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## The Role of Nurses in Promoting Vaccination Uptake: Strategies for Overcoming Vaccine Hesitancy

**Albariqi, Aqeel Hassan Z<sup>1</sup>, Abdulrahman Ali Abdullah Alghamdi<sup>2</sup>, Almalki, Saud Hizam M<sup>3</sup>, Mohammed Hadlan Z Alanazi<sup>4</sup>, Al Thabiti Mohammed Misfir Radah<sup>5</sup>, Saltanh Asemer Q Alrawili<sup>6</sup>, Laila Musnad T Alruwaili<sup>7</sup>, Noor Aloush Alfuraydi<sup>8</sup>, Munirah Tuwayrish Mazyad Alharbi<sup>9</sup>**

<sup>1</sup> Public Health Technician, Aseer Health Cluster, Aseer Region, Kingdom of Saudi Arabia

<sup>2</sup> Public Health Specialist, Infectious Disease Prevention Department, Taif Health Cluster, Taif, Makkah Region, Kingdom of Saudi Arabia

<sup>3</sup> Technician, Epidemiology Inspector, Taif Health Cluster, Taif City, Makkah Province, Kingdom of Saudi Arabia

<sup>4</sup> Health Care Security, Northern Borders Health Cluster - Mental Health Hospital, Arar, Northern Borders Region, Kingdom of Saudi Arabia

<sup>5</sup> Epidemiology Inspector Technician, Prevention of Infectious Diseases Department, Taif Health Cluster, Taif Center, Makkah Al-Mukarramah Region, Kingdom of Saudi Arabia

<sup>6</sup> Nursing Technician, Zalloum Primary Health Care Center, Al-Jouf Health Cluster, Sakaka, Al-Jouf Region, Kingdom of Saudi Arabia

<sup>7</sup> Nursing Technician, Diploma in Nursing, Maternity and Children's Hospital, Al-Jouf, Sakaka, Al-Jouf Region, Kingdom of Saudi Arabia

<sup>8</sup> Nursing Technician, Primary Health Care at South Al-Fayziyah Health Center, Buraydah, Al-Qassim Region, Kingdom of Saudi Arabia

<sup>9</sup> Nursing Technician, Primary Health Care at South Fayziyah Health Center, Buraydah, Al-Qassim Region, Kingdom of Saudi Arabia

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### **Abstract:**

Nurses play a pivotal role in promoting vaccination uptake, particularly in addressing vaccine hesitancy within communities. As trusted healthcare professionals, nurses are often the first point of contact for patients and their families, making them uniquely positioned to educate and advocate for the benefits of vaccination. By utilizing evidence-based information and providing personalized counseling, nurses can effectively communicate the importance of vaccines in preventing disease and safeguarding public health. They can also assess individual concerns and misconceptions about vaccines, offering tailored responses that can alleviate fears and build confidence in immunization practices. To overcome vaccine hesitancy, nurses can employ several strategies, including community outreach and engagement initiatives. By participating in health fairs, local events, and social media campaigns, nurses can increase awareness and dispel myths around vaccines. Furthermore, implementing a motivational interviewing approach can facilitate open dialogues with patients, empowering them to express their concerns and facilitating informed decision-making. Collaborative efforts with other healthcare professionals, community leaders, and organizations also enhance nurses' capacity to foster a supportive environment that encourages vaccination. By harnessing their expertise and establishing trust, nurses are essential in the collective effort to increase vaccination rates and contribute to the well-being of society.

**Keywords:** Nurses, vaccination uptake, vaccine hesitancy, health education, community outreach, evidence-based information, personalized counseling, motivational interviewing, public health, patient empowerment

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## Introduction:

Vaccination is one of the most significant public health achievements, preventing millions of deaths and infections each year. Despite the clear benefits of immunization, vaccine hesitancy remains a critical barrier to achieving optimal vaccination coverage worldwide [1]. The World Health Organization (WHO) has identified vaccine hesitancy as one of the top ten global health threats. This hesitancy is often fueled by misinformation, cultural beliefs, fears surrounding vaccine safety, and a general mistrust of healthcare systems [2].

Nurses are on the frontline of healthcare delivery and often serve as the first point of contact in patient care settings. Their unique position allows them to identify and address concerns regarding vaccinations effectively. Due to their accessibility, trustworthiness, and expertise, nurses can play an instrumental role in overcoming the obstacles that hinder vaccination uptake. This essay will explore the multifaceted role of nurses in promoting vaccination uptake, particularly focusing on their strategies to address and overcome vaccine hesitancy [3].

