



## LEVEL OF PREPAREDNESS OF THE FILIPINO PHARMACISTS AS PROVIDERS OF IMMUNIZATIONS FOR ADULT PATIENTS

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### ABSTRACT

The objective of this study is to investigate the level of preparedness of the Filipino Pharmacists in providing immunizations to adult patients particularly in their knowledge, behavior and skill as well as their assessment of the community pharmacy as an environment for immunization. To do this, original validated questionnaires were given to 353 Filipino Pharmacists from the major practice fields in the country – community, hospital, academe and industrial where 113 responded. The questionnaires were then consolidated and treated statistically to measure the level of preparedness reported in this study. About this study, it was found out that the Filipino Pharmacists are moderately prepared as to knowledge ( $2.95\bar{x}$  from a scale of 5 and  $0.96\sigma$ ) and skill ( $3.11\bar{x}$  and  $1.11\sigma$ ) but very prepared behavior-wise ( $3.84\bar{x}$  and  $1.04\sigma$ ). On the other hand, the community pharmacy environment in the Philippines is perceived to be moderately suitable for immunization by the respondents. The results show that the Filipino Pharmacists are very prepared ( $3.56\bar{x}$ ) to provide immunization as part of their role. However, the Community Pharmacists who are the ones to immunize among the practice fields are only moderately prepared. The government needs to address the concerns of the Pharmacists in providing immunization like identifying and handling AE ( $2.81\bar{x}$  and  $1.12\sigma$ ), knowledge in the principles of IM administration ( $2.83\bar{x}$  and  $1.15\sigma$ ) and handling parenteral ( $2.91\bar{x}$  and  $1.15\sigma$ ) as well as the training fee to provide immunizations ( $3.23\bar{x}$  and  $1.39\sigma$ ) which is the major concern affecting behavior.

**Keywords:** *Filipino, Immunization Providers, Pharmacists, Immunization, Vaccination*

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## 1. INTRODUCTION

The Department of Health (DOH) in the Philippines released an advisory [1] last September 9, 2014 regarding its plan to train and authorize FDA-licensed Community Pharmacists to administer vaccines and other immune-products for adult subjects/patients. In the near future, guidelines will be released to support this government initiative which is actually a concept patterned from the United States [2]. While the authorities are still working on these guidelines, it is of utmost importance to consult the pharmacists especially those in community practice who will later be immunization providers as to their views on this recent healthcare development. Information as to

which products is to be administered in the local immunization time table [3] as well as the extent of immunization like using advanced products [4] are not yet disclosed but this study is important as it aims to answer the basic questions as to the preparedness of the Pharmacists when it comes to their knowledge, skills and behavior in relation to immunization as well as their assessment on the drugstore environment for such activity.

Early articles involve the increasing participation of the Pharmacists in the United States in immunizations [5] as well as its success in increasing the national vaccination rate like in influenza high-risk patients [6].

The quality of service delivered has also been perceived to have good overall satisfaction [7]. These existing studies though are from the United States where Pharmacists are known to have conducted vaccination since the early 1990s and there have been no studies yet in the Philippine setting. There are also numerous immunization literatures that is all about the National Immunization Advisory Groups (NITAGs) of different countries which is related to this study in some extent like the importance in the consideration of local disease burden and country specific cost-effectiveness before carrying out immunization decisions [8] which makes a good criteria for selection as to which vaccine products may be provided by the Pharmacists, the importance of an immunization handbook[9] in which the Pharmacists adult vaccines may be reflected, the role of evidence-based literatures in implementing health policies like in Pharmacists immunization[10], the administration of a NITAG in different countries where a Pharmacist may be added as a part of the decision-makers due to their recent involvement in Philippine Immunization[11-16] it is also important to note that the United States has a strong orientation to Pharmacoeconomics [17] when making immunization policies and the best practice of doing a systematic secondary validation process and not merely relying national statistics[18]. These NITAG studies are good framework for health policy decision making including Pharmacists immunization in the Philippines. In this current study, the level of preparedness of the Filipino Pharmacists as providers for adult immunization is being assessed; this study is timely as the authorities are still drafting the guidelines for this upcoming regulation on the immunization role of Community Pharmacists. There is still no similar study conducted using Philippine settings so the information gathered from this work is of great help, it could be a good basis for planning the total routine immunization cost [19] as well as examining other alternatives of vaccination delivery available [20].

