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Preparedness of community and hospital pharmacists in immunization of vaccine to patients

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Abstract

Immunization is a method by which a person becomes sheltered from infectious diseases, extricating millions of lives every year. Vaccines reduce risk of acquiring diseases by functioning your body's natural defenses to strengthen protection. Immunization is a key component of primary health care. With the increasing need for immunizers, pharmacists were trained and instated to be allowed and able to provide immunization to patients. This study aimed to know how community and hospital pharmacists are prepared in immunization of vaccines to patients whether in terms of training, credentials, and willingness. The authors sent out online surveys to pharmacists working in the hospital and community sectors. Using questions following a Likert scale format, the following categories of data were gathered: Demographic profile, perceived level of effectiveness of vaccines per demographic profile, level of preparedness in immunization of vaccines per demographic profile, and significant difference in the perceived level of effectiveness of vaccines per demographic profile. The subsequent data were then consolidated and interpreted, with the results being: majority of respondents obtaining a mean score obtained mean score is within 2.50 to 3.49 which is verbally described as "neutral" and interpreted as "Uncertain whether vaccines are effective or not". In perceived level of preparedness per demographic profile, respondents who were above 30 years old, male respondents, and respondents who had more than 5 years of work experience obtained mean scores that are within 3.50 to 4.49 which is verbally described as "Agree" and interpreted as "Prepared in Immunization of Vaccine". For Test of significant difference on Perceived Level of Effectiveness on Vaccine, across sub-levels of each demographic profile, the computed p-values are greater than .05 alpha level which is not significant and null hypothesis is accepted. For Test for Significant Difference on Level of Preparedness in Immunization of Vaccine, demographic profiles such as age, civil status, work experience, and field of work, the computed p-values are greater than .05 alpha level. This would mean that there is no significant difference and null hypothesis is accepted. However, for sex and demographic profile, the computed p-values are less than .05 alpha level. This would mean that there is significant difference and null hypothesis is rejected. Based on these findings, the researchers concluded that Respondents are uncertain whether the vaccine is effective or not and are uncertain if they are prepared in immunization of vaccines or not. Across all respondents, they perceived uncertainties with the use of vaccines. Age, civil status, years of experience, and field of work has nothing to do with uncertainties in being prepared with immunization of vaccine.

Keywords: Community pharmacist, hospital pharmacist, immunization, vaccines, immunizers, infectious disease, effectiveness.

Introduction

Pharmacists are often the most accessible healthcare providers and the initial point of contact for patients with the healthcare system in many communities. They may be the sole healthcare practitioner available to patients in rural and underserved areas, as well as in areas where physicians are in short supply. If barriers to care are removed, pharmacists working in hospitals, clinics, physician offices, and community settings are educated to treat infectious diseases and can dramatically increase access to care (ASHP, 2020; Hedima et al., 2021).

Due to the complexities of vaccine rejection and vaccine hesitation, the pharmacist is viewed as a professional person in the health sector who is qualified to promote social accountability with the goal of increasing consent when it comes to vaccination. Pharmacists have been recognized as a new professional group that could help the national health service with vaccine awareness and administration campaigns (Petrelli et al., 2019).

Pharmacists, as established advocates, educators, and qualified vaccine providers, have a vital role to play in promoting and supporting vaccination uptake. The challenges and barriers to pharmacist vaccination are multifaceted, and they must be addressed with appropriate solutions (Echano et al., 2016). By overcoming these obstacles, pharmacists will be able to play a larger role as vaccine providers, resulting in increased public access to vaccination and accurate and reliable vaccine information (Poudel et al., 2019; Ramirez et al., 2017).

Vaccination program underutilization is still a major public health issue (Rauch et al., 2018). Pharmacists function as vaccine instructors, facilitators, and administrators in various jurisdictions. Even though pharmacists have been associated with vaccines in various ways for many years, there has yet to be a comprehensive review evaluating pharmacists' impact in these three positions. Immunization uptake increased due to pharmacist involvement in immunization, whether as educators, facilitators, or administrators of vaccines (Isenor et al., 2016; Pollard et al., 2021).

Methodology

Research Design

This study used the descriptive method of the survey type of research which describes and interprets data and characteristics about preparedness of community and hospital pharmacists in immunization of vaccine to patients.

The Sample

Table 1 shows the frequency distribution per demographic profile of respondents. For age, five (5) or 9 percent of the respondents are above 30 age, four (4) or 7 percent are ages 26 to 30 years old, and 45 or 83 percent are ages 22 to 25 years old.

For sex, eight (8) or 15 percent are male respondents and 46 or 85 percent are female respondents. For Civil Status, 50 or 93 percent are single respondents and four (4) or 7 percent are married respondents.

