information exchanges, the connection of online activity with local areas and events, and the changing nature of this activity according to the different stages of the crisis (Cleverley et al., 2021; Husnayain et al., 2020; Singh, Bansal, et al., 2020; Thelwall & Thelwall, 2020; Zhao, Fan, Basnyat, & Hu, 2020). Sarker et al. (2020) mine Covid-19 conversations on Twitter to collect user-referred symptoms and find a wide range of symptoms, which, in milder cases, such as anosmia and ageusia, did not appear yet in comparative clinical studies. Analysis of social media for infoveillance purposes allows Shen, Chen, Luo, et al. (2020) to conclude that symptoms reported on Weibo, during the period of November 1 Steinerová, 2019 to March 31, 2020, predicted daily case counts up to 14 days ahead of official statistics. This predictive power was specific to posts informing about one's own symptoms or other people's symptoms (Shen, Chen, Luo, et al., 2020).

In several other studies, activity on social media mirrors other events related to the pandemic. Monitoring the use of the hashtag #COVID-19 Patient Seeking Help on Weibo at the peak of the outbreak, Zhao, Fan, et al. (2020) describe a rapid increase of the hashtag use that corresponded with the difficulty to access health care services. People taking care of older adults or children, usually women, were especially active. In the Singh, Bansal, et al. (2020) massive analysis of Twitter activity between January 16 and March 15, Twitter conversations predicted Covid-19 cases 2 to 5 days in advance of official statistics. The analysis of COVID-19 related queries, through Google Trends and Naver, permits Husnayain et al. (2020) to measure risk perception about the pandemic in the South Korean population, describing patterns of covariation with

daily new COVID-19 cases and tests available, with more internet search data in affected areas and in correspondence with local events. Thelwall and Thelwall (2020) describe gender differences in English language tweets about the pandemic in March 2020, finding that female accounts tended to tweet more often about family-related issues, social distancing measures, and health care, while tweets posted by men tended to address issues related to the cancellation of sports events, the global reach of the virus, and political reactions.

Social media and search engines studies also provide a picture of the population preferences for information sources. In Shen, Chen, Bovonratwet, Shen, and Su (2020), the most Google searched topics about the pandemic by US users were matched to health organizations or academic medical institutions information sources most of the time. The World Health Organization analysis of usage data of a massive open online course on the Coronavirus pandemic reveals that users identified themselves as "other" considerably more often than in pre-pandemic similar courses, showing the interest of the course for non-healthcare professionals (Utunen et al., 2020). Park, Park, and Chong (2020) combined topic and network analysis of Covid-19 tweets collected in South Korea on February 29, 2020, shows that tweets containing medically framed news articles were more popular in terms of shares than the rest.

User interactions with digital health tools have also been exploited, to understand their potential in enabling remote care (Perlman et al., 2020). From the perspective of an organization, the analysis of search logs during the first months of the pandemic reflects faithfully its different stages, evidencing a 'peak of uncertainty and activity' in March 2020, just following lockdown measures; a drop of search after lockdown; and an important surge in mental health information search from April onwards (Cleverley et al., 2021).

4.4. Misinformation, disinformation, and infodemics

People's HIB during the crisis was seriously challenged by the dissemination of false information in a context that has often been defined as *infodemics* (Agarwal & Alsaeedi, 2020; Alfonso Sánchez & Fernández Valdés, 2020; Montesi, 2021). In the studies reported in Table 5, HIB manifests as information practices such as disinformation and misinformation, and often as an area for information literacy interventions. However, in several retrieved studies, instead of dealing with actual people's behavior, documents related to fake news were analyzed or theoretical perspectives were presented, making disinformation appear to be a less mature area for HIB research (Agarwal & Alsaeedi, 2020; Alfonso Sánchez & Fernández Valdés, 2020; Montesi, 2021; Victoria, 2020). The problem of disinformation during the pandemic is seen from the theoretical perspective of HIB in Alfonso Sánchez and Fernández Valdés (2020) and Montesi (2021), who argues that judgments on information rest on a concept of authority that is not only cognitive but also "affective". Serendipity is invoked by Agarwal

Table 4
Contributions summarized under 4.3 Infoveillance of search engines and social media activity.

