Strategies of communicating health-related risks to vulnerable groups of immigrants during a pandemic: a scoping review of qualitative and quantitative evidence

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Abstract

Purpose – The purpose of this rapid scoping review was to map existing literature on risk communication strategies implemented by authorities and aimed at vulnerable immigrants in the context of pandemics.

Design/methodology/approach – Existing literature on the topic was charted in terms of its nature and volume by summarizing evidence regarding the communication strategies. Literature searches were conducted in Academic Search Premier and CINAHL, databases were searched from 2011 to present on March 31, 2021.

Findings – Five articles met the criteria and were included in this review, pointing at limited research in this area. The findings indicated that a close interaction between communication authorities and immigrants is important. Community education, building trust in communication sources, clear risk communication and inclusive decision-making among all were found to be important when communicating health risks to immigrants.

Research limitations/implications – The primary limitation of this rapid scoping review is that the literature searches were conducted in only two databases, namely, Academic Search Premier and CINAHL. A wider search across several other databases could have given more profound results. Furthermore, some studies where immigrants were conceptualized as, for instance, "disadvantaged groups" might be overseen due to a choice of the search strategy used in this study. There are also certain limitations related to the studies included in this review.

Practical implications – Identifying efficient ways of conveying recommendations may further assist authorities and scientists in developing more effective health-related risk communication.

Originality/value – This study covered health-related risk communication in the context of pandemics, addressing the need to investigate different groups of immigrants and the challenges related to communicating risks to these groups.

Keywords Risk communication, Risk communication strategies, Pandemics, Vulnerable groups, Authorities, COVID-19, Immigrants

Paper type Research paper

Introduction

On January 30, 2020, the Emergency Committee of the World Health Organization (WHO) agreed that the COVID-19 outbreak met the criteria of Public Health Emergency of International Concern and proposed temporary recommendations (e.g. isolation, early detection and contact tracing), which were advised to be implemented by governments with the aim to prevent the spread of the disease internationally (World Health Organization, 2020). Worldwide, public health interventions were communicated and implemented through national risk communication strategies. To further mitigate the spread of the COVID-19 pandemic, the WHO recommended national risk communication strategies targeting migrant groups (Maldonado *et al.*, 2020). This is due to several major reasons. First, immigrants with limited non-native language proficiency and those born outside of their place of residence may be at a greater risk of illness (Garcia-Retamero and Dhami, 2011; Norwegian Institute of Public Health, 2020a). Among such groups are, for instance, Mexican immigrants in the USA, or Syrian refugees worldwide, as well as other groups, which are weaker both economically and in relation to their social, psychological and physical well-being, compared to the general population in the host countries (Cantekin, 2019). Second, it has been reported that certain groups with the different cultural backgrounds are overrepresented among those infected with COVID-19. A recent report has demonstrated that, for example, foreign-born immigrants in Norway constituted about 34% of all COVID-19 infected cases, with an increase of up to 39% by November 2020, and with certain groups of immigrants being overrepresented (Norwegian Institute of Public Health, 2020b). And finally, as pinpointed by Gostin *et al.* (2020), "at a time of vast inequalities, we are only as safe as the most vulnerable among us." This means that everyone else is at a greater risk if disadvantaged members of our society do not practice general recommendations from the governments (Gostin *et al.*, 2020).

Due to their temporary residency status, refugees and immigrants are oftentimes excluded from national health-care systems, lacking access to health insurance and health-care services, accompanied by reduced access to satisfactory living and working conditions as compared to host populations (Lebano *et al.*, 2020; Greenaway *et al.*, 2020). Existing health policies and health-related risks communication policies with migrant populations vary from country to country, however, the overall health needs of refugees may be described as close to neglected within global health-care responses. According to the latest literature review related to refugee health during the COVID-19, the main gaps are in providing adequate public health information and access to health-care and mental health services, responding to the needs of refugees in detention centers and engaging refugees as decision-makers within health responses (Lupieri, 2021). Another study on public health communication aimed at migrants during the COVID-19 pandemic in Europe has demonstrated that there are significant gaps in the availability of translated COVID-19 risk communications across European countries, excluding refugees and immigrants from the pandemic response (Maldonado *et al.*, 2020). It is also likely that vulnerable immigrants suffer from the impact of misinformation and information insufficiency, which may cause serious negative consequences (Clark-Ginsberg and Petrun Sayers, 2020).