For work experience, five (5) or 9 percent work as pharmacists for more than five (5) years. Fifteen (15) or 28 percent work as pharmacists for two (2) to five (5) years and 34 or 63 percent work as pharmacists for less than two (2) years. For the field of work, 22 or 41 percent are Hospital Pharmacists and 32 or 59 percent are community pharmacists.

For source of information on immunization, 25 or 46 percent get immunization information on social media, eight (8) or 15 percent get immunization information on television, and 21 or 39 percent get immunization information on websites (e.g., WHO, CDC, John Hopkins Medicine).

Table 1. Frequency distribution per demographic profile of respondents (n=54)

Demographic Profile		Frequency	Percent
Age	Above 30	5	9
	26-30	4	7
	22-25	45	83
Sex	Male	8	15
	Female	46	85
Civil Status	Single	50	93
	Married	4	7
Work Experience	More than 5 years	5	9
	2-5 years	15	28
	Less than 2 years	34	63
Field of Work	Hospital	22	41
	Community	32	59
Source of Information	Social Media	25	46
	Television	8	15
	Websites (WHO, CDC, John Hopkins Medicine, etc.)	21	39

Sampling Procedure

The researchers used convenience non-probability sampling to get respondents who are willing to participate in the study. It is a sort of non-probability sampling in which a sample is taken from a population segment that is close to hand. For pilot testing, this form of sampling is ideal.

Data Gathering Procedure

The following procedure were chronologically followed:

a. The researchers presented the research title subject for approval. Once the research title is selected and approved, the researcher does an online reference and related research to enhance the literature and related studies.
b. The research was developed, proposed, and revised based on the recommendations of the panel members.
c. Since it was not feasible to conduct a physical data gathering, the researcher decided to utilize online platforms to make data gathering possible.
d. The researchers developed a self-made test that measured the level of effectiveness of vaccines and level of preparedness in immunization of vaccines. Items were validated by subject matter experts.
e. The self-made survey questionnaires were converted to online Google Survey so that respondents can answer those questionnaires online.
f. Informed consent and confidentiality were established and indicated in the first part of the survey questionnaire that the data will serve only the purpose of the study and will be kept with highest confidentiality.
g. Once data gathering is done, the researcher collates, tallied, and statistically analyzed with the aid of a statistician.

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Statistical Analysis

Frequency. This is getting the number of respondents per sub-level of each demographic profile.

Percentage. This is to get the proportion or representation of a sub-level of each demographic profile.

Mean. This is to get the average for the level of effectiveness of Covid-19 vaccine and level of preparedness in immunization of vaccines per sub-level of each demographic profile.

T-Test for Independent Samples. This is to get test for significant difference for demographic profiles with two sub-levels such as Sex, Civil status, Field of work and Infection Control Training.

One-Way Analysis of Variance. This is to test for significant differences for demographic profiles with more than two sub-levels such as age and years of experience.

Fisher LSD Test. This is a Post-Hoc Test to establish specific difference between groups when ANOVA analysis resulted with significance.

Table 2. Reference scale for the survey responses

Rating Scale	Arbitrary Scale	Verbal Interpretation
5	5.00 – 4.21	Strongly Agree
4	4.20 – 3.41	Agree
3	3.40 – 2.61	Neutral
2	2.60 – 1.81	Disagree
1	1.80 – 1.0	Strongly Disagree

Results and Discussion

Table 3. Perceived level of effectiveness of vaccines per demographic profile

Demographic Profile		Mean	Verbal Description	Verbal Interpretation
Age	Above 30	3.31	Neutral	Uncertain whether vaccine is effective or not
	26-30	3.32	Neutral	Uncertain whether vaccine is effective or not
	22-25	3.37	Neutral	Uncertain whether vaccine is effective or not
Sex	Male	3.36	Neutral	Uncertain whether vaccine is effective or not
	Female	3.36	Neutral	Uncertain whether vaccine is effective or not
Civil Status	Single	3.35	Neutral	Uncertain whether vaccine is effective or not
	Married	3.48	Neutral	Uncertain whether vaccine is effective or not
Work Experience	More than 5 years	3.42	Neutral	Uncertain whether vaccine is effective or not
	2-5 years	3.31	Neutral	Uncertain whether vaccine is effective or not
	Less than 2 years	3.37	Neutral	Uncertain whether vaccine is effective or not
Field of Work	Hospital	3.39	Neutral	Uncertain whether vaccine is effective or not
	Community	3.34	Neutral	Uncertain whether vaccine is effective or not
Total		3.36	Neutral	Uncertain whether vaccine is effective or not

Table above shows the perceived level of effectiveness of vaccines per demographic profile. For Age, respondents who are above 30 years old obtained a mean score of 3.31 with a verbal description of "Neutral" and interpretation of "Uncertain whether vaccines are effective or not". Respondents whose ages fall between 26 to 30 years old obtained a mean score of 3.32 with a verbal description of "Neutral" and interpretation of "Uncertain whether vaccines are effective or not". Respondents whose ages fall between 22 to 25 years old obtained a mean score of 3.37 with a verbal description of "Neutral" and interpretation of "Uncertain whether vaccines are effective or not".

