Effectiveness of the InfoVax Strategy Using Infographics and Infomercial on Influenza and Pneumococcal Vaccination Promotion Among Residents of Barangay Pinag-Isang Palad, Commonwealth, Quezon City: A Quasi-Experimental Study

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Background: A community survey on the immunization status of residents in Barangay Pinag-Isang Palad, Old Balara, Quezon City, reflected a low immunization rate of 8% for influenza and 6% for pneumococcal vaccines. Exploring ways to increase awareness on vaccination is important to improve the delivery of primary prevention.

Objective: This study aimed to compare the effectiveness of infomercials versus infographics in promoting influenza and pneumococcal vaccination among residents of Barangay Pinag-Isang Palad.

Methods: A quasi-experimental study design using systematic sampling where one group of respondents was assigned to the infomercial intervention, and the other group to the infographics intervention. Each participant completed a self-administered 25-item questionnaire assessing perceived barriers to influenza and pneumococcal vaccination. Wilcoxon signed rank test was used to compare within group changes in scores pre- and post-intervention. Mann-Whitney test was used to determine between group differences in post-intervention scores.

Results: A total of 70 respondents representing 70 households in the barangay participated in the study. Respondents were mostly from the 26-35 age group, females with high school education in the service industry, with <P23,381 average monthly income, and good self-reported health status. Comparison of the pre- and post-intervention mean scores of both groups (infomercial and infographics), showed statistically significant change in post-intervention mean scores from baseline. However, comparison of the post-intervention mean scores between groups was not statistically significant. Identified barriers in both groups were challenges in affordability and accessibility of influenza and pneumococcal vaccines.

Conclusion: This study showed that the InfoVax Strategy, using infomercials and infographics, can be effective tools in improving perceptions on influenza and pneumococcal vaccination among residents of Barangay Pinag-Isang Palad. The findings of this study can be applied to communities having similar characteristics. Healthcare providers may improve perceptions on vaccination and subsequent uptake by distributing infographics or playing infomercials aside from public health lectures. Vaccination will help prevent loss of earnings and increased medication consumption. The local health unit needs to evaluate and address the identified barriers of affordability and accessibility.

Key words: vaccination promotion, vaccine hesitancy, influenza vaccines, pneumococcal vaccines

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Background

Influenza is known as a contagious respiratory illness caused by the influenza virus, which may cause mild to severe illness and may sometimes lead to death. Pneumonia is a lung infection that may cause mild to severe illness among people of all ages.[1] Globally, an estimated 290,000-650,000 influenza-associated respiratory deaths occurred yearly from 1999 to 2015.[2] Likewise, pneumonia had approximately 1.19 million deaths worldwide in 2015. The most effective way to prevent these types of infections is through vaccination. However, vaccine hesitancy, defined as the delay in accepting or refusing vaccines despite the availability of vaccine services, remains to this day.[2] In a study by Rolfes et al., a significant number of influenza-related illnesses, hospitalizations, and deaths were reduced in 2017-2018 due to vaccination uptake despite the low efficacy of influenza vaccines.[3] Meanwhile, pneumococcal vaccination reduced the burden of community-acquired pneumonia and its associated complications. Reasons for low vaccination uptake mentioned by Rastegar et al. were vaccine shortage, lack of public awareness, insufficient vaccine demand, and failure to incorporate vaccines into the national immunization program.[4] In China, only 2% and 3% of the population were vaccinated against flu and pneumonia in 2014-2015, respectively.[5]

Foreign studies have applied educational measures to improve vaccination uptake, such as motivational interviewing among post-partum mothers to improve vaccination in infancy[6], video-led education intervention on influenza vaccination uptake in the elderly[7], and infographics on COVID-19 vaccine hesitancy and misinformation.[8,9,10] Locally, influenza-associated deaths stand at an estimated average of 5,374 excess deaths per year or approximately 1.1% of the average annual all-cause deaths in 2009-2015. This is alarming because 3 out of 10 individuals are aware of the flu vaccine, and 4 out of 10 are aware of the pneumococcal vaccine.[11] Hence, the Department of Health has promoted its Bakunation Program in inoculating influenza and pneumococcal vaccines to prevent possible co-infection and complications of COVID-19 infection with flu and/or pneumonia.[12] However, public distrust against any vaccination was present among Filipinos due to the Dengvaxia controversy in 2016[13], which resulted in poor adherence and vaccination uptake of inoculations in the barangay, especially during the start of the lockdown in the Philippines.[14]

