Identifying COVID-19 and H1N1 vaccination hesitancy or refusal among health care providers across North America, the United Kingdom, Europe, and Australia: a scoping review protocol

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ABSTRACT

Objective: The aim of this scoping review is to describe and map the evidence on COVID-19 and H1N1 vaccination hesitancy or refusal among physicians, nurses, and pharmacists across North America, the United Kingdom, Europe, and Australia.

Introduction: When global pandemics occur, including the coronavirus (COVID-19) pandemic, which originated in 2020, and the swine flu influenza pandemic (H1N1) of 2009, there is increased pressure for pharmaceutical companies and government agencies to develop safe and effective vaccines against these highly contagious illnesses. Following development and approvals, it then becomes essential that priority populations, including frontline health care providers, opt to receive these vaccinations to prevent illness and potential transmission to their patients. However, vaccine hesitancy or refusal has played a significant role in suboptimal vaccination rates globally. As health care providers, including physicians, nurses, and pharmacists, often administer vaccines, their vaccination views and behaviors are of great importance because they can directly affect the vaccination decisions of their patients.

Inclusion criteria: The review will identify factors affecting COVID-19 and H1N1 vaccine hesitancy or refusal among physicians, nurses, and pharmacists across a range of countries. Published and unpublished evidence, including quantitative, qualitative, mixed methods research, and gray literature, will be eligible for inclusion.

Methods: This scoping review protocol will follow JBI methodology. The search strategy will be developed with support from a health sciences librarian scientist to identify relevant evidence. Screening and data extraction will be conducted by two reviewers, with findings summarized and presented through narrative descriptions, tables, and figures.

Keywords: COVID-19; H1N1; health care providers; immunization; vaccine hesitancy

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Introduction

The novel coronavirus disease (COVID-19), first identified as a pandemic by the World Health Organization (WHO) in March 2020, has placed significant burden on health care providers and health systems around the world.[1,2] In an effort to return to some semblance of normalcy, it is vital to develop herd immunity against COVID-19 through vaccination rather than by infection, but it is estimated that up to 90% of the population would require vaccination to achieve this.[3] From December 2020, two-dose COVID-19 vaccines (ie, Pfizer-BioNTech, Moderna, and Oxford-AstraZeneca) have been approved for use in multiple countries, including Canada, the United States (US), the United Kingdom (UK), and across the European Union.[4-6] Throughout these countries, priority populations for vaccination have included older adults (eg, those aged 80 years and older), those living in long-term care facilities, and frontline health care providers who have direct contact with patients.[7,8]

Due to the vast number of doses being administered daily, data on COVID-19 rates are continually being updated. As of February 27, 2021, however, only 52% of targeted health care workers in Canada (eg, hospital staff, those who administer vaccines, workers in group care settings) have received at least one dose of the vaccine.[9] Additional factors, including emerging COVID-19 variants of concern[10] and concerns about the development of blood clots associated with the Oxford-AstraZeneca vaccine,[11] have highlighted further concerns about vaccinating against COVID-19. As the pandemic continues to cause havoc, it is imperative that health care providers eligible for the COVID-19 vaccine choose to get vaccinated.

H1N1 pandemic

Prior to COVID-19, the most recent pandemic was the "swine flu" influenza (H1N1) pandemic. H1N1 is an influenza virus, which was first identified in April 2009 and declared a pandemic by the WHO in June 2009. It is estimated to have resulted in up to 575,000 deaths worldwide during the first year of the pandemic.[12,13] Similar to the situation with COVID-19, work was immediately undertaken to develop a vaccine against H1N1, with vaccines being approved for use in Canada and the US in autumn 2009.[14] At the time, health care providers were a prioritized population to receive the H1N1 vaccine, along with pregnant women and persons with chronic health conditions.[15] However, by 2010, only two-thirds of Canadian health care workers chose to receive the H1N1 vaccine.[15]