For Sex, male respondents obtained a mean score of 3.36 with a verbal description of "Neutral" and interpretation of "Uncertain whether vaccines are effective or not" while female respondents obtained a mean score of 3.36 with a verbal description of "Neutral" and interpretation of "Uncertain whether vaccines are effective or not".

For Civil Status, single respondents obtained a mean score of 3.35 with a verbal description of "Neutral" and interpretation of "Uncertain whether vaccines are effective or not" while married respondents obtained a mean score of 3.48 with a verbal description of "Neutral" and interpretation of "Uncertain whether vaccines are effective or not".

For Work Experience, respondents who are working as pharmacists for more than five (5) years obtained a mean score of 3.42 with a verbal description of "Neutral" and interpretation of "Uncertain whether vaccines are effective or not". Respondents who are working as pharmacists for two to five years obtained a mean score of 3.31 with a verbal description of "Neutral" and interpretation of "Uncertain whether vaccines are effective or not". Respondents who are working as pharmacists for less than two (2) years obtained a mean score of 3.37 with a verbal description of "Neutral" and interpretation of "Uncertain whether vaccines are effective or not".

For Field of Work, respondents who are hospital pharmacists obtained a mean score of 3.39 with a verbal description of "Neutral" and interpretation of "Uncertain whether vaccines are effective or not" and respondents who are community pharmacists obtained a mean score of 3.34 with a verbal description of "Neutral" and interpretation of "Uncertain whether vaccine is effective or not".

Table 4. Level of preparedness in immunization of vaccines

Demographic Profile		Mean	Verbal Description	Verbal Interpretation
Age	Above 30	3.94	Agree	Prepared in Immunization of Vaccine
	26-30	3.38	Neutral	Uncertain if they are prepared or not
	22-25	3.29	Neutral	Uncertain if they are prepared or not
Sex	Male	3.83	Agree	Prepared in Immunization of Vaccine
	Female	3.27	Neutral	Uncertain if they are prepared or not
Civil Status	Single	3.35	Neutral	Uncertain if they are prepared or not
	Married	3.46	Neutral	Uncertain if they are prepared or not
Work Experience	More than 5 years	3.71	Agree	Prepared in Immunization of Vaccine
	2-5 years	3.29	Neutral	Uncertain if they are prepared or not
	Less than 2 years	3.33	Neutral	Uncertain if they are prepared or not
Field of Work	Hospital	3.49	Neutral	Uncertain if they are prepared or not
	Community	3.26	Neutral	Uncertain if they are prepared or not
Total		3.36	Neutral	Uncertain if they are prepared or not

Table above shows the level of preparedness in immunization of vaccines per demographic profile. For age, respondents who are above 30 years old obtained a mean score of 3.94 with a verbal description of "Agree" and interpretation of "Prepared in Immunization of Vaccine". Respondents whose ages fall between 26 to 30 years old obtained a mean score of 3.38 with a verbal description of "Neutral" and interpretation of "Uncertain if they are prepared or not". Respondents whose ages fall between 22 to 25 years old obtained a mean score of 3.29 with a verbal description of "Neutral" and interpretation of "Uncertain if they are prepared or not".

For Sex, male respondents obtained a mean score of 3.83 with a verbal description of "Agree" and interpretation of "Prepared in Immunization of Vaccine" while female respondents obtained a mean score of 3.27 with a verbal description of "Neutral" and interpretation of "Uncertain if they are prepared or not".

For Civil Status, single respondents obtained a mean score of 3.35 with a verbal description of "Neutral" and interpretation of "Uncertain if they are prepared or not" while married respondents obtained a mean score of 3.46 with a verbal description of "Neutral" and interpretation of "Uncertain if they are prepared or not".

For Years of Experience, respondents who are working as pharmacists for more than five (5) years obtained a mean score of 3.71 with a verbal description of "Agree" and interpretation of "Prepared in Immunization of Vaccine". Respondents who are working as pharmacists for two to five years obtained a mean score of 3.29 with a verbal description of "Neutral" and interpretation of "Uncertain if they are prepared or not". Respondents who are working as pharmacists for less than two (2) years obtained a mean score of 3.33 with a verbal description of "Neutral" and interpretation of "Uncertain if they are prepared or not".

