Strategies Used In The Covid-19 Vaccination Campaign: a Scoping Review

Estratégias Utilizadas na Campanha de Vacinação Covid-19: Revisão de Escopo

Estrategias Utilizadas En La Campaña de Vacunación Contra La Covid-19: Revisión de Alcance

RESUMO

Objetivo: Mapear as estratégias extramuros utilizadas durante a campanha de vacinação contra a COVID-19. Métodos: Trata-se de um estudo de revisão sistemática de escopo, cuja busca foi realizada em dezembro de 2022 e atualizada em dezembro de 2024, em 5 bases de dados. Foram obtidos 2.102 artigos, após a exclusão dos estudos, 30 artigos foram analisados através da análise temática de conteúdo. Resultados: A análise resultou em 5 categorias temáticas: "vacinação extramuro na campanha contra a COVID-19"; "estratégias e capacitações direcionadas para a atuação na campanha de vacinação"; "elegibilidade dos grupos prioritários para vacinação"; "representatividade social, religiosa e comunitária como dispositivo integrador entre a comunidade e o acesso à vacina"; e "inovações tecnológicas utilizadas na disseminação de informações acerca da vacinação". Considerações finais: A análise dos dados permitiu observar que a vacinação extramuro é uma ferramenta potente de combate à doença, via imunização dos indivíduos e mitigação da transmissão viral.

DESCRITORES: COVID-19; Vacinação em Massa. Programas de Imunização, Fluxo de Trabalho, Enfermagem em Saúde Pública.

ABSTRACT

Objective: To map the extramural strategies used during the COVID-19 vaccination campaign. Methods: This is a systematic scoping review study, whose search was conducted in December 2022 and updated in December 2024, in 5 databases. A total of 2,102 articles were obtained; after the studies were excluded, 30 articles were analyzed through thematic content analysis. Results: The analysis resulted in 5 thematic categories: "extramural vaccination in the campaign against COVID-19"; "strategies and training aimed at acting in the vaccination campaign"; "eligibility of priority groups for vaccination"; "social, religious and community representation as an integrating device between the community and access to the vaccine"; and "technological innovations used in the dissemination of information about vaccination". Final considerations: The analysis of the data allowed us to observe that extramural vaccination is a powerful tool to combat the disease, through immunization of individuals and mitigation of viral transmission.

DESCRIPTORS: COVID-19; Mass Vaccination. Immunization Programs, Workflow, Public Health Nursing.

RESUMEN

Objetivo: Mapear las estrategias extramuros utilizadas durante la campaña de vacunación contra la COVID-19. Métodos: Se trata de un estudio de revisión sistemática de alcance, cuya búsqueda se realizó en diciembre de 2022 y se actualizó en diciembre de 2024, en 5 bases de datos. Se obtuvieron 2.102 artículos, y después de excluir los estudios irrelevantes, se analizaron 30 artículos a través del análisis temático de contenido. Resultados: El análisis resultó en 5 categorías temáticas: "vacunación extramuros en la campaña contra la COVID-19"; "estrategias y capacitaciones dirigidas a la participación en la campaña de vacunación"; "elegibilidad de los grupos prioritarios para la vacunación"; "representatividad social, religiosa y comunitaria como dispositivo integrador entre la comunidad y el acceso a la vacuna"; y "innovaciones tecnológicas utilizadas en la difusión de información sobre la vacunación". Consideraciones finales: El análisis de los datos permitió observar que la vacunación extramuros es una herramienta potente para combatir la enfermedad, a través de la inmunización de los individuos y la mitigación de la transmisión viral.

DESCRIPTORES: COVID-19; Vacunación masiva; Programas de inmunización; Flujo de trabajo; Enfermería en salud pública.

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INTRODUCTION

COVID-19 was declared a pandemic in March 2020 by the WHO. [1] The spread of the virus occurred quickly and alarmingly, requiring authorities in all countries to develop contingency plans in order to mitigate the transmission of the virus and its consequences.[2]

Thus, vaccination was a strategy to combat the pandemic, since immunization promotes disease prevention. [3] Authors highlight that studies regarding the creation of a safe and effective vaccine against COVID-19 were carried out in all countries of the world by governments, non-governmental institutions and pharmaceutical companies. [4]

The plans to start vaccination, one of the strategies listed being extramural vaccination, consists of offering the vaccine to the population outside of accredited health establishments, the vaccination rooms. [5] This strategy decentralizes immunization and facilitates the population's access to vaccines, which results in effective vaccination coverage and, consequently, disease mitigation. [6]

Extramural vaccination is an essential public health strategy to serve populations with limited access to conventional health services. This approach has been particularly vital in eradication campaigns for global diseases such as smallpox and polio, where reaching communities in remote areas is critical to successful eradication. [5–7] Fur-

thermore, in emergency situations such as yellow fever, cholera and Ebola epidemics, extramural vaccination has proven to be an effective strategy to rapidly immunize vulnerable populations, ensuring an agile and comprehensive response to health crises, as was the case with COVID-19. [5–7]

This is a relevant study for immunization program planners in pandemic or epidemic situations, essential for understanding extramural vaccination practices, aiming to maximize vaccination coverage and mitigate the impacts of future health crises. [5–7]. Nessa perspectiva, o presente estudo tem como objetivo mapear as estratégias extramuros utilizadas durante a campanha de vacinação COVID-19.