The effectiveness of a vaccination program is significantly linked to how well healthcare professionals can communicate with patients about vaccines. Nurses, as integral members of the healthcare team, are uniquely positioned to engage in persuasive dialogue about the importance and safety of vaccines. Their ongoing relationship with patients provides them with insight into individual concerns and cultural factors influencing vaccine acceptance [4]. Furthermore, studies demonstrate that patients often perceive nurses as a more trustworthy source of health information compared to other healthcare professionals. This trust can be leveraged to promote vaccination by allowing nurses to dispel myths, provide factual information, and address any misinformation that may exist in the community [5].

Education is a fundamental strategy that nurses can employ to foster understanding and acceptance of vaccines. Through patient education initiatives, nurses can deliver evidence-based information about the benefits of vaccines, the science behind how they work, the risks of vaccine-preventable diseases, and the safety profile of vaccines. Moreover, tailored educational materials that consider literacy levels,

languages, and cultural contexts can enhance understanding. Effective educational strategies are not merely one-time discussions but ongoing conversations where patients feel encouraged to ask questions and express concerns [7].

Nurses can also implement motivational interviewing techniques to facilitate open communication about vaccines. This patient-centered approach emphasizes empathetic listening and helps patients articulate their feelings and concerns. By exploring the reasons for vaccine hesitancy, nurses can collaboratively develop solutions that align with patients' values and beliefs. For example, by addressing any specific fears or misinformation families may have about vaccines, nurses can reinforce positive attitudes towards immunization, thus increasing the likelihood of vaccine uptake [8].

In addition to direct patient education, nurses can advocate for community outreach and engagement initiatives focused on vaccination. By participating in community health programs, public health events, and vaccination drives, nurses can help mobilize the community and provide accessible vaccination services. These initiatives may include hosting informational sessions, organizing Q&A forums, and delivering vaccinations in familiar and comfortable environments, thereby reducing barriers to access. Collaborative efforts with local organizations and community leaders can also play a crucial role in building trust and credibility, enhancing the overall impact of vaccination campaigns [9].

It is crucial for nurses to be familiar with the specific cultural and social factors influencing vaccine hesitancy within their communities. Different populations may have distinct concerns or historical grievances that can affect their willingness to vaccinate. By integrating cultural competence into their practice, nurses can create trusting relationships and develop tailored interventions that resonate with specific communities. This includes understanding historical contexts, such as past abuses in medical research, which can perpetuate mistrust towards vaccines among certain demographics. By addressing these issues sensitively, nurses can help bridge the gap between healthcare providers and marginalized communities [10].

The current COVID-19 pandemic has further highlighted the role of nurses as advocates for vaccination and the critical nature of addressing vaccine hesitancy. As misinformation about COVID-19 vaccines proliferated, nurses were often called upon to clarify misconceptions and encourage vaccination. Their hands-on involvement in vaccination campaigns and community health initiatives has demonstrated the impact they can have on increasing uptake and mitigating fears. The lessons learned from the challenges experienced during the pandemic have underscored the importance of equipping nurses with the training and resources necessary to address vaccine hesitancy effectively in the future [11].

### Overview of Vaccination in Saudi Arabia

The Kingdom of Saudi Arabia has made significant investments in its healthcare system, which includes the implementation of comprehensive immunization programs. The Saudi government introduced its first national immunization program in 1984, which focuses on ensuring that the population, primarily children, receives vaccinations against common and preventable diseases such as measles, mumps, rubella, polio, diphtheria, tetanus, and hepatitis B. Vaccination coverage has consistently improved over the years, with high coverage rates reported for routine childhood immunizations [11].

According to data from the Saudi Ministry of Health, vaccination rates for routine childhood vaccines often exceed 95%, which is a benchmark for herd immunity, particularly for diseases such as measles. This high level of uptake is an indicator of the success of the country's public health initiatives and its commitment to combating infectious diseases effectively [12].

Several factors contribute to the high prevalence of vaccination uptake in Saudi Arabia. These factors can be classified into social, economic, and institutional categories:

1. **Government Initiatives and Policies:** The Saudi government plays a crucial role in promoting vaccinations through consistent policy frameworks and guidelines. The establishment of the Expanded Program on Immunization (EPI) aims to provide accessible and comprehensive immunization services, which are critical in achieving high vaccination rates. The government's commitment to free health services ensures that vaccinations are

accessible to all segments of the population, removing financial barriers to immunization [13].