Furthermore, existing research has demonstrated that diverse ethnic groups respond to risk communication based on their thinking and perceptions, and these may differ from

group to group (Carter-Pokras *et al.*, 2007). In practice, this might imply a need for a more "tailored" risk communication approach to various groups of immigrants, such as refugees, economic migrants or illegal migrants.

The overall aims of this rapid scoping review are: (1) to gather the evidence of which strategies local and national authorities put in practice to communicate health-related risks to reach various groups of immigrants during a pandemic and (2) to uncover the gaps regarding such evidence.

The following research questions guided the review:

RQ1. Which strategies do local and national authorities put into practice to communicate health-related risks to reach various groups of immigrants during a pandemic?

RQ2. What are the gaps and knowledge needs regarding such evidence?

While acknowledging the concept of diversity in population, rather than a more simplistic generalization of lay people, the review contributes to reveal areas of importance for strategic and efficient risk communication to migrant groups during pandemics.

Risk communication and communication strategies
Risk communication is defined by the WHO as the exchange of real-time information and advice between experts and people facing threats to their health, economic or social well-being. In the context of the pandemic, the main objective of risk communication is to enable people at risk to make decisions to protect themselves and their loved ones (Covello, 2010; World Health Organization, 2017). For this study, communication strategies are defined as a combination of factors including: frequency, direction, modality and content (Mohr and Nevin, 1990). *Frequency* refers to the amount of communication, *direction* refers to the flow of information (e.g. from authorities to immigrants), *modality* is used as a method of transmitting health-related information to immigrants and maybe operationalized in a variety of ways (e. g. face-to-face, phone, language variety and personalization), while *content* of information refers to the message that is delivered (e.g. direct and indirect influence strategies) (Mohr and Nevin, 1990).

There are numerous factors that play a crucial role in accepting the information, like cultural and social characteristics (Reddy and Gupta, 2020). There are two main risk models that are currently used. The *realist approach*, whereby risk is seen to be objective and independent of social context and the *social constructionist approach*, whereby risk is seen to be interrelated with sociocultural context (Abrams and Greenhawt, 2020; Renn, 2017). Earlier research has demonstrated that risk communication strategies are more efficient when they are intentionally matched to the audience, their background, culture, needs and experiences. It means that effective risk communication strategies from local and national authorities require both knowledge of vulnerable groups with different cultural backgrounds and respect for their diversity (Reynolds and Seeger, 2005). With regard to this, it was suggested that having bigger families, more cramped living conditions and lack of trust in authorities may influence health-related risks (Strömblad and Adman, 2010; Wong and Jensen, 2020). However, the impact of such variables as ethnicity and nationality on how people react to risk communication is still considered to be poorly understood (Mayhorn and Mclaughlin, 2014).

Several major pandemics and near-miss pandemics hit our societies during the recent decades. Fortunately, rapid actions by national and international authorities helped to slow and break the chain of transmission of, for example, such diseases as severe acute respiratory syndrome (SARS) outbreak in 2003 (Seto *et al.*, 2003) and Zika virus in 2015 (Baud *et al.*, 2017) which had a potential to become global pandemics if the outbreaks were not controlled. The bird flu (H5N1) influenza virus was considered a major pandemic threat and a lot of resources

were localized to stop the virus spread. Actions taken were also supposed to result in the preparation for future similar pandemic outbreaks. For example, expertise and knowledge from managing the 2009 H1N1 pandemic, which spreads in a similar way as does the ongoing COVID-19 pandemic, is of great importance as well. In this scoping review, we will map knowledge from the above-mentioned pandemic experiences. More specifically, this review focuses on vulnerable immigrants, that is groups of people who are less robust compared to the general population due to factors related to their origin, language proficiency, economy and health. In particular, when in a new country, immigrants may face numerous challenges with integration, relational and cultural disorientation and the reconstruction of their lives (Alfieri *et al.*, 2019). It has been reported that these same groups are among those who tend to experience more communication gaps when compared to less vulnerable groups of people (Clark-Ginsberg and Petrun Sayers, 2020). Consequently, the issues of information insufficiency and misinformation may cause serious damage to already vulnerable groups and, therefore, needs further attention.

