University of Ghana http://ugspace.ug.edu.gh

SCHOOL OF PUBLIC HEALTH

COLLEGE OF HEALTH SCIENCES

UNIVERSITY OF GHANA

FEASIBILITY AND ACCEPTABILITY OF THE USE OF COMMUNITY PHARMACIES AS SERVICE POINTS FOR IMMUNISATION IN THE ACCRA METROPOLITAN AREA

BY

ELYSEE AMA BONSU KARIKARI-AGYEMAN

(10598655)

A DISSERTATION SUBMITTED TO THE SCHOOL OF PUBLIC HEALTH, COLLEGE OF HEALTH SCIENCE, UNIVERSITY OF GHANA, LEGON, IN PARTIAL FULFILLMENT OF THE AWARD OF MASTER OF PUBLIC HEALTH (MPH) DEGREE

November, 2017

University of Ghana http://ugspace.ug.edu.gh

DECLARATION

I, Elysee Ama Bonsu Karikari-Agyeman, hereby declare that, with the exception of other people‟s work which has been duly acknowledged, this work is the result of my own original research and that this dissertation, either in whole or in part, has not been presented elsewhere for another degree.

Elysee Ama Bonsu Karikari-Agyeman	……	……
Student	Signature	Date
Dr Reuben Esena	……	……..
Supervisor	Signature	Date

University of Ghana http://ugspace.ug.edu.gh

DEDICATION

I dedicate this piece of work to my husband, Dr. Kofi S. Adimado and my children, Anthony-Marvin and Rose-Ryan for their inspiration, understanding and support throughout my study.

University of Ghana http://ugspace.ug.edu.gh

ACKNOWLEDGEMENT

I give thanks to the Almighty God through Jesus Christ for His everlasting faithfulness, abundant grace, divine infinite wisdom and strength granted me. I will never have been able to come this far without Him. Thank you, Lord.

To my supervisor, Dr. Reuben Kwasi Esena, I am humbled and most grateful for your excellent supervision, constructive comments, guidance and time. You are a mentor to me. I am sincerely and eternally grateful. I appreciate you. Thank you.

Special thanks also goes to Dr. Patricia Akweongo (Lecturer, HPPM) for her advice, **productive** inputs and encouragement.

Finally, I thank the Director of Pharmaceutical Services (MOH), the Registrar of the Pharmacy Council, the President of the Pharmaceutical Society of Ghana (PSGH)and the Deputy Director of EPI, Ghana for their immense support.

University of Ghana http://ugspace.ug.edu.gh

ABSTRACT

Introduction

The purpose of this study was to assess the views of stakeholders such as policy formulators and pharmacists on the introduction of immunisation services using community pharmacies as service points. This is to bridge the gap of the decrease in immunisation coverage currently reported by the Ghana Demography and Health Survey of 2014. The attrition of healthcare staff, which further contributes to this observation, can further be addressed by exploring community pharmacies as service points for immunisation.

The current trend of practice globally in reducing vaccine preventable diseases involves the use of immunisation services at community pharmacies, which has not yet been explored in Ghana. The use of non-traditional settings such as community pharmacies for immunisation services has been enabled through policy, guidelines formulation and training for the provision of this service.

Methodology

This exploratory study used the mixed method involving a qualitative and quantitative approach. The qualitative method involved the use of In-depths Interviews with a developed interview guide with selected policy formulators. The 4 policy formulators were purposively sampled giving four (4) In-depth interviews. Nvivo 10 statistical software was used to analyse the qualitative data, which identified specific themes that helped answer the research question. An adapted structured questionnaire were administered for the quantitative approach with the

University of Ghana http://ugspace.ug.edu.gh

other population of study, the pharmacists. A sample size of 103 pharmacists were selected using a simple random sampling technique. The quantitative data collected from the questionnaire was analysed using Stata 14 where a linear logistic regression module was used in predicting the acceptability of community pharmacies as immunisation service points.

Conclusion

The study provided insight into the current position of policy makers and stakeholders on the capacity, readiness and perception of community pharmacies as service points for the provision of immunisation in the Accra Metropolitan Area. It concluded that community pharmacies will be feasible and accepted as alternate service points for immunisations when the policy and training is in place. There was a high willingness of pharmacists to administer vaccines.

Keywords

Immunisation, Community Pharmacies, Vaccination, Vaccine preventable disease

University of Ghana http://ugspace.ug.edu.gh

TABLE OF CONTENTS

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

LIST OF TABLES

University of Ghana http://ugspace.ug.edu.gh

LIST OF FIGURES

University of Ghana http://ugspace.ug.edu.gh

LIST OF ABBREVIATIONS

AMA	Accra Metropolitan Area
APhA	American Pharmacists Association
BCG	Bacillus Calmette-Guerin
DPT	Diphtheria, Pertussis and Tetanus
EPI	Expanded Program on Immunisation
GAVI	Global Alliance for Vaccines and Immunisation
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Service
GVAP	Global Vaccine Action Plan
GSS	Ghana Statistical Service
FIP	International Pharmaceutical Federation
HPV	Human papillomavirus
JE	Japanese Encephalitis
MDG4	Millennium Development Goal 4
MOH	Ministry of Health
PSGH	Pharmaceutical Society of Ghana
SIA	Supplementary immunization activities

University of Ghana http://ugspace.ug.edu.gh

TB	Tuberculosis
UNICEF	United Nations Children‟s Fund
USA	United States of America
VDP	Vaccine preventable diseases
WHO	World Health Organization

University of Ghana http://ugspace.ug.edu.gh

CHAPTER ONE

INTRODUCTION

1.1 Background of study

Several childhood infectious diseases are prevented primarily through immunisations. Approximately 2-3 million deaths are prevented each year due to immunisation with diphtheria, tetanus, pertussis and measles. Immunisation programmes such as the Expanded Programme on Immunisation (EPI) by WHO since 1974 have increased protection since the end of the 1980‟s from 5% to 83% (measure at 12-23 months of age)(Hughes et al., 2016).

Despite this progress, global coverage remains below the target of 90% of diphtheria-tetanus-pertusis-3 (DPT-3) coverage.

Immunisation prevents illness, disability and deaths from vaccine preventable diseases (VDP) such as cervical cancer, hepatitis B, poliomyelitis, diphtheria, measles, pneumonia, rotavirus diarrhea, rubella virus, tuberculosis and tetanus.

Vaccines remain one of the most cost-effective prevention measures against certain diseases and the Centers for Disease Control and Prevention CDC declared vaccines one of the top public health achievements of the 20th century and have saved many lives since its invention over 200 years ago (Terrie, 2010). The provision of immunisation services in a study in Kenya gave rise to a coverage of 70% of people who otherwise will not have been protected since the invention of vaccination services over 200 years ago (Maina, Karanja, & Kombich, 2013). Its benefits cannot be underestimated.

University of Ghana http://ugspace.ug.edu.gh

According to studies done by Donaldson et al. (Donaldson et al., 2009) on the mortality from the 2009 influenza pandemic, findings supported a vaccination strategy. This prioritizes high risk groups and others outside this group since a substantial minority of deaths occurred within this other group and recommended a wider population vaccination consideration in the 2009 flu pandemic (Donaldson et al., 2009).

Presently, pharmacists in other countries including the United States, United Kingdom, Canada and South Africa among several others are actively engaging in immunisations at the community level at the pharmacies. This targets population who otherwise would have been missed as they collaborate with the healthcare team and enabled legislation allowing the provision of this service to contribute to the public health intervention of vaccine preventable diseases.

It is estimated that 10 million lives are saved annually as access to medication and vaccination are increased (Rosado & Bates, 2016).

The Flu vaccine delivery through pharmacies shows potential for improving convenience for vaccine recipients, according to a recent study conducted on an evaluation of a programme that allows administration of seasonal influenza vaccination to eligible patients at pharmacies (Atkins et al., 2016).

The trend of pharmacy practice in current times globally have not only maintained the traditional role of dispensing but expanded into other roles such as the provision of vaccination services at the community level in pharmacies.

Pharmacists are positioned close to the public at community pharmacies and so are the first point of call for healthcare needs due to ease of accessibility and availability. As experts in

University of Ghana http://ugspace.ug.edu.gh

medications, quality of care is improved as the pharmacist dispenses medications, counsels and provides the needed medication for prescriptions and for simple ailments of common occurrences. This trend of pharmacies providing immunisation services; however, is not yet practiced yet in Ghana. This study therefore sought to explore the feasibility and acceptability of community pharmacies as service points for immunisation in Ghana.

1.2 Problem Statement

Presently immunisation rates among adult fall below desired targets.(Edwards et al., 2015). In a 2016 report released by CDC, adult vaccination coverage remains low for most routinely recommended vaccines (*5*) and below *Healthy People 2020* targets (Williams et al., 2016) . Limited public awareness about vaccination rates, misinformation about vaccines, lack of vaccine requirements, vaccine needs assessment not often included in adult patient care, cost and the financial risk for providers to stock vaccines and provide vaccination services have been identified as contributing factors to this. Other Factors such as inconvenient hours and wait time, general public apathy, concerns and misconception about the safety and efficacy of vaccines, cost and distance to clinics have been known to contribute to low immunisation rates where immunisation rate in 65 and older age group were 66.7% for influenza and 53.8% for pneumonia (Kamal, Madhavan, & Amonkar, 2003).

Hence, practices that have demonstrated to improve vaccination coverage should be used. These practices include assessment of patients‟ vaccination indications by health care providers and routine recommendation and offer of needed vaccines to adults, implementation of reminder-recall systems, use of standing-order programs for vaccination, and assessment of practice-level vaccination rates with feedback to staff members(Williams et al., 2016)

University of Ghana http://ugspace.ug.edu.gh

Furthermore, despite tremendous progress through WHO‟s Expanded Programme on Immunisation (EPI) since 1974, global coverage remains below the target of 90% diphtheria-pertussis-tetanus (DPT-3) coverage.

According to the 2014 GDHS Report (GDHS, 2014) though the coverage for most vaccines have marginally increased over 2008 to 2014, there has been a drop in the percentage of fully immunised children from 79 in 2008 to 77 per cent in 2014 (GDHS, 2014). Furthermore, the GDHS Report indicated a decrease in vaccination coverage especially among children across the 10 regions in Ghana most notably in Western Region, Ashanti Region and also among children in highest wealth quintile (GSS, GHS, & ICF Macro, 2014). This suggests a decline in the coverage of children who will have otherwise been protected against vaccine preventable disease and who now may pose a threat to the community. Among the challenges the EPI in Ghana enumerated are the poor access in hard to reach districts and urban areas and the inadequate staff to provide services required (Ghana Health Service, 2014).

The trend of pharmacy practice in current times globally have not only maintained the traditional role of dispensing but also expanded into other roles such as the provision of vaccination services at the community level in pharmacies. These challenges can be addressed as community pharmacies explore their facilities as alternate non-traditional setting for immunisations services

In Ghana, pharmacist do not administer injections and so do not offer immunisation services. With the introduction of the Doctor of Pharmacy programme in Ghana since 2011/2012 academic year at the Kwame Nkrumah University and Science and Technology, (KNUST), pharmacy students are being introduced to injection techniques during their second year nursing clinical rotation. This indicates the possibility of a change in practice.

University of Ghana http://ugspace.ug.edu.gh

With this research, I seek to explore the feasibility and acceptability of this trend of healthcare practice being extended to community pharmacists at the community level in Ghana.

1.3 Justification of Study

To bridge the gap of vaccination coverage decline across the 10 Regions of Ghana, the provision of vaccinations services at the various community pharmacies located within these districts will complement the efforts of EPI and Vaccine Preventable Disease Surveillance through the "Reaching Every District" approach campaign. The use of community pharmacies as service points will provide an alternate source of adequate health staff as trained immunisations pharmacists to address the current challenges of the EPI concerned with inadequate health staff and attrition being experienced. Community pharmacies being the easy and most accessible health service centres within the community, will serve as convenient facilities to promote vaccine preventable disease by providing immunisation to its clients per protocol and thereby covering individuals who may not have been immunized against vaccine preventable diseases.

In conducting this research, the views and perception of pharmacists and policy makers on the use of community pharmacies as service point for immunisation provided insight into the readiness and the willingness of these stakeholders to implement immunisation service at community pharmacies and thereby contribute to reducing the impact of vaccine preventable diseases. This will inform policy of the need to introduce immunisation services at community pharmacies in Ghana, as is the current trend of practice emerging globally as a strategy to reduce the burden vaccine preventable disease.

University of Ghana http://ugspace.ug.edu.gh

1.4 Conceptual Framework

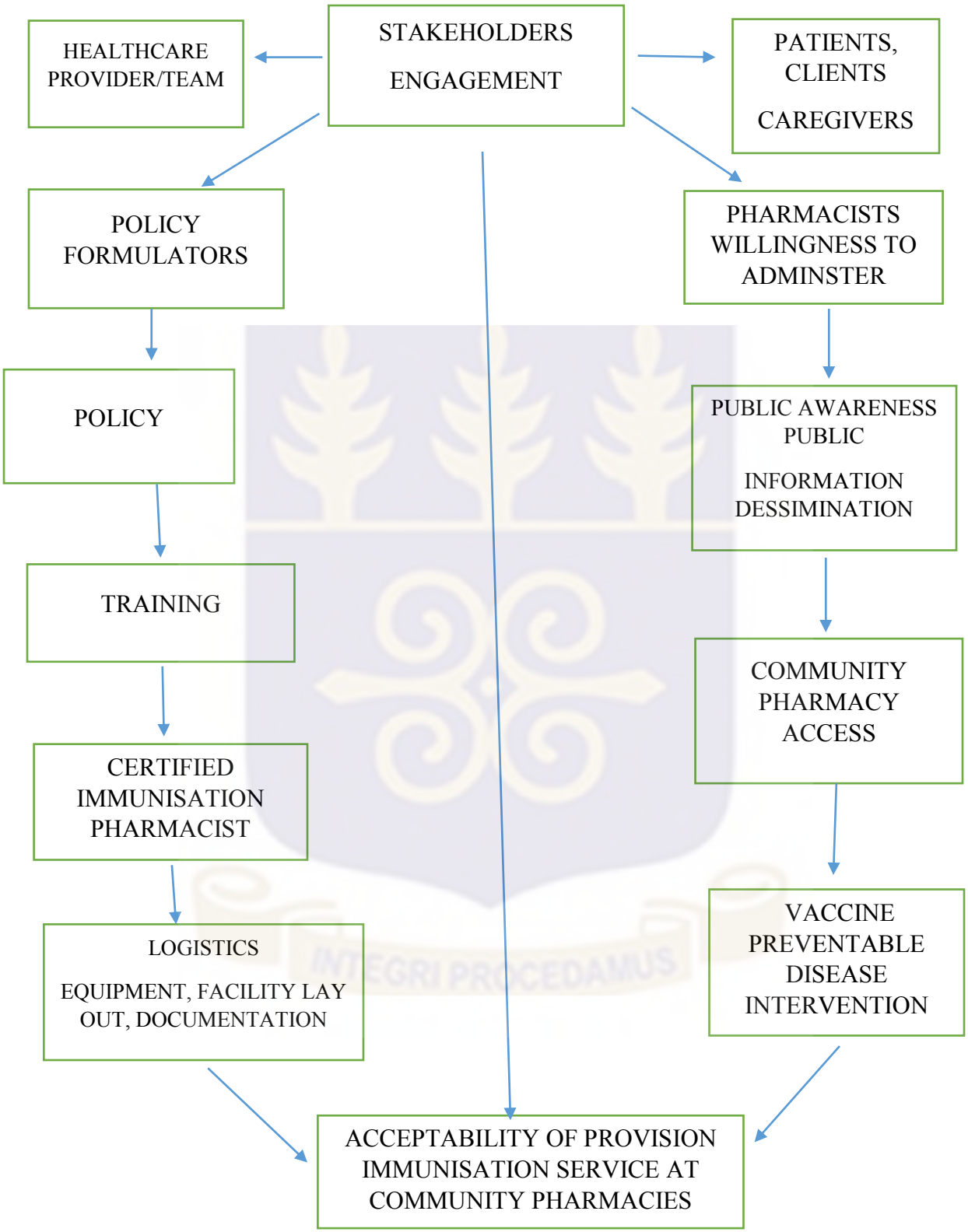

Figure 1: Conceptual framework

University of Ghana http://ugspace.ug.edu.gh

Figure 1 represents the conceptual framework of the various factors influencing the use of community pharmacies as service points for the provision of immunisation services in providing quality healthcare. This service is largely dependent on primary stakeholder engagement namely policy formulators, the healthcare team, clients, patients, care givers and the service providers, the pharmacists. The policy formulators within the health sector including the Ghana Health Service (GHS), the Ministry of Health (MOH), the Pharmacy Council, the Pharmaceutical Society of Ghana and Expanded Programme of Immmunization (EPI) that will influence and formulate policies to institute this service that is not currently the norm of practice in pharmacy service provision. This will allow the design of training programs which will equip the currently registered pharmacist as certified immunisation pharmacists. The availability of the vaccines, supplies for administration of vaccines and documentation ensure the provision of immunisation at community pharmacies through training and effective management. The success of this service provision is also dependent on the willingness of pharmacists, the other stakeholders to administer the vaccines, providing public health information and dissemination through public awareness creation on the availability of this service at the community pharmacy. Increased access to the community pharmacies and the flexibility in acquiring any needed vaccine for routine or non-routine vaccine as permitted by protocol directly impact the incidence of vaccine preventable disease. This will in turn address the vaccine preventable disease in the community and improve immunisation coverage. This will translate into the provision of a regulated immunisation service delivery at the community pharmacy.