Vaccine hesitancy

Vaccine hesitancy, or the reluctance to get vaccinated, has been identified by the WHO as a significant threat to global health.[16,17] The choice to get vaccinated can be complex, with varying individual, social, and environmental factors affecting the decision.[16,18] Vaccine hesitancy can also vary based on the vaccine.[16] The H1N1 and COVID-19 pandemics have highlighted the importance of keeping up-to-date on vaccinations for other vaccine-preventable diseases to protect personal health, the health of others, and prevent avoidable use of health care systems.[19] However, vaccine hesitancy, vaccine refusal, and anti-vaccination views have become more common in recent years and subsequently play a role in suboptimal vaccine uptake rates.[20]

Vaccine hesitancy frameworks

With the increased levels of vaccine hesitancy, multiple frameworks have been developed to classify the reasons affecting vaccine uptake. The SAGE Working Group on Vaccine Hesitancy created the 3Cs model, which groups vaccine hesitancy under three broad constructs: complacency (ie, not considering vaccinations a prioritiy), convenience (ie, accessibilty of vaccination services), and confidence (ie, belief in the safety and effectiveness of vaccinations).[16] Betsch et al.[18] developed a 5C model, building on the 3C model to include constructs of calculation (ie, seeking out information to inform vaccination decision-making) and collective responsibility (ie, social responsibility to get vaccinated). Utilizing frameworks can help identify the complex factors that can influence an individual's choice to vaccinate.

Rationale

Despite differences in severity and mortality rates across the H1N1 and COVID-19 pandemics, vaccinations have been essential in the fight to bring both pandemics to an end.[21] As frontline health care providers have been prioritized for vaccination during both pandemics, it is crucial to better understand why vaccine hesitancy or refusal occurs among this group. The authors have chosen to focus on these two global pandemics because they have occurred during the 21st century, when anti-vaccination views have grown due to the prevalence of social media and easily accessible online medical information.[20] Qualitative systematic reviews have addressed factors affecting seasonal and pandemic influenza vaccination in health care workers[22] and vaccine hesitancy toward a COVID-19 vaccine in the general public[23]; however, to our knowledge, the body of literature focused on COVID-19 and H1N1 vaccination hesitancy or refusal among health care providers has yet to be systematically reviewed. A search of the JBI Systematic Review Registration, Cochrane Library, Open Science Framework, and PROSPERO on April 15, 2021, identified no current, in-progress, or completed scoping or systematic reviews addressing COVID-19 and H1N1 vaccine hesitancy or refusal among health care providers.

The aim of this scoping review is to map the research on COVID-19 and H1N1 vaccine hesitancy or refusal among physicians, nurses, and

pharmacists in North America (Canada and the US), the UK, Europe, and Australia.

Review objectives

The following four objectives will be addressed:
  i) Describe the range of settings and types of health care providers studied;
 ii) Describe the range of measures that have been used to assess COVID-19 and H1N1 vaccine hesitancy or refusal among physicians, nurses, and pharmacists;
iii) Identify key characteristics of vaccine hesitancy or refusal toward COVID-19 and H1N1 vaccinations reported in the literature, and map these factors to the 5C model of vaccine hesitancy;
 iv) Identify existing gaps in evidence regarding COVID-19 and H1N1 vaccine hesitancy or refusal among health care providers.

Inclusion criteria

Participants

This scoping review will consider studies that include COVID-19 or H1N1 vaccination hesitancy or refusal in health care providers, specifically among physicians, nurses, or pharmacists. All roles encompassed within these three types of health care providers who are trained to administer vaccinations will be considered. Physicians will include primary care physicians, general practitioners, pediatricians, specialist physicians, physician assistants, and medical students. Nurses include registered nurses, nurse practitioners, licensed practical nurses, public health nurses, midwives, and nursing students. Pharmacists will include community pharmacists, hospital-based pharmacists, clinical pharmacists, pharmacy technicians, and registered pharmacy students. We chose to focus on these three groups of health care providers as they commonly administer vaccinations.[24] Physicians, nurses, and pharmacists are also considered credible sources of information for patients considering vaccination; therefore, their vaccination views or behaviors may impact the vaccination decisions of their patients.[24] While other health care providers outside of these roles (eg, dentists, allied health professionals, paramedics) may be trained to provide injections, they will be excluded from the review because administering vaccinations is not considered within their typical scope of practice.