Contributions	Research method	Sample size
Cleverley et al. (2021)	Search log analysis	2.5 M queries
Husnayain et al. (2020)	Statistical analysis of online data searches, daily numbers of new COVID-19 cases and coronavirus tests	(not specified)
Park et al. (2020)	Network analysis, classification and content analysis	43,832 Twitter users
Perlman et al. (2020)	Statistical analysis of health tools	71,619 users
Sarker et al. (2020)	Semiautomatic content analysis	203 users and 7945 tweets
Shen, Chen, Luo, et al. (2020)	Automatic classification and statistical analysis	14,983,647 Weibo posts
Shen, Chen, Bovonratwet, et al. (2020)	Categorization and topic analysis	200 questions and websites
Singh, Bansal, et al. (2020)	Statistical analysis, including thematic analysis	2,792,513 tweets
Thelwall and Thelwall (2020)	Word frequency analysis	3,038,026 English tweets
Utunen et al. (2020)	Statistical analysis of usage data	161,007 users
Zhao, Fan, et al. (2020)	Entity identification and textual analysis	10,908 Weibo posts

Table 5
Contributions summarized under 4.4 Misinformation, disinformation and infodemics.

Contributions	Research method	Sample size
Agarwal and Alsaeedi (2020)	Theoretical contribution	
Alfonso Sánchez and Fernández Valdés (2020)	Theoretical contribution	
Choudrie et al. (2021)	Mixed methods (automatic classification and interviews)	143 news +20 interviews
Kim et al. (2020)	Web survey	2942 respondents
Liu and Huang (2020)	Web survey	512 respondents
Montesi (2020)	Content analysis	242 news
Okan et al. (2020)	Web survey	1037 respondents
Singh, Cumberland, et al. (2020)	Statistical analysis, including thematic analysis	2,792,513 tweets
Victoria (2020)	Theoretical contribution	

and Alsaeedi (2020) as a promising perspective to fight against fake news, allowing individuals to reflect on the encountered information and develop critical thinking in information literacy interventions. Okan et al. (2020) also supports literacy as a strategy to address the infodemic, though they focus on health literacy.

Other works refer to surveys conducted in different contexts to measure the extent of the phenomenon. Kim, Ahn, Atkinson, and Kahlor (2020) find that increased exposure to disinformation was related to fewer information needs (or perception of “information insufficiency”), a greater tendency to avoid information, and a lower inclination to systematically process information on Covid-19. On the other hand, Liu and Huang (2020) highlight that many participants perceived themselves as less vulnerable to disinformation than those close to them. Choudrie et al. (2021) showed older adults’ had a preference for traditional media, the government, and general practitioners as information sources, rather than new media, which made them relatively immune to online misinformation. Singh, Bansal, et al. (2020) address disinformation through the massive analysis of almost 3 million tweets, revealing that sources of disinformation were retweeted more often than credible health sources. Finally, although several studies deal with misinformation and disinformation from an HIB perspective, Victoria (2020), in a review on fake news and disinformation, concludes that research on the topic often misses users’ perspective, especially their motivations for sharing fake news, and the role of specific political contexts and media systems in fostering dissemination of hoaxes.

4.5. Uncertainty and emotions

In general, the works reviewed so far point to different emotional dimensions of HIB during the pandemic, and some place particular emphasis on uncertainty. Tandoc and Lee (2020) note that uncertainty is a typical emotional response in health crises, which is caused by invisible organisms and may present unpredictable symptoms. In Finset et al. (2020) vision, effective health information communication actions should address uncertainty and fear and should encourage necessary behavioral readjustments. The perspective of uncertainty allows Montesi (2021) to see disinformation from a perspective that underlines the affective component of decision-making regarding information, whereas the misinformed discourse itself presents emotional and affective nuances.