University of Ghana http://ugspace.ug.edu.gh

1.4.1 General Objective

The general objective was to explore the feasibility and acceptability of the use of community pharmacies as service points for immunisation in the Accra Metropolitan Area.

1.4.2 Specific Objectives

The specific objectives are to:

1) assess feasibility of the use of community Pharmacies as service points for introduction of immunisation services by policy formulators
2) explore the acceptability of community pharmacies as service points for introduction of immunisation service by policy formulators
3) assess the willingness of pharmacists to administer vaccines

1.4.3 Research question

The research question was as follows:

Will community pharmacies be accepted and used as alternate immunisation service points in the community in Accra Metropolitan Area?

University of Ghana http://ugspace.ug.edu.gh

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Immunisation programmes in non-traditional settings such as pharmacies have been shown to be more accessible and convenient than from provider‟s clinic or public health facilities (Klein, 2016). This is particularly beneficial for underserved adults who may be at risk for being under vaccinated because they are often without a medical home or a regular point of contact where their medical needs are met. Relating this US scenario to Ghana with the lack of up-to- date demographic information on clients and the vaccination needs, the non-traditional settings such as the community pharmacies as an immunisation service points will serve as alternate points to provide vaccination services to individuals in the community.

This also helps the healthcare system increase the options for receiving the much-needed vaccine to prevent diseases.

2.2 Vaccine preventable diseases

Hepatitis B Virus infection, one of the vaccine preventable disease, is a major health problem worldwide translating into 5% of the world‟s population being chronic carriers. Parts of Africa, the Middle and Far East have a disproportionate higher carrier rate of 10% to 15%. (Damale, Lassey, & Bekoe, 2005). Its cancer, hepatocellular is one of the most common cancers in Ghana. This arises as a result of persistent HBV infection, an important risk factor in hepatocellular cancer. Furthermore, in 1991, the World Health Organization in an attempt to reduce the global health impact of Hepatis B infection, recommended that Hepatitis B vaccine be included in immunisation programmes worldwide. Since there is no treatment for HBV infection, a passive or active immunisations of neonates before exposure to carriers will be

University of Ghana http://ugspace.ug.edu.gh

protective and will further prevent the high carrier rate of 90% associated with neonatal infection (Damale et al., 2005).This further elucidates the relevance of immunisation and hence its accessibility in the community.

HBV is highly endemic in Ghana with a global perspective of being in the highest category of prevalence of HBV infection. It is also worth noting that HBV infection is 50 to 100 times more infectious than HIV and prevented by vaccination (Mkandawire, Richmond, Dixon, Luginaah, & Tobias, 2013). This gives immunisation service provision from non-traditional centres such as the community pharmacies the role to play in prevention - programmes needed to help to address this endemic situation in Ghana.

Supplementary immunisation activities (SIAs) which are mass immunisation campaigns, during which health workers seek to deliver vaccination to every household in targeted populations are mostly periodically conducted and mostly on a disease-specific initiative such as the Global Polio Initiative or the Measles Rubella Initiative. SIAs rarely distribute other vaccines that are part of standard immunisation such as Bacillus Calmette-Guerin (BCG) or diphtheria, pertussis and tetanus, (DPT). This generally creates gaps in continuity of immunisation service delivery across all vaccine preventable diseases and the use of community pharmacies as service points for immunisation service provision will bridge this gap providing equal service coverage for all acceptable vaccines for routine immunisations (Helleringer, Asuming, & Abdelwahab, 2016).

Delay in receipt of vaccines for example in infants may compromise the benefits of immunisations for active immunity who are at high risk of morbidity and mortality from vaccine preventable diseases such as tuberculosis, diphtheria, tetanus, pertussis, polio and measles. Among some of the reasons noted in this study, poor immunisation supply and lack of access to health service were cited (Hughes et al., 2016).

University of Ghana http://ugspace.ug.edu.gh

Since community pharmacies due to their location within the community increase accessibility to the population being served, making these pharmacies as service points for immunisation will increase accessibility and provide better immunisation supply.

In addition, pharmacist having expert knowledge on drugs and its storage, have refrigerators which are required for maintenance of cold chain in vaccine handling and storage. This component of vaccine handling has been shown to be a challenge in approximately one-third of facilities in Ghana as stated in a study done on the determinants of routine immunisation costing in Benin and Ghana (Damien et al., 2015).

2.3 Accessibility

Pharmacists have been described as the most accessible health professionals (Kelling, 2015). Health access framework, which has been developed, enumerates factors such as gaining entry into the healthcare system, accessing a healthcare location where needed services are provided and finding a healthcare provider with whom the patient can communicate with and trust.

In the light of this, pharmacists are changing their traditional roles of being only placed behind the counter to be physically closer to the patient leading to expansion of role extending to non-dispensing activities such as immunisations and medication therapy management. Historically, pharmacist have been viewed as being very honest and ethical- components of trust- further placing community pharmacies in the position to provide immunisation services as the global trend now presents.

Other benefits of providing immunisation in non-traditional settings such as at community pharmacies include access, convenience, reduced cost for vaccination and increased awareness for the importance for vaccination (Klein, 2016).

University of Ghana http://ugspace.ug.edu.gh

2.4 History

Smallpox, a vaccine preventable disease, in 1796 was experimented on when Edward Jenner undertook an experiment on 8 year-old James Phipps which change the world of infectious disease. Jenner published the outcome of this innovation two years later. He coined the term "vaccination" after the Latin word "vacca" for cow. This began the vaccine era (Rosado & Bates, 2016).

As a result of this initiative, WHO declared the smallpox an eradicated disease in 1980 as collaborated effort on behalf of public health and vaccination being the key component of this success story.

The WHO Millennium Development Goal (MDG4) between 1990 and 2015 aim to reduce childhood mortality by the implementation of national and global Expanded Programme of Immunisation (EPI). The EPI was originally started with six vaccines namely; diphtheria, pertussis, tetanus, measles, polio and tuberculosis. In 2012, the Global Vaccine Action Plan (GVAP) 2011-2020, was endorsed by 194 WHO member States to drive the universal access to immunisation (Rosado & Bates, 2016).

Since new life-saving vaccines were not reaching the children in developing countries where these were needed, the Bill and Melinda Gates Foundation in January 2000, created the GAVI Alliance (formerly known as the Global Alliance for Vaccine and Immunisation). WHO through the management of its prequalification systems, ensured quality vaccines for the bulk purchase by UNICEF, GAVI and other funding agencies (Reid & Fleck, 2014).

Immunisation are no longer restricted to the six vaccines. This has expanded to include the following: rubella, hepatitis B, Haemophilus Influenza b, rotavirus, streptococcus pneumonaie,

University of Ghana http://ugspace.ug.edu.gh

HPV, meningococcal meningitis, yellow fever and dengue. According to WHO, there are over 26 diseases which can be effectively prevented by a vaccine. These are Human papillomavirus (HPV), Cholera Dengue, Diphtheria, Haemophilus influenza type b (Hib) ,Hepatitis A ,Hepatitis B ,Hepatitis E, Influenza (Flu) Japanese encephalitis (JE), Lyme disease, Malaria, Measles, Meningococcal meningitis, Mumps, Pertussis (whooping cough) ,Pneumococcal disease, Poliomyelitis , Rabies, Rotavirus gastroenteritis, Rubella, Shingles, Smallpox , Tetanus, Tick-born encephalitis , Typhoid fever, Tuberculosis (TB), Varicella (Chickenpox) and Yellow Fever ((Rosado & Bates, 2016).

In Ghana, according to a study on the acceptability of HPV by Coleman et al, it was concluded that most women appear ready to accept the vaccine and concerns raised had to do with place of having the vaccine. With cervical cancer being the second most common cancer worldwide with approximately 493000 new cases diagnosed annually; nearly 80% of annual deaths 274000 occur in developing countries and this percentage is expected to increase by 2020 to 90%. This is out of a study done by Coleman et al on HPV vaccine acceptability in Ghana.(Coleman, Levison, & Sangi-haghpeykar, 2011). Recommendations from this study stressed the need for vaccine safety as well as improving quality of delivery and access. Hence supporting the fact that the availability of alternative service points will greatly impact the intervention of cervical cancer in Ghana.

2.5 The Role of Pharmacist and Vaccination – a change in trend of Practice

In late 1994 in Seattle, Washington in the United States, the first organized immunisation training for pharmacist was conducted. In 1996, two years later, the APHA, established its Pharmacy-based immunisation delivery programme, which CDC endorsed. This educational

University of Ghana http://ugspace.ug.edu.gh

programme teaches pharmacists the skills needed to become primary provider of both vaccine education and its administration. This has led to the successful pharmacy-based vaccination across all 50 States of the USA since the inception of the programme 22 years ago (Terrie, 2010).

In Tunisia, in Africa, Pharmacists were authorized to administer injections including vaccines on the presentation of a medical prescription.

South Africa has embraced immunisation in pharmacies with pharmacists actively administering vaccines and thereby assisting in reduction of the burden of vaccine preventable diseases.

According to the FIP report, August 2016 (Rosado & Bates, 2016), some countries in which immunisations are offered by the pharmacists in a non-traditional setting such as the pharmacy include countries such as Argentina, Australia, Canada, Costa Rica, Denmark, Ireland, New Zealand, Philippines, Portugal, South Africa, Switzerland, United Kingdom (UK) and United States of America (USA).

Other countries, which engage in immunisation at the pharmacy but not by the pharmacist, include Bolivia, Congo, Finland, Iceland, Lebanon, Netherlands and Pakistan.

This clearly indicating the increase in trend in the provision of immunisation services at community pharmacies. This global benefit should extend to Ghana where this practice can address the current vaccine preventable disease and help complement the efforts of the EPI in Ghana.

University of Ghana http://ugspace.ug.edu.gh

2.6 Importance of vaccination and immunisation

Immunisation is the process in which an individual is made immune or resistant to an infectious disease typically through vaccination, the administration of a vaccine. This protect both the individual and the community at large. According to WHO, vaccination is estimated to avert 2 to 3 million deaths each year.

Furthermore, immunisation confers herd immunity within the community. Herd immunity occurs when a proportion of the community, that is the "herd", provides protection to unprotected individuals(World Health Organization, 2014). The herd immunity proposes that in the transmission of disease among a population, it is difficult to maintain a chain of infection when large number of the population are immune. This is beneficial to individuals who due to allergies and certain contraindications cannot be vaccinated. By this, immunity is extended to the community even if immunisation is not 100% complete. Hence, immunisation provides personal as well as community benefits.

2.7 Immunisation Delivery in Ghana

The EPI delivers its immunisation services through several strategies. These strategies are daily routine immunisation services at health facilities and hospitals, outreach services to remote communities based on district/sub-district plans, catchment areas and location, a mop-up exercise to capture defaulters during a mass immunisation programme and campaigns targeted at the large population as a supplementary activity to routine immunisation in an effort to increase immunity.

The persons mostly involved include disease control officers (DCOs), community health nurses (CHNs) who are usually supported by some midwives.

University of Ghana http://ugspace.ug.edu.gh

These activities have not yet explored community pharmacies, which have pharmacists and the capacity to handle vaccines as another supplementary effort to achieve the goals of EPI and so reduce vaccine preventable diseases in Ghana in both children and adults.

University of Ghana http://ugspace.ug.edu.gh

CHAPTER THREE

METHODOLOGY

3.1 Study design

A mixed method approach was used in exploring the research topic. This involved the use of qualitative and quantitative methods. The quantitative method included the use of questionnaires (structured survey questionnaire) with pharmacists and the qualitative method involved in-depth interviews (IDI) with policy makers purposively selected as one group of respondents. This included the director of Pharmaceutical Services, the Chief-Pharmacist, Ministry of Health (MOH), the Registrar of the Pharmacy Council, the President of the Pharmaceutical Society of Ghana and the Deputy EPI Manager of EPI. This first group of population under study are located in the Greater Accra Region of Ghana (Workforce, 2005). The choice of this group of respondents is purposive. This is because policy level decision regarding health and the target group of service providers will involve the collaborative efforts of these stakeholders.

The IDI was conducted at specified locations upon confirmation with respondents and on preference.

This is a cross- sectional study and was conducted over a period of three weeks.

The second group of population under study was the prospective service providers, the pharmacists. This group of respondents were selected using simple random sampling. Structured questionnaire were administered to assess the acceptability and feasibility of the provision of immunisation services at the community pharmacy.

University of Ghana http://ugspace.ug.edu.gh

3.2 Study Area

Accra Metropolitan Area (AMA) is the regional capital of the Greater Accra Region of Ghana and also serves as the national capital of Ghana (Figure 2) (Ghana Statistical Service, 2014). The City of Accra is bounded to the North by Ga East Municipal, North West by the Ga West Municipal Assembly, North East by Tema Metropolitan Assembly, the West by Ga South Municipal, the South by the Gulf of Guinea, and the East by Ledzokuku-Krowor Municipal. It covers a total land area of 139.674 Km2. This will be the area under study. This is partly due to the greater number of pharmacies with its corresponding pharmacists located in the Greater Accra Region. The presence of the key international immunisation center in this area coupled with this area being an urban area contributes to this area as a choice of study. This presented the views of respondents on a non- traditional setting in this case, the community pharmacy setting, where immunisation can be obtained once this existed as an alternative.

