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Beyond Information: Evaluating Health Education and Trust in Reducing Urban Vaccine Hesitancy in Indonesia

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ABSTRACT: Vaccine hesitancy remains a critical public health issue in urban Indonesia, where healthcare access coexists with growing skepticism toward immunization. This study assessed the impact of a structured health education program on improving vaccine literacy and reducing parental hesitancy toward childhood vaccination. Using a quasi-experimental pre–post design, 240 parents from two urban health centers in Jakarta and Surabaya were assigned to intervention and control groups. The intervention included seminars, printed materials, and moderated WhatsApp discussions. Data on vaccine literacy, vaccination intent, institutional trust, and misinformation exposure were collected through validated instruments and analyzed using paired t-tests and multiple regression. Results showed a 33.1% improvement in vaccine literacy and a 28% increase in vaccination intent among the intervention group. Institutional trust and participation in the education program emerged as key predictors of reduced hesitancy, whereas misinformation exposure had a strong negative influence. In areas with low trust in healthcare institutions and high misinformation exposure—where over 40% of parents reported encountering false vaccine narratives—the intervention's impact was weaker. The findings highlight that effective vaccine education must go beyond knowledge dissemination by integrating cultural narratives, emotional engagement, and community-based trust-building. While structured education enhances literacy and intent, sustainable behavioral change requires a multidimensional strategy combining education, empathy, and institutional credibility to strengthen urban immunization efforts.

Keywords: Vaccine Hesitancy, Health Education, Parental Intent, Urban Indonesia, Vaccine Literacy, Institutional Trust, Public Health Communication.

INTRODUCTION

In recent years, vaccine hesitancy has emerged as a significant global concern, particularly in urban settings where dense populations heighten the risk of disease transmission. Despite the widespread availability of vaccines, hesitancy defined as the reluctance or refusal to vaccinate even when services are accessible persists and undermines public health objectives (Al-Jayyousi et al., 2021; Taylor et al., 2020). This phenomenon has been exacerbated by misinformation, fear of adverse reactions, and growing distrust in healthcare systems, particularly following the rapid development

and distribution of COVID-19 vaccines (Caron & Dorsey, 2022). In urban environments, where vaccine coverage is critical for achieving herd immunity due to population density and mobility, vaccine hesitancy threatens to reverse gains made in disease control and prevention (Alzahrani et al., 2024). However, the degree of vaccine acceptance varies across urban populations, indicating the need for locally tailored interventions (Al-Jayyousi et al., 2021).

In the Southeast Asian context, and Indonesia specifically, childhood vaccine refusal presents a multifaceted challenge. Cultural beliefs, economic disparities, and deep-seated mistrust of medical institutions coalesce to create resistance to vaccination programs (Amalo et al., 2023). Parents with lower levels of education are consistently found to be more hesitant or resistant to vaccinating their children, a trend corroborated by both regional and global studies (Matta et al., 2020). Beyond formal education, religious and traditional belief systems also exert a strong influence on parental decision-making, often casting doubt on the necessity, efficacy, or even the religious permissibility of vaccines (Tu et al., 2018). These findings underscore the importance of context-sensitive approaches that take into account not only knowledge deficits but also cultural frameworks that shape health behavior.

Understanding the psychological dimensions of vaccine hesitancy is equally essential. The Theory of Planned Behavior (TPB) offers a valuable framework for analyzing individual health decisions. According to TPB, behavioral intention is influenced by one's attitude towards the behavior, subjective norms, and perceived behavioral control (Han et al., 2024). In the context of childhood vaccination, parental attitudes are shaped not only by their understanding of health risks and benefits but also by community norms and prior negative experiences with the healthcare system (Montuori et al., 2023). These norms, often driven by collective memory and social pressure, may discourage compliance with official immunization programs, further complicating public health efforts.