Based on this discussion, it was decided to map the knowledge on the strategies that authorities implement to disseminate pandemic-related health risk information to various groups of immigrants. Although studies included in our scoping review cover the context of pandemics in general, it is the ways in which the authorities design and implement health-risk communication strategies aimed at immigrants in relation to a pandemic situation that are of interest to us. This is key, as policymakers need to consider diversity in how to model and communicate risk in general and during pandemics, and our approach informs these policy and governance choices and approaches.

Method

Selection of rapid review method

This study was conducted according to a rapid review approach from the WHO (Tricco *et al.*, 2017). According to Tricco *et al.* (2017), rapid reviews are useful approaches to provide relevant evidence to make informed decisions about emergency contexts and health systems in routine. Munn *et al.* (2018) argue that the choice between systematic and scoping review should be made depending on the questions researchers are asking and the purpose of their review. They suggest that the questions related to the appropriateness or effectiveness of a certain practice are better answered by a systematic review, while for answering questions related to identification of certain concepts and characteristics and mapping/reporting/ discussing them, scoping review is a better choice. Consequently, the rapid review was selected as the method which would be in accordance with the aims and objectives of our study. The protocol was developed in collaboration with the research group, prior to conducting the review.

Information sources

We conducted a rapid scoping review of qualitative and quantitative empirical findings to map a body of literature on the topic with relevance to time from January 2011 to March 2021. We conducted a focused search of peer-reviewed articles from online databases Academic Search Premier and CINAHL. The search was designed for "specificity" using relevant terms described in Table 1. Our search was limited to peer review articles published in English.

Eligibility criteria

We included studies if they met the following inclusion criteria: (1) addressed previous pandemic and "nearly" pandemic experiences; (2) were published between January 2011 and March 2021; (3) addressed one or several groups of vulnerable populations, in particular:

labor migrants, poverty migrants, natural disasters migrants, non-economic migrants (e.g. religious persecution, oppression, civilians under risk during the war), illegal emigration and immigration (e.g. war criminals); and (4) were conducted by using qualitative, quantitative and mixed methods designs. We excluded the studies if they: (1) did not cover a pandemic, including yearly incidences of flu, which do not bring serious health-related consequences and those for which vaccinations are developed; (2) HIV/AIDS "pandemics," which may be easier avoided by taking certain precaution measures; (3) groups of immigrants for whom moving to another country is mandatory in their employment contract; (4) the groups of immigrants which are referred to as "expatriates," transnational marriage migrants, indigenous population; and (5) book chapters and literature reviews.

Extracting and charting the results
The bibliographic databases Academic Search Premier and CINAHL were searched simultaneously on the EBSCO platform on March 31, 2021, using the advanced search interface. As the search was conducted for a rapid review, the free-text search terms used (Table 1) were designed to be focused and specific.

The following limits were applied: scholarly (peer-reviewed) journals; published date: January 1, 2011 to March 31, 2021; language: English; document type: article; research article expanders: also search within the full text of the articles. Articles were narrowed by subject thesaurus: health promotion, globalization, cultural pluralism, crisis communication, community involvement, psychosocial factors, psychological stress, poverty, political campaigns, policy sciences, human rights, disparities, identity, ethnic groups, COVID-19 pandemic, communities, communication strategies, behavior, access to information, social stigma, public opinion, political parties, human services programs, health status indicators, health education, health behavior, health attitudes, social support, refugees, race, practical politics, immigrants, medical policy, black people, mass media, political science, minorities, emergency management, socioeconomic factors, service accessibility, health, government policy, emigration and immigration, medical care, health literacy, communication, qualitative research, public health and nonfiction. The 543 results retrieved with the strategy were screened by title and abstract.

During the process of study selection, the majority of studies were excluded as they did not meet the inclusion criteria. For example, the studies that address HIV and AIDS among the immigrant population and studies related to tuberculosis, and similar bacterial diseases among the population in focus, as well as studies related to other emergency situations. A total of 13 articles were read in full text, 5 of which are included in our scoping review, as presented in the PRISMA flow chart in Figure 1.

