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Immigrant families' health-related information behavior on instant messaging platforms: Health-related information exchange in immigrant family groups on instant messaging platforms

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Immigrant Families' Health-Related Information Behavior on Instant Messaging Platforms

Health-related Information Exchange in Immigrant Family Groups on Instant Messaging Platforms

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ABSTRACT

For immigrant families, instant messaging family groups are a common platform for sharing and discussing health-related information. Immigrants often maintain contact with their family abroad and trust information in shared IM family groups more than the information from local authorities and sources. In this study, we aimed to understand health-related information behaviors of immigrant families in their IM family groups. Based on the interviews with 6 participants from immigrant families to Canada, we found that immigrant families' discourse on IM platforms is motivated by love and care for other family members. The families used local and international sources of information, judged information credibility by its alignment with their pre-existing knowledge, and mostly did not verify information further. The information shared by different users from different sources often contradicted one another. Yet, family members did not discuss the conflicting information due to their desire to avoid tensions.

CCS CONCEPTS

• **Human-centered computing**; • **Collaborative and social computing**; • **Empirical studies in collaborative and social computing**;

KEYWORDS

Information behaviors, Instant messaging platforms, immigrant families, Health-related information exchange

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1 INTRODUCTION

The ongoing COVID crisis has accelerated the circulation and dissemination of health-related information online. We define health-related information as official public health directives, news, op-eds, recommendations, and reviews around health-related issues and topics. We do not include the health information about specific individuals (e.g., doctor notes, updates on the state of health of any particular family member, etc.).

Health-related information online can have variable quality, with verifiable information often mixing with less credible sources [10, 28]. Yet, due to the often lower trust in the local authorities, insufficient language proficiency, or reduced social assimilation, immigrant families disconnected physically from their communities leverage online sources as one of the primary ways to access information and knowledge [29]. Thus, in this context, understanding how people consume, share, and discuss health-related information online - the behaviors that can be conceptualized as health-related *information behaviors* [8] – can help us to understand how to design more effective technologies for families to make effective decisions. Previous studies had explored how people consume health-related information using public social networks, such as Twitter and Facebook [6, 27, 28]. However, less is known on how information is shared and disseminated within family circles in small family-based groups on Instant Messaging platforms (IM), such as WhatsApp[1], WeChat[2], or Facebook Messenger[3]. These platforms are critical to study in health-related information context, as the information obtained from the family members is often perceived as inherently trustworthy [14] and influential.

The computer-mediated information practices and needs of immigrant families are unique and distinct from those of general families (cf. [19]), and these needs are exacerbated in the COVID crisis. Such families often have family members with different levels of assimilation within the countries of residence, have varying comfort with the language in the residence country, and have diverse socio-cultural and economic backgrounds. Information circulating within such families comes from different sources, in different languages, and from various cultural perspectives. Moreover, different levels of assimilation in the receiving country can limit the users' access to information technology and information literacy [21]. Since informational literacy mediates information behaviors [13], this may further contribute to the complexity of information-related behaviors within such family units.

[1] https://www.whatsapp.com/
[2] https://www.wechat.com/en/
[3] https://www.messenger.com/

Many immigrant families use instant messaging platforms, specifically their group-based communication capabilities [4], to maintain contact with their home countries. IM groups represent an intimate and trusting circle of individuals, where communication carries not only constructive intent but also serves as a source of emotional support and assistance [30]. This makes IM groups a common platform for sharing and discussing *health-related* information with the family members (e.g. [23]). However, as IM group members tend to inherently trust the information disseminated by the others in the group, such platforms may have an increased potential to be a hotbed for misinformation, as the users are less inclined to verify the credibility of the message [10]. This aspect makes it critical to understand how users relate to the information shared with them in their family's IM group.

We conducted an interview study with 6 participants from immigrant families to Canada to understand and uncover health-related information behaviors of families with immigration background enacted on group-based IM platforms. We aimed to understand what kinds of health-related information families share, how the information is curated, and how it is discussed. We also wanted to uncover what tensions emerge in such discussions and how are these addressed within the family. We found that immigrant families' discourse on IM platforms is characterized by their desire to care for and support each other. The families' information behaviors were characterized by using both local and international sources of information, surface-level engagement with information and its verification, and sometimes sharing contradictory information in the family groups. Simultaneously, family members strive to avoid tensions within their groups, and mostly did not engage in discussing the conflicting information.