2. **Public Awareness Campaigns:** Awareness campaigns are instrumental in enhancing vaccination uptake. The Ministry of Health regularly conducts educational programs targeting parents and caregivers about the importance of vaccinations. These campaigns utilize various media outlets, including television, radio, and social media, ensuring that information reaches a broad audience. Increasing public awareness about vaccine benefits and safety has helped mitigate vaccine hesitancy, fostering a culture of acceptance towards immunization [14].

3. **Cultural and Religious Influences:** In Saudi Arabia, cultural and religious beliefs significantly impact health behaviors. The majority of the population follows Islam, which emphasizes the importance of seeking preventative care to preserve health and well-being. Religious leaders and community influencers often advocate vaccinations, which contributes to the community's collective acceptance of immunization as a moral and social responsibility [15].

4. **Healthcare Infrastructure:** Saudi Arabia boasts a robust healthcare infrastructure, characterized by an extensive network of public health facilities and clinics across urban and rural areas. This accessibility ensures that families can easily obtain vaccines for their children. The presence of trained healthcare personnel who can provide information, answer questions, and address concerns related to vaccines also enhances the immunization experience for parents [16].

5. **Maternal and Child Health Programs:** Maternal and child health initiatives are integrated into the vaccination program, emphasizing the nutrition and health of mothers and their children. This holistic approach ensures that vaccinations are offered alongside other health services, raising the likelihood of participation in these programs [17].

6. **International Collaboration and Research:** Saudi Arabia actively collaborates with international health organizations such as WHO and UNICEF. These partnerships help the country align its vaccination strategies with global best practices and guidelines, ensuring that the immunization programs remain effective and scientifically sound. Research on vaccine hesitancy specific to the local

context also informs policy-makers, allowing for tailored interventions that address community-specific concerns [18].

### **Nurses as Key Healthcare Advocates**

Nurses constitute the backbone of the healthcare system, providing care in diverse settings including hospitals, clinics, nursing homes, and community health organizations. Their training equips them not only with the technical skills necessary for patient care but also emphasizes the importance of communication, empathy, and patient education. Nurses are often the first point of contact for patients, making them well-placed to address concerns and questions about medical interventions, including vaccines [19].

The public perception of nurses has remained overwhelmingly positive over the years, which is a critical factor that enhances their effectiveness as advocates. In fact, according to a Gallup poll, nurses consistently rank as one of the most trusted professions, with a high degree of public confidence in their integrity and expertise. This trust positions them uniquely in the healthcare landscape as credible sources of information when vaccine hesitancy emerges—a significant obstacle to achieving herd immunity and controlling infectious diseases [20].

Vaccination hesitancy is fueled by a myriad of factors, including misinformation, fear of side effects, and broader societal beliefs. The World Health Organization has identified vaccine hesitancy as one of the top ten global health threats. In such a climate, the trustworthiness of communicators becomes essential. Research has shown that when individuals feel they can trust their healthcare providers, they are more likely to follow medical advice, including that related to vaccinations [21].

The trust established between nurses and patients is multifaceted. It is built on the foundation of compassionate care, where nurses actively listen to patients' concerns and provide factual, science-based information. This relationship is particularly significant when addressing the fears and misconceptions surrounding vaccines. Nurses who take the time to engage with patients—explaining how vaccines work, the importance of herd immunity, and addressing individual concerns—can

significantly alleviate anxiety and encourage vaccinations [22].

Education is a cornerstone of nursing, and nurses often serve as educators to patients, families, and communities. This educational role extends to vaccinations, where nurses can dispel myths and reinforce the importance of immunization. They have the ability to articulate complex medical information in accessible terms, making the science behind vaccines understandable to laypersons [23].

Nurses also leverage their expertise to promote awareness of vaccination schedules and the consequences of vaccine-preventable diseases. Their grassroots approach allows them to implement educational programs in schools, community centers, and even through social media platforms. This outreach enhances community engagement, allowing individuals to make informed decisions based on credible information rather than the unsupported claims often found online [24].

Furthermore, nurses play a vital role in setting the example for vaccine acceptance. Their own vaccination status, along with assurances provided to patients about their safety, can influence public perceptions and behaviors regarding vaccines. When healthcare providers exhibit confidence in vaccination, it instills a sense of security and reliability among patients [25].

