

IMPROVING INFLUENZA VACCINATION RATES OF ASSISTED LIVING STAFF

Doctor of Nursing Practice Project
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Doctor of Nursing Practice
by
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Improving Influenza Vaccination Rates of Assisted Living Staff

Influenza is a highly contagious respiratory illness that poses a significant threat to public health worldwide. Every year, influenza affects approximately one billion people worldwide (World Health Organization [WHO], 2021). People living in long-term care facilities face a heightened vulnerability to contracting influenza and experiencing adverse consequences due to the frail nature of the residents, the proximity of their living arrangements, and the common pool of caregivers. Most individuals tend to recover from uncomplicated influenza; however, it is imperative to acknowledge that influenza can lead to complications of a severe nature, culminating in acute illnesses and mortality. This susceptibility is notably pronounced among specific demographic groups, namely, infants, elderly individuals, those afflicted with neurological disorders, individuals with chronic medical conditions such as pulmonary, cardiac, and metabolic ailments, and those whose immune systems are compromised. Transmission of the virus from healthcare workers to long-term care residents has been well documented. This project is important to the clinical site because it can help to protect vulnerable residents from potential outbreaks, reduce staff absenteeism due to illness, and promote overall well-being within the assisted living community.

Although the influenza vaccine is widely regarded as the most effective measure for managing and curtailing the transmission of the virus, it is noteworthy that only 42% of healthcare personnel, for whom vaccination is not mandated by their employer, disclose having received the vaccine. The purpose of this project was to increase influenza vaccination rates at an assisted living facility. This paper reviews the background and significance of influenza and the influenza vaccine, provide a critical review of relevant literature, and detail the implementation of a quality improvement project aimed at improving influenza vaccination rates.

Statement of Purpose, PICOT, and Objectives

The purpose of this project is to improve the staff influenza vaccination rate at an Assisted Living facility in northern New Jersey. The goal of this project is to evaluate current staff vaccination rates, assess the staff's opinion of the vaccine, and to address and overcome vaccine hesitancy. Project objectives relate to the following PICOT question: In healthcare workers at an assisted living facility (P), how does an educational intervention aimed at reducing vaccine hesitancy and improving vaccination acceptance (I) compared to no intervention (C) affect the rate of vaccination of the healthcare worker(O) over the course of three months (T)?

The objectives of this project are:

- a 2% increase in staff influenza vaccination rate.
- a 5% increase in post-test employee survey scores related to confidence, calculation, and collective responsibility compared to pre-test employee survey scores.
- a 5% decrease in post-test employee survey scores related to complacency and constraint compared to pre-test employee survey scores.

Review of Literature

To identify obstacles to vaccination among healthcare workers and strategies to enhance vaccination acceptance rates, a comprehensive literature review was conducted.

Barriers to vaccination. Four articles explored reasons for vaccine avoidance and hesitancy in healthcare workers. Halpin and Reid (2019) conducted a descriptive study and found that 67% of healthcare workers in their sample declined the influenza vaccine because they felt they did not need it, they had concerns about the effectiveness of the vaccine, and they had

concerns about side effects or getting sick from the vaccine. Durovic et al. (2020) found in their cohort study that most influenza vaccination declinations in their sample were also due to fear of long-term side effects $p < .001$. Yaqub et. al., (2014) conducted a literature review and discovered that safety concerns surrounding the influenza vaccine was as the primary reason for hesitancy and avoidance. O'Neil et. al., (2017) conducted a knowledge, attitudes, and practices (KAP) study which revealed that the primary reasons for declining vaccination among the sampled individuals were knowledge and training gaps, obstacles to practicing infection prevention measures, and misconceptions regarding the safety and effectiveness of the influenza vaccine.

Interventions to Improve Influenza Vaccination Rates. Four articles detailed interventions used to improve influenza vaccination. Three studies emphasized the benefit of utilizing an educational program to improve vaccine uptake. Rodriguez et al., (2016) performed a cross-sectional study and found that vaccination rates in the healthcare workers sampled increased from 30% to 40% after the sample attended an educational program, ($p = .01$). Bechini et al. (2020) conducted a meta-analysis and found that facilities that conduct formal education programs and provide easy access to vaccination have a 10% higher staff vaccination rate ($p < .001$). that decline. A cross-sectional study by Vimercatual. et al. (2019) showed an increase in vaccination rates from 8.7% to 14.2% after an educational campaign was implemented ($p = .05$). Conversely, in a randomized control study, Barbaroux (2021) utilized a subtle intervention called nudging to influence healthcare workers to accept the vaccine. The nudge group received a questionnaire regarding vaccine perceptions as well as vaccine information and a note that asks the participant to remove the page and bring it to the pharmacy to get the vaccine. The no-nudge group only received a questionnaire. The author found no statistically significant difference in vaccine acceptance between groups, $p = .65$

In summary, influenza poses a risk to the population, with the elderly residents of long-term care being at the highest risk for serious outcomes. The influenza vaccine stands as the most efficacious means to prevent an influenza outbreak. The current body of literature supports educational initiatives to increase staff vaccination rate and reduce vaccine hesitancy. The goal of this project is to implement an effective quality improvement intervention that facilitates an uptake in staff influenza vaccine acceptance in an assisted living facility.