Our findings advance our understanding of how immigrant families engage with diverse information sources and describe information behaviors that characterize health-related discourse in immigrant IM family groups. We also hope to aid the practitioners by discussing the critical points that need to be considered when designing communication tools to support family communication online.

2 RELATED LITERATURE

Family communication in group-based instant messaging platforms. Individuals increasingly keep in touch with family members via group-based instant messaging platforms, such as WhatsApp [1]. The communication on these platforms predominantly occurs in the family groups that consist of family members and often close friends [11]. IM group communication allows family members to experience an increased sense of membership and unity with other group participants [3]. The preference of the IM groups for family's discussions is due to its support for *phatic* communication [18] – namely, its ability to share photos, voice messages, and links to content that functions as a demonstration of love and care, and social bonding between family participants. Thereby, familial communication in IM groups can be viewed as an act of care for other family members [30]. In particular, IM (WhatsApp) was previously found to be especially important for maintaining intergenerational connections between younger and older family members who use it for social bonding [19].

Immigrant families' use of group-based instant messaging platforms. Computer-mediated communication has increased importance in the context of immigrant families. In many cases, parts of immigrant families often remain in the countries of departure, making unmediated contact with them difficult or inconvenient. Several studies had found that immigrants often use public information environments in general [29] and IM platforms in particular [21, 24] to keep ties with their community and family abroad. One of the primary motivations to communicate and share information online is the need to receive social and emotional support [33] and connect to the values and religions of their native culture [16].

The varying levels of assimilation in the country of residence and the amounts of stress from their assimilation period often cause the participants to distrust local information sources. For example, in a study by Katz [15], many immigrant users preferred having their children broker the medical information exchanges in hospitals instead of professional interpreters. They felt the interpreters might not have their best interests at heart. The "us versus them" mentality leads to the segregation of trustworthy and untrustworthy information based on the level of acquaintanceship (e.g. [2]). Thus, immigrants increasingly seek support and stress-relieve on electronic social networks where they can converse with like-minded individuals [9, 22]. IM family groups become the essential place of communication in these circumstances [20].

Sharing health-related knowledge on online social networks. Social networks are increasingly being used to disseminate, consume, and discuss health-related information [26]. In one population-based survey conducted in Hong Kong, more than 40% of the respondents were exposed to health-related information on Facebook and Twitter [27]. However, it is necessary to bring forth the existence of low-quality information in such networks, which is being disseminated rapidly through the users sharing links to such information in their online social circles [32]. Several technical solutions were proposed to curb the virality of misinformation in online social networks. Among them are such solutions as providing algorithmic and social corrections to low-quality articles [6], extending the articles with contextual information and related stories [5], and involving expert organizations, such as CDC, to personally refute the health-related misinformation [31].

Sharing health-related knowledge on instant messaging platforms. To date, most of the research on health-related information behavior was focused on the public online social networks. However, a significant part of *familial* communication in the context of health-related information is happening within small, closed groups on IM platforms [17, 25]. For example, [14] found that more than 89% of Saudi Arabia users were exposed to health-related information on WhatsApp. Moreover, IM groups are one of the most influential sources of health information for users. The advice acquired from the close social circles on WhatsApp has the strongest influence on health-related decisions (Shen et al. 2018; Palanisamy, Gopichandran, and Kosalram 2018).

Along with the benefits of phatic health-related information exchange in familial IM groups, a significant drawback of this communication method is its ability to disseminate misinformation in closed family groups [12]. The existing design solutions previously proposed in the context of public social networks (e.g., social-based

corrections in the research by [6]) may be unfit in IM family group communication due to privacy concerns.

Because the information from IM family groups is considered trustable by default, the users often do not engage in verifying the message, taking it at its face value [14]. For example, in the Indian Tamil Nadu province, parents' trust in vaccination campaigns was significantly reduced in those families that reported WhatsApp as a primary source of their medical information (Palanisamy, Gopichandran, and Kosalram 2018). Such behaviors may be even more pronounced in the immigration families' context due to a varying level of assimilation in the country of residence, increased assimilation-related stress, distrust toward the official sources, and potentially lower information literacy.