Concept

This review will consider studies that identify reasons for vaccine hesitancy or refusal among physicians, nurses, or pharmacists. Vaccine hesitancy, as defined by MacDonald and the SAGE Working Group on Vaccine Hesitancy, refers to "the delay in acceptance or refusal of vaccination despite availability of vaccination services."[16(p.4163)] This definition views vaccine hesitancy as a continuum, with complete acceptance and refusal of all vaccines at opposing ends, with the reasoning for hesitancy existing across the continuum.[16]

Context

This scoping review will consider published and unpublished evidence and literature that addresses COVID-19 and H1N1 vaccination hesitancy or refusal among physicians, nurses, and pharmacists across North America (Canada and the US), Australia, the UK (Scotland, Wales, Northern Ireland, and England), and European Union countries (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden.) These countries have been chosen because they have similar health care system infrastructure,[25] and have experienced similarities in vaccination access and distributions across both pandemics. This will also allow for the identification of any differences in COVID-19 and H1N1 vaccine hesitancy or refusal across these regions, and the varying ways it is identified and measured across a range of countries. Countries outside of these regions will be excluded due to variations in vaccine distribution timelines and health care infrastructure. Research and literature within the included countries can range across all types of health care settings (eg, acute care, long-term care, primary care, rural and urban settings).

Types of sources

Evidence will be eligible for inclusion if it identifies and describes COVID-19 or H1N1 vaccine hesitancy or refusal among physicians, nurses, and pharmacists. This scoping review will consider quantitative, qualitative, and mixed methods study designs for inclusion. Editorials, commentaries, and gray literature will also be considered for inclusion. Systematic and literature reviews will be excluded; however, the reference lists

of studies will be reviewed for potentially relevant literature for inclusion.

Methods

The proposed scoping review will be conducted in accordance with JBI methodology.[26] The Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) criteria will be used to guide reporting of the scoping review findings.[27]

Search strategy

The search strategy was developed with the assistance of an expert health sciences librarian scientist with the aim to locate both published and unpublished studies. An initial limited search of CINAHL and PsycINFO was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy for four electronic databases: CINAHL with Full Text (EBSCO), MEDLINE (Ovid), Academic Search Premier (EBSCO), and PsycINFO (Ovid). The search strategy, including all identified keywords and index terms, will be adapted for each included database. The reference lists of all included sources of evidence will be screened for additional studies. The search strategy developed for CINAHL can be found in Appendix I.

Only studies published in English will be included due to limitations on translation resources. Studies published since 2009 will be considered as this was the year H1N1 was first identified.

Sources of unpublished studies and gray literature to be searched include a Google search and searches of government health websites (eg, Health Canada, Public Health England). This search will be conducted to identify potentially relevant gray literature. Key subject terms will be searched, and relevant evidence, reports, and materials will be collected until the reviewer examines 20 results without identifying a possibly relevant article.

Study selection

Following the search, all identified citations will be collated and uploaded into Covidence (Veritas Health Innovation, Melbourne, Australia), and duplicates will be removed. Title and abstract screening of imported citations will be reviewed independently by two trained reviewers. Conflicts between reviewers at this stage will be addressed by a third team member. Following this stage, studies eligible for full-text screening will be uploaded to Covidence and screened against the inclusion criteria again by two independent reviewers. Reason for exclusion will be tracked (eg, ineligible health care providers, ineligible country, duplicate) and conflicts will be resolved by a third team member.

Data extraction

Data will be extracted from included papers by two independent reviewers using a data extraction tool developed by the research team members. An example of the tool can be found in Appendix II. Data extracted will include specific details about the general study characteristics (eg, authors, year), population (eg, type of health care providers included, sample size), concept (eg, H1N1 and/or COVID-19 vaccine hesitancy or refusal), context (eg, country, type of health care setting), study methods and relevant details (eg, aim and objectives, study design, application of theory), and key findings (eg, factors identified as affecting COVID-19 and H1N1 vaccine hesitancy or refusal) relevant to the review question.