METHOD

This is a study carried out using the literature review methodology of the Joanna Briggs Institute - JBI, using the Scoping Review protocol method. [8] The study was registered on the Open Science Framework platform (OSF Associated Project Registration: osf.io/6amvb) and received the following DOI: https://doi.org/10.17605/OSF.IO/6AMVB, ensuring its methodological path in accordance with the recommendations of the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation [9] according to the Joanna Briggs Institute Reviews' manual method. [10]

Therefore, the research question was formulated using the elements of the mnemonic CC (Concept - Context), defining the acronym "C" (concept): extramural vaccination and "C" (context): COVID-19 vaccination campaign. [10] In this sense, the scoping review protocol had as its guiding question: What extramural strategies were used during the COVID-19 vaccination campaign.

The inclusion criteria were defined through the CC (Concept - Context) strategy and considered published manuscripts that addressed extramural vaccination strategies in the context of COVID-19. Studies that detailed logistics, implementation, communication, partnerships with local entities, and other relevant strategies. The exclusion criteria considered studies that did not specifically focus on extramural vaccination strategies or that were too general about vaccination. Studies carried out before the COVID-19 pandemic, as they would not be relevant to the current context.

The evidence available in the selected databases was included: Embase (Elsevier®); Latin American and Caribbean Literature in Health Sciences (LILACS)/Nursing Database (BDENF); Medline/PubMed®; SciELO; Scopus (Elsevier®). The research search strategy was developed in December 2022, with the support of a librarian from the University Library (BU - Biblioteca Universitária) of the Federal University of Santa Catarina (UFSC), and updated in December 2023, using the BU/UFSC search strategy development protocol (Figure 1). All languages were considered and there was no time limit.

Figure 1 - BU/UFSC Search Strategy in databases. Florianópolis/SC, Brazil.

Databases	Search Strategies
Embase (Elsevier)	(("Mass Vaccination" OR "Immunization Programs" OR "Vaccination Campaign" OR "Vaccination Campaigns" OR "Immunization Program" OR "Vaccination Promotion" OR "Vaccination Promotions") AND (Innova*:ti,ab OR Strateg*:ti,ab) AND ("Coronavirus Infections" OR "Covid-19" OR "SARS-CoV-2" OR "SARSCoV2" OR "SARS2" OR "COVID19" OR "COVID-2019" OR "COVID 2019" OR "SARS COV 2" OR "2019-nCoV" OR "2019ncov" OR "coronavirus" OR "nCoV 2019"))
LILACS/BDENF	(("Vacinação em Massa" OR "Programas de Imunização" OR "Campanha de Vacinação" OR "Campanhas de Vacinação" OR "Programa Nacional de Imunizações" OR "Programas de Vacinação" OR "Promoção de Vacinação" OR "Vacunación Masiva" OR "Programas de Inmunización" OR "campaña de vacunación" OR "campañas de vacunación" OR "Programa Nacional de Inmunizaciones" OR "Programa Nacional de Inmunización" OR "Programas Nacionales de Inmunizaciones" OR "Programas Nacionales de Inmunización" OR "Programas Provinciales de Inmunizaciones" OR "Programas Provinciales de Inmunización" OR "Promoción de Vacunación" OR "Mass Vaccination" OR "Immunization Programs" OR "Vaccination Campaign" OR "Vaccination Campaigns" OR "Immunization Program" OR "Vaccination Promotion" OR "Vaccination Promotions") AND (inova* OR Estrateg* OR Innova* OR Strateg*) AND ("Infecções por Coronavirus" OR "Virus da SARS" OR "Infecciones por Coronavirus" OR "Virus del SRAS" OR "Coronavirus Infections" OR "Covid-19" OR "SARS-CoV-2" OR "SARS Virus" OR "SARSCoV2" OR "SARS2" OR "COVID19" OR "COVID-2019" OR "COVID 2019" OR "SARS COV 2" OR "2019-nCoV" OR "2019ncov" OR "coronavirus" OR "nCoV 2019"))
Medline/PubMed®	(("Mass Vaccination"[Mesh] OR "Mass Vaccination" OR "Immunization Programs"[Mesh] OR "Immunization Programs" OR "Vaccination Campaign" OR "Vaccination Campaigns" OR "Immunization Program" OR "Vaccination Promotion" OR "Vaccination Promotions") AND (Innova*[Title/Abstract] OR Strateg*[Title/Abstract]) AND ("Coronavirus Infections"[Mesh] OR "Coronavirus Infections" OR "COVID-19"[Mesh] OR "Covid-19" OR "SARS-CoV-2"[Mesh] OR "SARS-CoV-2" OR "SARS Virus"[Mesh] OR "SARS Virus" OR "SARSCoV2" OR "SARS2" OR "COVID19" OR "COVID-2019" OR "COVID 2019" OR "SARS COV 2" OR "2019-nCoV" OR "2019ncov" OR "coronavirus" OR "nCoV 2019") AND (journal article[Publication Type] NOT review[Publication Type]))
SciELO	(("Vacinação em Massa" OR "Programas de Imunização" OR "Campanha de Vacinação" OR "Campanhas de Vacinação" OR "Programa Nacional de Imunizações" OR "Programas de Vacinação" OR "Promoção de Vacinação" OR "Vacunación Masiva" OR "Programas de Inmunización" OR "campaña de vacunación" OR "campañas de vacunación" OR "Programa Nacional de Inmunizaciones" OR "Programa Nacional de Inmunización" OR "Programas Nacionales de Inmunizaciones" OR "Programas Nacionales de Inmunización" OR "Programas Provinciales de Inmunizaciones" OR "Programas Provinciales de Inmunización" OR "Promoción de Vacunación" OR "Mass Vaccination" OR "Immunization Programs" OR "Vaccination Campaign" OR "Vaccination Campaigns" OR "Immunization Program" OR "Vaccination Promotion" OR "Vaccination Promotions") AND (Inova* OR Estrateg* OR Innova* OR Strateg*) AND ("Infecções por Coronavirus" OR "Virus da SARS" OR "Infecciones por Coronavirus" OR "Virus del SRAS" OR "Coronavirus Infections" OR "Covid-19" OR "SARS-CoV-2" OR "SARS Virus" OR "SARSCoV2" OR "SARS2" OR "COVID19" OR "COVID-2019" OR "COVID 2019" OR "SARS COV 2" OR "2019-nCoV" OR "2019ncov" OR "coronavirus" OR "nCoV 2019"))
Scopus (Elsevier)	(("Mass Vaccination" OR "Immunization Programs" OR "Vaccination Campaign" OR "Vaccination Campaigns" OR "Immunization Program" OR "Vaccination Promotion" OR "Vaccination Promotions") AND (Innova* OR Strateg*) AND ("Coronavirus Infections" OR "Covid-19" OR "SARS-CoV-2" OR "SARS Virus" OR "SARSCoV2" OR "SARS2" OR "COVID19" OR "COVID-2019" OR "COVID 2019" OR "SARS COV 2" OR "2019-nCoV" OR "2019ncov" OR "coronavirus" OR "nCoV 2019"))