University of Ghana http://ugspace.ug.edu.gh

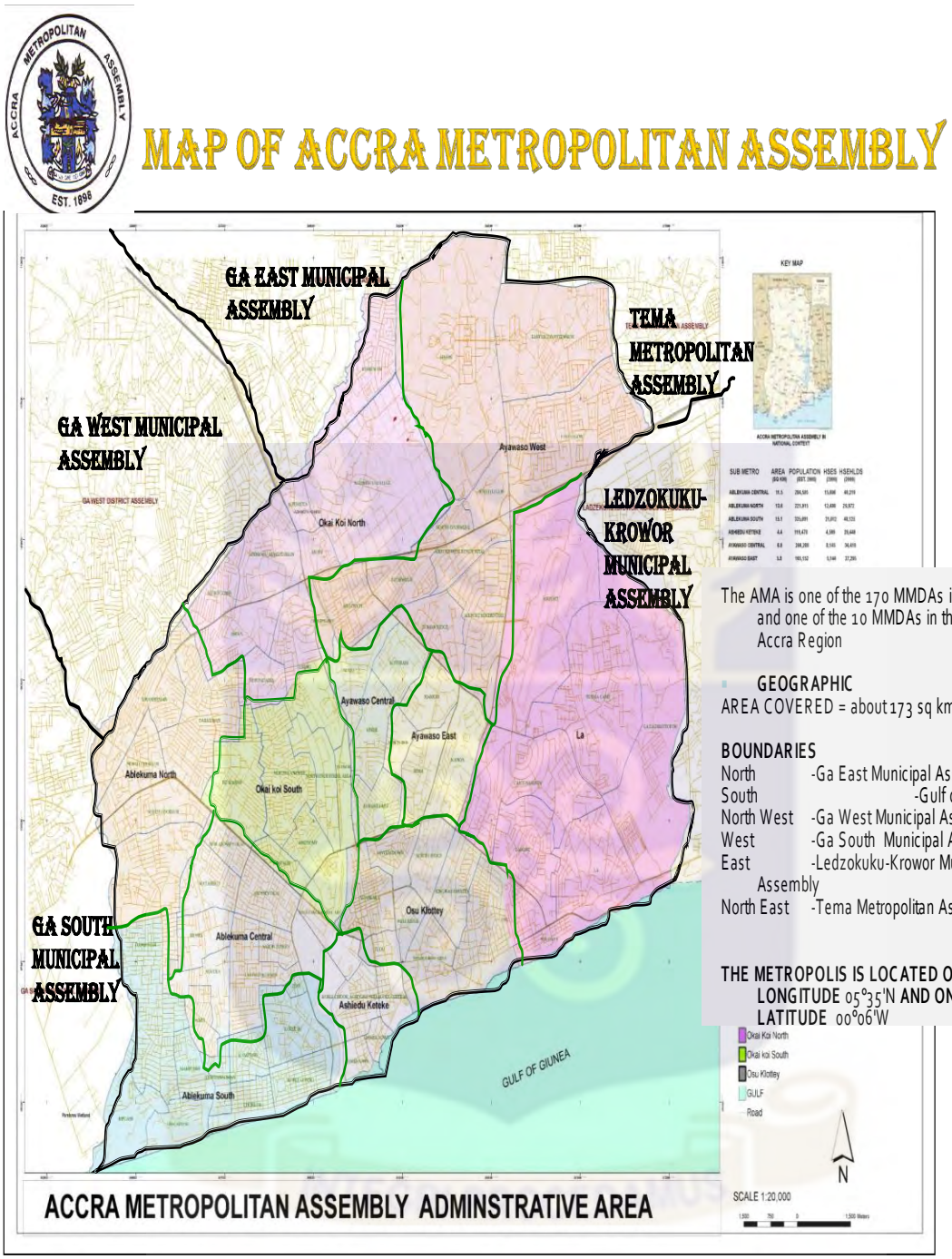

Figure 2 ***Map of Accra Metropolitan Assembly***

University of Ghana http://ugspace.ug.edu.gh

3.3 Demography

According to the 2010 Population and Housing Census, the total population of the Metropolis in 2010 was 1,665,086 with females constituting 51.9 percent while males formed 48.1 percent. The age distribution of the population shows that the population peaked at the age group 20-24, representing 12.4 percent followed by the 25-29 age group (11.5%). Females constitute the higher proportion in almost all the age groups of the population. Concerning sex ratio, for every 100 females, there were about 93 males within the Metropolis. The sex ratio of the Metropolis is lower than the national ratio of 95.2 (GSS, 2012). This could be attributed to male mortality being higher than that of females in the Metropolis or male out-migration from the Metropolis.

3.4 Study Duration

The study lasted for a period of six (6) weeks and data collection commenced in May,2017 upon receipt of ethical approval and ended in June 2017.

3.5 Study Variables

The outcome variables of this study are acceptability and feasibility of community pharmacies as immunisation service points.

Acceptability denotes how well an intervention will be received by a target population while feasibility explores the possibility of using community pharmacies as immunisation service points in the community. Perception on the other hand seeks to present the thoughts and expectations of the providers on the availability of immunisation services as the community pharmacy.

University of Ghana http://ugspace.ug.edu.gh

The independent variables are age, gender, level of knowledge of vaccines, years of practice as a pharmacist, marital Status, accessibility of facility, training, level of education and willingness of pharmacist to administer vaccine.

The quantitative method involved the use of a questionnaire to measure the outcome of the study such as acceptability. Perception through IDIs with policy makers was explored to address the feasibility of the use of community pharmacies as service points for immunisation. The pharmacist respondents were selected using simple random sampling.

Data collection included administering questionnaires and use of a tape recorder to conduct IDI.

3.6 Inclusion criteria:

This will include registered pharmacists who work at the community pharmacies within the study area of the Accra Metropolitan Area for the pharmacist with the quantitative approach. The policy makers will be selected purposively based on their position, availability, and influence on policy formulation and expertise on the subject matter.

3.7 The exclusion criteria

This will exclude pharmacists working outside the Accra Metropolitan Area.

University of Ghana http://ugspace.ug.edu.gh

3.8 Population of Study

The population for the policy formulators included 4 individuals which include the Director of Pharmaceutical Services of the MOH, the Registrar of the Pharmacy Council of Ghana, the President of the Pharmaceutical Society of Ghana, and the deputy manager of EPI (Ghana).

The second group of study involved the pharmacists working within the pharmacies located within the study area of the Accra Metropolitan Area. There are 909 pharmacy facilities with 711 out of this number operating as community pharmacies within the AMA area. Each of these pharmacies are superintendent by at least one pharmacist at a time. There may be other staff pharmacists who may work on either a part time basis or as fulltime pharmacists with the superintendent pharmacists. This gives a total population of 711 pharmacists within the AMA area out of which the sample size for the study was calculated.

3.9 Sample size

A sample size of pharmacies was selected which corresponded to at least one pharmacist per pharmacy. This was calculated using a proportion of 88%, being the proportion of Canadian community pharmacist who agreed that pharmacists, as immunizers will increase access to immunization and also concluded that pharmacists are willing to expand their scope of practice to include immunization (Edwards et al., 2015a). Adopting the Cochrane 1963‟s formula for sample size calculation:

$n = (z\alpha/2)^2 pq/d^2$ ……. (1)

Where

n = sample size

University of Ghana http://ugspace.ug.edu.gh

p = the proportion of community-based Canadian pharmacists who agreed that pharmacists as immunizers would increase public access to immunisation with respect to expanding their scope of practice to include administration of immunization, p= 88%.

q=1-p (estimated variance)

d = margin of error, 6%

Precision (margin of error) of 6% instead of 5% was chosen because of the limited duration of the study. The 5% would have given a larger minimum sample size, which could not have been achieved within study duration. However, the 6% gave a minimum but a sufficient sample size needed for the study.

$Z\alpha/2 = 1.96$ since $\alpha = 5\%$ at 95% Confidence Interval

Placing the above into equation (1), the minimum sample size for the clients required for this study was given by

$n = (1.96)^2(0.88)\ (0.12)/\ (0.06)^2$

$n = 112.68 \approx 113$

With the number of retail community pharmacies in the AMA known to be 711 by the pharmacy council records of 2016, Cochran's correction formula for sample less than 50.000 was used as follows:

= Calculated sample size/ (1+calculated sample size/finite population)

Corrected sample size = 112/ (1+113/711) = 98

University of Ghana http://ugspace.ug.edu.gh

Using none response of 5%, 103 pharmacies were selected where a corresponding 103 pharmacists was selected for the study.

3. 10 Sampling Method

3.10.1 Quantitative Method

The 103 pharmacists were selected using simple random sampling technique by feeding the population of pharmacies as obtained from the Pharmacy council into an excel software for the generation of the pharmacies. The pharmacies were selected at an interval. This was obtained by dividing the total number of pharmacies in the Accra Metropolitan area within the sampling frame by the sample size. The resultant number (k) is the interval with which pharmacies for corresponding pharmacist were obtained.

A simple random sampling technique was used to determine the start point for selecting a kth pharmacy and its corresponding pharmacist. With the help of software, a number was selected randomly between 1 and k.

Using the number picked as a start point, the selection of pharmacy with corresponding pharmacist was now determined by every kth pharmacy until the various allocated sample sizes for area was obtained. With the help of two research assistants, the randomly selected pharmacies were visited during the working hours of the pharmacy when the pharmacist is present and the pharmacists administered the questionnaire in the order generated. This was to ensure that the pharmacies and pharmacists in the population of study all had an equal chance of being selected. An adopted questionnaire from a survey on a study conducted on community pharmacists‟ willingness to administer adult immunisations was used (Edwards et al., 2015b)

University of Ghana http://ugspace.ug.edu.gh

3.10.2 Qualitative Method

A purposive sampling technique was used for the qualitative research to the study. Participants who were interviewed in-depth were identified as key persons in policy formulation and experts in this subject matter. Organizational leaders were used to identify these participants, which in their opinion will be best placed to contribute and assess the acceptability and feasibility of community pharmacies as service points for immunisations. These institutions included the Ghana Health Service under the Ministry of Health, the director of Pharmaceutical Services; Pharmacy Council of Ghana where the Registrar of the Pharmacy Council was included, Pharmaceutical Society of Ghana where the President was the selected participants and the deputy manager of the EPI programme (Ghana).

Interviews were held at their respective offices or designated location of convenience of these participants within normal working hours.

3.11 Data Collection Method

3.11.1 Qualitative Approach

Four In-depth Interviews (IDIs) was conducted during the study. The participants for the IDIs were drawn across the Ministry of Health (MOH), Pharmacy Council, Pharmaceutical Society of Ghana and EPI programme. The criteria for selecting them was based on capacity to affect policy formulation and expertise on the subject matter of study and the provision of In-depth information of their perception on the feasibility and acceptability of community pharmacies as service points for immunisation on recommendation by the various institutional heads. The interviews scheduled lasted for about 20 minutes in most cases.

University of Ghana http://ugspace.ug.edu.gh

3.11.2 Quantitative Method

A structured questionnaire containing questions that pertains to socio demographic factors and other factors of the participating pharmacist that influence their perception and willingness to administer vaccines and use of community pharmacies as immunisation service points were administered. These questionnaires covered perception and opinions on vaccines, training, legal responsibility and willingness to offer vaccines once this is available. The perceived limitations were addressed through a set of questions with options from which participant can make a choice. Most of the statements were made in a third party context. Respondents themselves had few statements that related to them. This was to reduce social desirability while providing responses.

3.12 Data Collection Technique and Tools

3.12.1 Qualitative Approach

Data collection was conducted through face-to-face interview. In-depths interview were conducted for 4 participants who are related to policy formulation across the GHS, MOH, Pharmacy Council, Pharmaceutical society of Ghana and the EPI (Ghana). Efforts were made to ensure that these participants covered the various health sectors that are directly involved with immunisation especially at the policy formulation level. This ensured a fair representation across the health sector.

An interview guide was used and consisted of the following themes:

The acceptability of community pharmacies as service points for immunisation, perception of policy makers of using pharmacies as alternate centers for immunisation, the perception of

University of Ghana http://ugspace.ug.edu.gh

pharmacists as immunizers and the feasibility of community pharmacies as immunisation service points.

A note taker was also employed to write notes on participants‟ responses during the process of interview. A tape recorder was used to record participants‟ responses to ensure every information was captured. Each interview scheduled lasted for about twenty minutes.

3.12.2 Quantitative Method

Data collection will be conducted by administering questionnaires or through a face to face interview.

The structured interviewer-administered questionnaire was used to collect data and consisted of three parts. The first part on socio-demographic characteristics covered age, educational status, sex and occupation including other factors such as respondent‟s awareness of pharmacist immunisation, willingness to administer vaccines. The second part covered a range of questions to identify respondent‟s perceptions about the feasibility of community pharmacies. The third part covered a list of statements to measure respondents acceptance level of use of community pharmacies as immunisation point.

The researcher and research assistants administered the questionnaires. In each selected pharmacy, the purpose of the study was first explained to the participants and a written consent from the participants sought before the questionnaires were administered. The questionnaire had close-ended items for ticking yes or no, and made possible choices among a number of possible alternatives. A set of open-ended items were also included to allow the expression of some opinions when desired. Responses were immediately entered on a computer

University of Ghana http://ugspace.ug.edu.gh

to reduce the possibility of missing out certain information and to ensure a safe keep of information gathered

3.13 Data Processing and Analysis

3.13.1 Qualitative approach

In-depth interviews (IDIs) were digitally recorded with the permission of the participants. Field notes were transformed into data documents within a day of the IDIs. These notes, as well as transcriptions, were not assigned to the names of interviewee but rather were identified by codes. The researcher again reviewed all transcripts. During the review, the researcher listened to the various recorded voices and made comparison between the voices and the transcriptions. The qualitative narrative data was then entered into a word processor (Microsoft Word). This was imported in a format that allowed coding of the interview transcripts in Nvivo 10. Double coding was done for each transcript and compared. This helped to identify specific themes that would answer the research question.

The data collected from the In-depth Interviews (IDIs) from the policy makers on the tape recorders were transcribed; had themes developed and were analyzed using Nvivo 10.

3.13.2 Quantitative Method

To ensure accuracy and completeness, data was cleaned by running frequencies of all variables to check for incorrect coding using Stata 14 . After double checking with raw data, all necessary corrections were made before analysis.

The researcher also monitored the interview processes in order to ensure research procedures were adhered to by the research team.

University of Ghana http://ugspace.ug.edu.gh

The information in each questionnaire was coded and keyed into a computer using excel for the data management. The resultant data was imported into Stata version 14.0 for analysis. In carrying out the analysis, both descriptive and analytical statistics were made use of. Frequency distribution tables, mean, percentages, charts and cross tabulations were used to describe the findings, where multiple regression model was used in predicting the acceptability of the community pharmacies as service points for immunisation. Statistical differences in demographic characteristics in relation to willingness of pharmacists to administer vaccines were evaluated by linear regression. Both univariate and multivariate regressions were performed.

In analysis of the Likert scale responses, the answers were coded on a scale from 1 (strongly disagree) to 5 (strongly agree) and analysed numerically. The composite score was calculated for the overall items on general, specific immunisation attitudes of pharmacists and to determine outcome variable of willingness to administer vaccines – acceptability and feasibility of use of community pharmacies as service point for immunisation. The minimum score was 15 and the maximum was 75. For the pharmacy related factors influencing immunization practice and pharmacists opinions about the immunization, the Likert scale responses were coded 1 (not at all important) to 5 (very important) and also analysed numerically. The minimum score was 11 and the maximum was 44.

The relationship between the independent variables and the use of community pharmacies as alternate service point for immunisation were initially analysed using the univariate logistic regression analysis. To exclude high intercorrelated independent variables, multivariate logistic regression was done. A mean of 3 (neutral) was considered low acceptability and feasibility of

University of Ghana http://ugspace.ug.edu.gh

the use of community pharmacies as alternate service points and a mean above neutral considered high acceptability and feasibility of use of community pharmacies as alternate service points.

A confidence interval of 95% was used to show significant relationship between the dependent and the independent variables.