Prior to data extraction, the tool will be pilot tested by two reviewers on five included studies to compare accuracy of data extraction and to revise the tool as necessary to address issues identified during the data extraction process. Any modifications to the tool will be detailed in the scoping review. The revised tool will be used throughout data extraction. Once data have been extracted by both reviewers, forms will be compared, and conflicts will be resolved through discussion. Authors of papers will be contacted to request missing or additional data where required.

Data analysis and presentation

A PRISMA diagram will be produced to summarize the screening process, reasons for study exclusion at the full-text screening stage, and the final number of included studies in the scoping review.[27] A summary table of included studies to highlight key study details (eg, country, study design, health care providers, vaccine hesitancy or refusal measures) will also be developed to summarize findings. Extracted data will be analyzed and summarized to meet the four research objectives. Quantitative data will be summarized using frequency counts to identify and

describe common health care provider types, health care settings, and vaccine hesitancy measures used. These findings will be synthesized using narrative summaries, in addition to tables and figures where appropriate. Qualitative findings and gray literature will be summarized narratively and presented in tables where appropriate.

Factors identified as affecting COVID-19 and H1N1 vaccination from the review will be mapped to the 5C model of vaccine hesitancy.[18] Mapping findings to these categories will help highlight key categories affecting vaccine uptake, any differences in vaccination hesitancy between COVID-19 and H1N1 vaccinations, and where potential deficiencies exist in the literature. Findings and identified gaps in evidence will be used to direct future research in the area of vaccination hesitancy among health care providers during pandemics.

Acknowledgments

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Appendix I: Search strategy

CINAHL (EBSCO)

Search date: April 15, 2021

Limiters: Date range 2009–2021; English language.

Search	Query	Records retrieved
S1	(vaccin* N3 (hesita* OR refus* OR reluctan* or attitude* or accept* or behaviour or non-vaccin* or uptake)) OR ("anti-vaccination" OR "anti-vax")	3947
S2	Immuniz*	25,055
S3	S1 OR S2	26,732
S4	pandemic influenza OR swine flu OR H1N1pdm09 virus OR 2009 novel influenza A OR H1N1	7701
S5	COVID disease OR COVID-19 OR coronavirus OR SARS-CoV-2	51,098
S6	healthcare worker* or health care provider* or personnel or doctor* or physician* or nurs* or pharmac*	988,578
S7	(MH "COVID-19 Vaccines") OR (MH " "Influenza A Virus, H1N1 Subtype"")	4283
S8	(MH "Nurse Attitudes") OR (MH "Pharmacist Attitudes") OR (MH "Physician Attitudes")	31,189
S9	S4 OR S5 OR S7	58,548
S10	S3 AND S9	2021
S11	S6 OR S8	988,578
S12	S10 AND S11	727
S13	Canad* OR United States OR North Americ* OR Americ* OR Ireland OR Irish OR United Kingdom OR UK OR Brit* OR Great Britain OR Scot* OR Wales OR Welch OR Engl* OR Austral* OR Austri* OR Belgi* Bulgar*OR Croatia* OR Cyprus OR Cypriote OR Czech* OR Czech Republic OR Denmark OR Danish OR Estonia* OR Finland OR Finnish OR France OR French OR German* OR Gree* OR Hungar* OR Ital* OR Latvia* OR Luxembourg* OR Malt* OR Netherlands OR Dutch OR Poland OR Polish OR Portug* OR Romania* OR Slovakia* OR Slovenia OR Slovene* OR Spain OR Spanish OR Spaniard* OR Sweden OR Swedish	1,238,482
S14	S12 AND S13	406

Appendix II: Data extraction tool

Data extraction point:	Response:
Date	
Reviewer	
Study identification details	
Author	
Year of publication	
Country	
Population	
Health care providers included and description	
Sample size	
Concept	
Vaccine studied (H1N1 and/or COVID-19)	
Vaccine uptake (% vaccinated and unvaccinated)	
Vaccine hesitancy or refusal measure used	
Context	
Health care setting	
Country evidence collected from	
Methods	
Dates of data collection	
Study aims	
Study design	
Theory used (eg, theory of planned behavior, health belief model)	
Key findings	
Factors associated with vaccine refusal	
Factors associated with vaccine hesitancy	