## 2. METHODS OR MATERIALS & METHODS

This research is cross-sectional utilizing a rating scale type of questionnaire on the aspects [21] of perception – knowledge, skill and behavior with 5 questions in each of the three components that are scaled from 1 to 5 of the Likert scale. This utilizes opportunity sampling in which available and Filipino Pharmacists are given the questionnaire to answer. Data were tallied and analyzed using Microsoft Excel [22].

### 2.1. Demographics of the respondents

The demographics considered in this study are the age, gender, pharmaceutical education, years of practice in all areas of pharmacy and the current field of pharmacy practice. The total number of respondents who answered the questionnaire was 113 but the entire population including those who did not return the questionnaire is 353[23]. Out of the 353, 51 Community Pharmacists responded while 227 did not, 18 Hospital Pharmacists responded while 6 did not, 33 Pharmacist Academicians responded while 3 did not, 10 Industrial Pharmacists responded while 4 did not and 1 outlier was removed from the data analysis.

### 2.2. Preparation of the questionnaire

The first part of the questionnaire is the demographics where age, gender, educational attainment (bachelor's, master's and doctorate degrees), years of practice in all pharmacy areas and the current field of pharmacy practice were asked. The questionnaire was also prepared with the knowledge [24], skill and behavior components. One vital addition that is important especially in the Philippine setting is the environment [25-27] of the drugstores as immunization locations so it was also added to the questionnaire. The last part of the questionnaire is a question on the preferred participation of the Pharmacists in immunization activities [28] whether an advocate (the one who campaigns on the importance of immunization) a partner (who hosts nurses and doctors for immunization activities) or a provider) where the pharmacist himself administers the vaccine).

The questionnaire was then validated by 4 pharmacists, 1 nurse, 1 radiologic technologist and 1 medical technologist who are all healthcare practitioners [29] in their own field as well as experienced researchers and academician. It is important for a non-pharmacist to validate the questionnaire because in the Philippines, social researches are not extensively taught and accepted in Pharmacy schools yet and the experimental research remains the specialization of the Pharmacists contrary to the developed countries where Pharmacists practice social and modern clinical research orientation.

### 2.3. Administration of the questionnaire to Community Pharmacists

The questionnaire where administered in several provinces in the Philippines by visiting every pharmacy accessible that is open for business during the time of visit including Cavite (Bacoor, Imus and Damariñas), Metro Manila (Quezon City, Pasig City, Makati City) and Misamis Oriental (Salay, Balingasag, Villanueva, Tagoloan, Medina and Jasaan) and Cagayan de Oro City.

### 2.4. Administration of the questionnaire to Hospital Pharmacists

The questionnaire was also administered to Hospital Pharmacists [30] in the Cavite area where most of the major hospitals were covered. These hospitals were classified as secondary hospitals and there were 3 of them included in this study, all of these hospitals are privately owned. Another 4 hospitals were also covered in Cagayan de Oro City comprising of 2 tertiary, 1 secondary and 1 primary hospitals where only 1 of the tertiary hospital is government owned and the rest are private

### 2.5. Administration of the questionnaire to Industrial Pharmacists

Administration of the questionnaires to Industrial Pharmacists was made possible through distributing it during 2 specialty national conventions attended by Regulatory Affairs Officers and/or Company Pharmacists. Few questionnaires were completed from visits at regulatory offices like FDA Philippines, PDEA (Philippine Drug Enforcement Agency), DDB (Dangerous Drugs Board) and the satellite FDA offices for Medical Devices in Tayuman, Manila.

## 2.6. Administration of the questionnaire to Pharmacists in the academe

Administration of the questionnaires to Pharmacist Academicians were also made possible through attending 2 national academic conventions for pharmacists as well as distributing it to 3 major universities in the country. There were also few questionnaires from academicians at provincial pharmacy schools.