Source: Prepared by the authors.

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After the search, all identified citations were collated and uploaded into Rayyan software (Qatar Computing Research Institute, Doha, Qatar), and duplicates were identified and removed. Titles and abstracts were screened by two reviewers and then imported into the Mendeley reference manager. The full text of the selected citations was organized into folders and assessed in detail against the inclusion criteria by two independent reviewers. The reasons for exclusion of full-text studies that did not meet the inclusion criteria were recorded and reported in the scoping review. Any disagreements that arose between the reviewers at each stage of the study selection process were resolved through consensus. The selection results were collated and represented in the form of a Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Review (PRISMA-ScR) flowchart. [8–10]

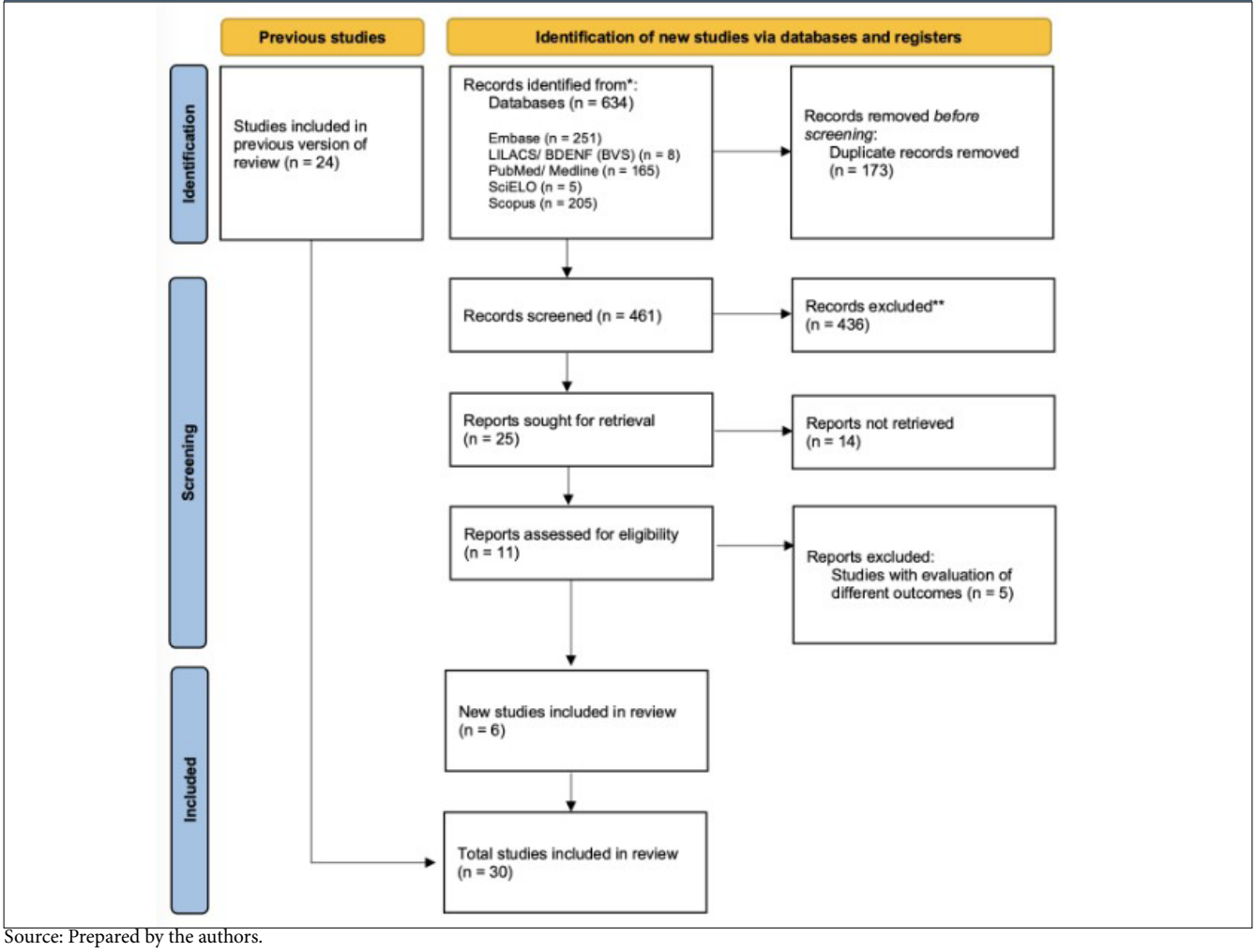
Data were extracted from the articles included in the comprehensive review by two independent reviewers using a data extraction tool developed by the reviewers, which sorted/numbered the articles, mentioned the year, country, author(s), article title and the vaccination strategy used. The extracted data included specific details about the studies, covering the main findings related to the review question.