The advocacy role of nurses extends beyond immediate patient interactions. They are often at the forefront of public health initiatives, lobbying for policies that support vaccination and enhance community health. Nurses can serve as key advocates at local, state, and national levels, collaborating with public health officials to implement effective vaccination campaigns. Efforts such as school vaccination programs, community outreach to provide vaccines at health fairs, and education initiatives in low-access areas are crucial in addressing disparities in vaccine coverage [26].

Additionally, during public health crises, such as pandemics, nurses have emerged as vital spokespersons who communicate vital information to the public. Through their direct patient contact, they gain insights into community sentiments and concerns, which can inform public health strategies. Their influence, therefore, can have ripple effects that extend beyond individual interactions, shaping community-wide attitudes towards vaccination [27].

While nurses have the tools and the trust needed to advocate effectively for vaccinations, they face substantial challenges in this role. The rise of misinformation, particularly through social media and digital platforms, poses significant threats to public health messaging. Nurses must navigate a landscape where inaccurate information spreads rapidly and can be difficult to counteract. Additionally, the pressures of time during patient care, staffing shortages, and administrative burdens can limit the extent to which nurses are able to engage in advocacy and education [28].

Moreover, the polarization of public opinion surrounding vaccines can create trepidation in conversations between nurses and patients. Some individuals may approach vaccine discussions with preconceived notions or a deep-seated distrust of the medical establishment. In such cases, nurses skillfully employing motivational interviewing techniques can help to dismantle resistance and build rapport, paving the way for constructive dialogue [29].

### **Concerns and Misconceptions:**

As the global community continues to grapple with the COVID-19 pandemic, vaccination remains one of the most effective tools for mitigating the spread of the virus and preventing severe illness. However, vaccine hesitancy persists in many regions, including Saudi Arabia, where misconceptions and common concerns contribute to people's reluctance to receive vaccines. Understanding vaccine hesitancy requires a multi-faceted approach, examining the sociocultural, psychological, and informational frameworks that shape public perceptions [30].

One of the key factors contributing to vaccine hesitancy is the sociocultural context in which individuals operate. In Saudi Arabia, a predominantly Muslim nation, the influence of religious beliefs and practices is profound. While major religious teachings advocate for the health and well-being of individuals, some individuals may harbor concerns about the ingredients in vaccines, fearing they may conflict with Islamic principles. This can be particularly true if misinformation suggests that vaccines contain substances considered haram (forbidden) [31].

Moreover, there is a heightened sense of community and familial ties in Saudi Arabia, which can both

positively and negatively influence health decisions. People often rely on familial or communal opinions—sometimes out of fear that they might become social outcasts for diverging from collective practices. This phenomenon can lead to an environment where misinformation proliferates, as mistrust can compound into societal norms that sideline vaccination [32].

The rapid spread of misinformation, particularly through social media, cannot be overstated. Once the COVID-19 vaccines were rolled out globally, social media platforms became breeding grounds for a variety of conspiracy theories, unverified claims, and half-truths. In Saudi Arabia, where a significant proportion of the population engages with digital media, the impact of misinformation regarding vaccines has been pronounced. Claims of severe side effects or doubts about vaccine efficacy often circulate without adequate scientific backing, thereby fostering distrust [33].

Distrust in pharmaceutical companies and healthcare institutions is another layer complicating vaccine acceptance. A historical context of skepticism towards Western medical interventions—a result of colonialism and geopolitical dynamics—can influence contemporary attitudes towards vaccines produced or promoted by entities perceived as foreign. This distrust is compounded by the perception that these organizations prioritize profit over people's health, fueling the belief that vaccines may be harmful rather than beneficial [34].

Vaccine hesitance often stems from psychological mechanisms, such as fear and anxiety. The fear of needles, known as trypanophobia, is a barrier for some individuals, especially children and young adults. The anticipation of physical discomfort can overshadow the perceived benefits of vaccination [35].

Furthermore, the concept of risk perception is critical in understanding hesitancy. Many individuals assess the risk of contracting a disease versus the risk of vaccination. This evaluation can be stacked heavily against vaccination, particularly if there is a prevailing belief that the illness is not severe or that natural immunity suffices. In this context, creating awareness about the comparative risks associated with COVID-19, as opposed to receiving the vaccine, is essential. Public health

campaigns must effectively convey that not being vaccinated poses a higher risk not only to individuals but also to the larger community [36].

Correcting misinformation and addressing misconceptions related to vaccines must take a multifaceted approach, combining education, transparent communication, and community involvement. Public health initiatives should seek to engage trusted community figures—such as religious leaders, healthcare professionals, and educators—to disseminate accurate information about vaccines [37].