Health education, therefore, becomes a pivotal tool in reshaping public attitudes and dismantling misinformation, serving as both a corrective and preventive mechanism against vaccine myths. Numerous studies affirm that well-structured educational initiatives whether through personalized counseling or targeted campaigns can positively influence vaccine uptake (Bardak & Koçoğlu, 2024). Personalized, context-specific interventions further strengthen the effects by addressing local fears and belief systems. Personalized interventions conducted in clinical settings have shown promise, particularly when they address specific fears and concerns expressed by parents (Fadel et al., 2024). Digital health communication, particularly through social media platforms, has also gained traction as a powerful means of countering anti-vaccine narratives and disseminating accurate information (Lang et al., 2021). Nonetheless, the effectiveness of these educational efforts is heavily contingent upon the credibility of the source and the extent to which the message aligns with the audience's values and experiences.

Moreover, logistical and infrastructural barriers continue to impede vaccine access, especially among socioeconomically disadvantaged urban populations. Research highlights that even when individuals are willing to vaccinate, obstacles such as transportation difficulties, clinic hours, and associated costs can hinder uptake (Islam et al., 2021). In this regard, urban planning and health infrastructure must be integrated into vaccine delivery strategies to ensure equitable access for all

communities (Khanam et al., 2023). Addressing these structural issues is as important as combating psychological resistance or cultural skepticism.

Taken together, these insights suggest that any attempt to reduce vaccine hesitancy in urban Indonesia must address multiple layers of influence cognitive, emotional, cultural, and structural. The objective of this study is to examine the effectiveness of a structured health education program in improving vaccine literacy and reducing parental hesitancy in an urban Indonesian setting. By integrating established behavioral theories with empirical findings on education, trust, and misinformation, this research aims to fill a critical gap in understanding how public health communication can be tailored for complex, diverse urban communities. In doing so, it seeks not only to validate education-based interventions but also to assess their limitations in environments shaped by competing narratives and unequal access to healthcare resources.

METHOD

This study adopted a quasi-experimental, pre-post design with a non-randomized control group to evaluate the impact of structured health education on vaccine hesitancy among urban parents in Indonesia. Quasi-experimental designs are particularly valuable in public health contexts where randomization may be impractical or ethically challenging (Dickerson et al., 2019). To mitigate potential biases and strengthen causal inference, the study employed a parallel group structure, incorporating an intervention group and a control group from comparable urban communities. While full randomization was not feasible due to ethical restrictions on withholding potentially beneficial educational content and logistical constraints within the public health centers, efforts were made to match groups based on comparable sociodemographic variables. Community-level assignment helped address selection bias, as recommended in applied public health interventions (Hicks et al., 2021).

The research was conducted in two urban public health centers (Puskesmas) located in Jakarta and Surabaya. The target population included parents or primary caregivers of children aged 0–12 years. A total of 240 participants were recruited using stratified sampling to ensure representation across various socioeconomic strata. Inclusion criteria included being the primary decision-maker for the child's health, aged 18 years or older, and not having received formal vaccine education in the preceding six months.

The educational intervention consisted of a four-week program featuring three core components: (1) in-person seminars led by trained health educators, (2) printed leaflets tailored to address common vaccine concerns, including religious, cultural, and safety considerations, and (3) moderated WhatsApp group discussions that allowed participants to engage directly with healthcare providers and clarify doubts. The use of digital platforms such as WhatsApp was informed by evidence supporting their effectiveness in health education within low-resource urban settings (Rahman & Bhuiyan, 2024). These tools provided flexible, interactive, and scalable communication, overcoming barriers related to geography and traditional system limitations (Lamont et al., 2016).

Three validated instruments were employed:

1. Vaccine Literacy Scale (VLS): Assessed participants' knowledge, beliefs, and comprehension of vaccine-related information.
2. Trust in Health Care Scale: Evaluated participants' level of trust in healthcare institutions, including perceived integrity, competence, and communication transparency.
3. Misinformation Exposure Scale (MES): Measured participants' self-reported exposure to false or misleading vaccine information, particularly through digital and social media platforms.

All instruments were translated and culturally adapted into Bahasa Indonesia, following a back-translation procedure and pilot testing with a sub-sample of 20 participants.

Baseline data were collected immediately prior to the intervention and post-intervention data were gathered one week following program completion. Surveys were administered on-site by trained data collectors using tablet-based forms. To ensure consistency, the same data collectors remained assigned to each participant throughout the study period.