Besides uncertainty, other negative emotions discussed in the literature include confusion, concern, worry, sadness, guilt, and anxiety. Indeed, in studies reported earlier, emotions are usually predefined by researchers; the studies reported in Table 6 are designed to detect shades in the emotional environment that surrounded information seeking about the pandemic and often highlights individual emotions as well as bundles of intertwined emotions (Chivers et al., 2020; Eriksson-Backa, 2020; Rak, 2020; Song, Yao, & Wen, 2021; Wong et al., 2021). Anxiety, a relatively easy to measure construct, results often from conflicting information or overexposure to information and social media (Singh, Cumberland, Ugarte, Bruckner, & Young, 2020; Soroya, Farooq, Mahmood, Isoaho, & Zara, 2021; Wong et al., 2021). Okan et al. (2020) detect confusion in the German population when it comes to managing and evaluating conflicting information on Coronavirus and Covid-19. This ability to evaluate conflicting information appears to be higher in women, possibly due to their increased need to seek information for family care. In Zhao, Xu, et al. (2020) survey, the feeling of concern appears to be related to a better knowledge about preventive practices and the adoption of proper preventive behaviors.

Some authors explore the connections between emotions and behavior. Singh, Cumberland, et al.’s (2020) work in the United States establishes a connection between time spent on the internet searching for information about the pandemic and Generalized Anxiety Disorder 7 (GAD-7) scores. Wong et al. (2021) notes that there is little research regarding the consequences of anxiety on attitudes and behaviors, so should the use of social media increase the risk of anxiety symptoms,

Table 6

Contributions summarized under 4.5 *Uncertainty and emotions*.

Contributions	Research method	Sample size
Chivers et al. (2020)	Thematic analysis, sentiment analysis, and word frequency calculations	831 posts 258 respondents
Eriksson-Backa (2020) Finset et al. (2020)	Web survey Theoretical contribution	1681 questions 242 news 1037 respondents 104 respondents
Ke et al. (2021) Montesi (2020)	Thematic analysis Content analysis	406 respondents 721 respondents 321 respondents
Okan et al. (2020)	Web Survey	89 young adults 3421 respondents
Rak (2020) Singh, Cumberland, et al. (2020)	Web Survey Web survey	10,304
Song et al. (2021)	Web survey	
Soroya et al. (2021) Tandoc and Lee (2020)	Web Survey Focus group discussions	
Wong et al. (2021) Zhao, Fan, et al. (2020)	Telephone Survey Web Survey	

more research will be needed in this area. According to their results, social media use for COVID-19 information resulted in more anxiety symptoms and lower social trust in information, but had no significant impact on preventive behaviors, causing more confusion about preventive behaviors than resistance to adopt them. The Soroya et al. (2021) survey in three Finnish universities points to social media use as a precondition for information anxiety mediated by information overload. While previous studies have highlighted the role of negative emotions in triggering information needs, Ke, Du, and Ji (2021) point to confidence in the government’s response as a motivation for searching information.

As previously mentioned, some studies centre on different emotions entangling and occurring at the same time (Chivers et al., 2020; Eriksson-Backa, 2020; Rak, 2020; Song et al., 2021; Wong et al., 2021). The sentiment analysis of threads related to Covid-19 in a mothering online support forum pointed to mostly negative content with fear, anger, joy, and sadness as dominating emotions, whilst, by interacting in the forum, women found an appropriate way of getting informed and supported, avoiding fear-provoking mainstream news sources (Chivers et al., 2020). In a similar vein, Song et al. (2021) looked at the intersection between anxiety, sadness, and cognitive dissonance (a discomforting condition appearing as a consequence of an excess of inconsistent information). According to survey results, Song et al. (2021) concluded that perceived threat and information overload may affect consumers’ emotional state which, in turn, has heterogeneous effects on information avoidance. Emotions emerge as the common thread in the otherwise disperse range of impressions that Eriksson-Backa (2020) gathered from a web survey with 258 respondents recruited through the Finnish Åbo Akademi university’s website and different social media platforms. Rak (2020), also points to the intertwining of different concurrent emotions while searching for information in her study of business sharing user groups.

