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PROJECT TITLE:

COMPLIANCE WITH INFECTION PREVENTION AND CONTROL MEASURES AMONG COMMUNITY PHARMACY STAFF IN GA EAST DISTRICT, GREATER ACCRA, GHANA.

BY:

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DECLARATION

I, Anoa Aidoo, declare that this dissertation is the result of my own research work except for references made to the work of other authors which have been duly acknowledged and was undertaken under supervision. This work has not been presented for the award of another degree elsewhere partially or in whole.

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ABSTRACT

The fight against the spread of infection has had pharmacy staff at the forefront facilitating measures to detect and control disease spread and transmission through their interaction with patients. The pharmacy therefore must have in place and practice appropriate infection prevention and control to prevent and limit exposure to infection among staff and within the healthcare setting. The main objective of the study was to assess compliance with infection prevention and control measures among community pharmacists in the Ga East District of Greater Accra. A cross sectional design using questionnaires was used in this. The response to this questionnaire was validated with an observation guide used by mystery clients. The population of the study consisted of retail pharmacy staff in the Ga East district. A list of pharmacies in the area was obtained from the Pharmacy Council and the study had a sample size of 171. The data was analyzed using STATA v.16. Univariable and multivariable analysis were performed as well as chi squared test of independence. The result of the study indicates that knowledge on IPC among pharmacy staff in the Ga East district was good. 86.6% of participants had adequate knowledge and 8.8% had excellent knowledge. Compliance to infection prevention measures was also high (81%). Factors that affected the compliance was found from the study to be availability of personal protective equipment and the ability to ensure social distance. From the results of this study, pharmacy staff compliance to IPC is high. This notwithstanding, community pharmacies should be designed to accommodate social distancing measures to help limit the spread of infections. Also pharmacy management should provide the needed IPC resources for health workers to practice according to IPC policy guidelines. Again, studies should be done into IPC and HCAIs in the community pharmacy setting in Ghana to provide data since community pharmacies are one of the most patronized healthcare facility.

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CHAPTER ONE

INTRODUCTION

1.1 Background

Pharmacists play an integral role in the delivery of healthcare in most health systems (Fathima et al., 2013). Generally, community pharmacists serve as the first port of call for people seeking healthcare within the community (Hindi et al., 2018). The role of the community pharmacist is cross-cutting to include direct retail of pharmaceuticals, provision of clinical interventions, drug information, prescription reviews, treatment of minor ailments, health screening and counseling of clients or patients (Okai et al., 2019). As such, pharmacists and their support staff may often come into contact with clients who may have one medical condition or the other which may be infectious or non-infectious in nature before they seek further care from clinics or hospitals, if need be. For example, a client in a pharmacy with respiratory tract infection coughing or sneezing may release droplets over short distances which may land on another client or staff.

Each of the outlined client-based activities within a pharmacy may involve some form of interaction with people either through direct or indirect means and a possible exposure to biological substances such as blood. Additionally, community pharmacies may have to manage the disposal of biohazards while ensuring the safety of all persons within the premises (MoH, 2006). It is therefore relevant that community pharmacies have adequate and appropriate infection prevention and control measures in ensuring safety and minimizing risks for clients and staff.

Respiratory disorders remain one of the common ailments reported at the pharmacies (Collins & Moles, 2019). These respiratory disorders may often be present as mild to moderate infections that may require primary care. Due to the fact that such infections can be transmitted via aerosols, there could be an increased risk of exposure within community pharmacies. This situation has been heightened with the emergence of the novel severe acute respiratory syndrome coronavirus (SARS-CoV-2), causative agent for coronavirus disease

2019 (COVID-19). Individuals who are infected with SARS-CoV-2 (especially asymptomatic ones) can pass on the virus during visitation to the pharmacy. Indeed, limiting the spread of SARS-CoV-2 is partly dependent on the individual, however, health officials also have a significant role to play.

Community Pharmacists have been at the forefront in the combat against infectious diseases; and currently in the enforcement of measures to control the spread of COVID-19 (Koster et al., 2021). Pharmacists are also involved in the detection (based on symptoms reported by patients at the pharmacy), and referral of suspected cases of COVID-19 to appropriate facilities (Hoti et al., 2020). Through their interaction with patients, pharmacists can also help demystify some of the misconceptions and erroneous beliefs about COVID-19 (Bragazzi et al., 2020). It is therefore expedient, that within the pharmacy there is appropriate infection prevention control measures.

Compliance to standard Infection Prevention and Control (IPC) measures is key in preventing and limiting exposure to infections within the healthcare setting. To this end, regulatory bodies globally and nationally ensure the provision of guidelines to standardize practices and ensure the safety of healthcare workers within the workspace. Unfortunately, recent studies indicate poor compliance to various IPC measure and standard precautions for infection control. General estimates for compliance to basic IPC practices such as hand washing amongst healthcare workers is less than 30% (Malliarou, 2013). Lowe et al (2021) observed poor compliance to IPC measures amongst a section of healthcare professionals(Lowe et al., 2021). Similar studies in Mongolia record a 33% non-compliance rate to IPC measures. These malpractices are known to account for 2.5% of HIV cases and 40% of hepatitis B cases amongst healthcare workers worldwide (WHO,2002). Studies in the United States of America estimate healthcare-associated infections to be between 1.7 to 23.6% among patients who visit healthcare facilities and this accounts for approximately 80,000 deaths per year (Onyedibe et al., 2020). In South Korea, this is estimated to be 5-10% amongst patients (Han et al., 2021).

More importantly, this infection burden can be several times higher in developing countries (Pittet, 2014). In a study carried out in Tanzania, hand hygiene and disinfection of working tools were some of the activities that recorded least compliance among health professionals (Powell-Jackson et al., 2020). These two activities are part of many measures cited by the World Health Organization (WHO) as essential for controlling the spread infectious disease (World Health Organization, 2020a).

1.2 Problem statement

Compliance to infection prevention and control protocols is one of the means of ensuring safety within healthcare settings (Alhumaid et al., 2021). However, recent studies indicate that compliance to infection prevention and control at outpatient health facilities is poor (Powell-Jackson et al., 2020). Non-compliance to infection prevention and control measures has been found to be due to lack of knowledge and training in infection prevention and control, type of healthcare facility and ownership or location health facility (Bedoya et al., 2017).

Studies conducted amongst pharmacists and pharmacy staff in Australia and Lebanon indicated that although some pharmacists were aware of the existence of a recommended cleaning and disinfection procedure in the healthcare settings, less than 50% actually practiced this (Sum & Ow, 2021; Zeenny et al., 2020). Similarly, non-compliance to infection prevention and control measures (irrespective of the knowledge and training received by the pharmacists) have been observed in studies conducted in Nigeria (Reuben et al., 2021). Reasons accounting for this level of noncompliance are yet to be fully explored.

This is a major problem as persons who may visit the pharmacy are in most cases, suffering from one ailment or the other. Direct exposure to infections could lead to high morbidities amongst clients who visit these pharmacies and pharmacy staff (Alhumaid et al., 2021). Indeed, a number of studies have been conducted on infection prevention and control during this period of COVID-19 in a number of healthcare settings; however, few studies have elucidated rising cost of personal protective equipment (PPE) and shortages of other

consumables as accounting for these observations (Zeenny et al., 2020). Additionally, assessment of country-specific and setting-specific measures on infection prevention and control measures is relevant.

In Ghana, health workers have generally raised concerns about the fear of contracting infections in their line of work. Although training and knowledge on infection prevention and control may be high, practical compliance may be low; thus continuous assessment is important. The consequences are not limited to Ghana alone and include increased morbidity and mortality among patients and staff, vulnerability to antimicrobial resistance and increased referrals to higher levels of healthcare system (Ochie et al., 2022). Considering these consequences of poor compliance to infection prevention and control on the safety and health of pharmacy personnel, it is important that pharmacy staff are assessed to ascertain their level of compliance and factors that may affect their compliance.

1.3 Research Questions

1. What is the level of knowledge of pharmacy staff on infection prevention?
2. What is the level of compliance with infection prevention and control measures by pharmacy staff in community pharmacies?
3. What factors affect compliance with infection prevention and control measures?

1.4 General Objective

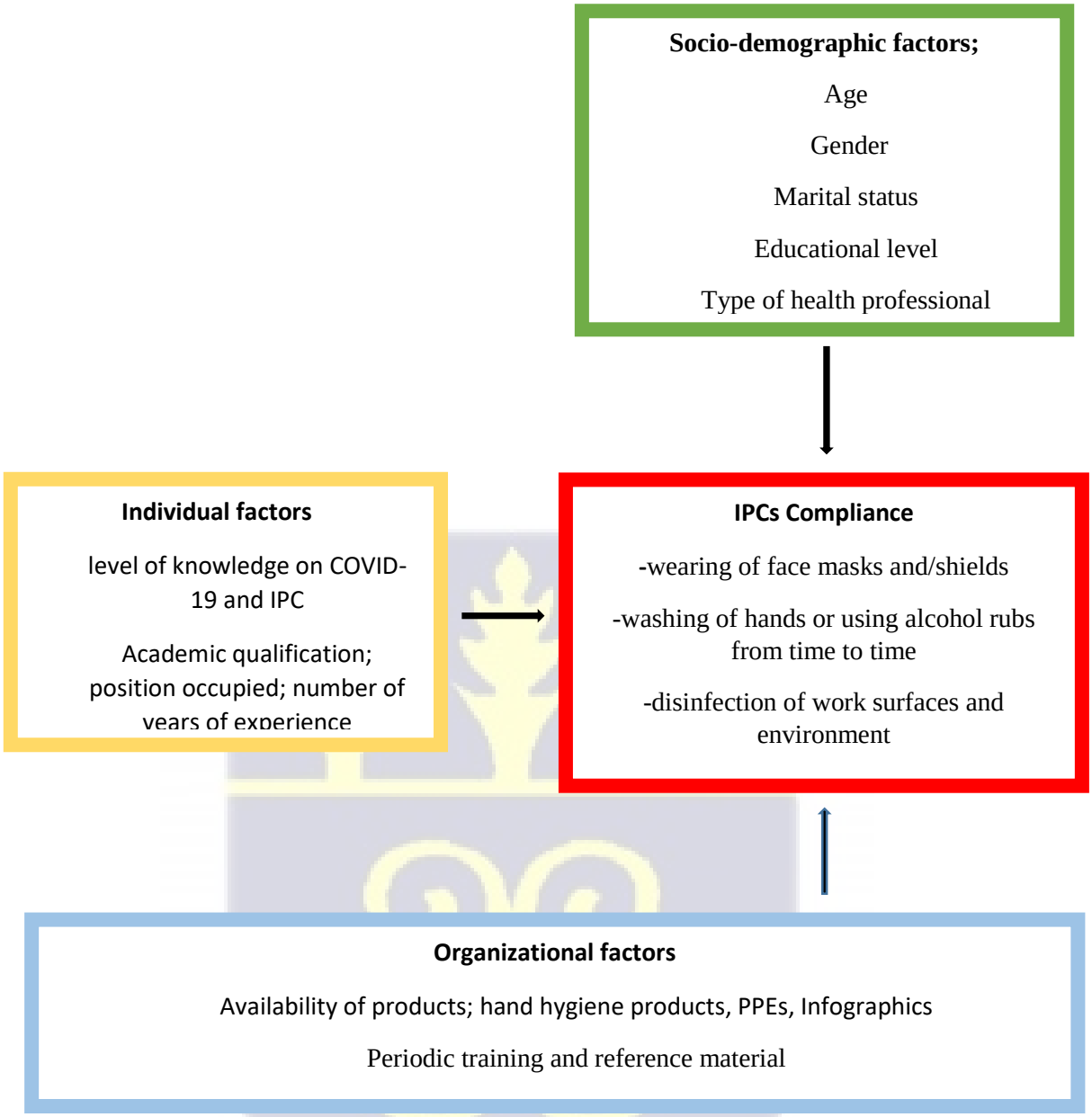
The general objective of the study was to assess compliance with infection prevention and control measures among community pharmacists in the Ga East District of Greater Accra.