Summary. To date, health-information exchange within immigrant families was explored in the personal care context and general public social network communication (e.g. [26, 27]. However, there is a gap in knowledge of health-related information practices within the close-nit immigrant family groups on IM platforms. To address this gap, we explore IM health-related informational behaviors of immigrant families in Canada.

3 METHODOLOGY

Our work aims to answer the following research questions:

RQ1: What are users' main motivations behind sharing and discussing health-related information in IM family groups?

RQ2: What kinds of health-related information do families share, how is the information curated, and how it is discussed?

RQ3: How do immigration background influence families' information behaviors and practices in IM family groups?

To address these questions, we conducted and analyzed six semi-structured interviews with participants from immigrant families that use IM groups to communicate with their families. The participants were recruited on the campus of a major university in Canada using the snowball sampling technique.

Interview process and questions. We carried the interviews in the period of June-August 2020, during the peak of the COVID-19. At the time, the course of COVID-19 was not yet well understood (e.g., the effectiveness of masks was still being debated), and the vaccine was still months away, so COVID-19-related discourse was characterized by uncertainty and contradicting information. The interviews were focused on the participants' health-information behaviors in the context of family group communication on the IM platforms. In particular, we asked the participants about their motivations to share information with other family members and discussed what information sources they and their family members usually use. We then focused on asking the participants on how they and their family members verify the information and what communication strategies they employ when facing different opinions, claims, and intentions. Finally, we probed into the participants' behaviors when the information shared on IM platforms is contested or enforced by various family members.

The interview sessions with the participants were conducted online via a video communication platform (Zoom). Before the interviews, the participants were told the study's goals and explained that they might withdraw from the study or choose not to answer specific questions at any point during the interview. The interviews lasted from 30 to 40 minutes. Participants received a remuneration of $25.

Table 1: Participants' demographic characteristics (P4 and P6 are Canada-born participants)

	Age	Age of immigration	Country of Origin
P1	44	20	China
P2	22	5	China
P3	22	14	Syria
P4	24	NA	Portugal
P5	27	1	China
P6	21	NA	Somalia

Data Analysis. Recordings of the interviews were analyzed using the thematic analysis procedure described in Braun and Clark (2006). Three researchers were involved in the analysis at the stage of the data collection and preliminary coding. Subsequently, two researchers engaged in the process of qualitative coding and identification of key research themes. We inductively generated codes and identified themes and patterns in the data without adhering to the predetermined conceptual basis. Per our study's goals, we were focused on a detailed description of the particular qualitative themes that reflect the participants' health-related information practices in IM family groups.

4 FINDINGS

The average age of our six participants was 27 years old. Two of the participants were born in Canada (to immigrant families), while the remaining four immigrated to Canada with their parents. Five participants self-identified as female. A detailed description of our participants' demographic characteristics is presented in Table 1.

Overall, we found that IM groups were among the primary ways the participants' family members shared health-related information, second only to the face-to-face conversations between them. Due to the ongoing COVID-19 pandemic, the participants' families were increasingly worried about their family's well-being, leading to sharing "*a lot more than usual in these circumstances*" [P3, 22 y.o.]. Below, we describe our major findings.

Love and care motivate sharing and withholding information in immigrant family IM groups.

In general, we found that the primary motivation of the participants and their family members behind sharing the information with their IM family group was love and care for one's family. The information was likely to be shared with the rest of the family if it was thought to bring positive emotions: "*if it's something that I know will make my family happy, then I'll share it*" [P5, 27 y.o.]

Specifically, in the context of health-related information, the intention to share had an emotional character too. For example, when asked to explain when and why the participants shared health-related information in their IM family group, one participant explicated that she would share it if she can imagine it "*having a positive effect in their lives*" [P5, 27 y.o.]. However, surprisingly, emotional reasoning often resulted in withholding health-related information rather than sharing it. Participants sometimes reported deliberately holding back the health-related information, particularly related

to COVID-19, with the rest of the family, even if they thought the information was interesting and relevant. In some cases, it was a worry of scaring or distressing their families or even being unsure of how to explain the information to their families. For example, one of the participants told us how she had read an article about a character of COVID-19 spread in the areas with varying income. She explained that although for her, this information is relevant and interesting, she decided not to share it with her family, as this would cause them additional distress and anxiety: "*I found that really interesting, but I did not send it to my parents because I thought that it would create panic*" [P3, 22 y.o.]