4.6. Information in daily life during lockdown and the effect of the situation

Unlike many previously reported studies that often center more on the effects of HIB than actual HIB, in this section the focus is on people, and the research methodologies are diversified (Table 7), offering important insights into HIB during the Covid-19 crisis. Information practices emerge as collaborative or “orchestrated” and interaction in

Table 7

Contributions summarized under 4.6 *Information in the day-to-day of the 2020 lockdown and the effect of the situation.*

Contributions	Research method	Sample size
Ali et al. (2020)	Web Survey	5677 respondents
Chivers et al. (2020)	Thematic analysis, sentiment analysis, and word frequency calculations	831 posts
Dreisiebner et al.'s (2021)	Web Survey	308 respondents
Ke et al. (2021)	Thematic analysis	1681 questions
Martos and Casarin (2020)	Web Survey	52 respondents
Montesi (2020a)	Web Survey	95 respondents
Ojaranta et al. (2020)	Web Survey and interviews	83 respondents
Oyovwe-Tinuoye and Omosekejimi Ademola (2020)	Survey administered by hand	146 health practitioners
Pan et al. (2020)	Case study	6 families
Soroya et al. (2021)	Web Survey	321 respondents
Tandoc and Lee (2020)	Focus group discussions	89 young adults
Tang and Zou (2021)	Interviews	17 participants
Xu et al. (2020)	Web Survey	8158 respondents

social networks, both online and offline, becomes, not only, an important information source for many, but it also appears to exert a protective function in regulating emotional responses to information about the crisis (Chivers et al., 2020; Ojaranta, Ahmadinia, & Eskola, 2020; Pan, Cui, & Qian, 2020; Tandoc & Lee, 2020). HIB and other behaviors, such as preventive practices and attitude towards vaccines, appear as conditioned and originated by relationships and roles, especially roles within the family and women's roles in sharing information through social networks (Ali, Whitebridge, Jamal, Alsafy, & Atkin, 2020; Montesi, 2020; Ojaranta et al., 2020; Pan et al., 2020; Xu et al., 2020). Groups such as older persons, that may be less visible in massive analysis of web activity, are also given more visibility (Martos & Casarin, 2020). Finally, the perspective on people provides insights into the characteristics of valuable information, that appears to be, not only, authoritative, but also comprehensible, complex, and locally relevant (Ke et al., 2021; Montesi, 2020).

Pan et al. (2020) underscores the importance of collaborative dynamics and social interactions by describing the information practices of six Chinese families during Covid-19 quarantine. The authors speak of practices of "orchestration" of the information resources deployed to adapt and maintain a normal life, emphasizing: the dependence on technologies and the need to instruct the older generation; the lack and excess of information; and the ability to assimilate new information. The older generation, as a demographic group with specific needs, were surveyed and results confirm their preference for traditional media, such as, television, as a means of finding updated information, despite availability of access to the internet (Martos & Casarin, 2020). Seventeen interviews with individuals residing in China's Hubei province describe the consumption of health information during quarantine and the progressive change in information needs and use during the evolution of the pandemic (Tang & Zou, 2021). Tandoc and Lee (2020) differentiate between two types of HIB aimed at protecting from the virus: information seeking and information scanning. Information seeking refers to acquiring information in casual conversations with family and friends, in chats or via WhatsApp (Tandoc & Lee, 2020). Information scanning protects individuals from information that would potentially cause panic or anxiety, according to the authors (Tandoc & Lee, 2020). Working with the notion of individuals as information sources in the Swedish and Persian linguistic minorities of Finland, Ojaranta et al. (2020) found that, for both minorities, the main references for obtaining and commenting on information were friendships and family, while women were 50% more active in communicating health information through personal contacts. By contrast, other sources point to a limited use of social media and interpersonal information