1.4.1 Specific Objectives

1. To assess the level of knowledge of pharmacy staff on infection prevention and control.
2. To determine the level of the compliance to infection prevention and control measures by pharmacists in community pharmacies.
3. To identify factors that affect compliance with infection prevention and control measures.

1.5 Conceptual Framework

Factors affecting compliance to Infection Prevention and Control measures among community Pharmacists is summarized in Figure 1.



Three key areas were looked at to assess their relation with each other and the final outcome which is compliance to Infection Prevention and Control measures among community pharmacists and their support staff particularly during this era of COVID-19. The areas under study are socio-demographic factors, individual factors and organizational factors. The socio-

demographic area will cover age and gender. Level of knowledge, professional qualification and number of years' experience fall under individual factors whereas availability of products and equipment necessary for compliance as well as periodic training of staff define organizational factors.

The level of education of the pharmacy staff may influence directly their curiosity about latest trends in infection prevention and control and the state of affairs in COVID-19 transmission management. It may play an important role in the understanding of the pharmacy staff on the necessity of these preventive measures and the need to adhere to them. The number of years in service may also affect their interest in their field of work. This will drive them to the quest for more knowledge hence their awareness on current guidelines and trends of infection control.

The level of knowledge of a community pharmacist may directly influence his/her awareness of the existence of IPC protocols and the extent of repercussions of noncompliance and hence cause him to consciously comply. It may also affect the influence on other colleagues with whom he/she works and hence collectively attain compliance. A pharmacist with adequate knowledge will know what measures to ensure are in place in the community pharmacy and the right way to carry them out.

The availability of products and equipment necessary to carry out infection prevention and control measures are key for compliance among pharmacists and their support staff. The presence of infographics at vantage points serves as a constant reminder to pharmacists to practice the necessary measures. Periodic training and the presence of reference material also improves the awareness and knowledge and influences compliance to infection prevention and control measures.

1.6 Justification

The community pharmacy is often the most preferred point of health access to many people in Ghana. However, factors such as poor ventilation, periodic human traffic in the pharmacy, among others, make the community pharmacy a potential source of infection. While acknowledging the existence of policies and guidelines within the country to improve infection control within the health sector, there is paucity of data on the current trends with compliance to IPC measures within community pharmacies in Ghana. The findings of this study will highlight the current state of infection prevention and control in community pharmacies in the country. This will aid in informing regulatory institutions such as the Food and Drugs Authority and Pharmacy Council on the quality and standards of practice within the community pharmacy to further direct policy interventions. Additionally, findings of the study will support pharmacy training institutions in the review and development of training materials for pharmacy education in the country.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Community pharmacists

Community pharmacists are an important link in the healthcare chain and represent an important part of pharmaceutical industry. The duties of the community pharmacist include but are not limited to review and provision of drug information, making clinical interventions, treating ailments of common occurrence and documenting and preventing adverse drug reactions. Community pharmacists are arguably the most assessable within the health system. They are well distributed in the community and do not require an appointment for consultation. They are available over prolonged working hours providing services with minimal waiting time placing them in an ideal position to impart to the health care service to vast category of people who walk into their facility. The services provided by the community pharmacists offers the community more affordable healthcare options. They do this by lowering the incidence of expensive hospital visits and admissions. Studies have also shown that the community pharmacist are the most frequently visited health practitioners (Okai et al., 2019). The ease of assess, convenience and cost associated with health services provided by the pharmacist in the retail outlet is what pulls the crowds to their facilities.

In recent years, health care delivery has seen a dramatic shift from hospitals to the outpatient community setting. The increasing demand, volume and complexity of cases received at these settings has led to a greater risk of transmission of infections between patients and healthcare providers (Steinkuller et al., 2018). Although extensive research has been done to look into the practice, response and infection containment measures in developed countries, sub-Saharan Africa lacks such review of its health system (Steinkuller et al., 2018).

2.2 Infection Prevention and Control

Infection prevention and control describes practices carried out to prevent avoidable infection among patients and health workers(World Health Organization, 2020b). Recommendations for infection prevention for outpatient care have proven to be effective against novel diseases and epidemics (Diseases, 2013; Powell-Jackson et al., 2020). The initial infection prevention recommendation was published by the Center for Disease Control and Prevention (CDC) in response to AIDs epidemic in 1983 (Steinkuller et al., 2018). With the increasing incidence of pandemics along with multiple outbreaks, the CDC recommended infection prevention measures to include hand hygiene, the use of personal protective equipment (PPEs), respiratory hygiene, safe injection sites and disinfection of equipment and environment. For IPC programs to be effective at national and facility level, countries should have in place minimum requirements as this represents the starting point for basic protection and safety to patients(visitors) and health workers (World Health Organization, 2020a).

2.2.1 Infection Prevention and Control in the outpatient setting

Infection prevention, control and overall health promotion have been a challenge to the health sector in most African countries leading to an upsurge of infectious diseases and pandemics in recent times (Pittet, 2014). A review of transmission of infectious diseases occurring in outpatient settings revealed that lapses in hand hygiene, reprocessing of reusable instruments, use of personal protective equipment and lack of restriction of sick healthcare workers were related to disease transmission (Goodman et al.,1991). The conclusion drawn by the authors suggested that policy development together with education and infection prevention oversight should be initiated to encourage the application of the protocols. Subsequent outbreaks lead to the formulation of the guide to infection prevention of outpatient settings (World Health Organization, 2020b). In spite of these recommendations, outbreaks have continued to be on the rise due to failure to comply to these guidelines (Kondor, 2021; Powell-Jackson et al., 2020).

2.2.2 Hand hygiene

A Hand Hygiene for All Initiative has been implemented led by the World Health Organization and UNICEF to ensure that the recommendations on hand hygiene to prevent and control infections like COVID-19 pandemic and sustainability. The WHO recommends that at primary care facility level, water should always be available from source. These sources may be running water from a tap or 'veronica buckets'. Also hand hygiene facilities available may be in the form of alcohol based hand rub and/or water with soap (World Health Organization, 2020a). Alcohol based hand sanitizers are preferred for hand hygiene because they have a broad antimicrobial coverage (World Health Organization, 2020a). They are also better tolerated by the skin and can be made easily available of point of care. This settles the behavioral barriers to compliance in the healthcare setting (World Health Organization, 2020a). The WHO recommends using reminders around the facility. These may be in the form of posters, stickers and visual prompts that will continually remind health workers of the importance of hand hygiene.

2.2.3 Face masks and shields

As part of a comprehensive infection prevention and control, the World Health Organization, advices the use of face masks to limit the spread of infection through acutely expelled aerosols. Masks may either be used to protect healthy individuals from getting the infection or preventing transmission from source (Chughtaita et al., 2020). According to the WHO recommendations, persons suspected or confirmed with confirmed cases of COVID-19, should wear medical mask in the presence of other people. The correct use, storage and disposal of the face masks are necessary to ensure their effectiveness in reducing risk of transmission.

The mask alone, even when used appropriately, may not give adequate protection (WHO, 2020). Face shields may also be used alongside fabric masks in the absence of medical masks but not on their own since they only confer partial protection of the face (Government, 2020).

The design of face shields is in such a way to prevent splashes, in the case of COVID-19, respiratory droplets, from coming into contact with the mucous membrane or the eye. Physical distancing of at least 1 meter, respiratory etiquette, the use of gloves, adequate ventilation in door, quarantine and isolation may be critical to prevent the transmission from one infected human to another.

2.3 Factors associated with infection prevention and control

Three main factors have been identified to be associated with IPC compliance. These factors are socio-demographic factors which include age and gender, organizational factors such as availability of products and periodic training and also individual factors such as level of knowledge, academic qualification and number of years working experience.

2.3.1 Socio-demographic factors

2.3.1.1 Gender and age

In some studies on the knowledge and attitude towards COVID-19, male participants were reported to have significantly higher knowledge while others have suggested female participants being more knowledgeable than their male counterparts (Tamang et al., 2020; Zhong et al., 2020). Women may have been known to be more cautious when it comes to sanitary conditions (Galasso et al., 2020). Age has been reported to be associated to experience and better appreciation of critical conditions and the approach to remedy them with younger adults feeling safer which might be related to their perceived risk for infection (Czeisler et al., 2020).