A survey on the immunization status of residents in the partner community of East Avenue Medical Center Department of Family and Community Medicine in Barangay Pinag-Isang Palad, Old Balara, Quezon City, showed that 11% had no vaccination. Likewise, it reflected a low immunization rate: BCG 17%, Measles 16%, Hepatitis B 15%, OPV 14%, DPT 13%, influenza 8%, and pneumococcal vaccine 6% compared to 80.9% for COVID-19. Therefore, identifying barriers to vaccination against influenza and pneumonia, two of the lowest uptake, is important to improve the delivery of primary prevention. Since no local data on addressing influenza and pneumococcal vaccination uptake in the community is available, this study will compare the effectiveness of promotion intervention between infographics and infomercials (InfoVax Strategy).

The objective of the study was to compare the effectiveness of infomercials versus infographics in promoting influenza and pneumococcal vaccination among residents of Barangay Pinag-Isang Palad. The specific objectives of the study were to describe the demographics of the respondents, to compare the pre and post-interventional mean scores of both groups (infomercial and infographics), and to identify barriers to influenza and pneumococcal vaccination.

Methods

Study Design

A quasi-experimental design was utilized in this study. Recruitment was done for approximately 1 month, which started on May 19, 2023, and ended on June 16, 2023, through announcements during general assemblies every Wednesday and Friday community visits and was augmented by house-to-house visits. Qualifications of every respondent were given, and then all 83 active households selected a representative who was recruited to the study and signed the informed consent. Systematic random sampling was used to divide the population into two groups – the infomercial intervention and the infographics intervention. The activity was conducted on June 17, 2023, and respondents who consented and met the inclusion criteria participated in the study. A self-administered 25-point questionnaire assessing the perceived barriers to influenza and pneumococcal vaccination was utilized to compare the effectiveness of infomercials and infographics as a promotion strategy for flu and pneumococcal vaccination. The questionnaire was composed of 8 initial questions on demographics and 16 questions on perceived barriers to vaccination using the Likert Scale: strongly agree (1), agree (2), uncertain (3), disagree (4), and strongly disagree (5). Demographic information was analyzed by obtaining the frequency and percentage, while pre- and post-intervention mean scores were compared. Pilot testing was conducted with 30 adult patients in the Family Medicine Out-Patient Clinic to determine the reliability of the translated Tagalog version of Larson et.al's Vaccine Hesitancy Questionnaire. Cronbach's alpha using SPSS 27 was found to be acceptable at alpha = 0.710.

Setting

The study was conducted in the partner community of East Avenue Medical Center Department of Family and Community Medicine in Barangay Pinag-Isang Palad, Old Balara, Quezon City, composed of 83 households from the low-income to low-middle income (NEDA classification). Recruitment was started on May 19, 2023, and augmented via house-to-house invitation, which started on June 9, 2023, wherein respondents were informed of the scheduled activity on June 17, 2023.

Subjects

The inclusion criteria were the following: a permanent resident of Barangay Pinag-Isang Palad, an adult representative aged 18 – 45 years old of every household present on the day of the community activity, and those with or without influenza and/or pneumococcal vaccination. The exclusion criteria were the following: those with hearing and/or

visual disability, those with difficulty reading and/or writing, illiterate, and mentally incapacitated. Respondents who fulfilled the inclusion criteria were selected by systematic random sampling and were asked to sign the consent.

Sampling

Using the community profile as the sampling frame, systematic sampling was used to divide the population into two groups – the first group assigned to the infomercial intervention were respondents from even-numbered houses; the second group assigned to the infographics intervention were respondents from odd-numbered houses. The intervention assignment was done by the researcher.

Intervention

The InfoVax Strategy (Infomercial-Infographics) was conducted last June 17, 2023, as a one-day event. Before the intervention, the representatives of the 83 different households were asked to complete a 10-minute self-administered 25-point online questionnaire. Afterward, the respondents were given 6 minutes and 30 seconds to view the infographic or infomercial on an iPad or tablet measuring 10.9 inches with appropriately fitting earphones (infomercial group only). Both interventions explained the overview of influenza and pneumococcal vaccination. After this, the same online questionnaire was given with the same duration to answer. A single-blinding procedure was applied: both the researcher and activity facilitators were aware of the intervention, while the participants weren't.