Thus, even when highly relevant information might be valuable for the family to be aware of, this was overridden by a sense of duty toward supporting the family's emotional well-being. As one of the participants explicated: "*I think that the area we are in is kind of considered [as the area of a significant COVID spread]. But, whatever, I am not going to send it. I decided not to share the information not to induce panic*" [P3, 22 y.o.]

Links to articles and videos (rather than commentary) are frequently shared in immigrant family IM groups. Four participants reported that their family members mainly shared the links to other resources, such as news articles or videos. It was rare for these links to be accompanied by additional messages or interpretations of the articles: "*A lot of times, [my mother] sends the links on WhatsApp [. . .] a lot of it was links*" [P3, 22 y.o.]. Given that many such links were simply forwarded links, one way to interpret this is that the thing that is being shared is the title or headline. It was not completely clear from our interviews whether family members actually read the articles before forwarding the links; however, our data indicate family members' surface-level engagement with the information prior to sharing. For example, here is how one participant explained her parents' information sharing behaviors: "*[They share] simply because it is like: "Oh, I read that or I heard that before, so that must be true. . .*" [P4, 24 y.o.]. Other work also indicates that most people do not read the articles (much less verify the correctness of the information) before forwarding the links on to their social networks [7].

Consistent with this interpretation, one of the participants said that simple, unambiguous, and easily interpretable content had a better chance of being shared with his family group [P1, 44]. When asked to describe how they decide whether to share the article, one of the participants said: "*If it's something super scientific, for example, in relation to COVID, [I would not share it]* " [P4, 24 y.o.]

Several of the respondents were aware of the potential of low-quality information being spread due to the absence of verifying the information before sharing. For example, one of the participants told us how her relative is being exposed to different content from Facebook that she described as "conspiracy theories," and then resharing it in the IM group: "*For example, the other day my aunt said that the COVID information app that you get on your phone. . .she was not gonna get it because it tracks your location, even if there has been so much information that it does not*" [P4, 24 y.o.]

Another criterion for deciding to share health-related information was its alignment with the sharer's pre-existing beliefs. One of our participants framed this alignment in terms of the information being "*common sense*" [P1, 44 y.o.]. Participants did not report engaging in verifying information before sharing it. If the information was consistent with common sense, the participants were inclined to share it. For example, when questioned on the verification of the information about COVID-19 shared in the group, one of the participants said: "*a lot of [information that I share] is kind of just common sense. Like all the stuff that you already know, my wife probably knows about, [for example] about wearing masks*" [P1, 44 y.o.]

In many cases, the participants told us that the reasoning of their family members regarding the credibility of the information was culturally dependent, originating from the cultural concepts, knowledge, and themes of their countries of origin. For example, as one of the participants described to us: "*My mom, she is the registered nurse, so she knows how to filter [sketchy] stuff, but she still gets a lot. . . I mean, maybe because of her [cultural] background, there is a lot of natural remedies and stuff like that that is passed down the generations. . . So she kind of has faith in that, and she shares the recipes for superfood drinks and special facemasks and stuff like that pretty often*" [P6, 21 y.o.]

Older adults in immigrant families shared information from sources originating from home countries. They perceived such sources as more credible, trustworthy, and worth sharing than local sources. For example, one participant described how her mom used Chinese sources for guiding her health decisions: "*[It's] my mother, who decides on anything related to health. So whatever she says goes because she would pull up some articles in Chinese as evidence*" [P2, 22 y.o.]

Similarly, P1 [44 y.o.] described how his parents were inclined to send him the links to the articles that promoted tea's health-related properties due to tea's healing abilities being a powerful theme in Chinese health-related values. Beyond this, participants reported that their parents frequently preferring and sharing resources that were written in the language of their home country: "*I think that from the perspective of my parents, they are able to relate to this kind of [information pieces] because they are written in their language*" [P3, 22 y.o.].

Participants perceived that because older family members relied on sources from the countries of origin, it diminished their family members' assimilation in the receiving country. In contrast, our participants, either born in Canada or had arrived in the country at a young age, tended to trust the local (i.e. Canadian) official sources: "*I would trust the government and large trusted media outlets like CBC*[4] *or CTV*[5] *and [. . .] people that work in this field. I trust their opinions*" [P5, 27 y.o.]