In general, the main reason for exclusion was limited evidence of health-related risk communication being tailored to the subgroups of immigrants. Such general concepts as "vulnerable groups" were frequently used to generalize the groups, making it challenging to identify the source of vulnerability referred to in the articles. Eight articles were excluded

| Data bases	Search strategy
Academic search premier	"Communication strategies*" OR "risk communication*" OR "health communication* OR "crisis communication* OR "public officials risk communication*" OR "government risk communication*"
CINAHL	Crisis* OR disaster* OR emergency* OR epidemic* OR pandemic* OR threat* Immigrants* OR "vulnerable groups*" OR refugees* OR migrants* OR minorities* OR outsiders*

Table 1.
Search strategy
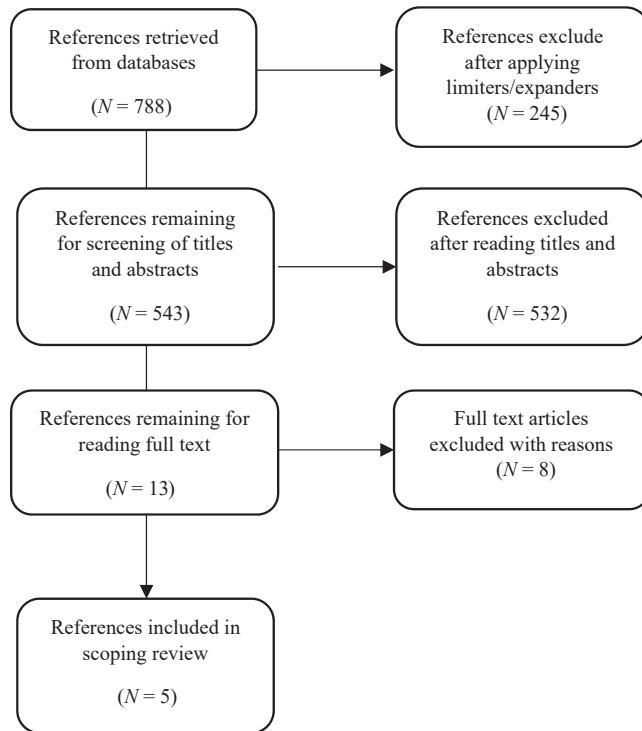
Figure 1.
PRISMA flow chart of
study selection as
described by Peters
et al. (2015)

from the review due to the following reasons: a lack of focus on groups of immigrants (Reddy and Gupta, 2020; Carney and Bennett, 2014; Sambala and Manderson, 2017; Sabatello *et al.*, 2020), essay and review papers (Savoia *et al.*, 2017; Laverack, 2018; Gostin *et al.*, 2020) and general health-care context (Harrison *et al.*, 2020).

Data charting process and analysis
In line with scoping reviews (Peters *et al.*, 2015), we extracted the data from included papers in a table before synthesizing the results. Summaries were developed of each article related to the author, year, country and context, aim/purpose, study population, method and sample, risk communication strategies/communication organ and key findings and research gaps. Details of included articles are provided in the results and findings section (Table 2). The data were analyzed using thematic analysis, by means of traditional manual methods (Alhojailan, 2012). In order to achieve more efficient outcomes, the data were compacted into a concise structure, by being organized into two tables and the model. Such data organization has provided the researchers with an opportunity to identify, determine and compare the data upon which to focus (Alhojailan, 2012; Denscombe, 2017).

Results and findings
This rapid scoping review yielded five articles. Of these, 2 were conducted in the USA, 1 across 19 countries, 1 in Canada and 1 in India (Table 2).