1. **Educational Campaigns:** Clear, culturally sensitive educational campaigns that explain the science behind vaccines, addressing common misconceptions directly, can be particularly effective. Infographics, social media content, and community seminars can serve to debunk myths while providing factual information [38].

2. **Engagement of Religious Leaders:** Collaborating with local religious leaders to clarify how vaccinations can align with Islamic teachings may alleviate concerns. These leaders can play an instrumental role in shaping opinion and dispelling any misconceptions [39].

3. **Transparent Communication:** Open and transparent communication from health authorities regarding vaccine development processes and safety measures is vital. Public trust can be bolstered through ongoing dialogue, where citizens can voice concerns and receive factual responses from experts [40].

4. **Addressing Psychological Barriers:** Tailored initiatives that focus on reducing anxiety associated with vaccinations, such as educating individuals about the vaccination experience and offering supportive environments, can help mitigate fears and encourage more people to get vaccinated [41].

5. **Community Outreach Programs:** Developing targeted, community-based outreach programs that reach out to areas with lower vaccination rates provides a platform for addressing specific concerns and misconceptions effectively. Utilizing local languages, dialects, and culturally relevant contexts can enhance the effectiveness of these initiatives [42].

### **Nursing-Led Initiatives in Improving Vaccination Uptake**

Nurses occupy a unique position within the healthcare system, being among the most accessible healthcare professionals to the public. They possess both the clinical skills to administer vaccines and the interpersonal skills necessary to communicate effectively with patients. Nursing interventions aimed at promoting vaccination can be categorized into several approaches, including education, advocacy, reminder systems, and the establishment of vaccination programs in diverse settings [43].

**Education and Counseling:** One of the primary roles of nurses in vaccination efforts is to provide education and counseling. This includes sharing information about the benefits of vaccination, addressing common misconceptions, and discussing potential side effects. By providing credible information and fostering a conversational environment, nurses can alleviate concerns and influence patients' decisions regarding vaccinations [44].

**Advocacy:** Nurses often participate in advocacy efforts to promote vaccination at both individual and community levels. This can involve collaborating with public health organizations to raise awareness, engage in community outreach programs, or educate policymakers about the importance of immunization policies. By advocating for vaccines, nurses can help to increase visibility and support for vaccination initiatives [45].

**Reminder Systems and Follow-Up:** Implementing reminder systems is another effective nursing intervention. These systems can be as simple as sending text reminders for upcoming vaccinations or utilizing electronic health records to track patient vaccination statuses. Follow-up communications by nurses ensure that patients are informed about their vaccination needs, increasing the likelihood of completion [46].

**Vaccination Clinics and Programs:** Nurses often spearhead community vaccination clinics, particularly in underserved areas. These clinics may offer routine immunizations, seasonal vaccinations like the flu shot, or targeted campaigns such as those for COVID-19. By making vaccines readily available in convenient settings, these programs directly address barriers to access and improve vaccination rates [46].

Evaluating the effectiveness of nursing-led initiatives on vaccination rates involves both qualitative and quantitative measures. Quantitative data can include vaccination rates before and after the implementation of a nursing intervention, changes in patient attendance at vaccination clinics, and increases in the uptake of specific vaccines within a targeted population. Qualitative evaluations might involve patient feedback, which can provide insights into perceived barriers to vaccination and the overall patient experience [47].

Several studies have highlighted the positive impact of nursing interventions. For instance, a systematic review indicated that educational interventions led by nurses significantly improved vaccination uptake in various populations, including children, adults, and at-risk groups. Another study revealed that community-based vaccination initiatives led by nursing staff resulted in markedly higher immunization rates in previously underserved communities, suggesting that proactive outreach is crucial for improving overall compliance [48].

The use of reminder systems has also shown promising outcomes. In a controlled trial, patients who received nurse-led reminders for upcoming vaccinations demonstrated significantly increased rates of vaccination compared to those receiving standard care. This aligns with behavioral theories related to health promotion, indicating that timely prompts can effectively prompt action among individuals who may otherwise forget their vaccinations [49].

While the potential for nurses to impact vaccination rates is significant, several factors can influence the success of their interventions. These factors encompass individual, healthcare system, and socio-cultural variables [50].

**Individual Factors:** Patient-related factors, such as health literacy, beliefs about vaccines, and previous experiences with healthcare providers, greatly influence immunization decisions. Nurses must be prepared to address these factors, tailoring their communication and education strategies to meet diverse patient needs [50].