The findings were presented schematically detailing the data extraction and analyzed according to thematic content analysis [11,12], with pre-analysis, exploratory reading, coding and thematic categorization stages to interpret the results.

RESULTS

2,102 articles were obtained in the search in the databases that were exported and selected with the help of Rayyan. After the exclusion of duplicate studies, 1,300 articles remained. After analyzing the titles, we continued with 291 articles, of which the abstracts were read, leaving 46 articles for reading in full, and of these 30 publications were used in the research (Figure 2).

Figure 2 - Prisma Flowchart. Florianópolis/SC, Brazil



Source: Prepared by the authors.

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The results were categorized according to the characteristics of the selected documents and organized in a table identifying the year, country, authors, title and vaccination strategy used (Figure 3).

Figura 3 - Característica dos documentos selecionados. Florianópolis/SC, Brasil

nº	Year	Country	Authors	Title of the Article	Strategy Used
1	2022	*Brazil*	*Ethel Maciel; Michelle Fernandez; Karla Calife; Denise Garrett; Carla Domingues; Ligia Kerr; Margareth Dalcolmo*	*The COVID-19 vaccination campaign in Brazil and the invisibility of scientific evidence*	*Use of the press to publicize priority groups for vaccination.*
2	2022	*France*	*Benjamin Faucher; Rania Assab; Jonathan Roux; Daniel Levy-Bruhl; Cécile Tran Kiem; Simon Cauchemez; Laura Zanetti; Vittoria Colizza; Pierre-Yves Boëlle; Chiara Poletto*	*Agent-based modelling of reactive vaccination of workplaces and schools against COVID-19*	*Use of reactive and non-reactive vaccination strategies, and communication to disseminate information during the COVID-19 campaign.*
3	2021	*Italy*	*C. Signorelli; A. Odone; V. Gianfredi; M. Capraro; E. Kacerik; G. Chiecca; A. Scardoni; M. Minerva; R. Manteca; P. Musaro; P. Brazzoli; P. Basteri; B. Bertini; F. Esposti; C. Ferri; V.A. Alberti; G. Gastaldi*	*Application of the "immunization islands" model to improve quality, efficiency, and safety of a COVID-19 mass vaccination site*	*Use of mass vaccination in the COVID-19 campaign. Organization of workflows and team training.*
4	2021	*USA*	*Hengchen Dai; Silvia Saccardo; Maria A. Han; Lily Roh; Naveen Raja; Sitaram Vangala; Hardikkumar Modi; Shital Pandya; Michael Sloyan; Daniel M. Croymans*	*Behavioural nudges increase COVID-19 vaccinations*	*Use of technology for communication and influencing individuals regarding vaccination.*
5	2022	*Canada*	*Shima Shakory; Azza Eissa; Tara Kiran; Andrew D. Pinto*	*Best Practices for COVID-19 Mass Vaccination Clinics*	*Mass vaccination in the COVID-19 campaign. Team training.*
6	2021	*Pakistan*	*Qiang Jin; Syed Hassan Raza; Muhammad Yousaf; Umer Zaman; Jenny Marisa Lim Dao Siang*	*Can communication strategies combat COVID-19 vaccine hesitancy with trade-off between public service messages and public skepticism? Experimental evidence from Pakistan*	*Use of the media to publicize vaccination and strengthen the COVID-19 campaign.*
7	2022	*USA*	*Deborah Gurgel Smith; John Anthony Vanchiehie; Michelle Raley; Andrew David Yourockho; Mohammad Afrad Nobel Bhuiyan; Kevin Sean Murnan; Rona Scott; Jeremy Kamil*	*COVID-19 drive-through mass vaccination in Northwest Louisiana*	*Use of mass vaccination in the COVID-19 campaign for priority groups. Communication to disseminate information about vaccination. Social representation in the media as a vaccination influencer.*
8	2021	*Brazil*	*Jeane Barros de Souza; Tassiana Potrich; Julia Valeria de Oliveira Vargas Bitencourt; Valéria Silvana Faganello Maudêra; Ivonete Teresinha Schlüter Buss Heidemann; Giselle Christine Schmidt Menegolla*	*COVID-19 vaccination campaign: Dialogues with nurses working in Primary Health Care*	*Use of drive-through, online scheduling, home vaccination, and active search in the COVID-19 campaign. Communication to disseminate information.*
9	2021	*China*	*Mélissa Vuilliet Soit Vuilliet; Antoine Flahault; Liudmila Rozanova*	*COVID-19 Vaccination Strategy in China: A Case Study*	*Use of available groups for vaccination. Locations provided for vaccination during the COVID-19 campaign. Use of technology for information dissemination.*
10	2022	*Italy*	*Federica Turatto; Michele Sassano; Mauro Goletti; Santino Severoni; Adriano Grossi; Paolo Parente*	*Ensuring Equitable Access to the COVID-19 Vaccine: The Experience of A Local Health Unit in Rome, Italy*	*Use of strategies to reach the most vulnerable population. Social representation allied to the campaign as a vaccination influencer.*