2.3.2 Organizational factors

2.3.2.1 Availability of products and equipment

Following the discovery of the nature of the virus, the World Health Organization published products and practices that were effective in decapitating the virus. The use of recommended

products was encouraged among individuals as they go about their daily activities. However one factor responsible for non-compliance to this policy is the shortage or non-availability of the necessary resources for the enforcement of the guidelines (Kondor, 2021). One consistent reason given by some health workers according to Malliarou et al., for failing to follow guidelines on IPC was lack of equipment and necessary resources (Malliarou, 2013). This unavailability may directly affect the compliance to IPC measures because the resources and equipment are necessary to carry out the precautions. For instance, a healthcare worker needs soap and running water or an alcohol based sanitizer to practice hand hygiene. This observation was also made by Njovi, (2016). Whether or not resources are available may be attributed to inadequate funds which could be a result of the low priority given to infection prevention and control in national health budgets (Raka, 2014). Despite having the requisite training and knowledge for infection prevention and control, some healthcare workers have been found in several studies not show appropriate practice which may be as a result of the environment they find themselves in because most facilities do not provide sufficient sanitizers and protective equipment and some even surcharge staff under these conditions (Tamang et al., 2020).

2.3.2.2 Periodic training of pharmacy staff.

WHO initiated training sessions and virtual classes on prevention and control of COVID-19 to sensitize and heighten the preparedness of the healthcare worker. In research conducted participants who attended this training and online courses had adequate knowledge and engaged in appropriate practices of infection prevention (Atack & Luke, 2008; Tamang et al., 2020). Participants who were present for the training were knowledgeable in the field of infection prevention but did not have the right attitude or engage in the proper practices. Those who engaged in online sessions however showed better attitude and the appropriate practices towards infection prevention. The observations may have been due to the fact that trainings are often organized by the parent organization and participation is required

regardless of a person's interest. Online courses are however taken by individuals who have the interest (Tamang et al., 2020). A study among healthcare workers in Nigeria identified intensified regular training and retraining as an intervention strategy to bridge the gap in knowledge, and improve the adoption of a positive attitude towards infection prevention and control practices (Ukwenya et al., 2021). These findings were consistent with findings drawn from a study in Kenya that attributed gaps in knowledge, skills and attitudes regarding infection prevention and control to deficiencies in training on a comprehensive approach to IPC (Wesangula et al., 2016).

2.3.3 Individual factors

2.3.3.1 Level of knowledge

Being a novel virus, the knowledge, practices and attitudes of people towards COVID-19 is critical for in-depth understanding of the epidemiological dynamics of the disease and the compliance and success of IPC measures adopted for the management of the pandemic. (Reuben et al., 2021). Knowledge of risk and possible complications of an infection may influence the approach of high risk individuals in dealing with the situation. Also the knowledge of guidelines and appropriate protocol influences whether or not a person will perform or engage in them as a person who is unaware of what to do cannot do them (Hoti et al., 2020)(Tamang et al., 2020). A positive correlation has been found to exist between participants who have good knowledge of IPC and compliance to it even though it doesn't predict compliance, Alhumaid et al. reported that for this reason health facilities need to arrange training sessions to improve knowledge (Alhumaid et al., 2021)

2.3.3.2 Professional qualification

Studies among health workers in tertiary institutions in Nigeria and Iran reported high knowledge of IPC could be due to higher level of educational qualification of the doctors, nurses, pharmacists, and laboratory scientists, compared to other primary care workers

(Ukwenya et al., 2021). In the study about 93% of respondents had tertiary education. Others have also found that the high qualifications of health workers had no relationship with their practices on infection prevention but rather communication of regular up to date IPC strategies (Ireye et al., 2019). The professional qualification and the role played by healthcare workers has also been identified as being pivotal to their knowledge with higher qualified professionals exhibiting better knowledge and attitude to infection prevention (Alhumaid et al., 2021).

2.3.3.3 Number of years working experience

Overall knowledge and positive attitude toward infection prevention and control has been associated with appropriate training programs (Wesangula et al., 2016) and experience of other infectious disease outbreaks has been identified to have a powerful psychological effect on the attitude to IPC (Bavel et al., 2020). Bavel et al., explains that a healthcare worker who has lived through a pandemic surely has a better appreciation for possible manifestations of the disease and therefore the need for measures to control it. The longer a health worker has been in practice or his experience of epidemics of infectious diseases like Ebola and Lassa Fever, the better their understanding of issues on IPC based on the exposure they have. Exposure to a previous pandemic or crisis sparks a sense of urgency in dealing with a subsequent one (Jamison, 2018). In another study, healthcare workers who had been practicing for longer periods of time and who had attained higher levels in education showed more interest in infection prevention and control training and online courses regarding COVID-19 and were generally better vested in this area (Tamang et al., 2020).

2.4 Measurement of infection prevention in community pharmacies

In previous research, response to infection control has been measured based on guidelines recommended by the International Pharmaceutical Federation(IPF) health advisory and also based on general observations of the rapid changes that go on when it comes to infection control in retail companies (Sum & Ow, 2021). The IPF recommendations cover general

guidelines for pharmacists and the pharmacy workforce (International & Federation, 2020). These recommendations also cover the operations of the pharmacy as well as facilities that ensure safety and continuity of service with respect to pharmacy team, customer service and medicine supply (COVID-19 SUMMARY GUIDANCE # 3 Pharmacy Operations and Facilities : Ensuring Safety for All and Continuity of Service, 2020). The community pharmacy procedures in public areas, at the counter, social distancing, pharmacy visits and pharmaceutical services and activities in the pharmacy were also considered by these guidelines (COVID-19 SUMMARY GUIDANCE # 2 Community Pharmacy Interventions and Patient Counselling, 2020). The WHO also put out an outpatient healthcare facility Infection Prevention and Control tool which has also been adapted by researchers to assess infection prevention and control among pharmacies across the world (Bedoya et al., 2017; Onyedibe et al., 2020; Powell-Jackson et al., 2020). Bedoya et al., reported that the tool effectively assessed compliance with infection prevention and control in low-income countries across multiple domains in primary healthcare. In the study it was found that compliance with infection prevention and control practices was low overall and varied substantially across IPC domains. Weak associations were observed between compliance and the characteristics such as knowledge and training in infection prevention and control practices compared to availability of supplies. Onyedibe et al., 2020 reported that low overall compliance was not surprising considering limited access to hand hygeine facilities was an important risk to compliance to hand hygiene. His study cited higher compliance in certain areas and attributed it to the positive effect of the interventional programs mentioned in the studies which included systematic IPC training, and the use of posters and other reminders in the facilities. The WHO tool classifies a facility as meeting the infection prevention and control target completely, partially or not, depending on how well it follows guidelines. The WHO guidelines for infection prevention in outpatient guidelines was also based on other infection prevention assessment framework, implementation tools and resources,

precautionary measures and technical guidelines all developed by the WHO (World Health Organization, 2020b).

2.5 Measuring knowledge among Pharmacy staff.

Level of knowledge on infection prevention and control and its related guidelines have been measured using Likert scale and multiple choice questions on causative organism, period of incubation, mode of transmission, symptoms, population at risk, differential diagnosis, measures necessary for prevention and control (Alhumaid et al., 2021; Tamang et al., 2020; Zeenny et al., 2020). Information on these areas have been adequately furnished by the Center for Disease Control, the World Health Organization as well as various researchers and healthcare stakeholders (World Health Organization & Mission China Joint, 2020). Higher scores on these questions usually denote better knowledge. High level of knowledge has usually been associated with professional qualification, source of information and the availability of periodic training activities (Tamang et al., 2020).

2.6 Summary of literature review

Previous studies have showed the existence of poor compliance to IPC measures generally among healthcare workers. Although some studies have been carried out in primary healthcare settings, limited information exists on the most accessible primary healthcare setting in our communities. Hand hygiene, decontamination of work equipment, use of protective clothing, social distancing and training have been identified to be necessary to control and prevent infections. However, factors that affect compliance to these measures have not been assessed for their association within the community pharmacy. Insight to the state of compliance and factors related to compliance will be of great benefit to directional policy and professional training interventions.

2.7 Search Strategy

Literature for this review was assessed by searching relevant databases such as PubMed/MEDLINE, Scopus, Mendeley, Google Scholar and Science Direct. Global development websites such as the World Health Organization International Repository (WHO IRIS) and that of the International Federation of Pharmacists. Emphasis was on scientific publications published from 31st December 2019 which was the date the World Health Organization (WHO) received its first communication on COVID-19 (World Health Organization, 2020). The search strategy made use of the following Medical Subject Headings (MeSH) to streamline common terms searched across the data bases;

- COVID-19: This covered the various terms for describing COVID-19; coronavirus, SARS-CoV-2, pandemic
- Infection prevention and control: This included terms for: protocols for the prevention of infections, infection management.
- Healthcare associated infections (HCAIs): This included terms for: infections in healthcare setting and among healthcare workers.
- Frontline workers: This covered healthcare workers and their risk of contracting and spreading infections.
- Factors: This will include terms/synonyms for: factors, facilitators, barriers, drivers and determinants.

Boolean operators were also employed in the combination of the various key search terms to ensure that the selected articles reflected IPC among health workers whilst capturing both patient and health provider perspectives.

CHAPTER THREE

3.0 MATERIALS AND METHODS

3.1 Study location

The study was carried out in the Ga East of the Greater Accra region. This area is bordered by the Ga West, Tema metropolis and Accra Metropolis Districts and to the north by the eastern region. Ga East district covers the Abokobi, Oyarifa, Pantang, Dome, Madina, Haatso and Kwabenya areas. As at the last national population census conducted by the Ghana Statistical Service, the Ga East district had an estimated population of 172,243 (Health & In, 2010). The district has a good distribution of pharmacies (estimated to be about 150 registered community pharmacies). During the study it was observed that the actual distribution of pharmacies was less than what had been given by the pharmacy council. This was due to closure of most pharmacies due to constraints faced during the pandemic as well as some temporary suspension of service. The regulation of these pharmacies is by the Pharmacy Council of Ghana. The Pharmacy Council is involved in the registration of pharmacists each year. The Council also accredits training (continuous professional development) for pharmacists and their support staff. The Pharmacy Council also undergoes periodic monitoring of community pharmacies.

3.2 Study Design

An analytic cross sectional survey was conducted among pharmacists and other support staff in community pharmacies. The facilities on the list of pharmacies obtained from the pharmacy council were visited to brief supervisors or persons in charge on the study and also get their consent to participate in the study. Their contact details for further engagement through the questionnaire was also obtained at this point. Observations were also made through mystery visits to participating pharmacies to ascertain whether claims made by staff were exactly what pertains in pharmacies. The mystery visits incorporated was due to limitations observed in similar studies where questionnaires were administered online where respondents gave answers they thought was right and not what was actually practiced on site. In my study I sought to avoid this limitation by cross checking if the response they gave to make sure there was no disparity. Depending on how busy the facility was at the time of the

mystery client's visit, the pharmacy staff were engaged as would a regular client on requests for simple purchases or general community pharmacy services like blood pressure checks. At busy pharmacies the mystery client just passed through and made observations of staff interactions with themselves and other clients.