Follow-up and Outcomes

The primary outcome of the study was to compare the effectiveness of infomercials and infographics as a promotion intervention strategy for flu and pneumococcal vaccines. The secondary outcome was to identify the barriers to influenza and pneumococcal vaccinations. Outcomes were obtained by observation on the same day as the conduct of the intervention. There was no follow-up or changes to trial outcomes after the trial commenced.

Statistical Analysis

The null hypothesis of this study is that there is no difference between the use of infographics and infomercials as a promotion intervention strategy. Since there is no local study regarding the community's vaccination data on the identified barriers to influenza and pneumococcal vaccination but the population size of the community is known, Slovin's formula was employed to compute for the sample size. Slovin's formula was computed using:

$$n = \frac{N}{(1+Ne^2)}$$

n = sample size
N = population size
E = margin of error

By utilizing the formula, with a population size of 83 representing the active households with a confidence interval of 95% and a margin of error of 0.05, the computed sample size rounded off to 68 households – 34 households for the infographics group and 34 households for the informercial group. The questionnaire result was analyzed using the Wilcoxon Signed Ranks test using the Statistical Package for the Social Sciences (IBM SPSS 25 for 11). A p-value of <0.05 was considered significant. For the primary outcome, Wilcoxon signed rank test analysis was used to compare the pre- and post-intervention mean scores within interventions, and the Mann-Whitney test was used to compare the post-intervention mean scores between interventions, while descriptive analysis was done for the secondary outcome.

Ethical Considerations

The research adheres to ethical guidelines for human research respondents as stipulated by the National Ethical Guidelines for Research Involving Human Respondents (NEGRIHP 2022). Participation was voluntary without coercion, and consent could be canceled at any time and without any reason. There was no monetary cost to participate in this study; participation did not entail significant risks to the physical, emotional, mental, and social aspects of the health and well-being of the participants. Participants may withdraw at any time during the conduct of the survey without loss or penalty of any form to which they are entitled. No known injuries or related illnesses were found related to participation in this study. All data recorded were treated as confidential and available only to the primary investigator, research staff, and the ethical committee board. A simple token of food and drinks was given to every respondent after the questionnaire and intervention were accomplished. The study complied with the provisions of the Data Privacy Act of 2012. The study protocol was submitted and approved by the East Avenue Medical Center - Technical Review Board (TRB) and the East Avenue Medical Center - Institutional Ethics Review Board (IERB).

Results

The InfoVax Strategy was conducted as a one-day activity last June 17, 2023. Of the 83 active households in the community, 70 respondents participated in this study.

Socio-demographic characteristics of the respondents showed that most of them belonged to the 26-35 age group (infomercial 13, 37.14%; infographics 13, 37.14%), followed by those in the 36-45 (infomercial 12, 34.29%; infographics 12, 34.29%); mostly females (infographics 18, 51.43%; infomercial 23, 65.71%), with most attaining high school education (infographics 21, 60.00%; infomercial 18, 51.43%); mostly in the enterprise/business/service industry (infographics 19, 54.29%; infomercial 22, 62.86%), with an average monthly income of less than Php23,381 (infographics 29, 82.86%; infomercial 31, 88.57%) and most with good self-reported health status (infographics 22, 62.86%; infomercial 24, 68.57%).

Table 2 shows the comparison of the pre- and post-intervention mean scores of both groups (infomercial and infographics), with both interventions having a statistically significant within group change in