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11	2022	Brazil	Leticia Yamawaka de Almeida; Jessica Domingues; Talita Rewa; Daniela Baptista Novaes; Adriana Aparecida Alves do Nascimento; Daiana Bonfim	Implementation of the drive-through strategy for COVID-19 vaccination: A case report	Use of drive-through in the COVID-19 campaign. Planning and strategies for vaccination. Training and team communication.
12	2022	France	L. Cambon; M. Schwarzinger; F. Alla	Increasing acceptance of a vaccination program for coronavirus disease 2019 in France: A challenge for one of the world's most vaccine-hesitant countries	Use of communication to disseminate information. Use of a digital platform for vaccination registration. Social representation allied to the campaign as a vaccination influencer.
13	2022	England	Eric Goralnick; Christoph Kaufmann; Atul A. Gawande	Mass-vaccination sites — An essential innovation to curb the COVID-19 pandemic	Use of mass vaccination and conventional locations in the COVID-19 campaign. Planning and strategies for vaccination. Use of technology to disseminate information.
14	2021	USA	Kate M. Bubar; Kyle Reinholt; Stephen M. Kissler; Marc Lipsitch; Sarah Cobey; Daniel B. Larremore; Yonatan H. Grad	Model-informed COVID-19 vaccine prioritization strategies by age and serostatus	Use of different strategies for vaccination prioritization.
15	2022	Australia	C. Raina MacIntyre; Valentina Costantino; Mallory Trent	Modelling of COVID-19 vaccination strategies and herd immunity, in scenarios of limited and full vaccine supply in NSW, Australia	Use of mass vaccination in the COVID-19 campaign. Priority groups. Planning and organization for vaccination.
16	2021	Italy	Eletra Carini; Chiara Caleddu; Carolina Castania; Mario Cesare Nurchis; Teresa Eleonora Laura; Adriano Grossi; Andrea Barbara; Svetlana Axelrod; Mauro Goletti; Paolo Parente	Organisational model and coverage of at-home COVID-19 vaccination in an Italian urban context	Use of mass vaccination in the COVID-19 campaign.
17	2021	Italy	S. Catalano; S. Tribastone	Organizational design: the case of SARS-CoV-2 vaccination in a healthcare centre	Use of mass vaccination in the COVID-19 campaign.
18	2021	USA	Capt. Benjamin Fischl; Capt. Andrew T. Patterson; Maj. Joseph Baxter; Capt. James Watson; Maj. Jesse Hensomvitz; Maj. David Valentine; Lt. Col. Jacob Wessler; Col. Danny Wong	Planning Considerations and Lessons Learned From a COVID-19 Mass Community Vaccination Center	Use of drive-thru and scheduling in the COVID-19 campaign. Planning and organization for vaccination.
19	2022	Brazil	Llanos Bernardez-Serra; Agathe Nguyen-Huynh; Tara Spongberg; Nathalia Semizon Guimarães; Raphael Augusto Teixeira de Aguiar; Milena Soriano Marcolino	The COVID-19 Vaccination Strategy in Brazil: A Case Study	Use of priority groups for vaccination.
20	2022	Italy	Silvana Castaldi; Cecilia Eugenia Gandolfi; Antonia Franchini; Paolo Maria Galimberti; Maria Piga; Francesco Auxilia; Alessandro Porro	The first major vaccination campaign against smallpox in Lombardy: the mass vaccination campaign against coronavirus...nothing new, only terminology	Use of mass vaccination against COVID-19. Use of social representation and communication to disseminate information.
21	2021	Germany	Volker Gehrau; Sam Fujarski; Hannah Lorenz; Carla Schieb; Bernd Blöbaum	The impact of health information exposure and source credibility on covid-19 vaccination intention in Germany	Use of media and communication to disseminate information.
22	2022	Asia	Tsheten Tsheten; Phurpa Tenzin; Archie CA Clements; Darren J. Gray; Lhawang Ugyen; Kinley Wangdi	The COVID-19 vaccination campaign in Bhutan: strategy and achievements	Use of home vaccination in COVID-19. Communication strategies for disseminating information.
23	2021	USA	Amy Thompson; Heidi Hancher-Rauch; Alexis Blavos; Jody Early; Jodi Brookins-Fisher	Universities as Catalysts for COVID-19 Vaccination: A Call to Action	Mass vaccination against COVID-19. Using communication to disseminate information.
24	2021	Israel	Jonathan Cylus; Dimitra Panteli; Ewout van Ginneken	Who should be vaccinated first? Comparing vaccine prioritization strategies in Israel and European countries using the Covid-19 Health System Response Monitor	Use of priority groups for vaccination.