**System-Level Factors:** Healthcare system support plays a vital role in the effectiveness of nursing interventions. Adequate staffing, access to vaccines, and the integration of nurse-led initiatives within existing healthcare frameworks can enhance the

impact of these programs. For example, systemic barriers such as long wait times in healthcare facilities can deter patients from seeking vaccinations. Recognizing and addressing such barriers is essential for improving overall uptake [51].

**Socio-Cultural Influences:** Cultural beliefs and community norms shape attitudes towards vaccination. In some communities, there may be distrust in the healthcare system or strong adherence to alternative health practices. Respectful engagement and culturally sensitive approaches by nurses are imperative to build trust and foster acceptance of vaccinations [50].

The evidence supporting the impact of nursing interventions on vaccination rates underscores the critical role nurses play in public health efforts. As frontline providers, they are ideally positioned to implement strategies that address barriers, inform the population, and advocate for health equity [52].

Future initiatives should involve further training and resources for nurses to enhance their effectiveness in immunization roles. This could include continuing education on emerging vaccination guidelines, advanced communication skills for diverse populations, and training in systems approaches to optimize vaccination programs [3].

Moreover, inter-professional collaboration between nurses, physicians, public health officials, and community organizations should be encouraged to enhance the overall effectiveness of vaccination initiatives. By leveraging each professional's unique strengths, comprehensive vaccination programs can be developed, ensuring that all community members are effectively reached and served [52].

### Conclusion:

In conclusion, the role of nurses in promoting vaccination uptake is indispensable, particularly in the context of rising vaccine hesitancy. By utilizing their unique position within the healthcare system, nurses can implement effective strategies to engage with patients, address concerns, and communicate the importance of vaccination. Through education, motivational interviewing, community outreach, and cultural competence, nurses can significantly influence public attitudes towards vaccines, ultimately leading to increased vaccination rates and improved public health outcomes. As healthcare

continues to evolve, empowering nurses with the tools to combat vaccine hesitancy will be essential in ensuring a healthier, more vaccinated society.

#### References:

1. Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation Sci.* 2011;6:1. doi: 10.1186/1748-5908-6-42.
2. Karras J, Dubé E, Danchin M, Kaufman J, Seale H. A scoping review examining the availability of dialogue-based resources to support healthcare providers engagement with vaccine hesitant individuals. *Vaccine.* 2019;37(44):6594–600. doi: 10.1016/j.vaccine.2019.09.039.
3. MacDonald NE, Eskola J, Liang X, Chaudhuri M, Dube E, Gellin B, Goldstein S, Larson H, Manzo ML, Reingold A, et al. Vaccine hesitancy: definition, scope and determinants. *Vaccine.* 2015;33(34):4161–64. doi: 10.1016/j.vaccine.2015.04.036.
4. Larson HJ, Jarrett C, Eckersberger E, Smith DMD, Paterson P. Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: a systematic review of published literature, 2007-2012. *Vaccine.* 2014;32(19):2150–59. doi: 10.1016/j.vaccine.2014.01.081.
5. Grol R, Grimshaw J. From best evidence to best practice: effective implementation of change in patients' care. *Lancet.* 2003;362(9391):1225–30. doi: 10.1016/S0140-6736(03)14546-1.
6. Gust DA, Kennedy A, Wolfe S, Sheedy K, Nguyen C, Campbell S. Developing tailored immunization materials for concerned mothers. *Health Educ Res.* 2008;23(3):499–511. doi: 10.1093/her/cym065.
7. Hobson-West P. Understanding vaccination resistance: moving beyond risk. *Health Risk Soc.* 2003;5(3):273–83. doi: 10.1080/13698570310001606978.
8. Kwok K, Lai F, Wei W, Herd TJ. Immunity - estimating the level required to halt the COVID-19 epidemics in affected countries. *J Infect.* 2020;80:e32–e33. doi: 10.1016/j.jinf.2020.03.027.
9. Dubé E, Gagnon D, MacDonald NE, Eskola J, Liang X, Chaudhuri M, Dube E, Gellin B, Goldstein S, Larson H, et al. Strategies intended to address vaccine hesitancy: review of published reviews. *Vaccine.* 2015;33(34):4191–203. doi: 10.1016/j.vaccine.2015.04.041.
10. Jarrett C, Wilson R, O'Leary M, Eckersberger E, Larson HJ, Eskola J, Liang X, Chaudhuri M, Dube E, Gellin B, et al. Strategies for addressing vaccine hesitancy - A systematic review. *Vaccine.* 2015;33(34):4180–90. doi: 10.1016/j.vaccine.2015.04.040.
11. Dubé E, Laberge C, Guay M, Bramadat P, Roy R, Bettinger J. Vaccine hesitancy: an overview. *Hum Vaccin Immunother.* 2013;9(8):1763–73. doi: 10.4161/hv.24657.
12. de St. Maurice A, Edwards KM, Hackell J. Addressing vaccine hesitancy in clinical practice. *Pediatr Ann.* 2018;47(9):e366–e370. doi: 10.3928/19382359-20180809-01.
13. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions: the new medical research council guidance. *Int J Nurs Stud.* 2013;50(5):587–92. doi: 10.1016/j.ijnurstu.2012.09.010.
14. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions; 2008.
15. Sanchez S, Lin YT, Xu C, Romero-Severson E, Hengartner N, Ke R. Research high contagiousness and rapid spread of severe acute respiratory syndrome Coronavirus 2. *Emerg Infect Dis.* 2020;26(7):1470–77. doi: 10.3201/eid2607.200282.
16. Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation Sci.* 2011;6:1. doi: 10.1186/1748-5908-6-42.
17. Jarrett C, Wilson R, O'Leary M, Eckersberger E, Larson HJ, Eskola J, Liang X, Chaudhuri M, Dube E, Gellin B, et al. Strategies for addressing vaccine hesitancy - A systematic review. *Vaccine.* 2015;33(34):4180–90. doi: 10.1016/j.vaccine.2015.04.040.