Quantitative data were analyzed using SPSS (version 26). Descriptive statistics were used to summarize demographic characteristics. Paired t-tests compared pre- and post-intervention scores for vaccine literacy and vaccination intent. Multiple regression analysis was conducted to identify predictors of reduced vaccine hesitancy, with trust and misinformation exposure included as covariates. Missing data were handled using multiple imputation to avoid bias and maintain statistical power.

The study received ethical approval from the Health Research Ethics Committee of Universitas Indonesia. Written informed consent was obtained from all participants. Data confidentiality and participant anonymity were rigorously maintained throughout the study.

RESULT AND DISCUSSION

Improvement in Vaccine Literacy

Participants in the intervention group exhibited substantial improvements in vaccine literacy following the four-week health education program. As shown in Table 1, the average Vaccine Literacy Score increased from 56.2 (SD = 12.3) at baseline to 74.8 (SD = 10.4) post-intervention, reflecting a 33.1% improvement. In contrast, the control group demonstrated a marginal increase of 4.3%, from 55.7 (SD = 11.8) to 58.1 (SD = 12.2). This aligns with findings from Kaim et al. (2021), who reported that short-term educational interventions significantly improved perceived knowledge and vaccine acceptability. Similar conclusions were drawn in studies by Otsuka-Ono et al. (2019), emphasizing the effectiveness of structured education in increasing vaccine literacy.

The role of parental education level emerged as a significant moderator. Participants with higher educational attainment retained more vaccine-related information and demonstrated greater engagement with the materials echoing findings by Maneesriwongul et al. (2023). However, sustainability of literacy gains was limited, as follow-up monitoring after four weeks showed a 9%

decline in literacy retention, supporting longitudinal findings that impacts diminish without ongoing engagement (Woods-Townsend et al., 2021). Demographic variables such as urban residency, socioeconomic status, and cultural background also influenced literacy outcomes (Kaim et al., 2021), underlining the need for tailored program design.

Table 1. Vaccine Literacy Scores (Pre vs. Post)

Group	Pre-Test (Mean ± SD)	Post-Test (Mean ± SD)	% Change
Intervention	56.2 ± 12.3	74.8 ± 10.4	+33.1%
Control	55.7 ± 11.8	58.1 ± 12.2	+4.3%

Change in Intent to Vaccinate

A significant rise in parental intent to vaccinate was observed among the intervention group, increasing from 52% pre-intervention to 80% post-intervention (Δ = +28%). The control group showed a smaller increase from 51% to 57% (Δ = +6%), as shown in Figure 1.

This shift is consistent with psychological models such as the Health Belief Model and the Theory of Planned Behavior, which emphasize perceived risk, benefits, and behavioral control as core determinants of intent (Griffith et al., 2020). Nonetheless, the reliability of self-reported intent as a proxy for actual behavior remains debated. Research shows that intent does not always translate into action, with social desirability bias and lack of follow-through acting as confounders (Beck et al., 2017).

Educational programs that addressed emotional concerns particularly fear of side effects were more effective at shifting attitudes, as demonstrated in similar findings by Miller (2016). Interactive elements, including group discussions and Q&A sessions, were particularly impactful, increasing engagement and knowledge retention (Kaim et al., 2021).

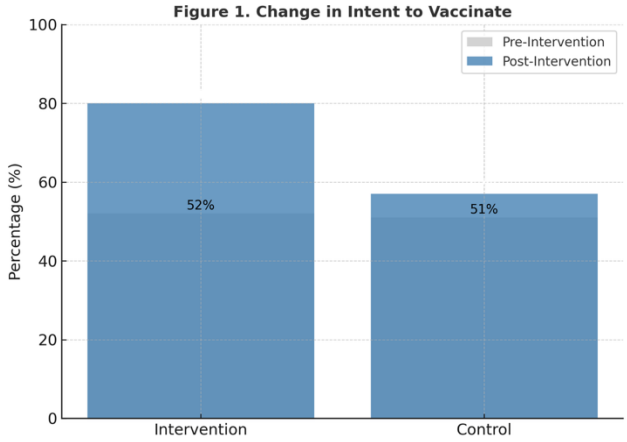

Figure 1. Change in Intent to Vaccinate

Predictors of Hesitancy Reduction

Regression analysis revealed that institutional trust and participation in the education program were the strongest predictors of reduced vaccine hesitancy. Trust in health institutions had a negative association with hesitancy ($\beta = -0.45$, $p < 0.001$), confirming the importance of public confidence in healthcare providers (Tollosa et al., 2020). Exposure to misinformation was a significant positive predictor of hesitancy ($\beta = +0.38$, $p < 0.01$), aligning with findings by Anraad et al. (2024), who highlighted the role of disinformation in eroding vaccine confidence.