Methods

This quality improvement project utilized a pre and posttest design to evaluate healthcare worker's opinions of the influenza vaccine before and after a quality improvement intervention. To evaluate this project, the participants were asked to complete the 5C psychological antecedents of vaccination scale before and after the intervention. The QI project was conducted at an Assisted Living facility in New Jersey. The facility is a 90 bed, private pay long-term care center with approximately 81 employees. The target population for this project is employees 18 years of age and older. Inclusion criteria are limited to the age of 18 or greater, employed by the facility. Exclusion criteria consists of all employees under the age of 18.

Interventions. A staff educational intervention was provided in October 2023. The mandatory one-hour educational session consisting of a PowerPoint presentation, video, and hand-outs that address common misconceptions regarding the influenza vaccine, safety information, efficacy, and risk factors for infection and negative outcomes.

Participant responses from the 5C scale related to confidence, calculation, collective responsibility, complacency, and constraint from T1 were compared to T2 survey data to evaluate

the effectiveness of the educational program. An influenza vaccination clinic was provided on-site following the educational session and influenza vaccination rates were collected throughout the influenza season, calculated, and compared to the prior year's vaccination rate.

Measurement Tools and Data Analysis. Calculations for sample size were based on the recommendations from G Power 3.1. Using a power of .80, an effect size of 0.50, and a $p=.05$, a minimum of 34 subjects was required. However, all 60 available participants were included in the sample. Of the 60 participants, all 60 completed pre and posttest surveys using the 5C psychological antecedents of vaccination scale. The internal consistency coefficients of the 5C scale ranges from .71 to .85 (Betsch, 2020). The primary outcome variable is the employee influenza vaccination rate. The secondary variables are posttest scores related to confidence, calculation, collective responsibility, complacency, and constraints when compared to pretest scores. Demographic information collected included gender, age range, race, level of education, job title, and length of employment at the facility. Descriptive statistics were used to provide an overview of the project sample. IBM SPSS version 27 was used for statistical analysis. Statistical significance was defined as $p \leq .05$.

Ordinal level data collected from the 5C Likert scale pre-and-post intervention was analyzed using the Wilcoxon signed-rank test. The Vargha and Delaney (A) effect size measures were utilized to determine the clinical significance of intervention, using values of small (.56), medium (.64), and large (.71).

Evaluation

Overall Demographics

Of the 81 employees at the Assisted Living facility, 60 participated in the QI project. All 60 participants completed the pre and posttest 5C scales as well as the demographic survey. The sample was 75% female ($n = 45$), males ($n = 15$, 25%). The predominant age range was 51-60 ($n = 18$, 30%), followed by 41-50 ($n = 16$, 26.7%), 30-40 ($n = 10$, 16.7%), 18-29 ($n = 8$, 13.3%), 61-70 ($n = 7$, 11.7%), and 71 and older ($n = 1$, 1.7%). The race was predominantly black/African American ($n = 27$, 45%) with sixteen Hispanic or Latino (26.7%), seven white (11.7%), six Asian (10%), and four indicated that they are a combination of two or more races (6.7%). The predominant level of education was high school ($n = 27$, 45%), followed by some college ($n = 19$, 31.7%), bachelor's degree ($n = 7$, 11.7%), associate degree ($n = 4$, 6.7%), and master's degree ($n = 3$, 5%). The predominant job title was Wellness Department Resident Services Aide/Certified Medication Aide ($n = 29$, 48.3%). Nine were dining staff (15%), housekeeping made up 13.3% ($n = 8$), four administration employees (6.7%), activities personnel made up 6.7% ($n = 4$), three Licensed Practical Nurses (5%), one Wellness Department Registered Nurse (1.7%), one maintenance employee (1.7%), and one concierge (1.7%).

5C Psychological Antecedents of Vaccination Scale (5C Scale)

Confidence Scores. When comparing the 5C Scale scores at the two timepoints, the Wilcoxon Signed Rank Test revealed a large statistically significant increase in confidence scores associated with the following questions: "I am confident that vaccines are safe" ($p < .001$, $A = 13.5$), "Vaccines are effective" ($p < .001$, $A = 14.7$), and "I am confident that public authorities decide in the best interest of the community" ($p < .001$, $A = 13.3$).