sources, in favor of official and traditional information sources such as public broadcasters (Dreisiebner et al., 2021; Soroya et al., 2021). Criteria for selecting relevant information are varied and included: credibility, journalistic quality, interesting facts based on research, information from official sources, reliability, authority, adequacy to one's prior knowledge, comprehensibility, and complexity (Dreisiebner et al., 2021; Montesi, 2020). Looking for the impact of specific situations (households with children, job loss, and contact with the virus) on HIB during lockdown, Montesi (2020) found that the presence of children in the household fostered a wider range of information practices than the other factors analyzed, which proved presence of children to be a powerful motivation for information-mediated adaptation strategies. Ke et al. (2021) set out to compare information needs in the context of the Covid-19 health crisis, with usual information needs when searching for health information. This comparison was based on Covid-19 related questions from a Chinese social Q&A website, Baidu Zhidao. A thematic analysis of the questions revealed that, whilst normally people tend to ask about symptoms and treatments, during the Covid-19 crisis many questions concerned clarification of the circumstances and preparation, control measures and prevention strategies (Ke et al., 2021). Developing the notion of situational-triggered information needs, Ke et al. (2021) found that in order to make important decisions people are mostly concerned about locations, settings, and activities, preferring information relevant to their target location, and tailored to their specific needs.

Other characteristics of the situation influence HIB, such as relationships. The 5677 respondents in the Ali et al. (2020) survey showed differences in risk perception and vaccination intentions, and those working or studying in health care, among others, reported a higher perceived likelihood of acquiring COVID-19 and a more positive disposition to COVID-19 vaccines compared to the rest of respondents. In the Xu et al. (2020) survey, behaviors were influenced by relationships, and those with family members involved in local community efforts against COVID-19 or who were health professionals were more likely to adopt preventive behaviors than the rest of participants.

Finally, even if health care services were as profoundly impacted by the pandemic as were educational services, few of the selected studies addressed the topic except, reporting from Nigeria, that describe the medical practitioners' difficulties to access valuable information to care for patients, as mentioned above (Oyovwe-Tinuoye & Omosekejimi Ademola, 2020; Perlman et al., 2020).

4.7. The "dark side" of information and communication technologies

Reflecting on the most critical period of the pandemic, Pan and Zhang (2020) believe that information systems have been conceived mostly from an organizational point of view, disregarding their social and cultural value. One aspect that Pan and Zhang (2020) consider important to investigate is what they call the "dark side" of information systems, including the difficulty of reaching marginalized groups such as older persons or lower income people. The pandemic has revealed some aspects of the dark side of information and communication technologies (ICT) and social media, and the Wang study (Wang, 2020) reports negative experiences in the use of videoconferencing systems and online resources for children. Other relevant studies apart from those included in Table 8, were reported in Section 4.5, pointing to negative emotions resulting from overexposure to information, social media, and conflict information.

Table 8

Contributions summarized under 4.7 *The "dark side" of Information and Communication Technologies.*

Contributions	Research Method	Sample size
Pan & Zang, (2020)	Theoretical contribution	
Wang (2020)	Diaries and interviews	9 families