Research also suggests a threshold of trust is necessary for education to be effective a "tipping point" below which interventions fail to produce meaningful behavior change (Tollosa et al., 2020). Furthermore, participants with higher levels of education and critical thinking ability responded more favorably to the intervention, supporting arguments by (Coman et al., (2020) that educational background moderates the effect of public health campaigns.

Table 2: Regression Predictors of Hesitancy Reduction

Predictor	β Coefficient	Std. Error	p-value
Trust in Institutions	-0.45	0.08	<0.001
Exposure to Misinformation	+0.38	0.09	<0.01
Education Level	-0.12	0.07	0.09
Participation in Education	-0.52	0.10	<0.001

The findings of this study confirm that structured health education can significantly enhance vaccine literacy and positively influence parental intent to vaccinate in urban Indonesia. However, while educational interventions demonstrated measurable impacts, several limitations emerge when such strategies are implemented in isolation. Vaccine hesitancy is a complex phenomenon shaped not merely by information deficits but by a range of emotional, psychological, and sociocultural variables (Willis et al., 2022). These dimensions often lie beyond the reach of informational campaigns, necessitating a broader, integrated approach.

Educational efforts that do not account for institutional distrust or prior negative experiences with the healthcare system may have limited or even counterproductive effects. For instance, the "backfire effect," where exposure to corrective information reinforces pre-existing beliefs, can undermine the objectives of health education (Reuben et al., 2020). This study observed that participants with high exposure to misinformation and low institutional trust were less responsive to the intervention, despite improved literacy, consistent with findings by Sujarwoto et al. (2023) that misinformation significantly moderates vaccine-related decision-making in Indonesia. These findings align with previous research suggesting that trust must be established before education can yield behavioral change (Novilla et al., 2023). Thus, education must be implemented in conjunction with initiatives that directly target emotional and relational dimensions of vaccine hesitancy.

The socio-economic and educational backgrounds of the participants further influenced the outcomes of the intervention. Participants with lower educational attainment or income levels often faced additional structural barriers, such as limited access to follow-up information or healthcare services. This supports previous assertions that health education, in the absence of

supportive systems and contextual adaptation, may inadvertently widen the gap between health-aware and health-marginalized groups (Nesiama et al., 2022). Therefore, education must be complemented by strategies that account for structural inequities and cultural specificity.

An essential aspect of culturally responsive health education is the integration of local belief systems and narrative frameworks. Cultural values heavily influence perceptions of health and vaccination, and interventions that fail to acknowledge these systems often lack relevance and resonance. This study reinforces the efficacy of culturally framed messaging, particularly those that align vaccination with parental responsibility and community welfare (Binyaruka et al., 2023). Engaging local leaders or respected community figures not only facilitates message delivery but also enhances credibility, leading to improved vaccine uptake (Adambekov et al., 2023). Interventions that incorporate community co-creation and respect for local traditions tend to foster long-term behavioral change by embedding health messages within existing social structures (Benham et al., 2021).

The role of trusted community messengers emerged as a decisive factor in this study. Health education delivered by community-based health workers or leaders was received with greater openness and reduced skepticism, particularly among historically hesitant groups. This finding echoes studies that highlight the influence of peer credibility in shifting public health attitudes (Momplaisir et al., 2021). By establishing relational trust and contextual familiarity, these figures not only transmit information but also create a dialogic space for discussing fears and uncertainties (Kalu et al., 2024). Moreover, their presence fosters continuity in health communication beyond the confines of structured programs.