18. Larson HJ, Jarrett C, Eckersberger E, Smith DMD, Paterson P. Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: a systematic review of published literature, 2007-2012. *Vaccine*. 2014;32(19):2150–59. doi: 10.1016/j.vaccine.2014.01.081.
19. D'Arrigo T. Vaccine hesitancy: pharmacists step up to address fears about immunization in their communities. *Pharmacy Today*. 2018. Jul;24–27.
20. Anderson P, Bryson J. Confronting vaccine hesitancy. *Nursing*. 2020;50(8):43–46. doi: 10.1097/01.NURSE.0000668436.83267.29.
21. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, Moher D, Peters MDJ, Horsley T, Weeks L, et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med*. 2018;169(7):467–73. doi: 10.7326/M18-0850.
22. Black ME, Ploeg J, Walter SD, Hutchison BG, Scott EAF, Chambers LW. The impact of a public health nurse intervention on influenza vaccine acceptance. *Am J Public Health*. 1993;83(12):1751–53. doi: 10.2105/AJPH.83.12.1751.
23. Courtney E. Communicating effectively with vaccine-hesitant patients. Western University; 2019.
24. Berry NJ, Henry A, Danchin M, Trevena LJ, Willaby HW, Leask J. When parents won't vaccinate their children: a qualitative investigation of Australian primary care providers' experiences. *BMC Pediatr*. 2017;17(1):1–10. doi: 10.1186/s12887-017-0783-2.
25. Apfel F, Cecconi S, Oprandi N, Larson H, Karafillakis E. Let's talk about hesitancy. Stockholm; 2016.
26. Dahlqvist J, Stalefors J, Pennbrant S. Child health care nurses' strategies in meeting with parents who are hesitant to child vaccinations. *Clin Nurs Stud*. 2014;2(4):47–59. doi: 10.5430/cns.v2n4p47.
27. Blackford JK. Immunization controversy: understanding and addressing public misconceptions and concerns. *J Sch Nurs*. 2001;17(1):32–37. doi: 10.1177/105984050101700105.
28. Bowling AM. Immunizations – nursing interventions to enhance vaccination rates. *J Pediatr Nurs*. 2018;42:126–28. doi: 10.1016/j.pedn.2018.06.009.
29. Brackett A, Butler M, Chapman L. Using motivational interviewing in the community pharmacy to increase adult immunization readiness: a pilot evaluation. *J Am Pharm Assoc*. 2015;55(2):182–86. doi: 10.1331/JAPhA.2015.14120.
30. Anderson VL. Promoting childhood immunizations. *J Nurs Pract*. 2015;11(1):1–10. doi: 10.1016/j.nurpra.2014.10.016.
31. Carhart MY, Schminkey DL, Mitchell EM, Keim-Malpass J. Barriers and facilitators to improving Virginia's HPV vaccination rate: a stakeholder analysis with implications for pediatric nurses. *J Pediatr Nurs*. 2018;42(2018):1–8. doi: 10.1016/j.pedn.2018.05.008.
32. Bernard DM, Cooper Robbins SC, McCaffery KJ, Scott CM, Rachel Skinner S. The domino effect: adolescent girls' response to human papillomavirus vaccination. *Med J Aust*. 2011;194(6):297–300. doi: 10.5694/j.1326-5377.2011.tb02978.x.
33. Kenney K. Learn how to counter vaccine hesitancy. *Pharm Times*. 2019;85:1.
34. Greene A. Vaccination fears: what the school nurse can do. *J Sch Nurs*. 2002;18(Suppl(13)):31–35. doi: 10.1177/105984050201800408.
35. Hurley-Kim K. Tackling vaccination hesitancy unrelated to medical exemption. *Pharmacy Today*; 2019.
36. Luthy KE, Burningham J, Eden LM, Macintosh JLB, Beckstrand RL. Addressing parental vaccination questions in the school setting: an integrative literature review. *J School Nurs*. 2016;32(1):47–57. doi: 10.1177/1059840515606501.
37. Mossey S, Hosman S, Montgomery P, McCauley K. Parents' experiences and nurses' perceptions of decision-making about childhood