Linear regression was used because the outcome variable use of community pharmacies as service points is normally distributed. It is also a continuous variable. Normality was determined by using histogram and gladder commands in STATA Version 14. The results were presented in frequencies, mean and percentages.

Information received was stored in a password secured safe, which is accessible to the principle investigator, and the supervisor assigned.

3.13.3 Pretest of Instrument

The structured questionnaire was pretested within the neighbouring community to assess for suitability and acceptability before being used in the main data collection.

3.14 Ethical Consideration

Ethical approval was sought from the Ethical Review Board of the Ghana Health Service. The study data collection was initiated when ethical clearance had been granted by the GHS ethical review committee.

3.14.1 Confidentiality and Anonymity

Participation in this study was strictly confidential. Personal information and contacts taken from patients was coded, password protected and kept anonymous. This was securely stored in a safe and keys kept securely with the principle investigator and the supervisor.

University of Ghana http://ugspace.ug.edu.gh

Permission was sought from pharmacies, Pharmacy Council, GHS, MOH, PSGH and EPI where the study was conducted.

3.14.2 Consent form

Consent was sought from all participants before participating in the study. A consent form was explained and given to each participant explaining the purpose of the study and ensuring participants that any questions raised on this would be addressed. The participants were required to sign the declaration form indicating they have understood the purpose, procedure, risk and benefits of the study and participate according to their free will.

3.14.3 Privacy

Privacy of participants were ensured during the study. The questionnaires and interviews were administered and conducted respectively in an area to secure privacy for the participants, the research assistants and the principal investigator during the study.

3.14.4 Right to refuse

Participation in this study was solely voluntary. Participants could choose not to take part in the study and were at liberty to withdraw from the study at any point in time. Full Participation was however encouraged.

3.14.5 Risks/Benefits

The study did not cause any potential risk to participants. The result of the study provided insight into the readiness of pharmacists in Ghana to engage in immunisation services and the level of acceptability of this practice by police makers.

University of Ghana http://ugspace.ug.edu.gh

3.14.6 Compensation

No incentives or compensation was given for participating in the study. **The participants bore no cost in participating in this study.**

3.14.7 Data Storage, Usage and Security

All research data and records were protected against inappropriate use and disclosure. This protected the confidentiality of the subject data. Electronical data was stored in password-protected folders and access was limited to only the Principal Investigator and the Supervisors.

Data will be destroyed and discarded after 7 years of the study.

3.14.8 Conflict of Interest

There was no conflict of interest pertaining to this study.

3.14.9 Assurance for academic purpose

Findings from this study was included in a dissertation proposal submitted in partial fulfilment of the requirement for the award of MPH degree. Results from this study was made available to appropriate policy makers.

University of Ghana http://ugspace.ug.edu.gh

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents the findings of the study in accordance with the stated objectives and research questions as approached qualitatively and quantitatively. The chapter is in seven sections: Section one presents demographic characteristics of the respondents. Section two presents the practical implications of vaccine administration for pharmacists. Section three and four present the general and specific immunisation attitudes by pharmacists respectively. Section five presents pharmacy related factors influencing immunisation practice. Section six presents the opinions about immunisations by the Pharmacist and section seven presents the chapter summary.

4.2. Demographic characteristics of respondents

4.2.1 Socio-demographic characteristics of participants who were interviewed In-depth.

The four (4) participants who were interviewed in-depth consisted of three (3) males and a female. All of them had attained at least a Bachelor‟s degree, with three participants having additional Masters with one participant having a PhD. The lowest age was 51 with the highest being 58 giving a mean age of 55 years for the 4 participants. There was one clinical pharmacist, one Public Health Practitioner, and 2 Pharmacists. Years of practice of participants in their various profession ranged from 25 years through to 30 years giving an average of 28 years of professional experience. All participants were married and were Christians.

University of Ghana http://ugspace.ug.edu.gh

4.2.2 Assessing feasibility of the use of community Pharmacies as service points for introduction of immunisation services by policy formulators

The themes identified under the objective were legal framework, policy formulation, pilot study, capacity building, engagement and advocacy.

4.2.3 Exploring the acceptability of community pharmacies as service points for introduction of immunisation service by policy formulators

The following themes were identified under this objective:

Professionalism, Continuous professional development, availability of pharmacist, accessibility of pharmacies, knowledge of adverse reactions after administration of vaccines and reimbursement.

The demographic characteristics of respondents in the quantitative approach of the study are presented in Table 4.1a and 4.1b. A total of 105 respondents were surveyed. The mean age was 38.2 (SD=11.3) years while the minimum and maximum ages were 24 years and 70 years respectively (table 4.1a).

Table 1 **4.1a Age respondents**

Variable	Observations	Mean	Standard deviation	Min	Max
Age (years)	105	38.2	11.3	24	70

University of Ghana http://ugspace.ug.edu.gh

As shown in Table 4.1b below; Almost two-thirds, 74 (70.5%) of the respondents were males while 31 (29.5%) were females. Majority, 65 (61.9%) of the respondents were married, 35 (33.3%) were single while 5 (4.8%) were divorced / separated. Almost all 100 (95.1%) the respondents were Christians and 4 (3.8%) were Muslims. More than half, 60 (57.1%) of the respondents had Bachelor degree, 34 (32.4%) had master‟s degree, 4 (3.8%) had PharmD, 5 (4.8%) had Fellowships and other courses while 2 (1.9%) had PhD. Close to half, 50 (47.6%) of the respondents were staff Pharmacists, 32 (30.5%) were pharmacy owners, 16 (15.6%) were managers and 7 (6.7%) were clinical Pharmacists. Majority, 43 (41.0%) of the respondents had worked for one to five years, 21 (20.0%) worked for ten to twenty years while 17 (16.2%) worked for five to ten years. Additionally, majority, 41 (39.0%) of the respondents work for more than twenty-four hours to forty hours a week, 38 (36.2%) work for more than forty hours a week while 16 (15.2%) work for less than ten hours in a week.

University of Ghana http://ugspace.ug.edu.gh

Table 2 **4.1b: Socio-demographic characteristics**

Variable	Frequency(N=105)	Percent (%)
Gender		
Male	74	70.5
Female	31	29.5
Marital status		
Married	65	61.9
Single	35	33.3
Widow/widower	0	0.0
Divorced/separated	5	4.8
Religion		
Christian	100	95.1
Muslim	4	3.8
Traditionalist	1	1.0
Educational level		
Bachelor	60	57.1
Masters	34	32.4
PharmD	4	3.8
PhD	2	1.9
Fellowship/others	5	4.8
Position		
Staff Pharmacist	50	47.6
Manager	16	15.2
Owner	32	30.5
Clinical Pharmacist	7	6.7
Years of practice		
<1 year	5	4.8
≥1≤5years	43	41.0
>5≤10years	17	16.2
>10≤20years	21	20.0
>20≤30years	11	10.5
>30years	8	7.6
Hours of work per week		
<10hours	16	15.2
>10≤24hours	10	9.5
>24≤40hours	41	39.0
>40hours	38	36.2

University of Ghana http://ugspace.ug.edu.gh

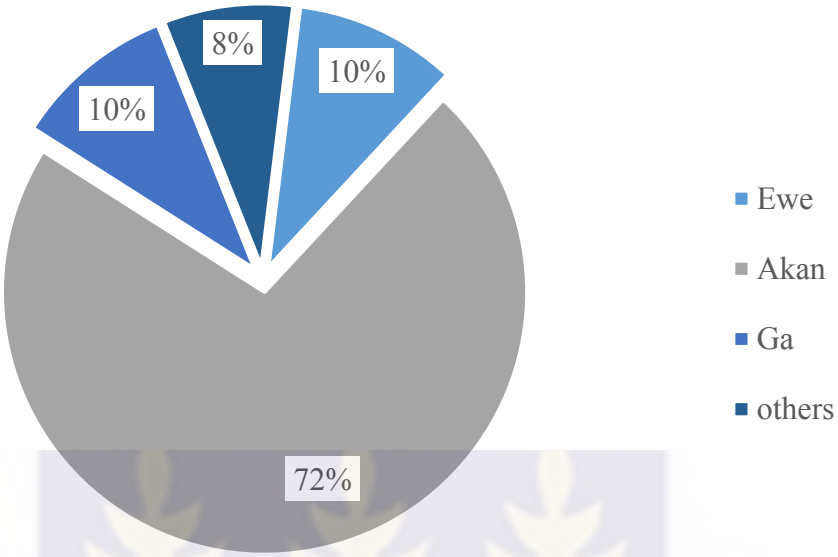

Figure 3 ***4.1: Ethnicity of respondents***

4.2.4 Ethnicity of respondents

Figure 3 4.1 shows the distribution of the respondents‟ ethnicity. Majority, 72% of the respondents were Akans, 10% were Ewes and 10% were Gas. The „others‟ (8%) comprised Hausa, Dangbe, Gonja and Sissala.

4.3. Practical implications of vaccine administration into practice at this time

The practical implications of vaccine administration by Pharmacists as shown in Table 4.2a. Respondents were asked about their concerns in relation to the incorporation of vaccine administration into their practice or business. Majority 61 (15.9%) of them stated reimbursement as their concern, 51 (13.4%) mentioned needle disposal concerns, 39 (10.2%) indicated sharp safety concerns, 32 (8.3%) were concerned about liability and malpractice.

University of Ghana http://ugspace.ug.edu.gh

Additionally, 27 (7.0%) stated lack of knowledge of how to administer vaccine safely as their concern, 21 (95.5%) mentioned time for professional development and training, 17 (4.4%) stated lack of knowledge of vaccine indications and contraindications as their concern.

Further, 15 (3.9%) of them were concerned about costs associated with professional development and training while 13 (3.4 %%) mentioned the vaccines would be too costly. Almost all, 100 (95.2%) the respondent agreed that at this time if they were legally permitted by legislation to administer vaccines to adults, they would have chosen to incorporate it into their practice or business, 1 (1.0%) said otherwise while 4 (3.8%) were unsure.

University of Ghana http://ugspace.ug.edu.gh

Table 3 **4.2a: Practical implications of vaccine administration for Pharmacists**

Variable	Frequency(N=105)	Percent (%)
What is your concerns about incorporating vaccine administration into your practice at this time		
Too costly	13	3.4
Reimbursement concerns	61	15.9
Lack of pharmacy space to store vaccines	10	2.6
Lack of pharmacy space to administer vaccines	24	6.3
Uncomfortable with needles and blood	16	4.2
Sharp safety concerns	39	10.2
Needle disposal concerns	51	13.3
Uncomfortable performing procedures in general	3	0.8
Time for professional development and training	21	5.5
Costs associated with professional devt & training	15	3.9
Liability and malpractice concerns	32	8.3
Do not feel it will serve the public	0	0.0
Insufficient staff or resource to implement	11	2.9
Lack of knowledge of vaccine indications and contraindications	17	4.4
Lack of knowledge of how to administer vaccine safely	27	7.0
Lack of knowledge on adverse events after immunisation	4	1.0
Lack of knowledge on how to manage adverse Events after immunisation	11	2.9
Record keeping	7	1.8
Benefits do not outweigh the risks	2	0.5
Others	3	0.8
Total	384*	100.0
At this time if you were legally permitted by legislation to administer vaccines to adults, would you choose to incorporate this service into your practice/business		
Yes	100	95.2
No	1	1.0
Unsure	4	3.8

*Multiple response, hence the different total frequencies

University of Ghana http://ugspace.ug.edu.gh

4.3.1. Practical implications of vaccine administration – immunisation training or certification program

The responses given when respondents were sked if an immunisation training or certificate program was available to them, what they would do are shown in Table 4.2b below. Majority 84 (34.2%) of them stated they would vaccinate in a collaborative framework where Physician recommends a vaccine first and then they administer the vaccine, 75 (30.5%) mentioned they would vaccinate in emergency situations and 64 (26.0%) said they would administer travel vaccines. Additionally 10 (4.1%) stated they would either provide all subsequent vaccinations of the same vaccines or they would be comfortable administering influenza vaccines only while 3 (1.2%) said they would not vaccinate under any circumstance.

Table 4 ***4.2b: Practical implications of vaccine administration – training or certification***

Variable	Frequency(N=102)	Percent (%)
If an immunisation training or certification program was available to you		
I would vaccinate in emergency situation	75	30.5
I would vaccinate in a collaborative framework where a physician recommends a vaccine first and then I administer the vaccine	84	34.2
I would vaccinate in collaborative framework where a physician vaccinated the first time and I could provide all subsequent vaccinations of the same vaccine	10	4.1
I would be comfortable administering influenza vaccine only	10	4.1
I would administer travel vaccines	64	26.0
I would not vaccinate under any circumstance	3	1.2
Total	246*	100.00

University of Ghana http://ugspace.ug.edu.gh

4.4. General immunisation attitudes by pharmacists

The general immunisation attitudes by respondents in the study are presented in Table 4.3. Overall, there was a statistically significant [k=3.35, CI :(3.01, 3.69), p<0.05] relationship between the general immunisation attitudes of Pharmacists and their willingness to use pharmacies as service points for immunisation in the Accra Metropolitan area.

The feasibility and acceptability were assessed using in-depth interviews (IDIs). This was what a respondent had to say when he was asked how he would feel about the use of community pharmacies as alternate immunisation service points:

> *"I will go with it. Because, pharmacy is located or spotted virtually in every community and even outskirts so it's going to be a very good and convenient alternative to that approach"* (IDI No 2).

Another also had this to say:

> *"Well, it will be quite significant. I mean, the drug bills, the deaths, the unnecessary deaths that will be in our hands. I think the government will be impressed with that and government will support it because anything that will bring some of these thing down and also unnecessary deaths, - Government will be most prepared to support it. It also depends on the way we go about it. Cause, they are not in the no. It's like, when did the pharmacist starts vaccinating, these are areas they will be asking themselves questions. But if they come to realise that pharmacist are capable of doing it, they are even doing it elsewhere. You sighted South Africa, the UK, the US and some of these. Some developing countries have even started it. Just that I am not too sure but one of the presentation that we had at FIP, was from one of the African countries that had started with a pilot work on it"* (IDI No 4).

The Pharmacists were asked to respond to the statement: Pharmacists‟ opinion should be sought when the scope of practice is extended to include the administration of vaccines to adults (table 4.3). Responses: „somewhat disagree‟, „neither agree nor disagree‟ and „somewhat agree‟ compared to „strongly disagree‟ showed no significant difference ($p>0.05$). Those who responded „somewhat agree‟ had higher willingness to use pharmacies as service points for

University of Ghana http://ugspace.ug.edu.gh

immunisation compared to „somewhat disagree", „neither agree nor disagree" and strongly disagree". Additionally, there was no significant association between the responses: „strongly agreed", „somewhat agreed", „neither agree nor disagree" and „somewhat disagree" compared to „strongly disagree" when respondents were asked if provision of immunisation to children as is currently done is adequate.