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25	2023	*Germany*	*Stella Dancek; Dmitrij Achlerod; Ole Kämmerer; Falk Schwendicke*	*The Role of Vaccination Centers in a National Mass Immunization Campaign: Policymaker Insights from the German COVID-19 Pandemic Vaccine*	*Extramural vaccination in the COVID-19 campaign. Strategies and training aimed at participation in the COVID-19 vaccination campaign.*
26	2023	*Bangladesh*	*Nazmunnahar; Bulbul Ahamed; Md. Amanul Haque; Md. Tanbir; A. S. M. Roknuzzaman; Rapty Sarker; Md. Rabiul Islam*	*COVID-19 vaccination success in Bangladesh: Key strategies were prompt response, early drives for vaccines, and effective awareness campaigns*	*Social, religious and community representation as an integrating device between the community and access to the vaccine. Technological innovations used in the dissemination of information about vaccination.*
27	2022	*Iran*	*Hesam Seyedin; Mohsen Dowlat; Mohammad Barzegar; Saeid Bahramzadeh; Abed Khanizadeh; Mostafa Foshanvaran; Haleh Adibi; Fahimeh Barghi-Shirazi; Mahboubeh Rouholllahi*	*Developing a Roadmap for Mass Vaccination of COVID-19 in Iran: A Qualitative Study*	*Estratégias e treinamento focados na participação na campanha de vacinação contra a COVID-19. Elegibilidade de grupos prioritários para a vacinação. Representatividade social, religiosa e comunitária como dispositivo integrador entre a comunidade e o acesso à vacina. Inovações tecnológicas utilizadas na divulgação de informações sobre a vacinação.*
28	2023	*India*	*Priyanka Das; Santosh Shukla; Ashwin Bhagat; Saurabh Purohit; Sanjay Dhir; Sushil; Harkabir Singh Jhander; Nirmal Kukreja; Nitin Kotnkar; Saurabh Sharma; Shyamashree Das; Gunjan Taneja; Raj Shankar Ghosh*	*Modeling a COVID-19 Vaccination Campaign in the State of Madhya Pradesh, India*	*Extramural vaccination in the campaign against COVID-19. Strategies and training aimed at participation in the vaccination campaign against COVID-19. Social, religious and community representation as an integrating device between the community and access to the vaccine.*
29	2023	*Ghana*	*Ruth Nana Efua McCarthy; Emmanuel Timmy Donkoh; Dominic DeGraft Arthur; Edward Tiero Dassah; Kwabena Ofoli Boadu; John Ekow Otoo; Ivy Wia Ofori Boadu; Samuel Fosu Gyasi*	*Public relations strategies employed by the Ghana Health Service to address COVID-19 vaccine hesitancy: a qualitative inquiry*	*Extramural vaccination in the campaign against COVID-19. Technological innovations used in the dissemination of information about vaccination.*
30	2023	*Italy*	*Sandro Cinquetti; Anna De Polo; Vincenzo Marcotrigiano; Marica Battistini; Erica Bino; Giulia De Mattia; Jacopo Fragherazzi; Nahuel Fiorito; Mattia Manzi; Anna Voltolini; Martina Mangiacotti; Christian Napoli*	*Lessons Learned from the COVID-19 Vaccination Campaigns in Veneto Region: Population Vaccination Centers as Support for the Traditional Outpatient Model*	*Vacinação extra-muro na campanha contra a COVID-19. Estratégias e treinamentos voltados à participação na campanha de vacinação. Inovações tecnológicas na disseminação de informações sobre a vacinação.*

Source: Prepared by the authors.

After analyzing the 30 publications, we proceeded with the thematic synthesis of content. This process allowed us to classify the publications into five distinct categories: Extramural vaccination in the campaign against COVID-19; Strategies and training aimed at action in the vaccination campaign against COVID-19; Eligibility of priority groups for vaccination against COVID-19; Social, religious and community representation as an integrating device between the community and access to the vaccine; and Technological innovations used in the dissemination of information about vaccination.

DISCUSSION

Extramural vaccination in the campaign against COVID-19

As the global pandemic intensified, laboratories accelerated research to create immunobiologicals against COVID-19, allowing the rapid development of vaccines with various technologies. [5] Global COVID-19 vaccination strategies have expanded supply, including extramural vaccination to reach more people and reduce transmission (11; 13).

The WHO has highlighted vaccination as an effective response to the pandemic, aiming to reduce COVID-19 transmission. In China, mass immunization began in December 2020, eight months after the pandemic was declared, while Brazil adopted a slower approach (11; 9).