3.3 Study population

The study population consisted of retail pharmacists and support staff (pharmacy technicians or medicine counter assistants) at community pharmacies in Ga East district.

3.4 Variables

3.4.1 Dependent variable

The outcome variable in the study was the compliance to infection (particularly against COVID-19) prevention and control measures among community pharmacy staff. The assessment of compliance among pharmacy staff was made based on responses given to questions on the WHO and IPF recommended guidelines for infection prevention and control. These pointers were adapted from Ashinyo et al., (Ashinyo et al., 2021) on infection prevention and control among healthcare workers in COVID-19 treatment centers in Ghana.

3.4.2 Independent variable

The independent variables of the current study were socio-demographic factors; age and gender, individual based factors; academic qualification, position held in the pharmacy and work experience (years), organizational factors; availability of products, hand hygiene products, PPEs, infographics, and level of knowledge, periodic training of staff and reference materials. These variables are summarized in Table 1.

Compliance to infection prevention by pharmacy staff was assessed using 7 questions from the general practices and guidelines on infection prevention (appendix 1). This was assessed with a Likert scale with responses; always as recommended, most of the time, occasionally and rarely. One point (compliance) will be awarded for the responses; always as

recommended and most of the time. While occasionally and rarely was assigned zero (non-compliance). Yes, or no questions carried 1 point for yes whiles no was assigned zero.

Knowledge of IPC by pharmacy staff was measured using 10 questions. These questions were on existence of infection prevention policies, how infections can be transmitted in the pharmacy and how they can be prevented adapted from a study by Kondor (Kondor, 2021) on health worker compliance with infection prevention and control policy in Ghana. Response to these questions were answered yes or no giving a total highest score of 10. Participants who got a total score of 10 have excellent knowledge. six to nine (6-9) have adequate knowledge, and a score below six (6) have poor knowledge of IPC policy guidelines

Table 3.1a **Summary of Dependent and Independent Variables**

Variables		Operational definition	Scale of measurement	Variable type
Independent variables	Age	Age of respondent as at last birthday	Years	Continuous
	Sex	Biological make-up	Male or female	Binary
	Marital status		Single, married, divorced, widowed or cohabiting	Nominal
	Level of education	Highest educational level attained	JHS, SHS , degree, diploma, Masters	Ordinal
	Pharmacy staff category	Professional background of staff	Medicine counter assistant, dispensing technician, pharmacist.	Nominal
	Length of service	Number of years in service	Years	Continuous
	Water source	Running water to be used for hand washing with soap	Veronica buckets, flowing taps	Nominal
	Interruptions in supply	Water shortages, cuts in running water	Yes, no	Binary
	PPE	Protective clothing including overalls, dispensing coats, hand gloves, face masks, face shields or googles	Yes, no	Binary
	Training	Training on infection prevention and control guidelines	Yes, no	Binary
	Social distancing	1.5m-2m distancing between clients and staff	Yes, no	Binary

Table 3.1b **Summary of Dependent and Independent Variables**

Variables		Operational definition	Scale of measurement	Variable type
Independent variable	Frequency of PPE use	Making use of hand gloves, face masks, face shields, disposable gowns/ dispensing coats during interaction with patients	Always, as recommended, Most of the time, Occasionally, Rarely	Ordinal
	Disposal and replacement of PPEs	Replacing or disposing off damaged or contaminated PPE and performing hand hygiene.	Always, as recommended, Most of the time, Occasionally, Rarely	Ordinal
	Performance of hand hygiene in between patient interactions	Washing hands with soap under running water or use of alcohol based hand sanitizer before and after interacting with patients.	Always, as recommended, Most of the time, Occasionally, Rarely	Ordinal
	Performance of hand hygiene post fluid exposure	Washing hands with soap under running water or use of alcohol based hand sanitizer after contact with patient body fluids.	Always, as recommended, Most of the time, Occasionally, Rarely	Ordinal
	Performance of hand hygiene after contact with shared surroundings	Washing hands with soap under running water or use of alcohol based hand sanitizer after contact with shared surfaces and surroundings (door handles, sitting areas).	Always, as recommended, Most of the time, Occasionally, Rarely	Ordinal
	Frequency of decontamination of high touch surfaces	How often frequently used and shared surfaces are disinfected with rubbing alcohol and recommended cleaning materials.	Always, as recommended, Most of the time, Occasionally, Rarely	Ordinal
	Frequency of decontamination of shared equipment	How often frequently used and shared equipment are disinfected with rubbing alcohol and recommended cleaning materials.	Always, as recommended, Most of the time, Occasionally, Rarely	Ordinal
	knowledge of infection prevention and control?	Have you ever heard of infection prevention and control?	Yes, No	Binary

Table 3.1c **Summary of Dependent and Independent Variables**

Variables		Operational definition	Scale of measurement	Variable type
Independent variable	Knowledge of IPC policy guidelines in your facility?	Do you have access to the IPC policy guidelines in your facility?	Yes, No	Binary
	Knowledge of transmission of infections within the pharmacy?	Can a health worker transmit infections to a patient within the pharmacy?	Yes, No	Binary
	Infection from contact with body fluids	Are infections transmitted through contact with body fluids	Yes, No	Binary
	Infection from needle pricks and cuts from sharps.	Are infections transmitted through needle pricks and cuts from sharps.	Yes, No	Binary
	Infection from contaminated hands	Are infections transmitted through contaminated hand	Yes, No	Binary
	Infection from contact with contaminated surfaces.	Are infections transmitted through with contaminated surfaces.	Yes, No	Binary
	Infection prevention through hand hygiene	Infections can be prevented through hand hygiene	Yes, No	Binary
	Infection prevention with PPE	Infections can be prevented through PPEs	Yes, No	Binary
	Infection through disinfection of shared instruments and surfaces.	Infections can be prevented through disinfection of shared instruments and surfaces.	Yes, No	Binary
	Involvement and frequency of staff in IPC training.	Employee orientation and IPC training for all health workers(pharmacy staff)	Regular and mandatory orientation and training, annual orientation and training with optional attendance, occasional orientation, never.	Ordinal

Table 3.1d ***Summary of Dependent and Independent Variables***

Variables		Operational definition	Scale of measurement	Variable type
	Observation guide			
	Pharmacy staff disinfecting hands regularly	Pharmacy staff washing hands with soap under running water or using alcohol based hand sanitizers.	Yes, no	Binary
	Pharmacy staff in PPEs	Are pharmacy staff in face masks, shields, dispensing coats or gloves.	Yes, no	Binary
	Patients/clients disinfecting hands	Patients/ clients washing hands with soap and running water or using alcohol based hand sanitizers.	Yes, no	Binary
	Disinfection of shared surfaces	Disinfecting work surfaces and shared equipment with alcohol based sanitizers or recommended cleaning materials	Yes, no	Binary
	Social distancing demarcations	Clear markings of 1.5m-2m distancing between clients and staff in the facility	Yes, no	Binary
	Infographics	Posters and pictorial material on precautionary measures of IPC	Yes, no	Binary
Outcome variable	Compliance	Adherence to infection prevention and control measures	Yes, no	Binary

3.5 Inclusion criteria

Participants for this study were eligible if they were community pharmacists or pharmacy support staff providing retail services from community pharmacies within the Ga West district.

3.6 Exclusion criteria

Pharmacists or pharmacy support staff who provide wholesale services from community pharmacies were excluded from the study.

3.7 Data Collection Method

3.7.1 Sampling

A list of all pharmacies within the Ga East district was obtained from the Pharmacy Council, Accra, Ghana. The area was then categorized into urban, suburban and rural areas. Facilities to be included were randomly selected to represent uniformly in the different categories. Pharmacy staff that were readily available in the pharmacies participated in the study. A minimum of two participants per facility were engaged mainly based on availability of pharmacy staff at the time of data collection and general staff strength of the facility. Most facilities had one staff or two at most per shift. Although this was the practice by most facilities in some cases it had been necessitated by business challenges following the pandemic.

3.7.2 Data collection tools and procedure

A cross sectional study was employed to obtain data on infection prevention and control in community pharmacies in Ga East district of Greater Accra. Data were collected from 2 sources; i) pharmacists and support staff, and ii) pharmacies. Data collection was done between November and December and the visits were usually made mid-morning, the peak hours of the day. Prior to administration of questionnaire consent was sought from staff present in selected facilities.

Two data collection tools, comprising of a semi-structured questionnaire (Appendix 1) and a check list (Appendix 2) were used to collect data in two phases consecutively.

For the first phase, data was collected with a link to a KoboCollect database which was shared with consenting staff to give assess to offline questionnaire. On completion of the questionnaire it was submitted on the same portal and made available for analysis. The questionnaire had 3 sections (Appendix 1). The first section comprising socio-demographic and individual factors; age, sex, location, qualification, level of education, work

experience(years) and availability of measures for infection prevention. The second section was made up of 7 questions comprising infection prevention and control practices carried out by pharmacy staff. Infection prevention and control practices carried out by pharmacy staff included hand hygiene, disinfection of reusable equipment, work surfaces and premises, and use of PPE. The questions included whether or not personal protective equipment were worn during interactions with patients, proper disposal of used personal protective clothing, performance of hand hygiene before and after interaction with patients and their surroundings as well as disinfection of shared equipment and high touch surfaces. The last section had 10 questions on existence of infection prevention policies, how infections can be transmitted in the pharmacy and how they can be prevented one question as well assessing frequency and scope of infection prevention and control training programs based on the WHO infection prevention and control health-care facility response for COVID-19 (World Health Organization, 2020b). Questions in this last section include whether participant had heard of infection prevention and control, whether or not any such guideline was accessible in the facility, various ways infections get transmitted and various ways it can be prevented.

During the second phase of data collection, a checklist was used by mystery clients to confirm or dispute claims made by the pharmacy staff on the questionnaire. The checklist was filled by field investigators who visited the pharmacies as clients. They spent enough time (about 5 minutes) in the facility to assess the variables itemized on the list. The checklist included 6 questions on washing or disinfection of hands regularly, wearing of PPEs, patients being provided with hand disinfectants before entering pharmacy, surfaces and shared equipment disinfected regularly, demarcations to ensure social distancing, and infographics creating awareness for visitors about infection prevention and control measures as well as COVID-19 signs and symptoms (Appendix 2).