The concept of the vaccine-education paradox defined as situations where higher educational attainment leads to increased critical resistance or skepticism toward health interventions is particularly relevant in middle-income settings like Indonesia (Fadhel, 2021). While education is traditionally seen as a mechanism for improving health behavior, it may also increase hesitancy when individuals are exposed to conflicting messages or perceive educational content as dismissive of their concerns (Fadhel, 2021). This paradox calls for carefully designed communication strategies that validate concerns, provide space for discourse, and equip individuals with critical thinking skills to navigate misinformation (Glendening et al., 2022). Furthermore, interventions must address structural determinants such as historical distrust, inadequate healthcare access, and cultural misalignment (Shastri et al., 2022).

In summary, while this study affirms the value of health education in reducing vaccine hesitancy, its effectiveness is substantially enhanced when delivered through culturally grounded, trust-based, and structurally supported frameworks. Future interventions should prioritize the integration of local narratives, the inclusion of trusted messengers, and the dismantling of systemic barriers to fully realize the potential of public health education.

CONCLUSION

This study demonstrates that structured health education significantly enhances vaccine literacy and strengthens parental intent to vaccinate in urban Indonesia. The intervention's effectiveness

was particularly evident when educational materials were delivered through culturally sensitive and interactive platforms that fostered dialogue and trust. However, education alone proved insufficient to eliminate hesitancy, as emotional, psychological, and sociocultural factors including misinformation and institutional distrust continued to moderate behavioral outcomes. These findings highlight that vaccine hesitancy is not merely a knowledge deficit issue but a multidimensional phenomenon requiring tailored and empathetic engagement strategies.

To achieve sustained behavioral change, educational initiatives must be integrated with broader community trust-building and systemic support. Collaboration with local leaders, continuous engagement through accessible communication channels, and the inclusion of culturally relevant narratives can enhance message credibility and acceptance. This study underscores that effective vaccine promotion requires moving beyond information dissemination toward empowering communities as active partners in health advocacy thereby creating resilient, informed, and trust-based public health ecosystems.

REFERENCES

Adambekov, S., Bongers, A., Hare, J., Popovic, D., Rajashekharaiah, H., Lawson, S. M., Riggall, G., Kokareva, L., & Chin, B. (2023). Understanding COVID-19 Vaccine Hesitancy in Health Care Professionals in Central and West Asia: Lessons for Future Emergency Mass Vaccination Campaigns. Frontiers in Public Health, 11. https://doi.org/10.3389/fpubh.2023.1196289

Al-Jayyousi, G. F., Sherbash, M., Ali, L. A. M., El-Heneidy, A., Alhussaini, N. W. Z., Abdel-Rahman, M. E., & Nazzal, M. A. (2021). Factors Influencing Public Attitudes Towards COVID-19 Vaccination: A Scoping Review Informed by the Socio-Ecological Model. Vaccines, 9(6), 548. https://doi.org/10.3390/vaccines9060548

Alzahrani, A., Alshehri, W., Alghamdi, F., Almalki, A. T., Alzaidi, K. H., Alsulaimani, H. F., Tamur, S., Khayat, A. M., Aljaid, M., & Almalki, S. A. (2024). The Impact of COVID-19 Vaccine Controversy on Parents' Perceptions of Routine Vaccinations. Cureus. https://doi.org/10.7759/cureus.63606

Amalo, C. G., Ekaristy, E. A., Wattileo, M., Pakpahan, M., & Silitonga, E. (2023). Factors Affecting the Community's Attitude Toward COVID-19 Vaccination: Cross-Sectional Study. Revista Brasileira De Enfermagem, 76(suppl 1). https://doi.org/10.1590/0034-7167-2022-0597

Anraad, C., Empelen, P. v., Ruiter, R. A. C., Rijnders, M., Groessen, K. v., & Keulen, H. v. (2024). Promoting Informed Decision Making About Maternal Pertussis Vaccination: The Systematic Development of an Online Tailored Decision Aid and a Centering-Based Group Antenatal Care Intervention. Frontiers in Public Health, 12. https://doi.org/10.3389/fpubh.2024.1256337

Bardak, F., & Koçoğlu, D. (2024). Vaccination Status Among Children in an Urban Area and Its Association With Risk Factors and Some Parent Health Practices: A Cross-sectional Study. Public Health Nursing, 41(5), 883–893. https://doi.org/10.1111/phn.13343