In a context of intense circulation of the virus and emergence of variants, vaccination needs to be fast and dynamic. However, in the United States and Europe, as of June 2021, less than 60% of the population was fully vaccinated, requiring immediate actions, such as the expansion of vaccination sites to increase coverage and protect the population (2).

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Globally, countries have implemented vaccination strategies, including reactive vaccination, slowing down outbreaks, and non-reactive vaccination, such as mass vaccination, widely adopted during the COVID-19 pandemic. Conducted in vaccination rooms and unconventional locations, these strategies facilitated epidemiological management, mitigating the spread of the virus (2; 15; 25; 26; 27; 29).

Countries globally have adopted mass vaccination as their main strategy, a practice not seen since the eradication of smallpox in the 1970s (15; 25; 26; 27; 29). Unconventional locations for mass vaccination were selected considering structure, proximity, and accessibility to all social classes. Using public transportation, cars, or on foot, the aim was to ensure equity. This approach efficiently reached a large number of people in a short period of time, quickly and safely (3; 5; 13; 16; 25; 26; 27; 29).

These extramural locations, such as vaccination clinics, satellite units, and drive-thru sites, required rigorous organization, planning, and supervision to mitigate disease transmission and increase vaccination coverage (11; 13; 15). Extramural vaccination was vital during the pandemic, expanding access to immunization. The reactive strategy aimed to immunize direct contacts and places frequented by positive cases. Effective in outbreaks, reactive vaccination, together with distancing measures and masks, has proven effective (2; 12). In COVID-19, however, transmission by asymptomatic individuals challenges this approach (2).

The reactive vaccination strategy may not be as effective without early tracing and rapid vaccination of contacts. Viability depends on actions such as regular testing and vaccine stockpiling. As the pandemic progressed, the reactive approach proved less effective than non-reactive strategies, such as mass vaccination. The latter, agile and comprehensive, stands out in pandemic management (2; 15).

Mass vaccination took place outside accredited venues, in diverse locations such as sports arenas, schools, shopping malls, churches, among others (2; 5; 11; 13; 20; 23). The strategy included identifying large locations, such as universities, event centers, and shopping malls, that allowed social distancing, avoiding crowds during mass vaccination (5; 11; 17; 23; 30). Furthermore, strategic proximity between the vaccination site and the cold chain is crucial to ensure efficient and rapid distribution of the immunobiological agent, optimizing vaccination success during the pandemic (11; 13; 15).

Drive-thru was an innovative strategy for mass vaccination, taking place in spaces with controlled traffic, where people remained in their cars, ensuring safety, distancing and efficiency (5; 7; 13). A disadvantage of the drive-thru method was the restriction for those who did not drive. [13] However, pedestrian vaccination points were an option to solve this problem (11).

Pedestrian vaccination points aimed to provide broad coverage. Located near drive-through vaccination stations, they were organized with a single flow, avoiding crowds. Individuals went through queues, registration, application and observation (3; 5; 11; 13).

Other methods included home vaccination for people with reduced mobility, already used in primary care; online scheduling for specific dates (8; 16; 18; 22); "open night", which vaccinated vulnerable individuals without documentation at night, without an appointment (10). These actions sought to expand vaccination coverage and mitigate large-scale transmission.

Strategies and training aimed at working in the vaccination campaign against COVID-19

Online and just-in-time training for COVID-19 professionals was institutionalized, demonstrating effectiveness in the mass vaccination strategy (5). These trainings were crucial to ensure the safety of users and professionals (7).

During the vaccination campaign, nursing professionals reinvented themselves daily, learning and applying knowledge simultaneously. Continuing education actions were insufficient due to the accelerated pace and lack of time for technical guidance (8).

Health education included frequent training due to the dynamics of vaccination, addressing flow, immunobiologicals, route of administration, storage and temperature monitoring, with effective practical results (5; 11). The need for frequent training was observed due to the rotation of professionals, with a fixed team being more favorable for the efficient functioning of the service (11).

The importance of planning, implementing measures in public vaccination sites and training nurses as vaccinators was emphasized, expanding vaccination capacity (15). Concomitantly with the training, daily instructions were held in a circle format, briefly recalling essential topics to align information with users and ensure vaccination effectiveness (11).

Eligibility of priority groups for COVID-19 vaccination

Before the launch of COVID-19 vaccines, it was essential to plan distribution considering the global shortage of vaccines and supplies, delays in production and distribution. [14,15]

Priority groups were chosen with a focus on the most vulnerable population, considering the limitation of doses. Criteria included exposure to the virus, mortality and comorbidities. [15] (9; 14) Initial priority groups in some countries included exposed healthcare workers, older adults, and residents of long-term care facilities for the elderly (LTCFs) due to higher risk (14; 15; 24).