For Field of Work, respondents who are Hospital Pharmacist obtained a mean score of 3.49 with a verbal description of "Neutral" and interpretation of "Uncertain if they are prepared or not" and respondents who are Community Pharmacist obtained a mean score of 3.26 with a verbal description of "Neutral" and interpretation of "Uncertain if they are prepared or not".

Table 5. Test for significant difference on perceived level of effectiveness on vaccines

Demographic Profile	p-value	Significance	Ho Decision
Sex	0.964	Not Significant	Failed to Reject
Age	0.817	Not Significant	Failed to Reject
Civil Status	0.169	Not Significant	Failed to Reject
Years of Experience	0.581	Not Significant	Failed to Reject
Field of Work	0.488	Not Significant	Failed to Reject

Significant at .05 alpha level

Table above shows the Test for Significant Difference on Perceived Level of Effectiveness on Vaccine. For Sex, the p-value is 0.964 which is greater than .05 alpha level. This would mean that there is no significant difference and null hypothesis failed to reject. Hence, regardless of sex, the difference in the mean score on Perceived Level of Effectiveness on Vaccine is not significantly different.

For Age, the p-value is 0.817 which is greater than .05 alpha level. This would mean that there is no significant difference and null hypothesis failed to reject. Hence, regardless of age, the difference in the mean score on Perceived Level of Effectiveness on Vaccine is not significantly different.

For Civil Status, the p-value is 0.169 which is greater than .05 alpha level. This would mean that there is no significant difference and null hypothesis failed to reject. Hence, regardless of civil status, the difference in the mean score on Perceived Level of Effectiveness on Vaccine is not significantly different.

For Years of Experience, the p-value is 0.581 which is greater than .05 alpha level. This would mean that there is no significant difference and null hypothesis failed to reject. Hence, regardless of the number of years of experience in the Pharmacy profession, the difference in the mean score on Perceived Level of Effectiveness on Vaccine is not significantly different.

For the Field of Work, the p-value is 0.488 which is greater than .05 alpha level. This would mean that there is no significant difference and null hypothesis failed to reject. Hence, regardless of being a hospital or community pharmacist, the difference in the mean score on Perceived Level of Effectiveness on Vaccine is not significantly different.

Table 6. Test for significant difference on perceived level of preparedness in immunization of vaccines

Demographic Profile	p-value	Significance	Ho Decision
Sex	0.038	Significant	Reject
Age	0.105	Not Significant	Failed to Reject
Civil Status	0.797	Not Significant	Failed to Reject
Years of Experience	0.442	Not Significant	Failed to Reject
Field of Work	0.236	Not Significant	Failed to Reject

Significant at .05 alpha level

Table above shows the Test for Significant Difference on Perceived Level of Effectiveness on Vaccine. For Sex, the p-value is 0.038 which is less than .05 alpha level. This would mean that there is significant difference and null hypothesis is rejected. Hence, male respondents are prepared for Immunization of Vaccine than female respondents.

For Age, the p-value is 0.105 which is greater than .05 alpha level. This would mean that there is no significant difference and null hypothesis failed to reject. Hence, regardless of age, the difference in the mean score on Level of Preparedness in Immunization of Vaccine is not significantly different.

For Civil Status, the p-value is 0.797 which is greater than .05 alpha level. This would mean that there is no significant difference and null hypothesis failed to reject. Hence, regardless of civil status, the difference in the mean score on Level of Preparedness in Immunization of Vaccine is not significantly different.

For Years of Experience, the p-value is 0.442 which is greater than .05 alpha level. This would mean that there is no significant difference and null hypothesis failed to reject. Hence, regardless of the number of years of experience in the pharmacy profession, the difference in the mean score on Level of Preparedness in Immunization of Vaccine is not significantly different.

For the Field of Work, the p-value is 0.236 which is greater than .05 alpha level. This would mean that there is no significant difference and null hypothesis is accepted. Hence, regardless of being a hospital or community pharmacist, the difference in the mean score on Level of Preparedness in Immunization of Vaccine is not significantly different.

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Conclusion

Based on the findings, respondents are uncertain whether the vaccine is effective or not. Since the vaccine is developed over time and not just in the span of a year, the urgency of its usage might lead to uncertainties whether the vaccine is effective or not or there might be adverse effects. Respondents are also uncertain if they are prepared in immunization of vaccines or not. Age, sex, civil status, years of experience, and field of work have nothing to do with the uncertainties whether the vaccine is effective or not. Across all respondents, they perceived uncertainties with the use of vaccines. Age, Civil Status, Years of Experience, and field of work have also nothing to do with uncertainties in being prepared with immunization of vaccine.

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