Beck, A. L., Lakkaraju, K., & Rai, V. (2017). Small Is Big: Interactive Trumps Passive Information in Breaking Information Barriers and Impacting Behavioral Antecedents. Plos One, 12(1), e0169326. https://doi.org/10.1371/journal.pone.0169326

Benham, J. L., Atabati, O., Oxoby, R. J., Mourali, M., Shaffer, B., Sheikh, H., Boucher, J.-C., Constantinescu, C., Leigh, J. P., Ivers, N., Ratzan, S. C., Fullerton, M. M., Tang, T., Manns, B., Marshall, D. A., Hu, J., & Lang, R. (2021). COVID-19 Vaccine–Related Attitudes and Beliefs in Canada: National Cross-Sectional Survey and Cluster Analysis. Jmir Public Health and Surveillance, 7(12), e30424. https://doi.org/10.2196/30424

Binyaruka, P., Mtenga, S., Mashasi, I., Karugu, C., Mohamed, S. F., Asiki, G., Mair, F. S., & Gray, C. M. (2023). Factors Associated With COVID-19 Vaccine Uptake Among People With Type 2 Diabetes in Kenya and Tanzania: A Mixed-Methods Study. BMJ Open, 13(12), e073668. https://doi.org/10.1136/bmjopen-2023-073668

Caron, R. M., & Dorsey, M. G. (2022). Challenges, Inquiry, and Recommendations: Effective COVID-19 Vaccine Management in the Face of Public Mistrust and Concern. Frontiers in Communication, 6. https://doi.org/10.3389/fcomm.2021.734996

Coman, M. A., Marcu, A., Chereches̨, R. M., Leppälä, J., & Broucke, S. V. d. (2020). Educational Interventions to Improve Safety and Health Literacy Among Agricultural Workers: A Systematic Review. International Journal of Environmental Research and Public Health, 17(3), 1114. https://doi.org/10.3390/ijerph17031114

Dickerson, J., Bird, P. K., Bryant, M., Dharni, N., Bridges, S., Willan, K., Ahern, S., Dunn, A., Nielsen, D., Uphoff, E., Bywater, T., Bowyer-Crane, C., Sahota, P., Small, N., Howell, M., Thornton, G., Pickett, K. E., McEachan, R., & Wright, J. (2019). Integrating Research and System-Wide Practice in Public Health: Lessons Learnt From Better Start Bradford. BMC Public Health, 19(1). https://doi.org/10.1186/s12889-019-6554-2

Fadel, E., Alshawish, E., El-Shaboury, R., Khalil, D., Zaghloul, F., & El-Feshawy, N. I. (2024). Effect of Implementing Virtual Educational Sessions on Nursing Students' Knowledge, Attitude and Hesitancy Regarding COVID-19 Vaccination. https://doi.org/10.21203/rs.3.rs-5044444/v1

Fadhel, F. H. (2021). Vaccine Hesitancy and Acceptance: An Examination of Predictive Factors in COVID-19 Vaccination in Saudi Arabia. Health Promotion International, 38(4). https://doi.org/10.1093/heapro/daab209

Glendening, J., Bickford, B., Markert, R. J., Yuhas, J., Berglund, A., Kelly, D., Scott, J., & Burtson, K. M. (2022). Addressing Persistent Vaccine Hesitancy in a Military Community Through a Physician-Led Intervention. Military Medicine, 188(5–6), 928–931. https://doi.org/10.1093/milmed/usac176

Griffith, B. C., Ulrich, A. K., Becker, A., Nederhoff, D., Koch, B., Awan, F. A., & Basta, N. E. (2020). Does Education About Local Vaccination Rates and the Importance of Herd Immunity Change US Parents' Concern About Measles? Vaccine, 38(50), 8040–8048. https://doi.org/10.1016/j.vaccine.2020.09.076

Han, K., Hou, Z., Tu, S., Liu, M., Chantler, T., & Larson, H. J. (2024). Factors Influencing Childhood Influenza Vaccination: A Systematic Review. Vaccines, 12(3), 233. https://doi.org/10.3390/vaccines12030233