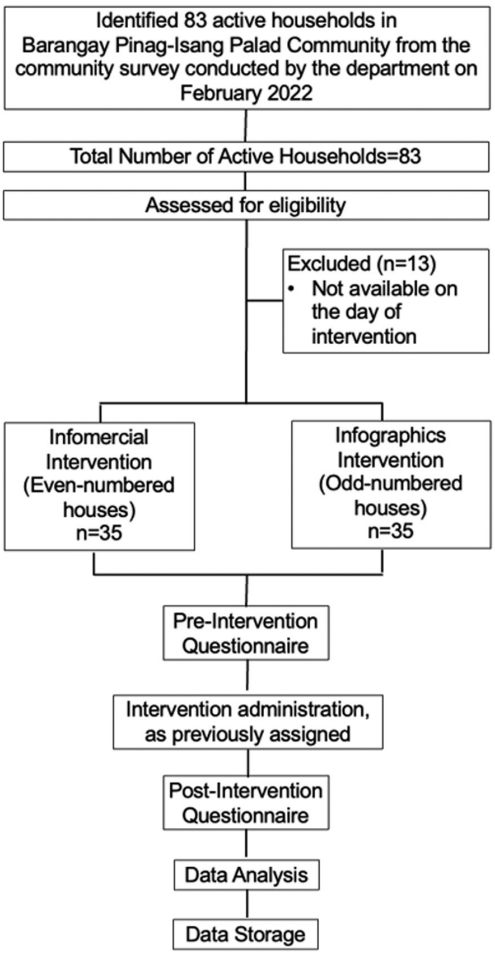

Figure 1. Study algorithm.

post-intervention mean scores from baseline using the Wilcoxon Signed Rank Test. However, comparison of the post-intervention mean scores of between interventions was not statistically significant using the Mann-Whitney Test.

Table 3 compares pre- and post-intervention mean scores of independent factors in barriers to influenza and pneumococcal vaccination, where affordability and accessibility remained not statistically significant even after intervention.

Discussion

In this study using InfoVax Strategy (Infomercial-Infographics) to improve vaccination uptake of Influenza and Pneumococcal vaccines, respondents mostly belonged to the 26-35 age group; mostly females, with mostly attaining high school education; mostly in the enterprise/ business/service industry, with an average monthly income of less than Php23,381 and mostly with good self-reported health status. There was a significant change in the post-intervention mean scores in both intervention groups ($p<0.001$), meaning both interventions can improve perceptions about vaccination, and eventually vaccination uptake, with comparable post-intervention mean scores between the Infographic and Infomercial groups ($p = 0.389$). Identified barriers in both groups were challenges in affordability and accessibility of influenza and pneumococcal vaccines.

The findings of this study will aid healthcare providers, such as the Family Medicine residents of East Avenue Medical Center Department of Family and Community Medicine, in improving vaccination uptake through distributing infographics or playing infomercials aside from public health lectures. Considering that the community predominantly belongs to low-income to low-middle-income households, community members will gain a better understanding and awareness regarding vaccination against influenza and pneumococcal infections, leading to

Table 1. Socio-demographic characteristics of respondents.

	Infomercial Intervention (n=35)		Infographics (n=35)	
	n	%	n	%
Age				
18-25	10	28.57	10	28.57
26-35	13	37.14	13	37.14
36-45	12	34.29	12	34.29
Sex				
Male	17	48.57	12	34.29
Female	18	51.43	23	65.71
Highest Educational Attainment				
Pre-school	0	0.00	0	0
Elementary	4	11.43	4	11.43
High School	21	60.00	18	51.43
College	5	14.29	12	34.29
Masteral	0	0.00	0	0
Doctorate	0	0.00	0	0
Vocational	5	14.29	1	2.86

Occupation				
Government agencies and institutions	0	0.00	0	0
Enterprise/business/service industry	19	54.29	22	62.86
Agricultural/forestry/animal husbandry/fishery/water conservancy production personnel	0	0.00	0	0
Student	5	14.29	6	17.4
Unemployed	11	31.43	7	20.0
Occupation: Healthcare related or not				
Yes	3	8.57	10	28.57
No	32	91.43	25	71.43
Monthly Income (based on NEDA)				
Less than Php 11, 690	15	42.86	13	37.14
Php 11, 690 – 23, 381	14	40.00	18	51.43
Php 23, 381 – 46, 761	6	17.14	4	11.43
Php 46, 761- 81, 832	0	0.00	0	0
Php 81, 832 - 140, 284	0	0.00	0	0
Php 140,284 – 233, 806	0	0.00	0	0
At least 233, 807	0	0.00	0	0
Self-reported health status				
Very Good	8	22.86	4	11.43
Good	22	62.86	24	68.57
Common	3	8.57	4	11.43
Bad	1	2.86	2	5.71
Very Bad	1	2.86	1	2.86

Table 2. Comparison of pre- and post-interventional mean scores of both groups (Infomercial and Infographics**).**

Intervention	Pre-Intervention (n=35)	Post-intervention (n=35)	p-value Wilcoxon Signed Rank Test
Infomercial	2.47	2.00	<0.001*
Infographics	2.59	2.06	<0.001*
p-value Mann-Whitney Test		0.389	

*statistically significant

Table 3. Independent factors in barriers to influenza and pneumococcal vaccination.