The observational follow-up was not used as a direct assessment of the pharmacy staff in the community pharmacy, but served as a confirmatory measure against any biases that may have

arisen from participants who being aware they were under observation may have altered their behavior or responses. de

3.8 Data Quality Control

3.8.1 Training and Pretest of data collection tools

The research team (comprising four individuals including the principal investigator) were trained on data collection tools and techniques to eliminate biases. In order to test the content and validity, the questionnaire was pretested amongst 15 pharmacies in the Accra Metropolitan Area, outside the study site. Following which modification was made to questionnaires, where necessary.

3.9 Data Management and Analyses

Data collected using KoboCollect was transferred into Microsoft Excel 2013. Subsequently, data was cleaned by getting rid of blank cells, duplicates and any encountered errors. Data was analyzed using STATA IC16. Data obtained through mystery clients was analyzed by direct comparison to other responses in the questionnaire. This was then merged with the main questionnaire to assess the difference in responses made by pharmacy staff and observations made by mystery clients. Descriptive statistics was used to present the results of the comparison in tables and figures. Chi-square test of independence was used to determine association between the independent variables and compliance; the Fisher's exact test was employed where some variables had few observations (less than 5). Logistic regression analyses were performed to ascertain the strength of association between independent variables (sociodemographic information, availability of IPC facilities, etc) and IPC compliance. Only variables that were significant at p=0.1 or less at the crude level were used to run the adjusted model. Significance of all variables was determined at 95% confidence interval.

Also data from questionnaires was categorized into urban and suburban depending on the location of the facility to identify any possible difference in compliance.

Measurement of knowledge was based on these 10 questions. The highest score of 10 denoting excellent knowledge was for participants who answer correctly all 10 questions. Participants with 6-9 had adequate knowledge while participants with a score below 6 had poor knowledge. Knowledge among staff was categorized as excellent, adequate or poor and training within facility was categorized as meeting target, meeting target partially or not meeting target at all.

3.10 Ethics

Ethics approval was sought from the Ethics Review Committee of the Ghana Health Service. Permission to study sites was also obtained from the Pharmacy Council of Ghana. All participants were made fully aware of the objectives of the study and their willingness to participate confirmed by consent prior to administration of questionnaire. Participation was voluntary and their submissions anonymous.

CHAPTER FOUR

4.0 RESULTS

4.1 Demographic characteristics of pharmacy staff in the Ga East district, Accra

Table 4.1 presents a summary of one hundred and seventy-one (171) community pharmacy workers sampled from 78 pharmacies. A majority of them, 109 (63.7%) and 140 (81.9%) were females and married, respectively. A little over half, 94 (55.0%) were within the 25-29 years' age bracket. A greater portion of them, 113 (66.1%) were Medicine Counter Assistants while over half, 88 (51.5%) held certificates as their highest qualification. Most of them, 74 (43.3%) had worked for 3-4 years in community pharmacy settings.

Table 4.1: Socio-demographic characteristics of pharmacy staff in the Ga East District, Accra (N=171).

Characteristics	Frequency (171)	Percentage (%)
Age		
≤ 24	36	21.1
25-29	94	55.0
30-34	27	15.8
≥ 35	14	8.2
Sex		
Female	109	63.7
Male	62	36.3
Marital status		
Single	140	81.9
Married	31	18.1
Highest qualification		
Secondary	23	13.5
Certificate	88	51.5
Diploma	26	15.2
Bachelors	30	17.5
Masters	4	2.3
Type of health professional		
Administrative staff	4	2.3
Dispensing technician	21	12.3
Medicine Counter Assistant	113	66.1
Pharmacist	33	19.3
Work experience (years)		
1-2	28	16.4
3-4	74	43.3
5 and above	69	40.4
Area		
Suburban	46	26.9
Urban	125	73.1

4.2 Knowledge of Infection Prevention Control measures among Pharmacy Staff in Ga East District. Accra.

A greater portion of study participants had heard of infection prevention and control (62.0%), knew pharmacists can transmit infection to patients (92.4%) through blood and body fluids (93.6%), needle pricks and cuts (88.3%), contaminated hands (78.4%), contaminated surfaces (89.5%) and can be prevented using PPE (93.0%) and proper disinfection (93.6%). Nonetheless just few, 15.2% had access to IPC policy.

Table 4.2: Knowledge on IPC among Pharmacy Staff in Ga East District. Accra.

Characteristics	Response	Frequency (171)	Percentage (%)
Knowledge on infection prevention and control			
	No	65	38.0
	Yes	106	62.0
Access to IPC policy			
	No	145	84.8
	Yes	26	15.2
Pharmacist can transmit infection to patient			
	No	13	7.6
	Yes	158	92.4
Infections transmit through blood and body fluids			
	No	11	6.4
	Yes	160	93.6
Infections transmit through needle pricks and cuts			
	No	20	11.7
	Yes	151	88.3
Infections transmit through contaminated hands			
	No	37	21.6
	Yes	134	78.4
Infections transmit through contaminated surfaces			
	No	18	10.5
	Yes	153	89.5
HCAI can be prevented by hand washing			
	No	6	3.5
	Yes	165	96.5
HCAI can be prevented by PPE			
	No	12	7.0
	Yes	159	93.0
HCAI can be prevented by proper disinfection			
	No	11	6.4
	Yes	160	93.6

4.3 Level of knowledge on IPC among pharmacy staff in the Ga East District, Accra (N=171).

Assessment of knowledge on infection prevention and control measures showed that the majority, 148 (86.6%) (95% CI – 80.5% - 90.9%) had adequate knowledge while few showed poor knowledge on IPC (Figure 4.1). There was no association between level of knowledge and area of study participants.

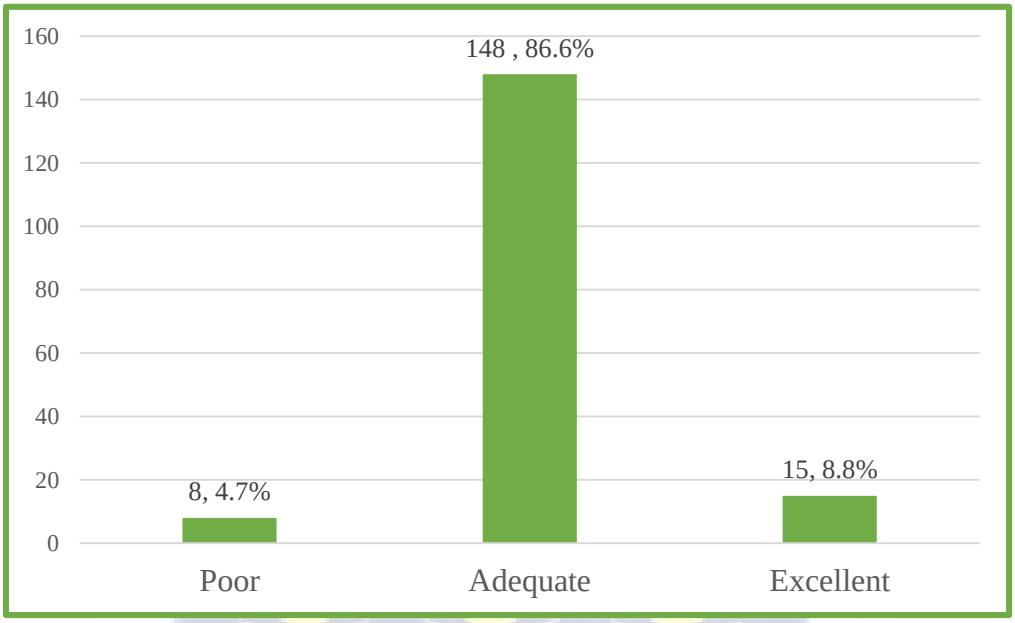


Figure 4.1: Level of knowledge on IPC among pharmacy staff in the Ga East District, Accra (N=171).

4.4 Compliance with infection prevention measures among pharmacy staff in the Ga East district, Accra

A majority of study participants were compliant to single-use gloves (80.1%), use of dispensing gown/coat (90.6%), removal of PPE based on protocol (90.1%), observation of hand hygiene (91.8%), observance of hand hygiene after exposure to body fluid (100.0%), observance of hand hygiene after touching patients (81.3%), frequent decontamination of surfaces (69.0%) and frequent decontamination of equipment (62.0%). However, non-compliance was higher for use of N95 or surgical mask and face shield or protective glass.

Table 4.3: **Compliance with infection prevention measures among pharmacy staff in the Ga East district, Accra**

Characteristics	Response	Frequency (171)	Percentage (%)
Single-use gloves			
	Non-compliant	34	19.9
	Compliant	137	80.1
N95 or surgical mask			
	Non-compliant	93	54.4
	Compliant	78	45.6
Face shield or goggles/protective glasses			
	Non-compliant	153	89.5
	Compliant	18	10.5
Dispensing gown/coat			
	Non-compliant	16	9.4
	Compliant	155	90.6
Removal of PPE based on protocol			
	Non-compliant	17	9.9
	Compliant	154	90.1
Observation of hand hygiene			
	Non-compliant	14	8.2
	Compliant	157	91.8
Observe hand hygiene after body fluid exposure			
	Non-compliant	0	0.0
	Compliant	171	100.0
Observe hand hygiene after touching patients			
	Non-compliant	32	18.7
	Compliant	139	81.3
Frequent decontamination of surfaces			
	Non-compliant	53	31.0
	Compliant	118	69.0
Frequent decontamination of equipment			
	Non-compliant	65	38.0
	Compliant	106	62.0

4.5 Level of compliance among pharmacy staff in the Ga East district, Accra

As shown in figure 4.2, the majority of community pharmacy workers, 138 (81.0%, 95% CI = 74.0% - 86.3%) were compliant with infection prevention and control measures.