Hicks, J. P., Allsop, M. J., Akaba, G., Yalma, R. M., Dirisu, O., Okusanya, B. O., Tukur, J., Okunade, K. S., Akeju, D., Ajepe, A., Okuzu, O., Mirzoev, T., & Ebenso, B. (2021). Acceptability and Potential Effectiveness of eHealth Tools for Training Primary Health Workers From Nigeria at Scale: Mixed Methods, Uncontrolled Before-and-After Study. Jmir Mhealth and Uhealth, 9(9), e24182. https://doi.org/10.2196/24182

Islam, Md. S., Siddique, A. B., Akter, R., Tasnim, R., Sujan, Md. S. H., Ward, P., & Sikder, Md. T. (2021). Knowledge, Attitudes and Perceptions Towards COVID-19 Vaccinations: A Cross-Sectional Community Survey in Bangladesh. BMC Public Health, 21(1). https://doi.org/10.1186/s12889-021-11880-9

Kaim, A., Siman-Tov, M., Jaffe, E., & Adini, B. (2021). Effect of a Concise Educational Program on COVID-19 Vaccination Attitudes. Frontiers in Public Health, 9. https://doi.org/10.3389/fpubh.2021.767447

Kalu, K., Shah, G. H., Tung, H., & Bland, H. W. (2024). Social and Structural Determinants of Health Associated With COVID-19 Vaccine Hesitancy Among Older Adults in the United States. Vaccines, 12(5), 521. https://doi.org/10.3390/vaccines12050521

Khanam, M., Sanin, K. I., Rita, R. S., Akand, F., Rabbi, M. F., Hasan, Md. K., Alam, T., & Ahmed, T. (2023). COVID-19 Vaccine Barriers and Perception Among Rural Adults: A Qualitative Study in Bangladesh. BMJ Open, 13(10), e074357. https://doi.org/10.1136/bmjopen-2023-074357

Lamont, K., Sliwa, K., Stewart, S., Carrington, M., Pretorius, S., Libhaber, E., Wiysonge, C. S., Adebayo, E. F., & Klipstein-Grobusch, K. (2016). Short Message Service (SMS) as an Educational Tool During Pregnancy: A Literature Review. Health Education Journal, 75(5), 540–552. https://doi.org/10.1177/0017896915607910

Lang, R., Benham, J. L., Atabati, O., Hollis, A., Tombe, T., Shaffer, B., Burns, K. K., MacKean, G., Léveillé, T., McCormack, B., Sheikh, H., Fullerton, M. M., Tang, T., Boucher, J.-C., Constantinescu, C., Mourali, M., Manns, B., Marshall, D. A., Hu, J., & Oxoby, R. J. (2021). Attitudes, Behaviours and Barriers to Public Health Measures for COVID-19: A Survey to Inform Public Health Messaging. BMC Public Health, 21(1). https://doi.org/10.1186/s12889-021-10790-0

Maneesriwongul, W., Deesamer, S., & Butsing, N. (2023). Parental Vaccine Literacy: Attitudes Towards the COVID-19 Vaccines and Intention to Vaccinate Their Children Aged 5–11

Years Against COVID-19 in Thailand. Vaccines, 11(12), 1804. https://doi.org/10.3390/vaccines11121804

Matta, P., Mouallem, R. E., Akel, M., Hallit, S., & Khalife, M. F. (2020). Parents' Knowledge, Attitude and Practice Towards Children's Vaccination in Lebanon: Role of the Parent-Physician Communication. BMC Public Health, 20(1). https://doi.org/10.1186/s12889-020-09526-3

Miller, T. A. (2016). Health Literacy and Adherence to Medical Treatment in Chronic and Acute Illness: A Meta-Analysis. Patient Education and Counseling, 99(7), 1079–1086. https://doi.org/10.1016/j.pec.2016.01.020

Momplaisir, F., Haynes, N., Nkwihoreze, H., Nelson, M. N., Werner, R. M., & Jemmott, J. B. (2021). Understanding Drivers of Coronavirus Disease 2019 Vaccine Hesitancy Among Blacks. Clinical Infectious Diseases, 73(10), 1784–1789. https://doi.org/10.1093/cid/ciab102

Montuori, P., Gentile, I., Fiorilla, C., Sorrentino, M., Schiavone, B., Fattore, V., Coscetta, F., Riccardi, A., Villani, A., Trama, U., Pennino, F., Triassi, M., & Nardone, A. (2023). Understanding Factors Contributing to Vaccine Hesitancy in a Large Metropolitan Area. Vaccines, 11(10), 1558. https://doi.org/10.3390/vaccines11101558