Families avoid debates about contradictory or questionable information in immigrant family IM groups. Several participants highlighted that the diversity of information sources used by different family members led to contradicting information being present in the IM family group. In these situations, the participants had to decide how to negotiate around such conflicting information. Our participants reported trying to avoid active discussion of the shared content, instead choosing not to respond to the message. They explained that the primary motivation behind such avoidance was the desire not to upset other family members. Again, we see

[4]https://www.cbc.ca/
[5]https://www.ctvnews.ca/

how love and care define informational behaviors within close-knit family groups.

Interestingly, avoiding discussion of the information in IM family group contradicted the families' overall communication patterns in face-to-face conversations. In the latter, the participants did not feel constrained to respond to others. In contrast, the information was shared "*so that the conversation can happen around it*" [P5, 27 y.o.]. The same participant then described how she decided not to share the information about the importance of wearing masks in the IM family group even as she believed in its importance because she "*did not want to have this conversation*" [P5, 27 y.o.].

Ironically, one of the participants reflected on her frustration when she received no reaction to the messages that she relayed in the family group [P3, 22 y.o.]. She explained that she wanted to inform her parents about the importance of wearing masks but received no response from her parents when sharing the information. She said that her parents ignored her message because it was misaligned with their views.

Summary. We found that the information-sharing behaviors in immigrant IM family groups were enacted in the context of family members' love, care, and support for each other. The most typical information type in such groups were the links to the articles that the participants had found on the internet. The users mostly shared the links if the article's title is was aligned with their own preexisting beliefs and knowledge, which was often culturally dependent. The resulting communication thus involved the family group members leveraging and sharing the information from many diverse information sources, depending on the preferences and cultural background of the family members, and has often contradicted one another. Family members mostly avoided responding to the conflicting information out of fear of offending or upsetting other group members.

5 DISCUSSION AND FUTURE WORK

Unique information behavior patterns of immigrant families. Our findings shed light on the difference in information behaviors of immigrant families compared to non-immigrant families. Previous research had demonstrated that the information received from small, close-knit groups on IM platforms might be perceived as inherently trustable [27]. We show that the information is not always perceived as trustable or credible in immigrant families given diverse cultural backgrounds and values. Instead, credibility is weighed against pre-existing knowledge and is more likely to be perceived untrustworthy if misaligned. Perhaps immigrants expect multiple streams of potentially contradictory information in their family communication threads.

On the one hand, such information-sharing behaviors of immigrant families could be conceived as a resiliency strategy: if ideas are open for debate, the possibility of the whole family aligning with the less credible statements is lower than in non-immigrant families. On the other hand, the ability to rapidly disseminate credible information within the family circle may be lower in immigrant families. After all, such information will not be readily accepted by family members whose prior knowledge dictates that the message is untrustworthy.

Potential for the misinformation spread in immigrant families' IM groups. We found that the users did not engage in a thorough analysis of the shared information and avoided contesting contradictory messages out of fear of offending others. Avoidance orientation was previously found to be a characteristic of the IM health-related discourse [12]. We shed light onto the origins of such behavior and highlight its proliferation in immigrant family IM groups. Overall, our work demonstrates how specific information behaviors and practices in IM family groups lead to the potential spread of misinformation and fake news.

In addition to the social composition and dynamics of small family groups, which encourage only surface-level engagement with shared information, such behaviors can be at least partially prompted by the information presentation affordances of the IM medium itself. Most IM message platforms present shared links in the form of an "information snippet" – the information card containing the heading of the article, the image associated with the item, and the brief summarization of the article. Thus, the platform may encourage viewing the snippet as a self-sufficient informational message, a sort of "mini-article" that the user can process at a glance. Speculatively, it makes it less likely for the user to engage in the article's body and check the facts and sources within the article for their credibility.

Future Work. Future work will significantly extend both the scope of the inquiry and the research focus. To extend the study's ecological validity, we will continue to recruit participants with diverse immigration backgrounds. Specifically, we plan to interview ten additional participants. In addition to interviewing the participants, we will obtain the participants' actual IM family group communication content where health-related knowledge is discussed. Our intention is to discuss with various family members (both young and old) their reactions to different snippets of prior interaction. The continued work will allow us to fully understand the interconnected patterns of information behaviors that characterize immigrant families' health-related discourse on IM platforms. Our ultimate goal is to develop a conceptual framework that will aid the practitioners in implementing design solutions to limit the potential of the misinformation spread in IM platforms.

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