Table 2 contains a summary of the included articles in relation to the author, year, country and context, aim/purpose, study population, method and sample, risk communication

	Author(s)/year	Country/context	Aim/purpose	Study population	Method/sample	Risk communication strategies/communication organ	Key findings/gaps
1	Kiltz *et al.* (2013)	San Patricio County South, Texas (pandemic)	To gain information about pandemic preparedness of residents (Hispanics including) within San Patricio county and to identify the most effective ways of communicating the risks posed by pandemic influenza, to provide recommendations for building more resilient communities	Residents within San Patricio county	Field surveys (215) Telephone surveys (222)	Degree of trust in information sources, like health-care professionals, local or city or county public health department, elected leaders in the community Ways of getting information: TV, newspaper, Internet, radio, friends and neighbours Trusting relationship among residents and local public health agencies are vital Increase levels of pandemic flu preparedness by promoting community education	The various governmental levels must work together to assist communities to prepare for pandemic preparedness, but broad, inclusive community participation is also necessary to strengthen community resilience
2	Lazarus *et al.* (2020)	The study was conducted in 19 countries (COVID-19 pandemic)	Instrument development, collecting people's perceptions on government responses to COVID-19 pandemic	Lay people randomly selected from the general population in 19 countries	Surveys 13,426	Clear communication from the government to make informed decisions and protect themselves from COVID-19, regardless of migrant status, among all Special protection from the government to migrants during COVID-19 pandemic	Recommendations to the government, emphasize the need to give special protection to vulnerable groups, in relation to reduced quality of living conditions, absence of health insurance or reduced access to healthcare in marginalized communities

(continued)

Table 2.
Studies included in the review

Table 2.

Author(s)/ year	Country/context	Aim/purpose	Study population	Method/sample	Risk communication strategies/communication organ	Key findings/gaps
3 Markon et al. (2013)	Canada (pandemics/ complex global health risks)	To clarify citizens' perceptions of diverse sources of uncertainty in government risk communication and their expectations with respect to discussing uncertainties	Canadian citizens, including a sample of recent African immigrants from diverse countries such as Burundi, Congo and Rwanda	Focus groups Individual interviews (47)	Participants' expectations (often unfulfilled) about government roles and interests in the context of risk communication: Desire for responsible and democratic governance, government transparency, the role of the government in education and informing the public, make decisions on appropriate risk analysis considering the risk of citizens, trust in government Self-information as an integral part of risk communication Uncertainties in risk communication Both government and citizens play a role in risk communication	Perceptions on governmental roles, responsibilities of people, ways and time to communicate uncertainty, the inclusion of public into debates of risk management Although included immigrants, the study does not specify differences in perceptions among the general population and immigrants
4 Bhatia and Abraham (2020)	India (COVID-19 pandemic)	Experiences from the response to COVID-19 in India	Internal migrant population (internal work/poverty migrants)	Qual./ Discussion of the govern. Response to COVID-19 in India	The government should aim at community engagement/ education/empowerment, the importance of evidence-based non-pharmaceutical interventions are essential as pharmaceutical interventions may not be easily accessible	A number of a pandemic related questions are raised, and solutions suggested The study does not offer concrete solutions related to communicating risk to the internal migrant population, however, the need for such is argued

(*continued*)

Author(s)/ year	Country/context	Aim/purpose	Study population	Method/sample	Risk communication strategies/communication organ	Key findings/gaps
5 Quinn *et al.* (2011)	The USA (H1N1)	Empirical examination of disparities in H1N1 exposure, susceptibility to H1N1 complications and access to health care during the H1N1 influenza pandemic	US households including Blacks and Hispanics	Survey 1,479	The authors stress the urgent need for targeted and culturally appropriate risk communication that clarifies the risks from certain existing diseases. Blacks and Spanish-speaking Hispanics are at greater risk of receiving poorer health care due to differences in access to health care and perceived discrimination Centres for disease control and prevention, health departments, trusted spokespersons and channels, national and local organizations representing minority groups must be engaged in risk communication	Fear of deportation among immigrants and treatment of undocumented immigrants are among major issues The issue of mistrust is raised. Decease control and prevention should include race/ethnicity in reporting on H1N1 deaths and hospitalization, which may encourage immigrant groups to take protecting actions and seek help (facilitation of deliberate communication strategies)

Table 2.

strategies/communication organ, key findings and research gaps. Figure 2, in its turn, presents the main findings in relation to health communication strategies and communication bodies.