5. Discussion

The preceding non-systematic bibliographic review contributes to an incipient base of knowledge about HIB during health crisis, while at the same time pointing to new challenging themes for research. During the first year of the pandemic, the availability of massive datasets under circumstances of social distancing has encouraged the application of quantitative research methodologies in HIB research, instead of qualitative, direct and closer research methodologies focused on individuals or small communities, and many of the reviewed works analyze HIB through very large sample surveys or datasets from different social media platforms and search engines, confirming previous informal reviews (Eriksson-Backa, 2020). In this sense, it is possible to perceive a difference from the dominant methodological patterns outlined by Julien and O'Brien (2014), who pointed to interviews as the most used methods in information behavior research during the period 2009–2013. However, in line with the more traditional focus of HIB research on people, most contributions have implied some kind of collaboration with citizens whose experiences, perceptions, and opinions have been gathered through surveys, interviews, or focus groups, pointing to a highly engaged research community willing to get involved in societal issues. Though the advantage of quantitative over qualitative research may be just temporary and limited to the first year of research on HIB during the pandemic, considering that qualitative research tends to be more demanding in terms of time, the methodological preference for quantitative analysis also points to the relevance of HIB for today's society. In the research articles discussed in Sections 4.2 and 4.3, HIB is often instrumental but not always studied per se, however, because of what it can reveal about other related social phenomena it is relevant. In this way, studies into HIB allow researchers to measure effects of information use and information sources on behavior, knowledge, or trust in governments' interventions, and to predict related events, such as daily cases or less reported symptoms. In this way studies into HIB confirm that information usage accompanies strategies, decision-making, and problem-solving processes in today's society (Steinerová, 2019).

The use of data-driven research methodologies in the study of HIB assumes that HIB can be studied as an *existential* condition, in loose socio-cultural contexts, determined by universal situations such as a pandemic, and, in these specific circumstances, channeled through ICT. In the reviewed studies, the researched contexts are sometimes so loose that little attention is paid to the specificities of communities, and it is remarkable the case of research carried out in educational settings that looked at students' HIB paying little or no attention at all to educational issues; research that surveyed populations across different countries regardless of cultural and social differences; or research that carried out massive analysis of conversations held in English on social media, without considering the specific contexts in which they originated (Al-Hasan et al., 2020; Dadaczynski et al., 2021; Dreiseibner et al., 2021; Kecojevic et al., 2020; Sarker et al., 2020; Singh, Bansal, et al., 2020; Soroya et al., 2021; Thelwall & Thelwall, 2020). According to the reviewed research, the value of HIB appears to go far beyond the design of user-sensitive information systems and environments, because it allows for monitoring or even prediction of other intertwined phenomena, including behaviors, knowledge, attitudes, valuable insights, and information about decision-making processes.

In this new environment, which lines of research are then worth pursuing by future HIB research?

5.1. Paying attention to marginalized communities and weak social ties

A consequence of the massive data driven research, in a context of different degrees of social distancing, is that HIB has been studied mostly within technological environments, even when survey research designs have been implemented, whilst crucial questions such as the digital divide and its consequences have been left out (Ayre, 2020). In the context of the pandemic, the high reliance on ICT and the increasing use

of technology for the provision of health or educational services, among others, has uncovered the difficulties of more vulnerable groups, such as migrants and temporary workers, though this problem has been barely touched by the Covid-19 HIB research reported here (Lee et al., 2020; Mann, Chen, Chunara, Testa, & Nov, 2020). Only a few studies from developing Africa reach out to teachers and health practitioners to personally gather information about the problems that they experience; in sporadic cases alternative means of communications, such as the telephone, have been considered as channels to reach people, and acquire and exchange information (Esiebo et al., 2020; Oyovwe-Tinuoye & Omosekejimi Ademola, 2020; You & Lee, 2021). However, the unpredictable nature of crisis and disasters calls for a comprehensive analysis of HIB, in which communication and information flows are considered in all their diversity and peculiarities. If in this health crisis, it has been possible to highly rely on ICT, this does not guarantee that it will be so in future crises. According to Sakurai and Chughtai (2020), this health crisis has put the focus on communities and social infrastructure, evidencing weaker connections with important actors, such as the older generation, pregnant women, and other vulnerable communities. Even if some of the studies reported above engage with more fragile communities, such as, the older generation and pregnant women, and others claim major attention for struggling individuals, HIB future research should keep focusing on these weak community ties, if it intends to obtain a comprehensive picture of HIB during the Covid-19 pandemic and in this way prepare for the challenges of future and, to a certain extent, unpredictable health crises (Chivers et al., 2020; Choudrie et al., 2021; Händel et al., 2020; Martos & Casarin, 2020).