Barriers to Vaccination	Infographics			Infomercial		
	Pre-Intervention Mean (SD)	Post-Intervention Mean (SD)	P-value	Pre-Intervention Mean (SD)	Post-Intervention Mean (SD)	P-value
Vaccines can cause unknown illness	2.54 (1.120)	1.89 (0.900)	<0.001	2.74 (1.120)	2.00 (0.840)	<0.001
Vaccines can weaken the immune system	2.40 (0.914)	2.03 (0.785)	0.006	2.34 (0.802)	1.86 (0.494)	0.002
Vaccines have under-reported adverse effects	3.06 (1.211)	2.23 (1.140)	<0.001	2.46 (0.852)	1.89 (0.404)	<0.001

Vaccines can harm my health	2.37 (0.910)	1.51 (0.562)	<0.001	2.20 (0.759)	1.66 (0.539)	0.003
Influenza is not a serious illness	3.23 (1.262)	1.94 (1.056)	<0.001	2.89 (1.255)	1.71 (0.860)	<0.001
Pneumonia is not a serious illness	2.00 (1.029)	1.74 (0.780)	0.018	2.14 (0.944)	1.83 (0.707)	0.012
Prefers to be immunized in a natural way, not through vaccines	3.11 (1.409)	2.03 (1.014)	<0.001	2.94 (1.110)	1.89 (0.676)	<0.001
Previous adverse reactions with a different vaccine	2.71 (1.274)	1.91 (1.095)	<0.001	2.31 (1.051)	1.77 (0.942)	0.001
Negative information about vaccines through media	2.74 (1.245)	1.80 (0.584)	<0.001	2.74 (1.245)	1.80 (0.584)	<0.001
Do not have time for it	2.29 (1.126)	1.74 (0.657)	0.008	2.29 (1.126)	1.74 (0.657)	0.008
Vaccine is unsafe or has side effects	2.49 (0.853)	1.69 (0.471)	<0.001	2.49 (0.853)	1.69 (0.471)	<0.001
Vaccines are ineffective	1.97 (0.707)	1.74 (0.443)	0.026	1.97 (0.707)	1.74 (0.443)	0.026
No detailed information from healthcare professionals	2.14 (1.061)	1.54 (0.780)	0.002	2.14 (1.061)	1.54 (0.780)	0.002
Conflicting beliefs on vaccination	3.54 (1.12)	2.60 (1.17)	<0.001	3.54 (1.12)	2.60 (1.17)	<0.001
Distrust in vaccine manufacturers	2.03 (1.014)	1.54 (0.780)	0.002	2.03 (1.014)	1.54 (0.780)	0.002
I could not afford the influenza and pneumococcal vaccines	3.86 (1.061)	3.43 (1.461)	0.065	3.34 (1.235)	3.40 (1.311)	0.898
Unavailability of influenza and pneumococcal vaccine near the household area	2.77 (1.352)	2.71 (1.384)	0.548	2.77 (1.352)	2.71 (1.384)	0.548

*Wilcoxon Signed Rank Test

eventual vaccination that will prevent the worker from losing earnings and increased medication consumption. The local health u nit needs to address identified barriers from this study, leading to improvement in the delivery of primary prevention in the health system.