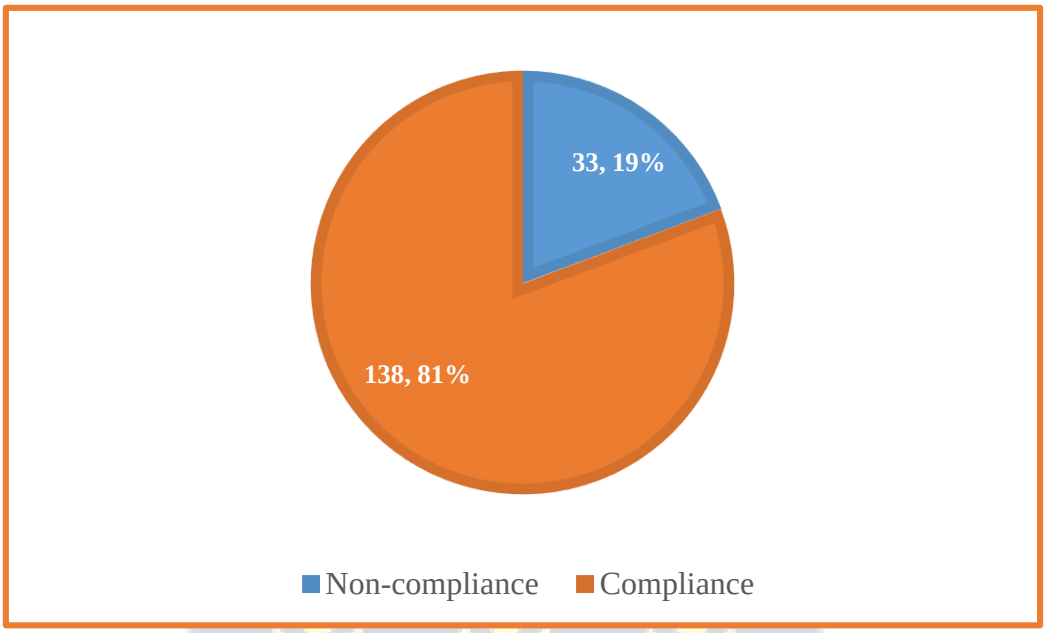


Figure 4.2: Level of compliance among pharmacy staff in the Ga East District, Accra (N=171).

4.6 Compliance with infection prevention measures among Pharmacy Staff in the Ga East District, Accra from Observation Guide.

A majority of study participants were compliant to single-use gloves (80.1%), use of dispensing gown/coat (90.6%), removal of PPE based on protocol (90.1%), observation of hand hygiene (91.8%), observance of hand hygiene after exposure to body fluid (100.0%), observance of hand hygiene after touching patients (81.3%), frequent decontamination of surfaces (69.0%) and frequent decontamination of equipment (62.0%). However, non-compliance was higher for use of N95 or surgical mask and face shield or protective glass.

Table 4.4: Compliance with infection prevention measures among Pharmacy Staff in the Ga East District, Accra from Observation Guide.

Characteristics	Response	Frequency (171)	Percentage (%)
Single-use gloves			
	Non-compliant	34	19.88
	Compliant	137	80.12
N95 or surgical mask			
	Non-compliant	93	54.39
	Compliant	78	45.61
Face shield or goggles/protective glasses			
	Non-compliant	153	89.47
	Compliant	18	10.53
Dispensing gown/coat			
	Non-compliant	16	9.36
	Compliant	155	90.64
Removal of PPE based on protocol			
	Non-compliant	17	9.94
	Compliant	154	90.06
Observation of hand hygiene			
	Non-compliant	14	8.19
	Compliant	157	91.81
Observe hand hygiene after body fluid exposure			
	Non-compliant	0	0.00
	Compliant	171	100.00
Observe hand hygiene after touching patients			
	Non-compliant	32	18.71
	Compliant	139	81.29
Frequent decontamination of surfaces			
	Non-compliant	53	30.99
	Compliant	118	69.01
Frequent decontamination of equipment			
	Non-compliant	65	38.01
	Compliant	106	61.99

4.7 Two sample test of proportion between level of compliance to IPC among pharmacy staff in the Ga East district, Accra.

There was no significant difference between the proportion of compliance to infection prevention and control measures from the self-assessment questionnaire and observation checklist.

Table 4.5: Two sample test of proportions

	Self-assessment		Observation		Absolute change		z	p-value
	Mean	SD	Mean	SD	Mean	SD		
Level of compliance	0.807	0.0302	0.813	0.0298	0.006	0.0004	-0.14	0.890

The two-sample test of proportion shows that there is no significant change in the metrics from the self-assessment as well as observation.

4.8 Association between socio-demographic characteristics and IPC Compliance among pharmacy staff in the Ga East district, Accra.

A significant association was found between highest qualification (Pearson chi-square = 9.60, p-value = 0.049), type of health professional (Pearson chi-square = 8.90, p-value = 0.034) and compliance to infection prevention and control measures (Table 4.6).

Table 4.6: Association between demographic characteristics of pharmacy staff and IPC Compliance in the Ga East District, Accra (N=171).

Characteristics	Total (%)	Compliance		Chi^2	p-value
		No	Yes		
Age				3.67	0.296a
≤ 24	36 (21.05)	6 (16.67)	30 (83.33)		
25-29	94 (54.97)	22 (23.40)	72 (76.60)		
30-34	27 (15.79)	2 (7.41)	25 (92.59)		
≥ 35	14 (8.19)	3 (21.43)	11 (78.57)		
Sex				0.15	0.697
Female	109 (63.74)	22 (20.18)	87 (79.82)		
Male	62 (36.26)	11 (17.74)	51 (82.26)		
Marital status				0.24	0.621
Single	140 (81.87)	28 (20.00)	112 (80.00)		
Married	31 (18.13)	5 (16.13)	26 (83.87)		
Highest qualification				9.60	0.049*a
Secondary	23 (13.45)	6 (26.09)	17 (73.91)		
Certificate	88 (51.46)	23 (26.14)	65 (73.86)		
Diploma	26 (15.20)	2 (7.69)	24 (92.31)		
Bachelors	30 (17.54)	2 (6.67)	28 (93.33)		
Masters	4 (2.34)	0 (0.00)	4 (100.00)		
Type of health professional				8.90	0.034*a
Administrative staff	4 (2.34)	0 (0.00)	4 (100.00)		
Dispensing technician	21 (12.28)	2 (9.52)	19 (90.48)		
Medicine Counter Assistant	113 (66.08)	29 (25.66)	84 (74.34)		
Pharmacist	33 (19.30)	2 (6.06)	31 (93.94)		
Work experience (years)				1.85	0.397
1-2	28 (16.37)	8 (28.57)	20 (71.43)		
3-4	74 (43.27)	13 (17.57)	61 (82.43)		
5 and above	69 (40.35)	12 (17.39)	57 (82.61)		
Area				0.24	0.624
Suburban	46 (26.90)	10 (21.74)	36 (78.26)		
Urban	125 (73.10)	23 (18.40)	102 (81.60)		

a – denotes p-value calculated from fisher's exact test, * - represents significance at p-value < 0.05.

4.9 Association between availability of IPC facilities and IPC Compliance among pharmacy staff in the Ga East district, Accra.

Most of the infection prevention and control facilities; water source (92.0%), Water supply (59.7%), Personal protective equipment (88.9%) and social distancing (79.5%) were available in the community pharmacy; however, few (19.3) had received infection prevention and control training (Table 4.7). A significant association was established between infection prevention and control training (Pearson chi-square = 4.60, p-value = 0.047), social

distancing (Pearson chi-square = 12.11, p-value = 0.001) and compliance to infection, prevention and control measures (Table 4.7).

Table 4.7: Association between availability of IPC facilities and IPC Compliance

Characteristics	Total (%)	IPC Compliance		Chi^2	p-value
		No	Yes		
Water source				0.14	0.524a
No	13 (7.60)	2 (15.38)	11 (84.62)		
Yes	158 (92.40)	31 (19.62)	127 (80.38)		
Water supply				0.27	0.603
No	69 (40.35)	12 (17.39)	57 (82.61)		
Yes	102 (59.65)	21 (20.59)	81 (79.41)		
PPE				0.68	0.411
No	19 (11.11)	5 (26.32)	14 (73.68)		
Yes	152 (88.89)	28 (18.42)	124 (81.58)		
IPC training				4.60	0.047*a
No	138 (80.70)	31 (22.46)	107 (77.54)		
Yes	33 (19.30)	2 (6.06)	31 (93.94)		
Social distancing				12.11	0.001*
No	35 (20.47)	14 (40.00)	21 (60.00)		
Yes	136 (79.53)	19 (13.97)	117 (86.03)		

a – denotes p-value calculated from fisher's exact test, * - represents significance at p-value < 0.05.

4.10 Association between other IPC factors and IPC Compliance among pharmacy staff in the Ga East district, Accra.

The association between wearing of personal protective equipment (Pearson chi-square = 5.08, p-value = 0.046), frequency of infection prevention and control training (Pearson chi-square = 8.80, p-value = 0.029) and compliance to infection prevention and control measures was significant (Table 4.8).

Table 4.8: Association between other IPC factors of Pharmacy Staff and IPC Compliance in the Ga East District, Accra(N=171).

Characteristics	Total (%)	IPC Compliance		Chi^2	p-value
		No	Yes		
Knowledge on IPC				0.2505	1.000
Poor	8 (4.7)	1 (12.50)	7 (87.50)		
Adequate	148 (86.6)	29 (19.59)	119 (80.41)		
Excellent	15 (8.8)	3 (20.00)	12 (80.00)		
Wears PPE				5.08	0.046*
No	8 (4.7)	4 (50.00)	4 (50.00)		
Yes	163 (95.3)	29 (17.79)	134 (82.21)		
Frequency of IPC training				8.796	0.029*
Never or rarely	107 (62.6)	28 (26.17)	79 (73.83)		
During orientation	41 (24.0)	3 (7.32)	38 (92.68)		
Annual	8 (4.7)	1 (12.50)	7 (87.50)		
Regular	15 (8.8)	1 (6.67)	14 (93.33)		

4.11 Univariable and multivariable regression analysis of the association between compliance to IPC and related factors among pharmacy staff in the Ga East district, Accra.

An initial multiple logistic regression was run, summary shown in table 4.9, showing univariate and multiple logistic regression of the association between compliance to infection, prevention and control measures and all related factors. This was modified and rerun to reflect only variables that were significant at p=0.1 or less at the crude level (shown in table 4.10). Table 4.10 summarizes the univariate and multiple logistic regression of the association between compliance to infection, prevention and control measures and related factors. Being able to practice social distancing increased the odds of compliance to infection prevention and control measures approximately 4 times (AOR = 4.11, 95% CI = 1.51 – 10.94, p-value = 0.006) compared to an environment not conducive for social distancing. Wearing of PPE also increased the odds of compliance to infection prevention control measures by approximately 7 times (AOR = 7.30, 95% CI = 1.23 – 43.22, p-value = 0.028) compared to those who did not wear PPE.