University of Ghana http://ugspace.ug.edu.gh

Table 5 ***4.3: General immunisation attitudes by pharmacists***

Variable	Likert Scale	Willingness to use pharmacies as service points		
		Coefficient (k)	95%CI	*P-Value*
Pharmacists‟ opinions should be sought when the scope of practice is extended	Strongly disagree	Ref		
	Somewhat disagree	-0.194	(-0.682 0.295)	0.432
	Neither agree nor disagree	-0.073	(-0.031, 0.184)	0.573
	Somewhat agree	0.063	(-0.162, 0.288)	0.580
Provision of immunisations to children as is currently done is adequate	Strongly disagree	Ref		
	Somewhat disagree	0.072	(-0.034 0.179)	0.182
	Neither agree nor disagree	0.078	(-0.077, 0.234)	0.320
	Somewhat agree	0.072	(-0.064, 0.209)	0.294
	Strongly agree	0.074	(-0.096, 0.244)	0.391
It is important that adults receive all vaccines recommended by WHO	Strongly disagree	Ref		
	Somewhat disagree	0.080	(-0.225 0.385)	0.605
	Neither agree nor disagree	0.194	(-0.161, 0.548)	0.281
	Somewhat agree	0.121	(-0.148, 0.389)	0.376
	Strongly agree	0.124	(-0.134, 0.381)	0.342
Ref		3.348	(3.008, 3.689)	0.000

4.5. Specific immunisation attitudes by pharmacists

The results of the overall willingness of respondents to use pharmacies as service points based on their specific immunisation attitudes are presented in Table 4.3a and 3b.

Overall, respondents‟ willingness was statistically significant [k=3.67, CI :(1.78, 5.55), p<0.05]. The results showed that respondents strongly agreed it is prudent to avoid all vaccine during the first trimester of pregnancy. There was no significant differences (p>0.05) in the responses: „strongly agree‟, somewhat agree‟, „neither agree nor disagree‟ and „somewhat disagree‟ compared to „strongly disagree‟. The responses were towards high willingness to use of pharmacies as service points. The willingness based on the responses to the statement: „increasing the proportion of adults who receive recommended immunisations is important‟ was

University of Ghana http://ugspace.ug.edu.gh

high. Respondents who chose „strongly agreed" and „somewhat agree" compared to „strongly disagree" were towards high willingness.

Table 6 ***4.3a: Specific immunisation attitudes by pharmacists***

Input qualities		**Quality of care**		
Capacity and sustainability	**Likert Scale**	**Coefficient (k)**	**95%CI**	***P-Value***
It is prudent to avoid all vaccines during the first trimester of pregnancy	Strongly disagree	Ref	-	-
	Somewhat disagree	-0.302	(-0.293, 0.086)	0.273
	Neither agree nor disagree	0.054	(-0.120, 0.228)	0.532
	Somewhat agree	-0.034	(-0.238, 0.168)	0.728
	Strongly agree	0.156	(-0.009, 0.322)	0.063
Increasing the proportion of adults who receive recommended immunisation is important	Strongly disagree	Ref	-	-
	Somewhat disagree	-0.036	(-1.494, 1.423)	0.960
	Neither agree nor disagree	-0.073	(-1.421, 1.275)	0.912
	Somewhat agree	0.386	(-0.890, 1.662)	0.541
	Strongly agree	0.312	(-0.977, 1.598)	0.625
Natural infection or a healthy lifestyle are effective alternatives to vaccines	Strongly disagree	Ref		
	Somewhat disagree	0.092	(-0.057 0.241)	0.217
	Neither agree nor disagree	-0.087	(-0.318, 0.144)	0.445
	Somewhat agree	0.174	(-0.007, 0.356)	0.059
	Strongly agree	0.084	(-0.126, 0.294)	0.420
If I do not receive the influenza vaccine, am at risk of contracting influenza	Strongly disagree	Ref		
	Somewhat disagree	-0.112	(-0.286 0.061)	0.196
	Neither agree nor disagree	-0.033	(-0.240, 0.175)	0.750
	Somewhat agree	-0.202	(-0.386, -0.017)	0.033*
	Strongly agree	-0.177	(-0.391, 0.037)	0.102
Getting my annual influenza vaccine is important	Strongly disagree	Ref		
	Somewhat disagree	-0.019	(-0.241 0.204)	0.865
	Neither agree nor disagree	0.088	(-0.153, 0.329)	0.460
	Somewhat agree	0.222	(0.011, 0.432)	0.040
	Strongly agree	0.173	(-0.050, 0.396)	0.123
Getting tetanus, diphtheria toxoid vaccine is important	Strongly disagree	Ref		
	Somewhat disagree	0.224	(-0.061 0.509)	0.119
	Neither agree nor disagree	-0.227	(-0.664, 0.209)	0.296
	Somewhat agree	0.229	(-0.030, 0.488)	0.081
	Strongly agree	0.296	(0.061, 0.531)	0.015*
Ref		**3.668**	**(1.784, 5.551)**	**0.000**

University of Ghana http://ugspace.ug.edu.gh

4.6. Specific immunisation attitudes by pharmacists – knowledge and capacity

The results of respondents when respondents asked to show their willingness to use pharmacies as service points by rating their specific immunisation attitudes are shown in Table 4.3b . Overall there was a significant relationship [k=4.62, CI :(0.34, 8.90), p<0.05]. The respondents were asked whether vaccines produce more health benefits than health risk. The results showed that the responses: „strongly agree", somewhat agree", „neither agree nor disagree" and „somewhat disagree" were not statistically significant compared to „strongly disagree" but were towards high willingness. Additionally, there was no significant differences (p>0.05) in the responses: „strongly agree", somewhat agree", „neither agree nor disagree" and „somewhat disagree" compared to „strongly disagree" when respondents were asked whether formal certification in vaccine administration should be required for pharmacists.

In terms of the IDIs, respondents believed formal certification in vaccine administration is important. For instance, a respondent stated:

> *"Before you are accepted in any spheres of life, your professionalism is key. Your professional judgement is also key. The knowledge of what you are doing should be paramount. If you going into immunisation, at the pharmacy, your knowledge as regard to whatever product you are going to immunize, or you are going to dispense to the person, (because immunisation is another form of dispensing/dispensation/dispense something to a patient). So you should be well- abreast with the information"* (IDI respondent 1).

Similarly, another respondent had this to say:

> *"Yes, I mean many people will be thinking about the knowledge. That is to start with and that will mean that we have to be able to impart the knowledge to start with. And then then the confidence…what do they do differently….what do the nurses do that the pharmacists cannot do. We have to be able to establish that. And what can the pharmacist do better than what the nurses do. That will also have to be established"* (IDI respondent 2).

University of Ghana http://ugspace.ug.edu.gh

Table 7 ***4.3b:*** ***Specific immunisation attitudes by pharmacists – knowledge and capacity***

Variables	Likert Scale	Willingness to use pharmacies as service points		
		Coefficient (k)	95%CI	*P-Value*
Vaccines produce more health benefits	Strongly disagree	Ref	-	-
	Somewhat disagree	-0.335	(-1.047, 0.378)	0.337
	Neither agree nor disagree	0.136	(-0.802, 1.074)	0.764
	Somewhat agree	0.238	(-0.319, 0.795)	0.381
	Strongly agree	0.243	(-0.373, 0.860)	0.418
Availability of pharmacy space to administer vaccine	Strongly disagree	Ref	-	-
	Somewhat disagree	0.034	(-139, 0.542)	0.229
	Neither agree nor disagree	0.032	(-0.275, 0.587)	0.458
	Somewhat agree	0.147	(-0.089, 0.557)	0.145
	Strongly agree	0.1	(-0.188, 0.397)	0.464
I am frequently asked by patients to provide advice about vaccines	Strongly disagree	Ref		
	Somewhat disagree	-0.088	(-0.931, 0.756)	0.829
	Neither agree nor disagree	0.008	(-0.684, 0..701)	0.981
	Somewhat agree	0.082	(-0.612, 0.776)	0.806
	Strongly agree	0.070	(-0.654, 0.793)	0.842
Availability of physician who would	Strongly disagree	Ref		
	Somewhat disagree	0.245	(0.087, 0.403)	0.003*
	Neither agree nor disagree	0.149	(-0.018, 0.315)	0.079
	Somewhat agree	0.247	(0.059, 0.435)	0.011*
Formal certification in vaccine administration should be required	Strongly disagree	Ref	-	
	Neither agree nor disagree	-0.437	(-1.632, 0.760)	0.453
	Somewhat agree	-0.585	(-1.627, 0.457)	0.254
	Strongly agree	-0.474	(-1.383, 0.434)	0.287
With no additional training, I can administer vaccines	Strongly disagree	Ref		
	Somewhat disagree	-0.040	(-0.262 0.182)	0.711
	Neither agree nor disagree	-0.023	(-0.388, 0.341)	0.896
	Somewhat agree	0.179	(-0.078, 0.437)	0.161
	Strongly agree	-0.048	(-0.646, 0.549)	0.867
Ref		4.619	(0.338, 8.900)	0.036*

University of Ghana http://ugspace.ug.edu.gh

4.7. Pharmacy related factors influencing immunisation practice

the overall willingness to use pharmacies as service points based on the pharmacy related factors influencing immunisation practice are shown in Table 4.3. Respondents were asked to indicate their concerns if pharmacists were permitted through legislation to administer vaccines in their area. Overall, there was a statistical significant [k=3.21, CI :(3.00, 3.42), p<0.05] relationship. In terms of concern about legality, there was no statistically significant (p>0.05) relationship between those who chose „somewhat unimportant" „neither important nor unimportant" and somewhat important compared to „not at all important".

During the IDI, a respondent was asked to state the factors that would make possible the use of community pharmacies as service point for immunisation:

> *"Of course the possibility, it should be backed by law and regulations. That is the first thing ...yes so that the public will also feel confident. Because if it is not backed by law. They might think that ohh the practice is quack. Chuckles…yes…So the mandate should be there. It should be mandated, backed by law for the public to accept that oh ok so now it is not only at the health Centres, clinics, hospitals that we can receive vaccinations services, but now, it is generally accepted by the GHS, MOH, by all the partners that pharmacists can now provide vaccinations and if that is there, the education goes on for people also to be aware. Backed by the trainings, and all those things, the equipment, and all those necessary I have said. It will be possible to provide" (*IDI respondent 3).

Further, the responses to the concern: „availability of physician who would agree to give standing orders or provide protocol oversight" was statistically significant (p<0.05). Responses: „somewhat unimportant" „neither important nor unimportant" and somewhat important compared to „not at all important" were all towards high importance.

Responses from the IDIs supported the quantitative results:

University of Ghana http://ugspace.ug.edu.gh

"Ehmmm.. the community pharmacies can be equipped with a bit of support. See, immunisation comes with certain things that you will have to provide. For instance, cold chain has to be maintained (you know) from delivery point, storage, and then it is not all the products you are going to administer. Some will be left over, how you store them. All that knowledge will have to be impacted to them – the pharmacist. And that will mean that the community pharmacies will have to be ready for it. They will also have to be given the necessary knowledge. It could be like the CPDs we are doing – impart the knowledge through that activity. And gradually, let it trickle down to the others" (IDI respondent 1).

University of Ghana http://ugspace.ug.edu.gh

Table 8 ***4.3: Pharmacy related factors influencing immunisation practice***

Variables	Likert Scale	Willingness to use pharmacies as service points Coefficient (k)		
Concern about legality	Not at all important	Ref	-	-
	Somewhat unimportant	-0.080	(-0.240, 0.080)	0.319
	Neither	-0.030	(-0.176, 0.117)	0.685
	Somewhat important	-0.018	(-0.186, 0.150)	0.836
Availability of staff support	Not at all important	Ref	-	-
	Somewhat unimportant	0.021	(-0.112, 0.154)	0.757
	Neither	-0.078	(-0.241, 0.084)	0.340
	Somewhat important	-0.049	(-0.251, 0.153)	0.631
Support of owner or management	Not at all important	Ref		
	Somewhat unimportant	0.093	(-0.040, 0.225)	0.167
	Neither	0.092	(-0.047, 0.230)	0.191
	Somewhat important	0.003	(-0.171, 0.177)	0.970
Pharmacists current level of knowledge	Not at all important	Ref		
	Somewhat unimportant	-0.031	(-0.167, 0.104)	0.646
	Neither	-0.067	(-0.200, 0.066)	0.320
	Somewhat important	-0.002	(-0.191, 0.186)	0.981
Availability of pharmacy space to administer the vaccines	Not at all important	Ref		
	Somewhat unimportant	0.038	(-0.097 0.173)	0.575
	Neither	0.056	(-0.097, 0.209)	0.468
	Somewhat important	0.161	(-0.043, 0.364)	0.119
Availability of physician who would colloborate	Not at all important	Ref	-	
	Somewhat unimportant	0.227	(0.071, 0.384)	0.005*
	Neither	0.165	(0.003, 0.327)	0.046*
	Somewhat important	0.234	(0.049, 0.419)	0.014*
Cost associated with professional	Not at all important	Ref		
	Somewhat unimportant	-0.150	(-0.304 0.004)	0.057
	Neither	0.029	(-0.130, 0.187)	0.719
	Somewhat important	0.129	(-0.041, 0.299)	0.134
Ref		3.209	(3.002, 3.415)	0.000

University of Ghana http://ugspace.ug.edu.gh

4.8. Pharmacists opinions about immunisations

The overall willingness by respondents to use pharmacies as service points in relation to their opinion about immunisation is shown in Table 4.3. Overall, there was a statistically significant [k=3.43, CI :(3.06, 3.80), p<0.05] relationship. Respondents were asked to indicate how important the provision of information to an individual or family on the diseases against which the vaccines are designed to protect is. Responses: „somewhat important", „neither important nor unimportant" and „very important" compared to „not at all important" were not statistically significant. The responses were however towards higher importance. Moreover, respondents agreed that it is important to continue to vaccinate even if some diseases have disappeared in Ghana. Those who indicated „somewhat important", „neither important nor unimportant" and „very important" compared to „not at all important", were toward high importance.

Respondents were asked whether it was important to encourage all healthcare workers to be immunized annually with influenza vaccine. Respondents who stated „somewhat important", „neither important nor unimportant" and „very important" compared to „not at all important" were all towards high importance with significant associations except those who said it was neither important nor unimportant [k=-0.06, CI:(-0.19, 0.07), p<0.365].

University of Ghana http://ugspace.ug.edu.gh

Table 9 ***4.6: Pharmacists' opinions about immunisations***

Variables	Likert Scale	Willingness to use pharmacies as service points Coefficient (k)		
Provide information on individual	Not at all important	Ref	-	-
	Somewhat unimportant	-0.646	(-1.312, 0.019)	0.057
	Neither	0.275	(-0.145, 0.695)	0.196
	Very important	0.325	(-0.090, 0.740)	0.123
Information on risk factors	Not at all important	Ref	-	-
	Somewhat unimportant	-0.099	(-0.864, 0.667)	0.798
	Neither	-.107	(-0.758, 0.544)	0.745
	Very important	-0.117	(-0.782, 0.549)	0.728
Continue to vaccinate even if some	Not at all important	Ref		
	Somewhat unimportant	-0.033	(-0.188, 0.122)	0.673
	Neither	0.023	(-0.138, 0.184)	0.780
	Somewhat important	0.097	(-0.051, 0.246)	0.196
	Very important	0.103	(-0.052, 0.259)	0.191
Encourage all healthcare workers to	Not at all important	Ref		
	Somewhat unimportant	-0.158	(-0.290, -0.027)	0.019*
	Neither	-0.061	(-0.194, 0.072)	0.365
	Somewhat important	-0.147	(-0.251, -0.044)	0.006*
Ref		3.429	(3.059, 3.798)	0.000*

4.9. Chapter summary

The chapter sought to explore the feasibility and acceptability of the use of community pharmacies as service points for immunisation in the Accra Metropolitan Area. The analysis revealed areas for policy formulation and implementation. The next chapter presents discussions of the results in relation to literature.