Nesiama, E., Vopni, R., Fuentes, N., Prabhu, F., & Bennett, K. (2022). Assessing and Addressing COVID-19 Vaccine Hesitancy in a West Texas Free Clinic Through Motivational Interview-Guided Intervention. The Southwest Respiratory and Critical Care Chronicles, 10(45), 42–47. https://doi.org/10.12746/swrccc.v10i45.1071

Novilla, M. L. B., Goates, M. C., Redelfs, A. H., Quenzer, M., Novilla, L. K. B., Leffler, T., Holt, C. A., Doria, R. B., Dang, M., Hewitt, M., Lind, E., Prickett, E., & Aldridge, K. (2023). Why Parents Say No to Having Their Children Vaccinated Against Measles: A Systematic Review of the Social Determinants of Parental Perceptions on MMR Vaccine Hesitancy. Vaccines, 11(5), 926. https://doi.org/10.3390/vaccines11050926

Otsuka-Ono, H., Hori, N., Ohta, H., Uemura, Y., & Kamibeppu, K. (2019). A Childhood Immunization Education Program for Parents Delivered During Late Pregnancy and One-Month Postpartum: A Randomized Controlled Trial. BMC Health Services Research, 19(1). https://doi.org/10.1186/s12913-019-4622-z

Rahman, M. A., & Bhuiyan, R. (2024). SMS Medicine: Revolutionizing Healthcare Delivery Through Mobile Technology. Aim, 2(4). https://doi.org/10.59652/aim.v2i4.368

Reuben, R., Aitken, D., Freedman, J. L., & Einstein, G. (2020). Mistrust of the Medical Profession and Higher Disgust Sensitivity Predict Parental Vaccine Hesitancy. Plos One, 15(9), e0237755. https://doi.org/10.1371/journal.pone.0237755

Shastri, T., Randhawa, N., Aly, R., & Ghouse, M. (2022). Bone Marrow Suppression Secondary to the COVID-19 Booster Vaccine: A Case Report. Journal of Blood Medicine, Volume 13, 69–74. https://doi.org/10.2147/jbm.s350290

Taylor, S., Landry, C. A., Paluszek, M. M., Groenewoud, R., Rachor, G. S., & Asmundson, G. J. G. (2020). A Proactive Approach for Managing COVID-19: The Importance of Understanding the Motivational Roots of Vaccination Hesitancy for SARS-CoV2. Frontiers in Psychology, 11. https://doi.org/10.3389/fpsyg.2020.575950

Tollosa, D. N., Holliday, E., Hure, A., Tavener, M., & James, E. L. (2020). Multiple Health Behaviors Before and After a Cancer Diagnosis Among Women: A Repeated Cross-sectional Analysis Over 15 Years. Cancer Medicine, 9(9), 3224–3233. https://doi.org/10.1002/cam4.2924

Tu, Y., Lin, Y.-J., Fan, L., Tsai, T., & Wang, H. (2018). Effects of Multimedia Framed Messages on Human Papillomavirus Prevention Among Adolescents. Western Journal of Nursing Research, 41(1), 58–77. https://doi.org/10.1177/0193945918763873

Willis, D. E., Selig, J. P., Andersen, J. A., Hall, S., Hallgren, E., Williams, M. L., Bryant-Moore, K., & McElfish, P. A. (2022). Hesitant but Vaccinated: Assessing COVID-19 Vaccine Hesitancy Among the Recently Vaccinated. Journal of Behavioral Medicine, 46(1–2), 15–24. https://doi.org/10.1007/s10865-021-00270-6

Woods-Townsend, K., Hardy-Johnson, P., Bagust, L., Barker, M., Davey, H., Griffiths, J. B., Grace, M., Lawrence, W., Lovelock, D., Hanson, M. A., Godfrey, K. M., & Inskip, H. (2021). A Cluster-Randomised Controlled Trial of the LifeLab Education Intervention to Improve Health Literacy in Adolescents. Plos One, 16(5), e0250545. https://doi.org/10.1371/journal.pone.0250545