Table 4.9: Univariate and multivariate logistic regression of the association between compliance to IPC and characteristics of Pharmacy Staff in the Ga East District, Accra

Characteristics	Unadjusted model		
	OR	95% CI	p-value
Age			
≤ 24	1		
25-29	0.65	0.24 – 1.78	0.405
30-34	2.5	0.46 – 13.49	0.287
≥ 35	0.73	0.16 – 3.45	0.695
Sex			
Female	1		
Male	1.17	0.52 – 2.61	0.698
Marital status			
Single	1		
Married	1.3	0.46 – 3.69	0.622
Highest qualification			
Secondary	1		
Certificate	0.99	0.35 – 2.83	0.996
Diploma	4.24	0.76 – 23.57	0.099
Bachelors	4.94	0.89 – 27.32	0.067
Work experience (years)			
1-2	1		
3-4	1.87	0.68 – 5.18	0.224
5 and above	1.90	0.68 – 5.31	0.222
IPC training			
No	1		
Yes	4.49	1.01 – 19.82	0.047*
Social distancing			
No	1		
Yes	4.10	1.78 – 9.43	0.001*
Wears PPE			

No	1		
Yes	4.62	1.09 – 19.56	0.038*
Frequency of IPC training			
Never or rarely	1		
During orientation	4.49	1.28 – 15.70	0.019*
Annual	2.48	0.29 – 21.07	0.405
Regular	4.96	0.62 – 39.48	0.130

*Showing all variables whether significant or not that were used to run initial model

Table 4.10: Univariate and multivariate logistic regression of the association between compliance to IPC and characteristics of Pharmacy Staff in the Ga East District, Accra.

Characteristics	Unadjusted model			Adjusted model		
	OR	95% CI	p-value	OR	95% CI	p-value
Highest qualification						
Secondary	1			1		
Certificate	1.00	0.35 – 2.84	0.996	1.52	0.47 – 4.92	0.489
Diploma	4.24	0.76 – 23.57	0.099	3.00	0.19 – 46.13	0.432
Bachelors	4.94	0.89 – 27.32	0.067	1.93	0.05 – 82.93	0.729
Type of health professional						
Dispensing technician	1			1		
Medicine Counter Assistant	0.30	0.07 – 1.39	0.125	0.77	0.06 – 10.55	0.843
Pharmacist	1.84	0.24 – 14.14	0.557	3.33	0.05 – 242.682	0.548
IPC training						
No	1			1		
Yes	4.49	1.02 – 19.82	0.047	3.82	0.57 – 25.70	0.168
Social distancing						
No	1			1		
Yes	4.11	1.78 – 9.43	0.001	4.06	1.51 – 10.94	**0.006***
Wears PPE						
No	1			1		
Yes	4.62	1.09 – 19.56	0.038	7.30	1.23 – 43.22	**0.028***
Frequency of IPC training						
Never or rarely	1			1		
During orientation	4.49	1.28 – 15.70	0.019	1.44	0.34 – 6.07	0.624
Annual	2.48	0.29 – 21.07	0.405	1.89	0.16 – 22.81	0.616
Regular	4.96	0.62 – 39.48	0.130	0.84	0.07 – 9.91	0.887

Only variables that were significant at p=0.1 or less at the crude level were used to run the adjusted mode

CHAPTER FIVE

5.0 DISCUSSION

The main objective of this study was to assess compliance with infection prevention and control measures among community pharmacies in the Ga East District of Greater Accra. A review of existing literature showed little or no studies within the community pharmacy setting. Most research work done in the past focused on hospitals and clinics. This makes this study by far one of the novel studies in Ghana and globally because it concentrates on infection prevention and control measures within the most assessable community health setting. Most patients will usually seek healthcare at the community pharmacy due to the ease of access, convenience and low cost associated with health services there. Also most research on infection prevention and control may use an observational tool or survey. This study went a step further to involve mystery clients to counteract possible biases and hence validate the self-answered questionnaires used for the cross-sectional study.

5.1 Level of knowledge on IPC

Knowledge of infection prevention and control (IPC) procedures among healthcare workers is crucial for effective IPC. From this study, majority of the pharmacy staff in the Ga East district had good knowledge on IPC. The findings in the study shows a similarity to studies conducted among workers in tertiary institutions. These studies recorded a high level of knowledge of infection prevention and control. This level of knowledge may have been due to the higher level of educational qualification of the health workers in the tertiary institutions, (Ukwenya et al., 2021). In this study only 19.8% of participants had a bachelor's degree or higher. The level of knowledge displayed shows the essence of pharmacy staff in communicating the prevention and control strategies to other pharmacy staff.

5.2 Association between level of knowledge and compliance to IPC

Although knowledge was good, compliance to IPC among the pharmacy staff was high (81%). Knowledge showed no association to the level of compliance among the pharmacy staff unlike in most studies where high compliance among health workers was accompanied by high level of knowledge. Usually level of knowledge affects attitude and practice of IPC measure but this was not evident in the study. This suggests that other factors may be responsible for compliance. These may include repeated mentions of these IPC measures in audio, visual and print media as part of efforts to control the current COVID-19 pandemic.

5.3 Level of compliance to IPC

Pharmacy staff within the Ga East district were mostly compliant with IPC measures. These measures included hand hygiene, decontamination of work surfaces, appropriate use personal protective clothing and practicing of social distancing. This level of compliance may be because of the intensified advertisement to enforce IPC in the wake of COVID 19. In contrast compliance in studies carried out among outpatient settings have been reported to be extremely low (Powell-Jackson et al., 2020). In the said studies hand hygiene for instance was rarely practiced indicating that there was little understanding that contamination of hands could take place in patient interactions. Disinfection of reusable equipment in those studies had only 13% compliance even though the shared equipment were likely to be very widely used for patients with COVID-19 symptoms.

5.4 Factors associated with compliance

5.4.1 Socio-demographic factors

Age, gender, marital status or type of health professional showed no association with the compliance to infection prevention and control among pharmacy staff in the Ga East district. Non-availability of resources, high workload and time limitation have been reported as some main factors influencing health care workers' compliance with IPC practice (Alhumaid et al., 2021).

These may rather have had significant association with the compliance rather than direct socio-demographic factors.

5.4.2 Individual factors

Individual factors like academic qualification, number of years work experience and level of knowledge did not affect the compliance to the recommended guidelines. This indicates that especially in a situation of high rates of infection such as in the pandemic, other factors affecting availability of resources may be more directly responsible for compliance than factors pertaining to the individual. This contradicts the findings of (Ukwenya et al., 2021). In their study (Ukwenya et al., 2021) opined that health workers in tertiary institutions in Nigeria and Iran reported high knowledge of IPC and this was due to higher level of educational qualification of the doctors, nurses, pharmacists, and laboratory scientists, compared to other primary care workers. However these same finding buttresses that of (Ireye et al., 2019) who revealed that the high qualifications of health workers had no relationship with their practices on infection prevention but rather communication of regular up to date IPC strategies.

5.4.3 Organizational factors

Training can be a form of raising awareness and sensitizing people on the need and the appropriate means of executing certain tasks. It offers some form of guide or blueprint that individuals can follow to get things done and so tends to be a good means of achieving IPC compliance as it gives the respondents adequate knowledge on what they should do in a bid to help prevent the spread of infections. As opined by (Atack & Luke, 2008; Tamang et al., 2020) participants who received IPC training and online courses had adequate knowledge and engaged in appropriate practices of infection prevention. This finding was however inconsistent with findings of the study where although pharmacy staff had some form of training frequency on IPC the association with IPC compliance wasn't significant.

Social distancing which also became a very common mode of infection prevention among people due to the rise of the Covid-19 virus was largely practiced in most instances and scenarios by the participants involved in the study and showed a significant association with compliance. The study revealed that most of the pharmacy staff observed social distancing as a means of IPC measure. The research also revealed an association between the availability of PPEs having an impact on the compliance of individuals towards the IPC measures. This finding is in line with a study by (Kondor, 2021) who opined that one factor responsible for non-compliance to IPC policy is the shortage or non-availability of the necessary resources for the enforcement of the guidelines. Even though majority of the pharmacy staff confirmed that there was PPEs available for use, a few said otherwise. Some studies have identified that health workers that were noncompliant with IPC usually complained about of short supply of personal protective equipment either due to non-availability or a surge in prices (Ashinyo et al., 2021).

5.5 Study implications

This study will go a long way to impact and contribute to the work of community pharmacy. Factors that show strong association to compliance must always be taken advantage of to encourage IPC. Regulators like the Pharmacy Council and the Food and Drugs Authority must also consider these findings to identify areas that need intensified monitoring and support in order to protect the health and ensure the safety of both healthcare providers and patients that walk into the pharmacy. The results from the study showed results different from what has been reported in previous studies carried out in other regions and health settings. For instance healthcare professionals in hospitals, clinics and the surgical setting with longer years working experience as well as women had been reported to be more careful with IPC measures due to the level of

experience, exposure and attention to detail (El-Sokkary et al., 2021). This observation was however not evident in this study. This emphasizes the peculiarities associated with different settings. Researchers may need to widen the scope of their research to include this area that has hardly been explored although it is of great importance to our community. This will all help to uncover areas and factors that need to be explored for their contribution in the fight against infections.

5.6 Study limitations

The majority of the participants included in these research studies were medicine counter assistants and this could have been a confounding factor. This may have skewed the data to be more representative of that population. The online self-administered nature of the questionnaire may have subjected the questionnaire to subjective interpretation. Revised work schedules due to COVID-19 restrictions limited the number of participants that were engaged per facility which could have been the reason behind some of the realizations from the study.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

This study sought to assess the level of knowledge and compliance to infection prevention and control among community staff in the Ga East district while identifying some factors that could possibly affect compliance to IPC. In conclusion, knowledge on infection prevention and control measures was good while compliance to infection prevention and control practices among pharmacy staff in Ga East distrist was high (86.6% and 81% respectively). Factors that showed significant association with compliance to infection prevention and control measures were availability of personal protective equipment and ability to practice social distancing. Categorization of facilities into urban and suburban showed no significant difference in the compliance to infection prevention and control.