## 2.7. Statistical analysis

The knowledge, skill and behavior as well as the over-all preparedness were analyzed using mean and standard deviation. The level of preparedness as to age and years of experience were correlated using Spearman's rho while Kruskal Wallis [31] test was used for the level of pharmaceutical education against the level of preparedness. For the immunization environment, this was analyzed using percentage, mean and standard deviation. Percentage was also used to analyze the preferred role of the respondents in immunization as well as their demographics.

## 3. RESULTS & DISCUSSION

### 3.1. Demographics of the respondents

The Filipino Pharmacists as providers of immunization is generally very prepared (3.56). The Community Pharmacists though who are the ones to administer the immunization is only moderately prepared (3.08 $\bar{x}$  and 0.92 $\sigma$ ) while among the major practice fields of pharmacy, the Pharmacists Academicians are the ones that are very prepared (3.75 $\bar{x}$  and 0.67 $\sigma$ ) while the Hospital Pharmacists are moderately prepared (3.39 $\bar{x}$  and 0.60 $\sigma$ ). Those in Industrial Pharmacy practice are moderately prepared (2.59 $\bar{x}$  and 0.79 $\sigma$ ) as well.

### 3.2. Knowledge, skill and behavior

The Filipino Pharmacists are generally moderately prepared (2.95 $\bar{x}$  and 0.96 $\sigma$ ) in the knowledge part but very prepared in their immunization behavior (3.84 $\bar{x}$  and 1.04 $\sigma$ ). For knowledge, the aspects that are moderately prepared are in identifying and handling adverse event during immunization (2.81 $\bar{x}$  and 1.12 $\sigma$ ), the principles of intramuscular administration (2.83 $\bar{x}$  and 1.15 $\sigma$ ) and the handling of parenteral products for IM administration (2.91 $\bar{x}$  and 1.15 $\sigma$ ). For behavior, the Pharmacists are very prepared to learn pharmaceutical care specific to vaccination (4.09 $\bar{x}$  and 1.07 $\sigma$ ), undergo training for vaccination (4.05 $\bar{x}$  and 1.20 $\sigma$ ) and provide pharmaceutical care specific to vaccination (4.04 $\bar{x}$  and 1.04 $\sigma$ ) but they are only moderately prepared to pay for a vaccination training (3.23 $\bar{x}$  and 1.39 $\sigma$ ). For skill, knowing the right drug for immunization is the part where the Pharmacists are moderately prepared (3.00 $\bar{x}$  and 1.12 $\sigma$ ).

### 3.3. Immunization environment in the Philippine Community Pharmacy

The Filipino Pharmacists are generally neutral regarding their perception on the suitability of the Community Pharmacy for immunization (3.48 $\bar{x}$  and 0.98 $\sigma$ ). Most of them though agree that there is enough availability of immunization devices in the drugstore to carryout immunization (3.75 $\bar{x}$  and 1.07 $\sigma$ ) as well as the storage capacity of the drugstore for the vaccines (3.70 $\bar{x}$  and 1.22 $\sigma$ ) while the suitability of the drugstore environment (3.36 $\bar{x}$  and 1.30 $\sigma$ ) and the availability of qualified pharmacist (3.36 $\bar{x}$  and 1.32 $\sigma$ ) are perceived to be neutral

among the respondents as well as the availability of vaccines in the drugstore (3.21 $\bar{x}$  and 1.16 $\sigma$ ).

### 3.4. Age, years of experience and pharmacy education

There is an observed significant positive correlation with the level of preparedness and of the pharmacy education ( $p = <0.001$  at 0.05 significance level). The higher the degree in pharmacy, like those who finished a Master's degree or a PhD degree, the higher is the levels of preparedness as to knowledge, skill and behavior while a significant negative correlation is observed with age ( $p = 0.680$  at 0.05 significance level, 2-tailed) and years of experience ( $p = 0.799$  at 0.05 significance level, 2-tailed). The older and the more experienced is the pharmacists, the level of preparedness towards immunization is low.