Complacency Scores. In examining the pre and post 5C Scale results related to complacency, the Wilcoxon Signed Rank Test detected a large statistically significant decrease for complacency associated with the following questions: "Vaccinations are unnecessary"

($p < .001$, $A = 13.5$), “My immune system is strong enough to protect me” ($p < .001$, $A = 13.4$), and “Vaccine preventable diseases are not severe enough to warrant vaccination” ($p < .001$, $A = 11.3$).

Constraints Scores. In examining the pre and post 5C Scale scores for questions pertaining to constraints, the Wilcoxon Signed Rank Test revealed a large statistically significant decrease in scores for the following questions: “Everyday stress prevents me from getting vaccinated” ($p = .005$, $A = 11.4$), “It is inconvenient to receive vaccinations” ($p = .003$, $A = 12.0$), and “Visiting the doctor is uncomfortable” ($p = .003$, $A = 11.3$).

Calculation Scores. In examining the pre and post 5C Scale scores of questions associated with calculation, the Wilcoxon Signed Rank test discovered a large statistically significant increase for the following questions “I weigh the benefits and risks when making a decision about vaccines” ($p < .001$, $A = 14.0$), “I closely consider whether a vaccine is useful to me” ($p < .001$, $A = 12.4$), and “It is important to fully understand the topic before vaccination” ($p < .001$, $A = 12.5$).

Collective Responsibility Scores. In examining the pre and post 5C Scale scores of questions related to collective responsibility, the Wilcoxon Sign Rank Test detected a large statistically significant increase in scores for the following question: “When everyone is vaccinated, I do not need vaccination too” ($p < .001$, $A = 13.8$), “I get vaccinated to protect people with weaker immune systems” ($p < .001$, $A = 14.7$), and “Vaccination is a collective action to prevent spread of diseases” ($p < .001$, $A = 14.3$).

Vaccination Rates. In examining the employee vaccination rates, it was discovered that 8% of the employees ($n = 7$) received the influenza vaccine in 2022. After the educational intervention was implemented in 2023, the influenza vaccination rate increased to 36.5% ($n = 31$).

Conclusions

The purpose of the QI project was to increase the employee influenza vaccination rate of an assisted living facility. In 2022, 7 employees received the influenza vaccine. After the educational intervention in 2023, 32 employees were vaccinated for influenza, bringing the vaccination rate from 8% to 36.5%. The primary project objective of a 2% increase in influenza vaccination rates was met with a 342.8% increase in vaccination rates after implementation of the project. The secondary objectives were to achieve a 5% increase in increase in posttest employee survey scores related to confidence, calculation, and collective responsibility and a 5% decrease in posttest survey scores related to complacency and constraints when compared to pretest employee survey scores. The objective for confidence was met with a 13.3% increase in posttest survey scores. The questions related to confidence had pretest median scores of 5, while the posttest scores had median scores of 6, 6, and 5. Calculation saw an increase of 20% in pretest survey scores. Median scores for the 3 questions related to calculation were 5 and the posttest median scores were 6. The collective responsibility objective was unmet, with a 0% increase in posttest scores. The median pretest and posttest scores for the questions related to collective responsibility were unchanged at 6. The objective for complacency was met with a 47.8% decrease in posttest scores. Median pretest scores for complacency were 3.5, 4, and 4 and the median posttest scores for all were 2. The objective for decreasing constraints scores was unmet, with a 0% decrease, and the median pretest and posttest scores remained unchanged at 2 for all of the questions related to constraints. The results suggest that the educational intervention had a substantial impact on the improvement of vaccination rates.

Stakeholder Recommendations

The educational intervention has shown a positive effect on the participant's perception of the influenza vaccine and on vaccine acceptance within the assisted living facility. It is reasonable to offer educational sessions for staff employed at the other locations within the organization prior to offering the vaccine to the staff.

Strengths and Limitations

A strength of this QI project is the statistical and clinical significance of the primary and secondary objectives. The project demonstrated a significant increase in vaccination rates and statistical significance for all 15 questions in the 5C Scale survey. The use of a convenience sample was a limitation. Ultimately, this QI project contributes to the improvement of staff influenza vaccination rates.

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Appendix A: D1 Form

DNP D1 Form



DNP Residential Project Committee Appointment Request

Student's Name: Melissa Marino
Student's Number: 14393231
Date Submitted: 5/30/23

I request that the faculty members listed below be appointed to serve as my Residential Project committee.

Dr Jan Sherman

Name of Chair*

Signature, Chair of Committee

Dr Rebecca Sidberry

Signature, Member

Member*

Maureen Scalesi

Signature, Member

Member*

Member*

Signature, Member

Signature of Student

*Please type or print

Signature of Director of DNP Program, School of Nursing

To be completed during the semester enrolled in: N9080 Section 1 DNP Residency Project