Following the results of the study, the following are recommended:

1. In the designing of community pharmacies it should be made to accommodate social distancing measures to help limit the spread of infections.
2. Pharmacy management should provide the needed IPC resources for healthworkers to practice according to IPC policy guidelines.
3. More studies should be done into IPC and HCAIs in the community pharmacy setting in Ghana to provide data especially on HCAIs since community pharmacies are one of the most patronized healthcare facility.

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APPENDIX I.
PARTICIPANT INFORMATION SHEET

Title: Compliance with Infection Prevention and Control Measures Among Community Pharmacy Staff in Ga East, Ghana.

Introduction:

Name of Principal Investigator: Anoa Aidoo

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Email: anoaaidoo@live.com

Institution: University of Ghana, School of Public Health

Background and purpose of research

This study seeks to obtain information on the infection prevention and control practices of community pharmacy staff in relation to guidelines provided by national and international agencies particularly during the COVID-19 pandemic and to assess the compliance to infection prevention and control measures by the pharmacy staff.

Nature of research

The study outcome seeks to determine the efforts being put in place to reduce the incidence and spread of infections within the community pharmacy setting considering it being the first point of call most illnesses within the community and the factors that may influence such efforts. The study will involve community pharmacy staff within the Ga East district in Accra.

Participants involvement

Participants will include staff of randomly selected community pharmacists within the study location. They will be given a simple online questionnaire to fill. The focus of the questionnaire will be to explore factors that may influence the behavior of community pharmacy staff with respect to infection prevention and control.

There will be an observational follow-up by a mystery client which will not be used as a direct assessment of the pharmacy staff in the community pharmacy, but will serve a confirmatory measure.

Potential Risks and benefits

The study shall pose no foreseeable risks or harm physically or psychologically but rather have positive consequences towards pragmatic efforts at controlling the incidence and spread of infections within the community pharmacy.

Costs

There will be no cost incurred by the participants. Any cost of transportation and purchases will be taken up by the principal investigator.

Compensation

Participation will be voluntary and will not attract any compensation.

Confidentiality

All study participants shall remain anonymous and all information provided shall be kept confidential. The data would be analyzed in such a manner that anonymizes all respondents.

Voluntary participation

Participation is voluntary and participants shall have the right to decline participation at any time they wish without penalty and without having to give any reasons.

Funding information

This study is a solely self-funded one.

Sharing of participants Information/Data

All collected data shall be kept by the Principal researcher and shall be secured on hard disks and cloud storage only for reference.

Provision of Information and Consent for participants

A copy of the Information sheet and Consent form will be given to you after it has been signed or thumb-printed to keep.

For further information, you can contact;

Anoa Aidoo (Principal Investigator)

University of Ghana, School of Public Health

Department of Epidemiology and Disease Control

Tel: 0209061866

Email: anoaaidoo@live.com

GHS Ethics Review Committee Administrator

Nana Abena Apatu

Tel: 0503539896

Email: ethics.research@ghsmail.org

APPENDIX II:

Consent Form

STUDY TITLE: Compliance with Infection Prevention And Control Measures Among Community Pharmacy Staff in Ga East District, Ghana.

PARTICIPANTS' STATEMENT

I acknowledge that I have read or have had the purpose and contents of the Participants' Information Sheet read and all questions satisfactorily explained to me in a language I understand (English). I fully understand the contents and any potential implications as well as my right to change my mind (i.e. withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Name of Participant……..

Participants' Signature ……...OR Thumb Print……

Date:……

INTERPRETERS' STATEMENT

I interpreted the purpose and contents of the Participants' Information Sheet to the afore named participant to the best of my ability in the (English) language to his proper understanding.

All questions, appropriate clarifications sort by the participant and answers were also duly interpreted to his/her satisfaction.

Name of Interpreter……

Signature of Interpreter…….. OR Thumb Print …….....

Date:……

Contact Details

STATEMENT OF WITNESS

I was present when the purpose and contents of the Participant Information Sheet was read and explained satisfactorily to the participant in the language he/she understood (English)

I confirm that he/she was given the opportunity to ask questions/seek clarifications and same were duly answered to his/her satisfaction before voluntarily agreeing to be part of the research.

Name:……

Signature…….... OR Thumb Print …….....

Date:……

INVESTIGATOR STATEMENT AND SIGNATURE

I certify that the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant have been addressed.

Researcher's name…….

Signature …….

Date…….

APPENDIX III

ETHICS CLEARANCE LETTER

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

My Ref. GHS/RDD/ERC/Admin/App|21|447
Your Ref. No.

Research & Development Division
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Mob: +233-50-3539896
Tel: +233-302-681109
Fax + 233-302-685424
Email: ethics.research@ghsmail.org
15th October, 2021

Anoa Aidoo
University of Ghana
School of Public Health

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	**GHS-ERC 039/09/21**
Study Title	An Assessment of Compliance with Infection Prevention and Control Measures among Community Pharmacy Staff in Ga East, Greater Accra, Ghana
Approval Date	15th October, 2021
Expiry Date	14th October, 2022
GHS-ERC Decision	**Approved**

This approval requires the following from the Principal Investigator

- Submission of a yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

You are kindly advised to adhere to the national guidelines or protocols on the prevention of COVID -19

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED..... .....
Dr. James Akazili
(Head, Ethics & Research Management Department)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra

APPENDIX IV:

Questionnaire for Community Pharmacist staff

Questionnaire for Infection prevention and control compliance among community pharmacy staff in Ga East, Accra, Ghana: a cross-sectional study

English questionnaire

Respondent Identification Code……. Location of Respondent…….

Date……

Section A: Healthcare worker characteristics and availability of IPC facilities		
Age in years		
Sex	☐Male ☐ Female	
Marital status	☐ Married	☐ Single
	☐Separated/divorced	☐ Widowed
Highest qualification	☐Basic education	☐Secondary level qualification
	☐Certificate	☐ Diploma
	☐ Bachelors	☐ Masters
Type of health professionals	☐ Pharmacist	☐ Medicine counter assistant
	☐ Dispensing technician	☐ Administrative staff
How many years have you been working	…….	
Is there a source of running water, soap and single use towels for hand washing practices?	☐Yes	☐No
In the past one week, have you experienced an interruption in water supply in this facility?	☐Yes	☐No

Is PPE available in sufficient quantity in your facilities?	☐Yes	☐No
Have you ever received training on infection prevention and control?	☐Yes	☐No
Are you able to maintain social distancing of at least 1.5 m from other individuals in the pharmacy?	☐Yes	☐No

Section B: compliance to IPC procedures during health care interactions		
For the following questions, please quantify the frequency with which you wore PPE, as recommended: 'Always, as recommended' means more than 95% of the time; 'Most of the time' means 50% or more but not 100%; 'occasionally' means 20% to under 50% and 'Rarely' means less than 20%.		
During a health care interaction with patients, did you wear personal protective equipment (PPE)?	☐ Yes ☐ No	
If yes, for each item of PPE below, indicate how often you used it?		
Single-use gloves	☐ Always, as recommended	☐ Most of the time
	☐ Occasionally	☐ Rarely
N95 or surgical mask	☐ Always, as recommended	☐ Most of the time
	☐ Occasionally	☐ Rarely
Face shield or goggles/protective glasses	☐ Always, as recommended	☐ Most of the time
	☐ Occasionally	☐ Rarely
Dispensing gown/coat	☐ Always, as recommended	☐ Most of the time
	☐ Occasionally	☐ Rarely
During a health care interaction with patients, do you remove and replace your PPE according to protocol (e.g. when medical mask became wet, disposed the wet PPE in the waste bin, performed hand hygiene, etc.)?	☐ Always, as recommended	☐ Most of the time
	☐ Occasionally	☐ Rarely
	☐ Always, as recommended	☐ Most of the time

During a health care interaction with patients, do you perform hand hygiene before and after interacting with patient (whether you were wearing gloves)?	☐ Occasionally	☐ Rarely
During a health care interaction with patients, do you perform hand hygiene after exposure to body fluid?	☐ Always, as recommended	☐ Most of the time
	☐ Occasionally	☐ Rarely
During a health care interaction with patients, do you perform hand hygiene after touching the patient's surroundings (sitting area, door handle, etc.), regardless of whether you were wearing gloves?	☐ Always, as recommended	☐ Most of the time
	☐ Occasionally	☐ Rarely
During a health care interaction with patients, were high touch surfaces decontaminated frequently (at least three times daily)?	☐ Always, as recommended	☐ Most of the time
	☐ Occasionally	☐ Rarely
Is there frequent decontamination of shared equipment before and after use	☐ Always, as recommended	☐ Most of the time
	☐ Occasionally	☐ Rarely

Section C :level of knowledge and frequency of IPC training		
Have you ever heard of infection prevention and control?	☐Yes	☐Yes
Do you have access to the IPC policy guidelines in your facility?	☐Yes	☐Yes
Can a pharmacy staff transmit infections to a patient within the pharmacy?	☐Yes	☐Yes
How do infections get transmitted within the pharmacy?		
A. Through contact with blood and body fluids	☐Yes	☐Yes
B. By needle prick and cuts from sharps	☐Yes	☐Yes
C. By contaminated hands	☐Yes	☐No
D. Contact with contaminated instruments and surfaces	☐Yes	☐No
How can Health Care-Associated Infection (HCAI) be prevented?		
A. Proper hand washing	☐Yes	☐No
B. Use of personal protective equipment (PPE)	☐Yes	☐No
C. Proper disinfection of shared instruments and surfaces	☐Yes	☐No

How frequently do staff receive training regarding IPC in your facility	☐Employee orientation and regular mandatory IPC training for all healthcare workers	☐Employee orientation at least annual IPC training but attendance not compulsory/ for selected workers
	☐Employee orientation only for health care workers	☐Never/rarely

APPENDIX V.

Pharmacists and support staff IPC measures observation guide

Infection prevention and control measures practiced by Pharmacist and their support staff (TO BE OBSERVED)

Pharmacists and support staff IPC measures observation guide		
Are pharmacists and support staff able to wash or disinfect their hands regularly?	☐Yes	☐No
Are pharmacists and support staff well clad in PPEs?	☐Yes	☐No
Are patients provided with hand disinfectants before entering the pharmacy?	☐Yes	☐No
Are work surfaces and shared equipment disinfected regularly?	☐Yes	☐No
Are there clear demarcations to ensure social distancing?	☐Yes	☐No
Are there infographics creating awareness for visitors about infection prevention and control measures and COVID-19 signs and symptoms?	☐Yes	☐No