University of Ghana http://ugspace.ug.edu.gh

CHAPTER FIVE

DISCUSSIONS

5.1 Introduction

This chapter presents the assessment of feasibility and the exploration of the acceptability of the use of community pharmacies as service points for introduction of immunization services by policy formulators and the assessment of the willingness of pharmacists to administer vaccines. It comprises the findings and their relationship to existing literature presented in accordance with the aim and objectives of the study. This is in six sections: Section one presents the identified factors of the feasibility of the use of community pharmacies as service points for the introduction of immunization services by policy formulators. Section two presents the factors that addresses acceptability of the use of community pharmacies for the introduction of immunization services by policy formulators. Section three presents practical implications of vaccine administration by pharmacists. Section four presents the general and specific immunisation attitudes of pharmacists, section five is on pharmacy related factors influencing immunization practice and section six presents the pharmacists‟ opinions about immunisations in relation to the willingness to administer vaccines.

5.2 Feasibility of use of community pharmacists as service points for immunisation – policy formulators

The findings of the qualitative approach using IDIs identified factors which addressed the feasibility of the use of community pharmacies as service points for introduction of immunisation services. This includes the alignment with policy formulation which is one of the key factors to make possible this concept and as is evidenced in the study conducted by Bushell

University of Ghana http://ugspace.ug.edu.gh

et al on the case of pharmacists administered vaccinations services in Australia (Bushell, Yee, & Ball, 2013). The study confirmed a willingness to embrace pharmacists administered vaccines based on appropriate competencies and broadening health delivery options to the public through the modification of its existing immunisation programmes. A respondent vividly described this as follows:

"Their availability, their capacity and their skills and competencies will draw people to them. Especially if they are given targets within the community."

The legal implication will call for policy formulation to create the mandate to have this practice." (IDI respondent 4)

In addition to the legal framework and policy formulation mentioned, a need for a pilot study, capacity building, engagement and advocacy are also listed as factors to enhance the feasibility of community pharmacies as immunization service points. This is in consistent with a study on "The pharmacist as public health advocate: enhancing immunization rates"- to increase immunisation advocacy and public awareness which will in turn increase immunization coverage (Shelton & Foster, 2012). This further proves the benefit of augmenting the efforts of the EPI in Ghana by improving coverage especially in the urban areas where community pharmacies are mostly located where the low coverage is alarming.

University of Ghana http://ugspace.ug.edu.gh

5.3 Acceptability of use of community pharmacists as service points for immunisation – policy formulators

The interviewed policy formulators highlighted factors such professionalism, Continuous professional development, availability of pharmacist, accessibility of pharmacies, knowledge of adverse reactions after administration of vaccines and reimbursements concerns as needed to make community pharmacies acceptable as alternate service points for immunisation. This is supported by a study which explored and verified the factors that influence the relative performance of pharmacies providing NHS influenza vaccinations which listed increasing capacity building among the obstacles to overcome as pharmacists expands role in the healthcare delivery system (Evans, Wood, & Carter, 2016).

Another study, which conducted a survey on the willingness of pharmacists as immunizers, further confirmed that the implementation of this concept requires professional development and certification in vaccine administration as well as addressing reimbursement concerns as found during this study by the policy formulators (Edwards et al., 2015b).

5.4 Practical implications of vaccine administration by pharmacists

The results to the concerns about incorporating vaccine administration into the pharmacists practice at this time highlighted the practical implications of vaccine for pharmacists. Of the concerns listed, reimbursement, sharp safety concerns, safe needle disposal concern, liability and malpractice concerns, lack of knowledge of how to administer vaccines with lack of pharmacy space to administer vaccines were ranked as the major concerns of vaccine administration by the pharmacists. This confirmed concerns cited by policy formulators and by the survey on the willingness of pharmacists to administer vaccines (Edwards et al., 2015a).

University of Ghana http://ugspace.ug.edu.gh

These challenges are also confirmed in the study on Adult immunization programmes in Nontraditional settings by Klein (Klein, 2016).

The least concerns given were lack of knowledge of adverse events after immunizing, lack of how to manage adverse events after immunization, cost associated with professional development and training, insufficient staff or resources to implement, record keeping and uncomfortability with seeing/using needles and blood.

The question posed to the pharmacists respondents if legally permitted by legislation to administer vaccines to adults at this time, would they incorporate this service into their practice or business; was answered in the affirmative for the majority of respondents 100 (95.2%). Four (4) of the respondents 3.8% were unsure of their response while one person answered no to this enquiry (Table 4.2a).

Concerning the response once immunization training or certification programme was available to the pharmacists, majority 84 (34.2%) of the respondent would vaccinate in a collaborative effort where a physician recommends a vaccine first and then they would administer. This was followed by 75 (30.5%) who will vaccinate in emergency situations such as during a pandemic and would also administer travel vaccines. A minority64 (26.0%) indicated that they would vaccinate in collaborative framework where a physician vaccinated the first time and they could provide all the subsequent vaccinations of the same vaccine or would be comfortable administering influenza vaccine only. However, 3 (1.2%) of the respondent indicated they would not vaccinate under any circumstances (Table 4.2b).

University of Ghana http://ugspace.ug.edu.gh

This is in agreement with the findings where the majority of community pharmacists (88 %) agreed that pharmacists as immunizers would increase public access, improve rates (84 %), and be acceptable to the public (72 %) (Edwards et al., 2015a).

5.5 General and specific immunisation attitudes of pharmacists

5.5.1 General immunisation attitudes of pharmacists

The pharmacists‟ general immunisation attitudes were sought through the question that asked whether pharmacists‟ opinions should be sought when the scope-of-practice of pharmacists is expanded to include the administration of vaccines to adults; most of the respondents strongly agreed which indicated a high willingness to administer vaccines.

On the opinion of pharmacists on the enquiry whether the provision of immunizations to individuals (children, adults), as is currently done is adequate; the respondents strongly disagreed.

Furthermore, respondents strongly agreed that it is important that adults receive all vaccines recommended by CDC.

Overall, there was a statistically significant [k=3.35, CI: (3.01, 3.69), $p<0.05$] relationship between the general immunisation attitudes of pharmacists and their willingness to use pharmacies as service points for immunization in the Accra Metropolitan Area. The IDI respondents 2 in the statement below further confirmed this:

> *"Ehmmm it would be acceptable because you see the community pharmacies are the first point of call. When anything happens in a community when anything happens to anybody (in the community), be it one complaint or the other all they ask for is the drug store (you know) so if they get know that I can also go to the drug store and also get immunized. I think we will be able to bridge the gap."*(IDI respondent 2)

University of Ghana http://ugspace.ug.edu.gh

Considering the use of community pharmacists being accessible and available at off-clinic periods, pharmacies are opened for longer and latter hours in the community compared to traditional healthcare premises such as the hospitals and the poly clinics; this provides a more convenient option for the community and thereby addressing the vaccine preventable diseases which is a national concern. This is confirmed by a study done by Goad J et al on vaccinations administered during off-clinic hours at a national community pharmacy: implication for increasing patient access and convenience(Goad, Taitel, Fensterheim, & Cannon, 2013) . This expanded hours offered by the community pharmacies increases accessibility and availability to clients for immunisation services. This in accordance to the findings by the policy formulators listing factors such accessibility and availability of community pharmacies making the community pharmacies feasible as alternate immunisation service points and the majority pharmacists willing to administer vaccines staying opened for longer hours as per the findings of this study .

As clearly given by the policy formulators during the In-depth interviews, factors indicated to make feasible the use of community pharmacies are increasing pharmacist capacity, vaccine procurement, managing other health care providers-pharmacy relationships, and improving public awareness. These are in agreement with the findings discovered by the study on National community pharmacy NHS influenza vaccination service in Wales: A primary care mixed methods study by Evans et al which listed these factors among others as obstacles to overcome in order to make feasible the use of community pharmacies as immunization service points (Evans et al., 2016).

The public health benefit as elucidated by one of the policy makers is seen as confirmed in a study by Papastergiou J et al on community-pharmacist administered influenza immunization

University of Ghana http://ugspace.ug.edu.gh

improves patient access to vaccination (Shelton & Foster, 2012). The study further concluded that the hope of expanding pharmacist vaccination services to include administration of other common vaccines would receive similar positive reception by patients and improve overall access to vaccination. This will further improve the public health contributions of pharmacists within the community.

There is an increase in immunization coverage as pharmacists get involved with immunizations process as compared to vaccines provision by traditional providers , as stated by policy makers, has also been established in a systematic and meta-analysis review conducted by Isenor, J.E et al- a study on impact of pharmacists as immunizers on immunization rates (Isenor et al., 2016)

5.5.2 Specific immunisation attitudes of pharmacists

The specific immunisation attitudes sought to identify views on the capacity and sustainability of immunizations practices among respondents. Majority of the responses strongly agreed that increasing the proportion of adults who receive recommended immunization is important. They somewhat agreed to the following statements: that natural infection or a healthy life style are effective alternatives to vaccination; that if one does not receive the influenza vaccine, also one is at risk of contracting influenza as important. There was a response of strongly agree to the statement of the importance of getting annual influenza, tetanus, diphtheria toxoid vaccine.

This showed a high willingness to administer vaccines further adding to the responses that vaccines produce more health benefits, the need for availability of pharmacy space to administer vaccine and the need for training in order to acquire skills to administer vaccines. Formal certification in vaccine administration is confirmed as a requirement as evidenced in the study

University of Ghana http://ugspace.ug.edu.gh

by Klein et al identifying pharmacists education in immunisation as barriers to overcome (Edwards et al., 2015b).

On how to equip personnel and facilities; capacity building through training in vaccine handling and techniques of administration, continuous development programme updates and increase knowledge in the management of adverse reaction were highlighted as key areas of skills needed by the policy formulators in confirmation as stated below:

"The knowledge of what you are doing should be paramount. If you going into immunization, at the pharmacy, your knowledge as regard to whatever product you are going to immunize, or you are going to dispense to the person, (because immunization is another form of dispensing/dispensation/dispense something to a patient). So you should be well- abreast with the information." (IDI Respondent 2)

Another policy formulator had this to say:

"Those are the things and they should be trained in the handling of vaccines. Vaccines are not just like other… ok? So there should be some kind of orientation in terms of handling. There should be cold chain management, Vaccine handling, that training should be there." (IDI Respondent 3)

Overall, there was a significant relationship [k=4.62, CI: (0.34, 8.90), $p<0.05$] between the specific immunization attitudes and their willingness to use pharmacies as service points.

University of Ghana http://ugspace.ug.edu.gh

5.6 Pharmacy related factors influencing immunization practice

This section identified factors about legal liability, availability of staff support, support of owner or management, pharmacist current level of knowledge concerning immunisation, availability of pharmacy space to administer vaccines, support and availability of physician for collaboration, reimbursement, cost associated with professional development as concerns that influence immunization practice.

The overall willingness to use pharmacies as service points based on the above listed factors are shown in Table 4.3. These factors identified were based on respondents response when they were asked to indicate their concerns if legislation were passed allowing pharmacists to administer vaccines in their area. Overall, there was statistical significant [k=3.21, CI: (3.00, 3.42), $p<0.05$] relationship.

Responses from the IDIs supported the quantitative results:

> *"Ehmmm.. the community pharmacies can be equipped with a bit of support. See, immunisation comes with certain things that you will have to provide. For instance, cold chain has to be maintained (you know) from delivery point, storage, and then it is not all the products you are going to administer. Some will be left over, how you store them. All that knowledge will have to be impacted to them – the pharmacist. And that will mean that the community pharmacies will have to be ready for it. They will also have to be given the necessary knowledge. It could be like the CPDs we are doing – impart the knowledge through that activity. And gradually, let it trickle down to the others*" (IDI respondent 1).

This provided the insight into pharmacy-related findings that can be strengthened to enhance the feasibility and acceptability of community pharmacies as service points for immunisation in the Accra Metropolitan area.

5.7 Pharmacists' opinions about immunizations

The general opinions of pharmacists about immunization was sought according to degree of importance. A higher importance response was assigned towards all opinions listed with

University of Ghana http://ugspace.ug.edu.gh

significant association except those who said it was nether important nor unimportant [k= -0.06, CI : (-0.19, 0.07), p<0.365] with regards to opinion on whether it was important to encourage all healthcare workers to be immunized annually with influenza vaccine. Among the opinions included the provision of information on risk and benefits prior to vaccination to individuals, information to an individual or family on the diseases against which vaccines are designed to protect and the importance to continue to vaccinate even if some diseases have disappeared in Ghana.

The overall willingness by respondents to use pharmacies as service points for immunisation are shown in Table 4.3. Overall, there was a statistically significant [k= 3.43, CI : (3.06, 3.80), p<0.05] relationship.

5.8 Chapter Summary

This chapter has highlighted the findings of the study in relation to existing literature. The next chapter addresses the summary, conclusion and recommendations.

University of Ghana http://ugspace.ug.edu.gh

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter presents the conclusion and recommendations of the study. The chapter covers five sections: The first section presents the summary of the study. Section two presents the conclusion. The third section presents the recommendations based on the findings of the study. Section four presents the limitations and section five presents future research suggestions.

6.2 Summary of the study

The general objective of the study was to explore the feasibility and acceptability of the use of community pharmacies as service points for immunisation in the Accra Metropolitan Area. The feasibility was assessed and acceptability of using community pharmacies as service points explored using a set of questions through an interview guide used in In-depth interviews and assessment of the willingness of pharmacists to administer vaccines was conducted through a structured questionnaire survey. Both qualitative and quantitative data were collected. Nvivo 10 was used for thematic analysis for the qualitative while Stata Version 14 was used to analyse the quantitative data. The conclusion of the study are presented based on the objectives of the study.

6.3 Conclusion

The study (both the qualitative and quantitative findings) concludes that community pharmacies will be accepted and feasible to use as alternate service points for immunisation in the Accra Metropolitan Area.

The qualitative study showed feasibility and acceptability of policy formulators to use community pharmacies as alternate service points for immunisation indicating the institution of

University of Ghana http://ugspace.ug.edu.gh

a legal framework, policy formulation, capacity building, knowledge acquisition through immunisation certification programme, engagement, advocacy, the availability of pharmacists as immunizers, the accessibility and convienence of community pharmacies as prerequisite for its implementation.

Overall, pharmacists were willing to administer vaccines in the Accra Metropolitan area in the quantitive study. Immunisation attitudes of pharmacists, pharmacy related factors that influence immunization and the pharmacists general opinions about immunisations were all statistically significant ($p<0.05$) and were all towards high willingness.

The multivariate logistic regression does not account for demographic characteristics. However, the univariate analysis confirmed that females had a higher willingness to administer vaccines as compared to males. Furthermore, pharmacists with a Bachelor‟s degree had a higher willingness as compared to those with Masters, PharmD, Fellowship or PhD. Moreover, pharmacist who had practiced between 1 and 5 years had a higher willingness followed by those who had practiced for 10 to 20 years to administer vaccines. The job title with the highest willingness to administer vaccines were staff pharmacists followed by pharmacist owners, then managers and clinical pharmacists. A further observation revealed the respondents who work for at least 40 hours a week and those who work for more than 40 hours a week also shows a high willingness to administer vaccines.

Overall, the use of community pharmacies as alternate service points are acceptable among both policy formulators and pharmacists with the feasibility factors to be put in place in order to implement this concept in the Accra Metropolitan Area.

University of Ghana http://ugspace.ug.edu.gh

6.4 Recommendations

Based on the findings evident from the study, and the conclusion drawn from the research, the following recommendations are being proposed to help bridge the gap of low immunization coverage in the urban areas of the EPI programme and reduce vaccine preventable diseases in the population at large:

- There should be a legal framework which will lead to a policy formulation that will permit pharmacists to administer vaccinations at the community pharmacy
- There should be an accredited immunization certification programme which will allow the pharmacists willing to provide immunization services to acquire the needed skills, knowledge and expertise in this expanded role
- Policy makers should foster a collaborative framework between the healthcare team, the physician and the pharmacists immunizers when legalised
- There is a need to for policies that will address concerns about reimbursement and malpractices
- There should be a pilot study on the implementation of the expanded role of pharmacists as immunizers and upon evaluation scale up to other needed areas of the country to augment the effort of the EPI programme and contribute to the public health of the nation by reducing if not preventing the spread of vaccine preventable diseases.
- Vaccine procurement arrangement should be instituted to mitigate the risk to physician practices of reduced service income and remove disincentives for pharmacies

University of Ghana http://ugspace.ug.edu.gh

6.5 Limitation to the study

One of the limitation of the study is the duration of the study. Due to the limited time of the study, a precision of 6% was used instead of the usual 5%. This resulted in a smaller sample size used in the study.