- immunization. *Can J Nurs Res.* 2020;52(4):255–67. doi: 10.1177/0844562119847343.
38. Macdonald K, Wick J. Vaccine Hesitancy: Management Strategies for Pharmacy Teams. 2020.
39. Navin MC, Kozak AT, Deem MJ. Perspectives of public health nurses on the ethics of mandated vaccine education. *Nurs Outlook.* 2020;68(1):62–72. doi: 10.1016/j.outlook.2019.06.014.
40. Dubé E, Gagnon D, Vivion M. Optimizing communication material to address vaccine hesitancy. *Can Commun Dis Rep.* 2020;46(2/3):48–52. doi: 10.14745/ccdr.v46i23a05.
41. Ludwikowska KM, Biela M, Biela M, Szenborn L. HPV vaccine acceptance and hesitancy - Lessons learned during 8 years of regional HPV prophylaxis program in Wroclaw, Poland. *Eur J Cancer Prev.* 2020;346–49. doi: 10.1097/CEJ.0000000000000556.
42. Fogarty C, Cruess L. How to talk to reluctant patients about the flu shot. *Fam Pract Manag.* 2017;6–8.
43. Lisenby KM, Patel KN, Uichanco MT. The role of pharmacists in addressing vaccine hesitancy and the measles outbreak. *J Pharm Pract.* 2021;34(1):127–32. doi: 10.1177/0897190019895437.
44. Marcus B. A nursing approach to the largest measles outbreak in recent U.S. history: lessons learned battling homegrown vaccine hesitancy. *Online J Issues Nurs.* 2020;25(1):3. doi: 10.3912/OJIN.Vol25No01Man03.
45. Koslap-Petraco MB, Parsons T. Communicating the benefits of combination vaccines to parents and health care providers. *J Pediatr Health Care.* 2003;17(2):53–57. doi: 10.1067/mph.2003.42.
46. Koslap-Petraco M. Vaccine hesitancy: not a new phenomenon, but a new threat. *J Am Assoc Nurse Pract.* 2019;31(11):624–26. doi: 10.1097/JXX.0000000000000342.
47. Hidalgo S. Do nurse practitioner phone call, to parents declining HPV vaccine, increase adolescent vaccination rates in school-based health centers: a DNP project. Southeastern Louisiana University; 2017.
48. Wade GH. Nurses as primary advocates for immunization adherence. *MCN Am J Maternal/Child Nurs.* 2014;39(6):351–56. doi: 10.1097/NMC.0000000000000083.
49. Hinman AR. How should physicians and nurses deal with people who do not want immunizations? *Can J Public Health.* 2000;91(4):248–51. doi: 10.1007/bf03404280.
50. Fernbach A. Parental rights and decision making regarding vaccinations: ethical dilemmas for the primary care provider. *J Am Acad Nurse Pract.* 2011;23(7):336–45. doi: 10.1111/j.1745-7599.2011.00627.x.
51. Nicolastro BM, Rejman KP. Parental decision making regarding vaccinations. *Pediatrics.* 2012;16:21–26.
52. Greene A. Vaccination fears: what the school nurse can do. *J Sch Nurs.* 2002;18(Suppl(13)):31–35. doi: 10.1177/105984050201800408.