In some countries, varying strategies for prioritizing groups in the first phase included LTCF residents and older adults before health care workers. (9) In other nations, the initial emphasis was on older people, especially those aged 80 and over, followed by transitions to younger age groups. [24] Although vaccinating younger people could reduce the spread, priority for the elderly was maintained to mitigate morbidity and mortality from COVID-19, according to evidence. [14, 15]

The criteria for the first phase considered high risk of mortality/hospitalization

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and greater exposure to the virus, prioritizing the elderly, residents of LTCFs, those with comorbidities, and frontline health professionals. (24) In the following phases, groups such as those with chronic diseases and socially vulnerable individuals (quilombolas, indigenous people, black people, homeless people, populations deprived of liberty, people with permanent disabilities, refugees, among others) were vaccinated as available (1; 19; 24). As vaccination progressed, everyone was reached, including younger people (20-49 years old), whose immunization substantially mitigated virus transmission. (14)

Social, religious and community representation as an integrating device between the community and access to the vaccine

In the COVID-19 campaign, strategies were adjusted in response to hesitant groups, impacting immunization and viral transmission. Investing in campaigns to combat hesitancy, involving community leaders, and promoting positive information was crucial. Awareness-raising, with authorities, celebrities, religious leaders, and specific times in places of worship, was successful in overcoming vaccine reluctance. (10; 12; 13; 22)

Communication by religious leaders is powerful in promoting health. The church got involved in the COVID-19 vaccination campaign, using its temples as immunization sites (20). Vaccination strategies included alliances with community leaders, involved in planning and implementation, identifying hard-to-reach locations, such as marginalized and occupied communities, gypsy communities, among others. (10)

It is recommended to mobilize different sectors, such as religious organizations, neighborhood associations, minority groups, companies, non-profit organizations, and government agencies, to promote information about vaccination. (7; 23)

Technological innovations used in the dissemination of information about vaccination.

Technologies are means of work, mediating relationships between human beings, nature and the social environment, being historically and socially defined for different uses. (16,17) In this scenario, countries have used innovative technologies, especially social media and apps, effectively in rapidly disseminating information, managing the course of the disease and reducing the spread of the COVID-19 virus (9).

In addition to these strategies, messages via apps, text reminders, videos, television media, advertisements, newspapers, radio programs and others were widely used strategies. [18] (4; 21; 22) Universities have organized educational lectures and webinars on COVID-19 and vaccination, increasing awareness and educating the community on the topic (20).

Technology is effective in disseminating information, but health education campaigns are essential to address vaccine hesitancy. Education should be ongoing, leading up to and during the rollout of vaccines, in addition to addressing uncertainties and misinformation in the media. Objective and organized information effectively combats misinformation (5; 6).

Health education should be comprehensive and understandable, reaching individuals of all educational levels. This strategy is essential to increase knowledge, increase vaccination, and encourage self-care. These are crucial tools for long-term change (7; 8; 23).

The use of technology is essential to understanding vaccination campaigns. A system dynamics modeling approach in the Indian state of Madhya Pradesh identified stakeholders, their interconnections, and perspectives. Models captured challenges and innovations, assisting academics, practitioners, and policymakers (28).

Technological innovations were essential for global health during the COVID-19 pandemic. In less developed countries, accessibility could be limited due to costs and quality, resulting in disadvantages. Agreements between governments, funders, and manufacturers were made to increase global access to technologies during and after the pandemic. [19,20]

Limitations of the study

Although comprehensive, it is limited by the scarcity of research focused on the reactive vaccination strategy, a crucial aspect in the effective management of pandemics. Another issue was the significant heterogeneity in both the methodologies and the results presented in the studies examined. This methodological and result variation, particularly with regard to the vaccination strategies employed in the fight against COVID-19, can be considered as limits to understanding the phenomenon in more depth. Such limitations reinforce the need for more research with a view to strengthening the knowledge base on vaccination strategies in pandemic situations.

Contributions to the field

By mapping extramural strategies during the COVID-19 vaccination campaign, the study offers contributions to nursing, especially in preparing for and responding quickly to future pandemics. Such observations can contribute to immunization practices, strengthening the response capacity of nursing, as central agents of the vaccination process, in reaching diverse populations and in remote areas. Furthermore, the study demonstrates the resilience and flexibility of nursing, essential elements to efficiently face the challenges of emerging public health crises, ensuring a more agile and comprehensive response in pandemic scenarios.

FINAL CONSIDERATIONS

The results of this research highlight that strategies such as extramural, reactive and non-reactive vaccination have been widely used globally against COVID-19. Reactive vaccination focused on positive cases and contacts, slowing down outbreaks, while non-reactive vaccination, including mass vaccination, quickly immunized many people. The latter proved to be more effective due to the widespread vaccination rate. The success of these strategies depended on careful planning, implementation of measures in public places and frequent training

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of professionals in the campaign against COVID-19.

The global shortage of vaccines required prioritizing groups for the distribution of immunobiologicals. Community leaders played a crucial role in raising awareness and overcoming vaccine reluctance, standing out as powerful health disseminators.

In addition, technology focused on social media and mobile applications were used to help disseminate information, establishing themselves as an effective tool in the management of the disease. This has enabled the entire population to have access to news more broadly and quickly, mitigating the likelihood of the COVID-19 virus spreading.

Finally, it is understood that the objective proposed by this research was achieved and that the discussion on the topic does not end within the horizon of this study, and that it is therefore necessary for other studies on this topic, which is so important to public health, to be carried out.

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Conception and/or design of the study: JF, LSEPWC, FRA.

Data collection, analysis and interpretation: JF, LSEPWC, FRA.

Writing and/or critical review of the manuscript: JF, LSEPWC, RRM, ANC, DEPP, MML, CSF, FRA.

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