The second limitation is the selection bias in the qualitative study that might have influenced the information obtained from them. However, despite these limitations, internal and external validity was not adversely affected in the study.

The use of the cross-sectional study is the final limitation. Cross-sectional study design is temporal and responses can be different if measured at another time.

6.6 Future research

There is the need for further studies to explore the feasibility and acceptability of community pharmacies as alternate service points for immunisation from the perspective of the community, recipient of the service. There is also the need to include other healthcare team members and non-governmental organizations (NGOs) such as GAVI, UNICEF and WHO in future studies.

University of Ghana http://ugspace.ug.edu.gh

REFERENCES

Atkins, K., van Hoek, A. J., Watson, C., Baguelin, M., Choga, L., Patel, A., … Griffiths, U. (2016). Seasonal influenza vaccination delivery through community pharmacists in England: evaluation of the London pilot. *BMJ Open*, *6*(2), 1–12. Retrieved from http://bmjopen.bmj.com/content/6/2/e009739.abstract

Bushell, M. J. A., Yee, K. C., & Ball, P. A. (2013). Case for pharmacist administered vaccinations in Australia. *Journal of Pharmacy Practice and Research*. https://doi.org/10.1002/j.2055-2335.2013.tb00278.x

Coleman, M. A., Levison, J., & Sangi-haghpeykar, H. (2011). HPV vaccine acceptability in Ghana , West Africa. *Vaccine*, *29*(23), 3945–3950. https://doi.org/10.1016/j.vaccine.2011.03.093

Damale, N. K. R., Lassey, A. T., & Bekoe, V. (2005). Hepatitis B virus seroprevalence among parturients in Accra , Ghana. https://doi.org/10.1016/j.ijgo.2005.05.014

Damien, C., Xian, X., Gargasson, J. Le, Sossou, J., Nyonator, F., Colombini, A., & Gessner, B. D. (2015). Determinants of routine immunization costing in Benin and Ghana in 2011. *Vaccine*, *33*, A66–A71. https://doi.org/10.1016/j.vaccine.2014.12.069

Donaldson, L. J., Rutter, P. D., Ellis, B. M., Greaves, F. E. C., Mytton, O. T., Pebody, R. G., & Yardley, I. E. (2009). Mortality from pandemic A/H1N1 2009 influenza in England: public health surveillance study. *BMJ (Clinical Research Ed.)*, *339*, b5213. https://doi.org/10.1136/bmj.b5213

Edwards, N., Gorman Corsten, E., Kiberd, M., Bowles, S., Isenor, J., Slayter, K., & McNeil, S. (2015a). Pharmacists as immunizers: a survey of community pharmacists‟ willingness to administer adult immunizations. *International Journal of Clinical Pharmacy*. https://doi.org/10.1007/s11096-015-0073-8

Edwards, N., Gorman Corsten, E., Kiberd, M., Bowles, S., Isenor, J., Slayter, K., & McNeil, S. (2015b). Pharmacists as immunizers: a survey of community pharmacists‟ willingness to administer adult immunizations. *International Journal of Clinical Pharmacy*, *37*(2), 292–295. https://doi.org/10.1007/s11096-015-0073-8

Evans, A. M., Wood, F. C., & Carter, B. (2016). National community pharmacy NHS influenza vaccination service in Wales: a primary care mixed methods study. *British Journal of General Practice*, *66*(645). Retrieved from http://bjgp.org/content/66/645/e248

Ghana Health Service. (2014). Immunization Programme Comprehensive Multi-Year Plan, (May 2011), 1–60. Retrieved from http://www.gavi.org/country/ghana/documents/cmyps/comprehensive-multi-year-plan-for-2010-2014

Ghana Statistical Service. (2014). 2010 Population & Housing Census: Accra Metropolitan District Analytical Report, 78.

Goad, J. A., Taitel, M. S., Fensterheim, L. E., & Cannon, A. E. (2013). Vaccinations administered during off-clinic hours at a national community pharmacy: Implications for

University of Ghana http://ugspace.ug.edu.gh

increasing patient access and convenience. *Annals of Family Medicine*, *11*(5). https://doi.org/10.1370/afm.1542

GSS, GHS, & ICF Macro. (2014). Ghana Demographic and Health Survey.

Helleringer, S., Asuming, P. O., & Abdelwahab, J. (2016). The effect of mass vaccination campaigns against polio on the utilization of routine immunization services : A regression discontinuity design. *Vaccine*, *34*(33), 3817–3822. https://doi.org/10.1016/j.vaccine.2016.05.037

Hughes, M. M., Katz, J., Englund, J. A., Khatry, S. K., Shrestha, L., Leclerq, S. C., … Tielsch, J. M. (2016). Infant vaccination timing : Beyond traditional coverage metrics for maximizing impact of vaccine programs , an example from southern Nepal. *Vaccine*, *34*(7), 933–941. https://doi.org/10.1016/j.vaccine.2015.12.061

Isenor, J. E., Edwards, N. T., Alia, T. A., Slayter, K. L., MacDougall, D. M., McNeil, S. A., & Bowles, S. K. (2016). Impact of pharmacists as immunizers on vaccination rates: A systematic review and meta-analysis. *Vaccine*. https://doi.org/10.1016/j.vaccine.2016.08.085

Kamal, K. M., Madhavan, S. S., & Amonkar, M. M. (2003). Determinants of adult influenza and pneumonia immunization rates. *J Am Pharm Assoc*, *43*(3), 403–411. https://doi.org/10.1331/154434503321831120

Kelling, S. E. (2015). Exploring Accessibility of Community Pharmacy Services INNOVATIONS in pharmacy Exploring accessibility of community pharmacy services. *Inov Pharm.INNOVATIONS*, *6*(3). Retrieved from http://pubs.lib.umn.edu/

Klein, J. (2016). Adult Immunization Programs in Nontraditional Settings : Quality Standards and Guidance for Program Evaluation, *49*, 1–17.

Maina, L. C., Karanja, S., & Kombich, J. (2013). Immunization coverage and its determinants among children aged 12 - 23 months in a peri-urban area of Kenya. *The Pan African Medical Journal*, *14*(3), 3. https://doi.org/10.11604/pamj.2013.14.3.2181

Mkandawire, P., Richmond, C., Dixon, J., Luginaah, I. N., & Tobias, J. (2013). Health & Place Hepatitis B in Ghana ‟ s upper west region : A hidden epidemic in need of national policy attention. *Health & Place*, *23*, 89–96. https://doi.org/10.1016/j.healthplace.2013.06.001

Reid, M., & Fleck, F. (2014, May 1). The immunization programme that saved millions of lives. *Bulletin of the World Health Organization*.

Rosado, H., & Bates, I. (2016). *An overview of current pharmacy impact on immunisation A global report*.

Shelton, C. M., & Foster, S. (2012). The pharmacist as public health advocate: Enhancing immunization rates. *Drug Topics*, *156*(8).

Terrie, Y. C. (2010). Vaccinations: The expanding role of pharmacists. Retrieved September 1, 2016, from http://www.pharmacytimes.com/publications/issue/2010/January2010/FeatureFocusVaccinations-0110

University of Ghana http://ugspace.ug.edu.gh

Williams, W. W., Lu, P.-J., O'Halloran, A., Kim, D. K., Grohskopf, L. A., Pilishvili, T., … Bridges, C. B. (2016). Surveillance of Vaccination Coverage Among Adult Populations - United States, 2014. *Mmwr*, *65*(1), 1–36. https://doi.org/10.15585/mmwr.ss6501a1

Workforce, G. P. (2005). *1 . 1 Global Overview : Pharmacists density*. *Health Policy*.

World Health Organization. (2014). *Global Manual on Surveillance of Adverse Events Following Immunisation*. https://doi.org/10.1017/CBO9781107415324.004

University of Ghana http://ugspace.ug.edu.gh

APPENDICES

Appendix 1: Structured Questionnaire on Feasibility and Acceptability of use of community pharmacies as service points for immunisation in the Accra Metropolitan Area.

Participant Survey Information Letter
Pharmacists as Immunizers Survey
November, 2016

Principal Investigator:

- Elysee A.B. Karikari-Agyeman, Master of Public Health Student, School of public Health, University of Ghana, Legon

Academic Supervisor:

- Dr. Reuben Esena, School of public Health, University of Ghana, Legon

Study Title:
Feasibility and Acceptability of the use of Community Pharmacies as service points for immunisation in the Accra Metropolitan Area

Pharmacists as Immunizers Survey

Introduction
You are being invited to take part in a survey examining the determinants of pharmacists' willingness to become potential immunizers with community pharmacies as service points for immunization. Before you complete the survey, we ask that you review this information letter outlining the purpose of the survey, how it may affect you, the time commitment required and the risks and benefits to completing the survey. Taking part in this study is voluntary, and whether or not you participate will not affect your employment, your involvement with the Pharmaceutical Society of Ghana, or your membership in any regulatory /professional organization.

Purpose of the Study
The interest is in exploring opportunities for immunization outside of physician's offices and other traditional health care settings. There is interest in making better use of pharmacists as potential immunizers, as ways to improve the proportion of people including children and adults who receive recommended vaccines (coverage rates) and for emergency preparedness. Pharmacy stakeholders will be also discussing the following ideas regarding Ghanaian pharmacists and vaccine administration:
1. Maintaining a status quo position (i.e. pharmacists dispense vaccine product to be

University of Ghana http://ugspace.ug.edu.gh

administered by another health professional);
2. Authorizing and training pharmacists to vaccinate;
3. Training pharmacists as emergency immunizers.

However, the acceptability and implications of these options for frontline community pharmacists has not been well explored. Prior to regulatory organizations or educators embarking on a program expanding the scope of pharmacy practice to include the administration of immunizations, it is important to understand the desire of the average Ghanaian pharmacist to become an immunization provider, as well as their knowledge, attitudes, and beliefs about immunization.

University of Ghana http://ugspace.ug.edu.gh

Important Background

Immunization is one of the most cost-effective strategies for disease prevention. Despite the known benefits of immunization, immunization programs are not well used. Also, immunization coverage rates, or the proportion of the children and adult population within any given region who receive recommended vaccines, are not being achieved in Ghana. Medical and allied health professional literature has suggested that some of the barriers to achievement of target immunization coverage rates barriers include lack of access to immunizers and convenience.

The 2002 Romonow Report of the Commission on the Future of Health Care in Canada identified community-based pharmacists as an underutilized health care professional. According to the Canadian Pharmacists Association, pharmacists are highly accessible health care professionals, with approximately 21,000 pharmacists working in 7500 community-based pharmacies across Canada, with an estimated 55% of people over 18 years of age visiting a pharmacy in any given week. Furthermore, 49% of Canadian adults receive one or more chronic medications per year, providing an average of 26 opportunities in a given year for interaction with a pharmacist. Thus, expanding the scope of practice of community-based pharmacists to provide adult immunizations may increase accessibility to immunization programs. In the United States, all 50 states have programs where pharmacists are able to act as licensed immunizers within their scope of practice. States in which pharmacists administer immunizations have higher rates of adult immunization compared to those that do not.

Presently, pharmacists in Ghana do not administer vaccines. However, it is well known that in settings where pharmacists are actively involved in public education and facilitate adult immunization programs by hosting clinics in the pharmacy setting, with immunization provided by other health professionals such as is in Canada, USA and South Africa are of great public health benefit. Such programs are well-received by the public, with one Nova Scotia based program finding that over 80% of individuals who received their flu shot in a pharmacy-based clinic stated it was their preferred site for immunization. Based on the US experience, there is considerable interest within public health and pharmacy organizations to explore the potential for Ghanaian pharmacists to be trained and certified as immunization providers. Prior to embarking on a program expanding the scope of pharmacy practice to include the provision of immunizations, it is important to understand the desire of the average Ghanaian pharmacist to become an immunization provider, as well as their knowledge, attitudes and beliefs about immunization. Such information may inform policy development and statutory reform around expanding the scope of pharmacy practice.

Study Design

Community based pharmacists across the Accra Metropolitan Area will be asked to take part in the study. Up to 103 community based pharmacists could participate.

What Participation Involves

You will be asked for consent from the principal investigator and research assists inviting you to participate in this survey study. If you agree to take part in this survey study, you will be required to sign a consent form to that effect. The survey takes 20-30 minutes to complete. You will not be asked to identify yourself on the survey. All information collected is kept strictly confidential.

University of Ghana http://ugspace.ug.edu.gh

The investigator will not know the identity of participants, nor who has completed a survey. To help with survey response rate, follow-up reminder calls will be placed once the questionnaire has been left with the pharmacist.

University of Ghana http://ugspace.ug.edu.gh

Potential Harms and Benefits

There are no anticipated harms or benefits to participating in this study. The potential benefits may include future evidence-based continuing education that specifically meets the needs Ghanaian pharmacists, as well as statutory reform and policy change which may enhance the ability of pharmacists to increase access to vaccines for individuals including children and adults. Pharmacists will receive a reminder call to complete the survey if they have not already done so.

Voluntary Participation

You do not have to take part in this study. It is entirely voluntary. The survey does not ask any personal questions that would tell us who you are. There is no link between you and the completed survey. Therefore, withdrawal of your information is not possible once we receive the completed survey.

Costs and Reimbursements

Participation in this survey will not result in any expenses for you.

Communication of Study Results

When the study is finished and all the questionnaires have been reviewed, the results will be made available through the School of Public Health, University of Ghana.

Confidentiality

Any information you provide will be kept private. Study staff will only have access to the completed surveys. Completed surveys will not contain any information that can identify you. In addition, the anonymous surveys may be shown to the CPD technical Committee of the Pharmacy Council, the regulatory authorities for research in Ghana, and Ethical Review Boards. If the results of the survey are published, the publication will not contain any information that could identify you. Completed surveys will be housed on a secure computer server at the School of Public Health and will be kept for 7 years post publication.

University of Ghana http://ugspace.ug.edu.gh

Research Rights

If you would like an independent opinion about the survey, or about research in general, you may contact the Ghana Health Service Ethical Review Board on 0244-712919, Monday to Friday between 9 am and 4 pm.

Contact Person

Please feel free to contact the following research staff below at any time during this study if you have any comments, questions, or concerns:

Elysee Karikari-Agyeman, Investigator – +233(0)540738857

Dr. Reuben Esena, Academic Supervisor - + 233(0)543012970

Please read the following instructions before starting the survey:

Note: The survey is divided into sections. At the beginning of a new section, there is a brief explanation of how you should proceed. Note that some questions allow you to choose multiple answers while others require only a single choice.

Please read each question carefully. Your answers are completely anonymous.

If you are unable to complete the survey in one sitting, you may pause it at any time by cl

Your survey is not completed until you complete the final page. You may choose to withdraw your participation in the survey by stopping at any time before it is submitted. Submitting your survey is your consent to take part in the study.

Respondent details:

Name:…….

Interviewer:

Date of interview:

Community Pharmacy:

Language: ☐ English ☐ Other:

Residence: ☐ In Accra Metropolitan Area ☐ Outside Accra Metropolitan Area

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

☐ Actively promote routine and recommended immunizations of any type (of any type) for adults through advertisements, flyers, seminars, etc.