### 3.5. Preferred role in immunization among Filipino Pharmacists

Majority of the Filipino Pharmacists prefers the Advocate role at 46.9% (53n) while 32.7% (37n) prefers to take part of the immunization as Partners. Those who prefers to be Providers only accounts for 20.4% (23n) of the entire population. Among the respondents from the Community Pharmacy, only 13.7% (7n) chooses to be a provider while 41.2% (21n) chooses being a Partner and the majority at 45.1% (23n) prefers the Advocate role. The results from the population of Community Pharmacists are parallel to the results from the Pharmacists in the entire practice fields.

The Filipino Pharmacists are very prepared in providing immunization to the public and the Philippine government seems to forecast the gaps in this undertaking properly by focusing on the skill development[1] which is the part perceived by most of the respondents as moderately prepared. The government should also look at the Community Pharmacists specifically as among the major practice fields of the profession, they are the one least prepared, ironically, they are the ones that will provide the immunization. Another thing that needs to be discussed is the possible training fee that will be incurred by the Pharmacists as this is a factor affecting their preparedness, behavior-wise. Looking at existing literatures, the effect of Pharmacists immunization is well received by the public[7] along with increased immunization rate in diseases like influenza [8]. The suggested training contents of the American Society of Health-Systems Pharmacists (ASHP) may be adapted in the Philippines and should address (1) the epidemiology of and patient populations at risk for vaccine-preventable diseases, (2) Public health goals for immunization, (3) Vaccine safety, (4) Screening for contraindications and precautions of vaccination in each patient, (5) Vaccine stability and transportation and storage requirements, (6) Immunologic drug interactions, (7) Vaccine dosing, (8) Proper dose preparation and injection technique, (9), Signs and symptoms of adverse reactions to vaccines, ADR reporting and emergency procedures, (10) Documentation, (11) Reporting to the primary care provider or local health department and (12) Billing[32] as well as the guidelines and standards from the American Pharmacists Association (APhA) [33] Future plans for implementation must also cover decisions on which adult vaccines are to be administered by the Pharmacists and if there are special vaccines needed unique to the country like in the case of the Enterovirus 71 in China[34], the current schedule includes Human papilloma Virus (HPV), Herpes Zoster, Meningococcal,

Typhoid, Rabies, Tetanus-Diphtheria-Acellular Pertussis, Influenza, Hepatitis A, Hepatitis B, Varicella, Measles-Mumps-Rubella (MMR) and Pneumococcal vaccines [35]. There are also other important issues that are not covered in this study that needs to be considered like the other strategies of the government that may be adapted for vaccination [36], the refusal and hesitancy of the Filipinos to vaccination [37], and the pharmacoeconomic aspects [38] like the mathematical modeling that may help in developing health policies in immunization[39]. Also, the problem with “Ghost Pharmacists” in the Philippines where the Pharmacists have their licensed rented[40] and not physically present during Pharmacy hours is also a major factor that reduced the respondents from the Community Pharmacy in this study, it can also be a major problem when the Pharmacy Provider status will be implemented. The Filipino Pharmacists may have few concerns regarding this upcoming role but they are still very prepared to accept the challenge.

#### 4. CONCLUSION

The results show that the Filipino Pharmacists are very prepared ( $3.56\bar{x}$ ) to provide immunization as part of their role. However, the Community Pharmacists who are the ones to immunize among the practice fields are only moderately prepared. The government needs to address the concerns of the Pharmacists in providing immunization like identifying and handling AE ( $2.81\bar{x}$  and  $1.12\sigma$ ), knowledge in the principles of IM administration ( $2.83\bar{x}$  and  $1.15\sigma$ ) and handling parenteral ( $2.91\bar{x}$  and  $1.15\sigma$ ) as well as the training fee to provide immunizations ( $3.23\bar{x}$  and  $1.39\sigma$ ) which is the major concern affecting behavior.

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#### Competing Interests

The author declares that there is no conflict of interest.

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#### Statement

The manuscript has been read and approved by all the authors, that the requirements for authorship as stated earlier in this document have been met, and that each author believes that the manuscript represents honest work

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