The articles included in this review can be divided into two categories: the perspectives and roles of the policymakers or people working at the policy level in various non-governmental organizations and those of immigrants. Besides, the overall results indicated that the roles in pandemic health communication may be divided into two groups: the ones followed by immigrants and the ones implemented by authorities (e.g. health-care professionals, elected leaders in a community and trusted spokespersons). Furthermore, the roles of these two groups may be classified as interrelated, in a way that authorities are expected to engage vulnerable groups by promoting, among all, community education and decision inclusion, while vulnerable groups (immigrants) are expected to take their part in, for instance, self-information and pandemic preparedness as such, as presented in Figure 2.

Authorities' health risk communication strategies to build resilience
Health-related risk communication strategies from the included articles are classified according to the facets presented in Table 3.
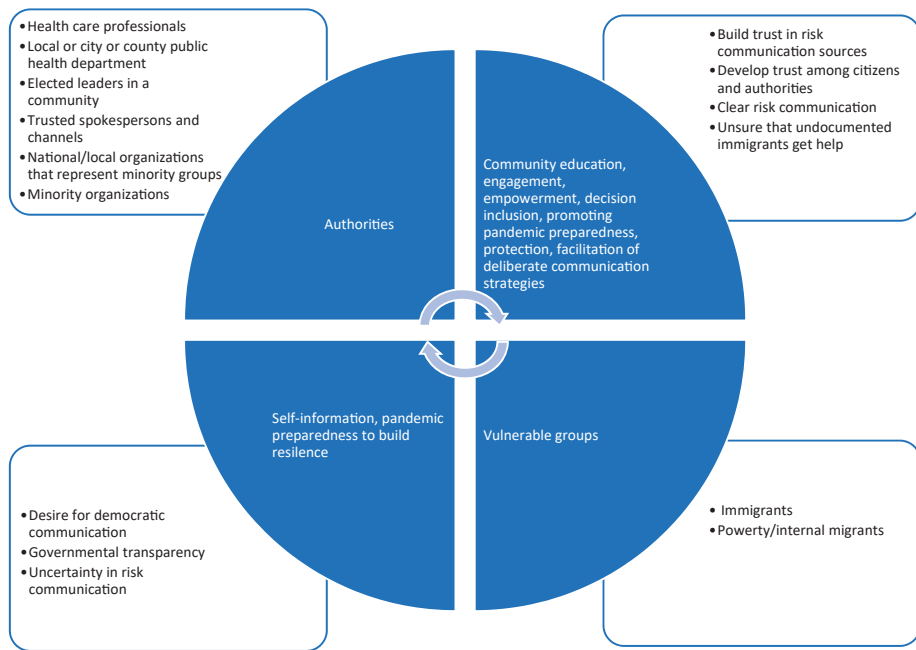

Figure 2.
Map of findings

Communication strategies	Studies
Frequency	Markon *et al.* (2013)
Direction	Markon *et al.* (2013), Quinn *et al.* (2011), Kiltz *et al.* (2013), Lazarus *et al.* (2020)
Modality	Kiltz *et al.* (2013)
Content	Bhatia and Abraham (2020), Quinn *et al.* (2011), Kiltz *et al.* (2013)

Table 3.
Communication
strategies

The study by Markon *et al.* (2013) covered to a certain extent both the communication frequency and direction. The authors investigated uncertainties in risk communication to the public, inspired by more participatory approaches. The study is based on the perceptions of 47 adults living in Canada, including individuals from other cultural backgrounds, such as Egyptian, Vietnamese, Indian and recent African immigrants from such countries as Burundi, Congo and Rwanda. The study gives a wide picture of citizens' outlooks on addressing uncertainties in risk communication, both in relation to the risk area, timely delivery and the public's engagement.

The communication direction was addressed by four of the five studies (Table 3). With the goal of providing recommendations that could assist in building more resilient communities, Kiltz *et al.* (2013) investigated pandemic preparedness efforts of residents within San Patricio County (including Hispanics) and identified the most effective means of communicating the risks during pandemic influenza. The main methods of acquiring information (modality) were as follows: TV, newspapers, Internet, radio, friends and neighbors. The importance of individual and family preparedness in building stronger communities was highlighted (Kiltz *et al.*, 2013). Regarding risk communication, the issue of trust in sources of information and ways of gaining information from authorities was raised. Such insight may help public health officials to understand the main methods of communication and sources of information among certain groups of population and give a better idea of how to target these groups during a pandemic emergency.