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

University of Ghana http://ugspace.ug.edu.gh

.....
.....
.....
.....
.....
.....
.....

PART I: DEMOGRAPHICS

The following parts of the survey address demographic information about you and your current practice setting. This information is important so that we can determine how representative the sample of pharmacists returning the survey is

University of Ghana http://ugspace.ug.edu.gh

of all Ghanaian pharmacists. Please answer by marking the most appropriate box.

---

93. What is your highest level of pharmacy education?

- Bachelor Degree
- Masters
- PhD
- PharmD
- Other

If you chose *Other*, please explain:.....
.....
.....

94. What is your gender?

- Male
- Female

95. What is your age as at your last birthday?

96. What is your marital status?

- Married
- Widowed
- Separated/Divorced
- In a long-term relationship
- Living together
- Single/Never been married

97. What is your ethnicity?

- **Akan**
- **Ewe**
- **Ga**
- **Others, please specify**

University of Ghana http://ugspace.ug.edu.gh

98. What is your religious background?

- ☐ **None**
- ☐ **Christian**
- ☐ **Moslem**
- ☐ **Others, please specify**

99. In which area do you primarily practice?

- ○ Accra Metropolitan Area
- ○ Tema Metropolitan Area
- ○ Ada East
- ○ Ada West
- ○ Adentan
- ○ Ashiaman
- ○ Ga Central
- ○ Ga East
- ○ Ga South
- ○ Ga West
- ○ Kpone Katamanso
- ○ La Dede-Kotopon
- ○ La Nkwantanang-Madina
- ○ Ledzokuku-Krowor
- ○ Ningo Prampram
- ○ Shai-Osudoku
- ○ I am not currently licensed.

If other Area, please state here:.....

University of Ghana http://ugspace.ug.edu.gh

100. Where do you primarily practice pharmacy?

- Independently Owned Pharmacy
- Pharmacy franchise
- Grocery/Department store franchise
- Hospital
- Other

If you chose *Other*, please explain:.....
.....
.....

101. Are you a:

- Owner
- Manager
- Staff Pharmacist
- Relief Pharmacist
- Clinical Pharmacist

102. How many years have you worked as a pharmacist?

- Less than one year
- 1 to 5 years
- 6 to 10 years
- 11 to 20 years
- 21 to 30 years
- More than 30 years

103. How many hours per week do you work:

- Less than 10 hours
- 11 to 24 hours
- 25 to 40 hours
- More than 40 hours

University of Ghana http://ugspace.ug.edu.gh

104. For the following questions, please provide the following statistics about your pharmacy. If you do not know, please leave the field blank.

a. Number of staff pharmacists employed (Full-time equivalents) =

b. Number of FTE pharmacy technicians employed =

c. Average prescription volume per day:

d. Number of hours per week your pharmacy is open?

University of Ghana http://ugspace.ug.edu.gh

Appendix 2: Interview Guide for Policy Formulators

Title:

Feasibility and Acceptability of the use of Community Pharmacies as Service Points for immunisation in the Accra Metropolitan Area.

Interview guide for in-depth interview

Introduction & Debriefing

Self-introduction: take note of age, level of education, occupation, religion, ethnic background, place of residence etc.

Debriefing: Tell participant again what the research is about, what the role of participants is, and the researcher‟s expectations.

Getting Started & Ice-breaking – cause and knowledge about the lack of use of community pharmacies as service points for immunisation.

Ok, now that you know why I am here and what I have come here to do, can you tell me how this is the situation now?

Acceptability of Community Pharmacies as service points for immunizations

- Tell me about your view of community pharmacies as service points for immunization?
- Probe for more view if answered brief and unclear
- How acceptable do you think this will be at this time?

o How will other providers in the healthcare team accept this role at the community pharmacy level in your opinion?

o Probe further for other possible reasons to cover perceived acceptance by healthcare team members (Prescribers, Nurses, EPI officials)

University of Ghana http://ugspace.ug.edu.gh

- How can community pharmacies equip both personnel and facilities to be accepted as alternate immunisation service points?
- What will be needed for the acceptability of community pharmacies as additional service points for immunisation?
- How does training and qualification influence the acceptance of community pharmacies as service points for immunisation?
- Are there any age group restrictions that should be assign to the population that can access immunization at the community pharmacies
- Should the immunization service at the community pharmacies be administered only by pharmacist or other healthcare professionals with expertise like nurses at the community pharmacies?

Perception about Community Pharmacies as Immunisation service points

- How would you feel about the use of community pharmacies as alternate immunization service points?
- How do you think other members in the community will feel?

- Let‟s now talk about your experiences. Share with us something you know or heard about the immunisation services at the community pharmacies?

- How relevant with this practice be in relation to vaccine preventable diseases?

- What are the major vaccine preventable diseases that you will suggest community pharmacies start with for immunizations and why?
- How do you think this will impact the Community and health in general?
- If yes, probe further for reasons for this.

University of Ghana http://ugspace.ug.edu.gh

- What do you think should be the criteria to qualify community pharmacies as service points for immunisation?

Feasibility of community pharmacies as service points for immunisation

- What are the factors that will make possible the use of community pharmacies as service points for immunisation?
- Probe into legal consideration, capacity building through training recommended relevant and by who, facility preparedness and criteria for qualifying as a service point for immunization.

    - What are the policy consideration for the implementation of this service at the community pharmacy?
- How long in your opinion will this policy formulation to implementation last?

University of Ghana http://ugspace.ug.edu.gh

Appendix 3: Informed Consent (Quantitative)

Consent Information/ Statement of Consent (structured survey questionnaire)

MASTER OF PUBLIC HEALTH

DEPARTMENT OF HEALTH POLICY PLANNING AND MANAGEMENT

SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF GHANA, LEGON

CONSENT INFORMATION

PURPOSE OF RESEARCH

You are invited to participate in a research study the acceptability and feasibility of community pharmacies as service points for immunization in the Accra Metropolitan Area. This study is to find out the perception of pharmacists on acceptability and feasibility of community pharmacies as service points for immunization.

You were selected as a possible participant in this study because you meet our selection criteria and you were retained in our sampling. This study is looking for a minimum of 250 participants.

VOLUNTARY PARTICIPATION

Your participation in this study is entirely voluntary. Your decision not to participate will not have any negative effect on you or on your relation. In the course of the study you can redraw anytime you want to, without any consequences.

University of Ghana http://ugspace.ug.edu.gh

DURATION OF STUDY INVOLVEMENT

This research study is expected to take approximately 2 months to interact with selected participants and to gather necessary information. Responses will be put together and analyzed in the next month. Final report should be complete by the end of July, 2017.

PROCEDURES

If you choose to participate, the research assistant will explain all the procedures to be followed in a language you understand. You will be given the opportunity to ask all questions you may have and further explanations will be given.

Signing or Thumb printing of Questionnaire

If you agree to participate, you will be requested to sign a consent form or thumb print if you wish to indicate that you fully agree to part. This will be done after understanding the purpose of study and agreeing to be part of study.

Administration of Questionnaire

A set of questions will be asked by the research assistant for which you will be requested to provide genuine answers as much as possible. You can however decide not to answer questions you feel uncomfortable with. Each questionnaire will take less than 30 minutes to complete.

University of Ghana http://ugspace.ug.edu.gh

Risks

There are no risks attached to responding to the questionnaires. Your identity will not be disclosed whatsoever in this study; however for purposes of data analysis each form will be coded.

PARTICIPANT RESPONSIBILITIES

As a participant, your responsibilities include:

- Follow the instructions of the research assistant
- Complete your questionnaires as instructed
- Ask questions as you think of them
- Tell the research assistant if you change your mind about staying in the study

WITHDRAWAL FROM STUDY

If you first agree to participate and later change your mind, you are free to withdraw your consent and discontinue your participation in the study. Your decision will not affect you in any way.

University of Ghana http://ugspace.ug.edu.gh

POSSIBLE RISKS, DISCOMFORTS, AND INCONVENIENCES

Even though there are no risks linked to participating in this study, we will be asking questions about your willingness to administer vaccines once the opportunity existed. This may generate some discomfort and inconveniences. You should talk with the research assistant if you have any such discomforts and ask questions whenever you want for clarification.

POTENTIAL BENEFITS

We cannot and do not guarantee or promise that you will receive any benefits from this study. We however hope that the outcome of this study would be used to advice on policies that impact on vaccine preventable diseases and improve quality of life.

PARTICIPANT'S RIGHTS

You should not feel obligated to agree to participate. Your questions should be answered clearly and to your satisfaction. If you decide not to participate, tell the research officer.

CONFIDENTIALITY

The results of this study may be presented at scientific or public health meetings or published in scientific or public health journals. Your identity and/or your personal information or that of your relation will not be disclosed except as authorized by you or as required by law. No response given will be disclosed to any unauthorized persons. Neither

University of Ghana http://ugspace.ug.edu.gh

your name nor any identity traceable to you or your relation will be indicated on the survey forms.

CONTACT INFORMATION

Questions, Concerns, or Complaints: If you have any questions, concerns or complaints about this research study, its procedures or risks and benefits, you should ask the research assistant.

Independent Contact: If you are not satisfied with how this study is being conducted, or your questions/ concerns etc. are not satisfactorily answered by the research assistant or if you have further concerns, complaints, or general questions about the research or your rights as a participant, please contact:

Dr. Reuben Esena (Supervisor)
School of Public Health
University of Ghana, Legon
Tel: 0543012970
E-mail: rkesena@hotmail.com

Or

Elysee Ama Bonsu Karikari-Agyeman
School of Public Health
University of Ghana, Legon
Tel: 0541174227
E-mail: elysee_k@yahoo.com

Or

Hannah Frimpong
GHS-ERC Administrator
Office: +233302681109
Mobile:+233(0)243235225 or 0507041223
Email: Hannah.Frimpong@ghsmail.org

University of Ghana http://ugspace.ug.edu.gh

Statement of Consent

I have read this consent form or it has been read and explained to me. I have had the opportunity to discuss this research study with ……..... and or his/her study staff. I have had my questions answered by them in a language I understand. The risks and benefits have been explained to me. I believe that I have not been unduly influenced by any study team member to participate in the research study by any statement or implied statements. I understand that my participation in this study is voluntary and that I may choose to withdraw at any time. I freely agree to participate in this research study.

I understand that information regarding my personal identity/ that of my relation will be kept confidential.

By signing this consent form, I have not waived any of the legal rights that I have as a participant in a research study.

Participant signature/Thumb print_____

Date _____

(Day / month / year)

University of Ghana http://ugspace.ug.edu.gh

Appendix 4: Informed Consent (Qualitative)

Consent Information/ Statement of Consent (interview guide)

MASTER OF PUBLIC HEALTH

DEPARTMENT OF HEALTH POLICY PLANNING AND MANAGEMENT

SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF GHANA, LEGON

CONSENT INFORMATION

PURPOSE OF RESEARCH

You are invited to participate in a research study the acceptability and feasibility of community pharmacies as service points for immunization in the Accra Metropolitan Area. This study is to find out the perception of stake holders such as policy formulators on acceptability and feasibility of community pharmacies as service points for immunization. You were purposively selected as a possible participant in this study because you meet our selection criteria and you were retained in our sampling. This aspect of the study will interview eight other policy influencing individuals in-depth.

VOLUNTARY PARTICIPATION

Your participation in this study is entirely voluntary. Your decision not to participate will not have any negative effect on you or on your relation. In the course of the study you can redraw anytime you want to, without any consequences.

University of Ghana http://ugspace.ug.edu.gh

DURATION OF STUDY INVOLVEMENT

This research study is expected to take approximately 2 months to interact with selected participants and to gather necessary information. Responses will be put together and analyzed in the next month. Final report should be complete by the end of July, 2017.

PROCEDURES

If you choose to participate, the research assistant will explain all the procedures to be followed in a language you understand. You will be given the opportunity to ask all questions you may have and further explanations will be given.

Signing or Thumb printing of consent form

If you agree to participate, you will be requested to sign a consent form or thumb print if you wish to indicate that you fully agree to part. This will be done after understanding the purpose of study and agreeing to be part of study.

The use of interview guide

A set of questions will be asked by the principal investigator for which you will be requested to provide your thoughts and experiences about the subject matter. You can however decide not to answer questions you feel uncomfortable with. Each interview will last for about an hour.

University of Ghana http://ugspace.ug.edu.gh

Risks

There are no risks attached with the interview. Your identity will not be disclosed whatsoever in this study; however for purposes of data analysis transcribed audio recordings will be coded.

PARTICIPANT RESPONSIBILITIES

As a participant, your responsibilities include:

- Ask questions as you think of them
- Tell the principal investigator if you change your mind about staying in the study

WITHDRAWAL FROM STUDY

If you first agree to participate and later change your mind, you are free to withdraw your consent and discontinue your participation in the study. Your decision will not affect you in any way.

POSSIBLE RISKS, DISCOMFORTS, AND INCONVENIENCES

Even though there are no risks linked to participating in this study, we will be asking questions about the inclusion of community pharmacies as service points for immunizations and whether you will support a policy formulation to this effect. This may generate some

University of Ghana http://ugspace.ug.edu.gh

discomfort and inconveniences. You should talk with the research assistant if you have any such discomforts and ask questions whenever you want for clarification.

POTENTIAL BENEFITS

We cannot and do not guarantee or promise that you will receive any benefits from this study. We however hope that the outcome of this study would be used to advice on policies that

PARTICIPANT'S RIGHTS

You should not feel obligated to agree to participate. Your questions should be answered clearly and to your satisfaction. If you decide not to participate, tell the interviewer (principal investigator).

CONFIDENTIALITY

The results of this study may be presented at scientific or public health meetings or published in public health journals. Your identity and/or your personal information or that of your relation will not be disclosed except as authorized by you or as required by law. No response given will be disclosed to any unauthorized persons. Neither your name nor any identity traceable to you or your relation will be indicated on the survey forms.

University of Ghana http://ugspace.ug.edu.gh

CONTACT INFORMATION

Questions, Concerns, or Complaints: If you have any questions, concerns or complaints about this research study, its procedures or risks and benefits, you should ask the research assistant.

Independent Contact: If you are not satisfied with how this study is being conducted, or your questions/ concerns etc. are not satisfactorily answered by the research assistant or if you have further concerns, complaints, or general questions about the research or your rights as a participant, please contact:

Dr. Reuben Esena (Supervisor)
School of Public Health
University of Ghana, Legon
Tel: 0543012970
E-mail: rkesena@hotmail.com

Or

Elysee Ama Bonsu Karikari-Agyeman
School of Public Health
University of Ghana, Legon
Tel: 0541174227
E-mail: elysee_k@yahoo.com

Or

Hannah Frimpong
GHS-ERC Administrator
Office: +233302681109
Mobile:+233(0)243235225 or 0507041223
Email: Hannah.Frimpong@ghsmail.org

University of Ghana http://ugspace.ug.edu.gh

Statement of Consent

I have read this consent form or it has been read and explained to me. I have had the opportunity to discuss this research study with ……. and or his/her study staff. I have had my questions answered by them in a language I understand. The risks and benefits have been explained to me. I believe that I have not been unduly influenced by any study team member to participate in the research study by any statement or implied statements. I understand that my participation in this study is voluntary and that I may choose to withdraw at any time. I freely agree to participate in this research study.

I understand that information regarding my personal identity/ that of my relation will be kept confidential.

By signing this consent form, I have not waived any of the legal rights that I have as a participant in a research study.

Participant signature/Thumb print_____

Date _____

(Day / month / year)

University of Ghana http://ugspace.ug.edu.gh

Appendix 5: Ethical Aprroval