5.2. Looking at the consequences of the intense use of ICT

Further research should also take advantage of the crisis to delve into the *dark sides* of ICT and social media that already count on a small body of literature (Boroon, 2018; Boroon, Abedin, & Erfani, 2019). Specifically, the literature reviewed here mentions mental health problems as a result of long periods of lockdown and forced use of ICT, and concerns have been expressed about the impact of the almost exclusive use of ICT on creative practices (Kecojevic et al., 2020; Murphy, 2020). If the use of social media has a high potential to become addictive because it can fill a social vacuum and can replace real family members and friendships, during the pandemic its intensive use may have worsened the negative consequences of social distancing measures (Boroon et al., 2019). Information systems during the Covid-19 crisis have enabled immediate challenges to be addressed, however, a better knowledge of ICT limitations, and of the consequences of its intense use, could contribute to devise medium- and long-term strategies to promote adaptation and transformation. In particular, Sakurai and Chughtai (2020) suggest strengthening access to local knowledge of the immediate environment. In this review, these ideas have emerged as especially relevant for daily information needs during the pandemic. Finally, the methodological emphasis on quantitative analysis based on large data sets requires reflection on the ethical consequences of all the activities of information and their impact on individuals' privacy that can be mentioned as an additional *dark side* of ICT (Pan & Zhang, 2020).

5.3. Digging at the border of the unconscious

Despite the existence of an important tradition of research on emotions in HIB, the reviewed research poses new questions in this sense also. The health crisis has been marked by uncertainty, but, in general, the literature reviewed has highlighted all kinds of emotions from confusion, perception of threat, anxiety, concern, and worry, to anger, hate, indifference, guilt, or confidence, and, in some cases, research has underscored conflicting or entangled emotions (Eriksson-Backa, 2020; Rak, 2020; Wang, 2020). Emotions are not new in HIB research and they have been conceived as feelings accompanying decision processes at different search stages; as an "affective load" during the search process;

as predictors of online search actions; and as promoters of online health searching (Fourie & Julien, 2014; Kuhlthau, 1991; Kuhlthau, 2005; Lopatovska, 2014; Myrick & Willoughby, 2019; Nahl, 2004; Nahl, 2005). Centered on emotions in the midst of the pandemic, even if often mediated by different media, much research on HIB during the Covid-19 crisis has pointed to new dimensions of the interplay of emotions with HIB. First, the connection between emotions and HIB has new empirical evidence. Several studies found that anxiety and other negative emotions, such as confusion or sadness, increased as a consequence of exposition to information from social media; excess of information; and inconsistent information, however, results were heterogeneous and inconsistent behaviors (Song et al., 2021; Soroya et al., 2021; Wong et al., 2021). If certain information practices may produce negative emotions and result in inconsistent behaviors, other practices such as sharing information with other people appear to regulate the emotional response to information about the crisis (Chivers et al., 2020; Tandoc & Lee, 2020). Second, aligning with studies on HIB in the context of illness, the corpus of works analyzed here make emotions dependent on, and produced by, the situation in all its dimensions more than the search process itself, and many authors stress the entangled nature of emotions during information practices (Chivers et al., 2020; Eriksson-Backa, 2020; Ke et al., 2021; Rak, 2020; Sen & Spring, 2013; Song et al., 2021; Wong et al., 2021). The fact that, in real situations, emotions coexist and combine makes it a bit more difficult to understand them in connection to HIB, which leads to a third important implication. The intertwining of emotions in real life may point to some limitations of all reported research that, centering on single or specific emotions, looks for connections with other behaviors including HIB, a limitation that inevitably derives from the extreme difficulty of studying subjective and not always conscious experiences, like emotions. It is a meaningful sign, in this sense, that the HIB research reported in Section 4.4 on disinformation and misinformation, information practices with a high emotional component, appeared to be a less mature area of investigation and counted with a higher proportion of theoretical contributions. On the other hand, many reported studies managed to measure anxiety and related disorders such as depression using proven tools, such as GAD-7 or others developed for healthcare or other purposes (Kecojevic et al., 2020; Singh, Cumberland, et al., 2020). If, in the words of Keilty and Leazer (2018, p. 484), information seeking has migrated “from the realm of the strictly conscious to the realm of semi-consciousness, and the unconscious”, then HIB scholars will need to devise appropriate research methodologies to address the affective emotional component of information practices in all its complexities.