Community education, wellness and engagement to vulnerable groups
Community education, wellness and engagement were identified as the areas which must deserve more attention in pandemic preparedness. The authors reported that not reaching subgroups within the population was one of the limitations of their study (Kiltz *et al.*, 2013). Similarly, the study conducted by Lazarus *et al.* (2020) was aimed at understanding public perceptions of governmental responses to the COVID-19 pandemic. The study gives an insight into several issues related to vulnerable groups, including migrants. In particular, it emphasizes the importance of providing special protection during the COVID-19 pandemic to vulnerable groups at higher risk (including migrants), and the clarity of communication needed for lay people to protect themselves from COVID-19, regardless of immigration status (Lazarus *et al.*, 2020). In general, the findings of this study validate the need to give special attention to vulnerable groups. The novel 10-item instrument that asks people to rate key characteristics of their government's response to the pandemic (COVID-SCORE), developed in this study, can be used by the governments to monitor public perceptions of governmental responses to pandemics and to identify groups that may require special interventions. The study by Quinn *et al.* (2011) investigated racial disparities in exposure, susceptibility and access to healthcare during the H1N1 pandemic in the USA. In particular, the study participants were asked about their ability to impose social distance in response to public health recommendations. The study is based on the theoretical model of Blumenshine *et al.* (2008), according to which differences in, for example, race or ethnicity could cause both disparities during exposure to influenza and during its stages. For this study, the stage of exposure is critical, as strategic health risk communication may prevent the influenza attack rate. The sample of the study was drawn from 60,000 US households, the analyzed responses were from 1,479 adults, including significant numbers of Blacks (non-Hispanic) and Hispanics. This research has several important findings related to disparities in exposure and socioeconomic factors and ethnic/racial disparities, by identifying the differences between Spanish-speaking Hispanics, English-speaking Hispanics and Black Americans. More specifically, this study identified that certain measures to communicate health risks (content facet) should be taken in relation to vulnerable immigrants who may have difficulty complying with staying home from work directives, thus having difficulty complying with

recommendations regarding social distancing. As a possible health risk communication strategy, the authors suggested to engage centers for disease control and prevention, health departments, trusted channels and spokespersons and national and local organizations representing minority groups (Quinn *et al.*, 2011).

The study by Bhatia and Abraham (2020) addressed the issue of uncontrolled movement of the migrant population, referred to as internal migrants. This group of people comprises one-third of India's population. Many of them have moved from far-away central and eastern parts of India to other parts of the country to find jobs. While the study does not mention the risk communication strategies to this vulnerable population – it does emphasize the issue of the virus spreading to, within and by this group. Bhatia and Abraham (2020) further argued that to avoid COVID-19 outbreaks in different rural areas of India, rapid containment actions were needed.

Discussion

In this section, we summarize our findings to provide an overview of what is currently known about strategies of conveying health-related risks to vulnerable groups of immigrants during a pandemic and draw attention to areas where there are prominent gaps within the literature.

From the scoping review, a key theme emerging was the recognition of the importance to support different groups of immigrants and the need to target risk communication to these groups. It is evident that researchers and authorities do recognize the importance of strategic risk communication aimed at groups of immigrants, but they possibly lack the knowledge, understanding and resources needed to implement it in action.

First, we observed a limited number of studies in total, and a notable absence of studies from Europe. This is somewhat surprising considering the large numbers of immigrants and refugees to European countries, with over 65 million people migrated only in 2015, and mainly from war-affected countries, such as Syria, Somalia and Afghanistan (Schilling *et al.*, 2017). More research from different geographic contexts and conducted on samples of various groups of immigrants is needed to develop research-based risk communication strategies and recommendations aimed at these groups.

Second, most of the studies only partially cover our area of enquiry, with their overarching theme being related to the general population or to vulnerable groups in general. It is known that a risk communication approach aimed at "foreign populations" or simply at "lay people" may not be efficient enough. When designing strategies and communicating health risk information, the source of the vulnerability of such groups needs to be taken into account, as it oftentimes reflects basic human needs, which should be addressed if one intends to achieve change in behavior of these groups (Adler, 1977; Cialdini, 1987). Future research could more explicitly focus on groups of immigrants, in such a way that opinions, needs and challenges pertaining to these groups are not "dissolved" or "trivialized" in the background of the general population. Studies which would address this issue would be helpful in developing governmental strategies to communicate health-related risks to these groups. In the context of a pandemic, it is important to gain a core understanding of how people from various cultural and social backgrounds think and behave, as each case matters. For example, according to the literature on social group formation and bonding, social influence from one's close circle guides behavioral change during a crisis (Tunçgenç *et al.*, 2021).