This study showed that video infomercials and infographics may be effective educational aids in increasing influenza and pneumococcal vaccination. Similarly, Brown et al.[15] found a positive response to a brief video on susceptibility to pneumonia and promoting the importance of vaccination in both children and adults. Likewise, Yi et al.[16] noted an improvement in the human papillomavirus vaccine uptake using graphic messages among adults. In the local setting, only the PCV13 (pneumococcal conjugate vaccine 13) is included under the Expanded Program on Immunization; influenza and PPSV23 (pneumococcal polysaccharide vaccine 23) vaccinations are out-of-pocket. Since most of the respondents belong to the low-income to low-middle income (NEDA classification) with a monthly income below Php23,381, this may explain why respondents in this study found affordability and accessibility as barriers to influenza and pneumococcal vaccine uptake. Similar findings were observed by Hou et al., where most individuals were unwilling to pay the standard rate of vaccines in the market.[17] Kamal et al. noted that income is one of the enabling factors for vaccination uptake; higher income meant higher immunization rates, and those who perceive they have poor health status have higher vaccination rates.[18] The latter finding contrasts with this study, where respondents, despite a good self-reported health status, had poor vaccination rates. As to accessibility, community members are separated from their barangay health center by a major thoroughfare and must cross a footbridge to reach it. Nevertheless, a private tertiary hospital is directly in front of the community. This geographic challenge may have prevented adequate information drive from its local health unit, possibly making them unaware of the availability of these vaccines. Factors such as cost or vaccine accessibility are possible barriers to vaccine hesitancy.[19] The use of infographics to address COVID-19 vaccine hesitancy and misinformation failed to show improvement in the respondents' outlook on vaccination[20]; however, in this study, the use of infographics elicited a positive change in perception of both influenza and pneumococcal vaccination as seen in the improvement of mean scores for both interventions.

The findings of this study are bound by its limitations: those under the infographic intervention required a longer period of administration and involved reading and comprehension of the respondent, whereas those in the infomercial group could accomplish the intervention within the time frame since they only need to process what is being discussed in the infomercial. Likewise, the questionnaire can be improved by re-wording it using straightforward phrases instead of using double negative phrases to lessen the respondents' confusion in answering. Future studies can improve on these limitations. As the study focused on a community setting with distinct sociodemographic characteristics, the results should be taken cautiously when applied to the general population.

Conclusion and Recommendations

This study showed that the InfoVax Strategy, using infomercials and infographics, effectively promotes influenza and pneumococcal vaccination among residents of Barangay Pinag-Isang Palad. Respondents mostly belonged to the 26-35 age group: females with high school education in the enterprise/business/service industry, with an average monthly income of less than Php23,381, and good self-reported health status. Both interventions can improve vaccination uptake, and the identified barriers were the affordability and accessibility of influenza and pneumococcal vaccines. The findings of this study can be applied to communities having similar characteristics. Healthcare providers may improve vaccination uptake through distributing infographics or playing infomercials aside from public health lectures. Vaccination will prevent the worker from losing earnings and increased medication consumption. The local health unit needs to address identified barriers from this study, leading to improvement in the delivery of primary prevention in the health system. Future studies can improve on the period of intervention, level of difficulty of the activity (reading and comprehension), and rewording of the using straightforward phrases.