5.4. Enriching the notion of situation: The need to better understand local knowledge and experiential knowledge

This review enriches our understanding of situations of HIB and several elements of the situation have emerged as remarkable. In Ke et al. (2021), information needs were local (concerning specific settings and public areas), related to daily life, and triggered by different family, social, and work roles. In other studies, human relationships and roles have generated a more active HIB and a wider range of information practices, probably mediated by a wider set of information needs, especially in presence of older individuals and children in the household, and contact with people working in healthcare or giving service to the community have made people better equipped and prone to preventive behaviors (Ali et al., 2020; Montesi, 2020; Pan et al., 2020; Xu et al., 2020; Zhao, Fan, et al., 2020). The abundance of information needs related to location, and the fact that information flows on social media have often evolved in correspondence with local events, prove the relevance of “local” knowledge (Husnayain et al., 2020; Ke et al., 2021). “Local knowledge” counts on a body of literature in adaptation science, where it is also known as “implicit knowledge”, or “indigenous knowledge” referring to knowledge gathered over time and shared by members of a community regarding a specific place (Lemos, Eakin, Dilling, &

Worl, 2019; Naess, 2013; Nakanishi & Black, 2018). However, local knowledge has not been investigated in LIS. Considering that during the Covid-19 pandemic many people’s information needs were local, it would be helpful to identify more clearly these local information needs and coherent strategies to support them if they really prove to be important during crisis.

Conversely, some of the reviewed studies document the enriching possibilities of exploiting experiential knowledge for symptoms detection, for making predictions about subsequent events, or even for making up for the unavailability of healthcare services (Sarker et al., 2020; Shen, Chen, Luo, et al., 2020; Zhao, Fan, et al., 2020). However, results about preferred information sources are conflicting, since in some studies, social interaction is preferred for obtaining valuable information, and in others it is mainstream media and information from government that is more highly valued (Chivers et al., 2020; Dreisiebner et al., 2021; Martos & Casarin, 2020; Ojaranta et al., 2020; Soroya et al., 2021; Tandoc & Lee, 2020). Significantly, more qualitative research returns a higher consideration for information from personal contacts and experiential knowledge and it acquires a protective power against the alarmism of mainstream media, guaranteeing appropriate access to filtered information (Chivers et al., 2020; Tandoc & Lee, 2020). Experiential knowledge, despite its function in situations of uncertainty and adaptation, has not been conceded yet the status of evidence, and health and social problems continue to be defined by expert knowledge (Popay, 2018). Because both local knowledge and experiential knowledge have been so little researched, they deserve some attention in future HIB research.

6. Conclusion

The centrality of information in the Covid-19 health crisis has shown that LIS can and should make its contribution to confront challenges of today’s society, and the research on HIB reviewed previously provides evidence of the diverse implications of information for people’s lives. The main results obtained point to a methodological preference for more quantitative data-driven research and contribute to a better understanding of situations of HIB, while some themes emerge as worth further inquiry, including the limitations of ICT and their improvement; the challenges of capturing the emotional component of HIB; and the need to better understand local knowledge and information acquired in social interactions, especially experiential knowledge. Though the methodological preference for massive data driven research undoubtedly enriches HIB research and opens up new lines of inquiry, emphasizing the relevance of HIB in today’s society, research still needs to be carried out about specific contexts and persons, because we only have a tentative understanding, often based on previous theories developed under circumstances of normality, of the information practices that allow people to make decisions and guide their behavior and social action in an era of post-truth, disinformation, conflictive and polarized information, and information overload, while more vulnerable and marginalized groups have been poorly studied.

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