Furthermore, the studies included in our review may be classified according to the communication strategies defined as a combination of facets (frequency, direction, modality and content) (Mohr and Nevin, 1990). Three of the included studies focused on several communication facets at the same time, mostly covering the two categories of direction and content. It would be beneficial for future research in health-related risk communication strategies aimed at immigrants and in the context of pandemics to further focus on the facets of frequency and modality.

The findings of this study are in line with the general literature on risk communication, which puts an emphasis on the dialogue processes between authorities and population, implying that in order to build consensus, communicators and audiences must listen to and learn from one another (Boholm, 2008). Consequently, more close interaction and co-creation of guidelines and strategies between authorities and immigrants may be a fruitful way forward for improving health risk communication during pandemics.

It is evident that in real-life health emergency risk communication is a comprehensive process of human interaction, which requires knowledge and understanding. To gain a better understanding of how to efficiently communicate health-related risks to immigrants during pandemics, future research in the area could also benefit from interdisciplinary approaches. For example, the article by Harrison *et al.* (2020) addressed consumers from culturally and linguistically diverse backgrounds, but in relation to the engagement of these groups into healthcare in general. The study by Harrison *et al.* (2020) may be useful in understanding how to effectively facilitate engagement within different groups of immigrants during pandemics. In linguistically challenging environments, future research could concentrate on communication strategies for L2 speakers, which is in the context of non-native language speakers and communication strategies based on nonverbal strategies and explanations using simple words (Montero, 2019).

Limitations
The primary limitation of this rapid scoping review is that the literature searches were conducted in only two databases, namely, Academic Search Premier and CINAHL. Although it is appropriate for a rapid review study, a wider scoping exercise may result in a more comprehensive dataset. Furthermore, some studies where immigrants were conceptualized as, for instance, "disadvantaged groups" might be overseen due to a choice of the search strategy used in this study. There are also certain limitations related to the studies included in this review. For example, in one of the studies, the perspectives and expectations of immigrants have not been classified separately from the general population (Markon *et al.*, 2013). Neither has the context in the study by Markon *et al.* (2013) been maintained, ranging between pandemics and other emergencies. Another limitation of this review is that we have not succeeded to identify the studies which address migration patterns during pandemics and risk communication strategies aimed at vulnerable immigrants during this early stage of integration in new environments. Gaining an insight into how authorities communicate with different groups of immigrants when arriving in the middle of the pandemic could give a better understanding of the risk communication process to vulnerable groups of immigrants. Giving greater attention to various groups of population and in the context of a pandemic might help governments and policymakers to adjust the ways in which discussion of uncertainties would empower these groups.

Conclusions
Our review identified a lack of studies focusing on strategies of communicating health-related risks to vulnerable groups of immigrants during a pandemic. We suggest that summarizing evidence regarding strategies to reach vulnerable groups of immigrants during pandemics and identifying ways of conveying recommendations to these groups may help authorities to make recommendations aimed at vulnerable immigrants. To achieve this, there is a need for more research from different geographic areas and conducted on samples of various groups of immigrants. The priority here should be an in-depth understanding of vulnerable groups of immigrants, where their fears, health-care needs and challenges before and during pandemics are addressed. Partly, this may be achieved by promoting community education and decision

inclusion. Moreover, vulnerable groups of immigrants could be encouraged to take part in self-information related to pandemic preparedness. Furthermore, a lot may be accomplished by being actively engaged with these groups, for instance, through elected leaders in communities, trusted spokespersons and channels, as well as national and local organizations representing such groups. Another way of understanding vulnerable immigrants would be by actively listening to the perspectives of immigrants and by making sure that these minority groups are being heard. The studies demonstrated that the above-mentioned groups have expressed their desire for more democratic communication and greater transparency from authorities.

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