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References

1. Key Facts About Influenza (Flu) [Internet]. 2022 [cited 2023 Dec 13]. Available from: https://www.cdc.gov/flu/about/keyfacts.htm
2. Galagali PM, Kinikar AA, Kumar VS. Vaccine Hesitancy: Obstacles and Challenges. Curr Pediatr Rep. 2022;10(4):241-8. doi: 10.1007/s40124-022-00278-9. Epub 2022 Oct 8.
3. Rolfes MA, Flannery B, Chung JR, et al. Effects of influenza vaccination in the United States during the 2017–2018 influenza season. Clin Infect Dis 2019; 69(11): 1845–53. https://doi.org/10.1093/cid/ciz075
4. Rastegar M, Tavana M, Meraj A, Mina H. An inventory-location optimization model for equitable influenza vaccine distribution in developing countries during the COVID-19 pandemic. Vaccine. 2021 Jan 15;39(3):495-504. doi: 10.1016/j.vaccine 2020.12.022. Epub 2020 Dec 9.
5. Rolfes MA, Flannery B, Chung JR, et al. Effects of influenza vaccination in the United States during the 2017–2018 influenza season. Clin Infect Dis 2019; 69(11): 1845–53. https://doi.org/10.1093/cid/ciz075
6. Lemaitre T, Carrier N, Farrands A, Gosselin V, Petit G, Gagneur A. Impact of a vaccination promotion intervention using motivational interview techniques on long-term vaccine coverage: the PromoVac strategy. Hum Vaccin Immunother 2019;15(3):732-9. doi: 10.1080/21645515.2018.1549451. Epub 2019 Jan 4.
7. Jiang M, Yao X, Li P, Fang Y, Feng L, Hayat K, Shi X, Gong Y, Peng J, Atif N. Impact of video-led educational intervention on uptake of influenza vaccine among the elderly in western China: a community-based randomized controlled trial. BMC Public Health 2022 Jun 6;22(1):1128. doi: 10.1186/s12889-022-13536-8.
8. Rotolo SM, Jain S, Dhaon S, et al. A coordinated strategy to develop and distribute infographics addressing COVID-19 vaccine hesitancy and misinformation. J Am Pharm Assoc (2003). 2022 Jan-Feb;62(1):224-31. doi: 10.1016/j.japh.2021.08.016. Epub 2021 Aug 21.
9. Lazić A, Kalinova KN, Packer J, Pae R, Petrović MB, Popović D, Sievert DEC, Stafford-Johnson N. Social nudges for vaccination: How communicating herd behaviour influences vaccination intentions. Br J Health Psychol 2021 Nov;26(4):1219-37. doi: 10.1111/bjhp.12556. Epub 2021 Sep 8.
10. Riggs EE, Shulman HC, Lopez R. Using infographics to reduce the negative effects of jargon on intentions to vaccinate against COVID-19. Public Underst Sci. 2022 Aug;31(6):751-65. doi: 10.1177/09636625221077385. Epub 2022 Mar 10.
11. University of the Philippines Population Institute (UPPI) and Demographic Research and Development Foundation, Inc. (DRDF). (2021, April). Vaccinating the most vulnerable group in the time of pandemic: Insights from a national survey of older people (UPPI/DRDF Research Brief No. 9). Retrieved from https://www.uppi.upd.edu.ph/sites/default/files/pdf/COVID-19Research-Brief-09.pdf
12. Montemayor Ma T. Over 750K infants inoculated vs. vaccine-preventable diseases [Internet]. Philippine News Agency. 2022 [cited 2023 Dec 6]. Available from: https://www.pna.gov.ph/articles/1175573
13. Mendoza RU, Dayrit MM, Alfonso CR & Ong MM. Public trust and the COVID-19 Vaccination Campaign: Lessons from the Philippines as it emerges from the Dengvaxia controversy. Int J Health Plan Man 2021; 36(6): 2048–55. https://doi.org/10.1002/hpm.3297
14. Reyes MS, Dee EC & Ho BL. Vaccination in the Philippines: Experiences from history and lessons for the future. Hum Vacc Immunother 2020; 17(6): 1873–6. https://doi.org/10.1080/21645515.2020.1841541
15. Brown T, Goldman SN, Persell SD, Lee JY, Doan CT, Stephens Q, Baker DW, Cameron KA. Development and evaluation of a patient education video promoting pneumococcal vaccination. Patient Educ Couns 2017; 100(5): 1024-7. doi: 10.1016/j.pec.2016.12.025. Epub 2016 Dec 28.
16. Yi Y, Xiu S, Shi N, et al. Perceptions and acceptability of HPV vaccination among parents of female adolescents 9-14 in China: A cross-sectional survey based on the theory of planned behavior. Hum Vaccin Immunother 2023 Aug 1;19(2):2225994. doi: 10.1080/21645515.2023.2225994. Epub 2023 Jun 20.

17. Hou Z, Jie Chang, Yue D, Fang H, Meng Q, Zhang Y. Determinants of willingness to pay for self-paid vaccines in China. Vaccine. 2014 Jul 31;32(35):4471-7. doi: 10.1016/j.vaccine.2014.06.047. Epub 2014 Jun 23.
18. Kamal KM, Madhavan SS, Amonkar MM. Determinants of adult influenza and pneumonia immunization rates. J Am Pharm Assoc (2003). 2003 May-Jun;43(3):403-11. doi: 10.1331/154434503321831120.
19. Jiang M, Yao X, Li P, et al. Impact of video-led educational intervention on uptake of influenza vaccine among the elderly in western China: a community-based randomized controlled trial. BMC Public Health 2022 Jun 6;22(1):1128. doi: 10.1186/s12889-022-13536-8.
20. Rotolo SM, Jain S, Dhaon S, et al. A coordinated strategy to develop and distribute infographics addressing COVID-19 vaccine hesitancy and misinformation. J Am Pharm Assoc (2003). 2022 Jan-Feb;62(1):224-31. doi: 10.1016/j.japh.2021.08.016. Epub 2021 Aug 21.