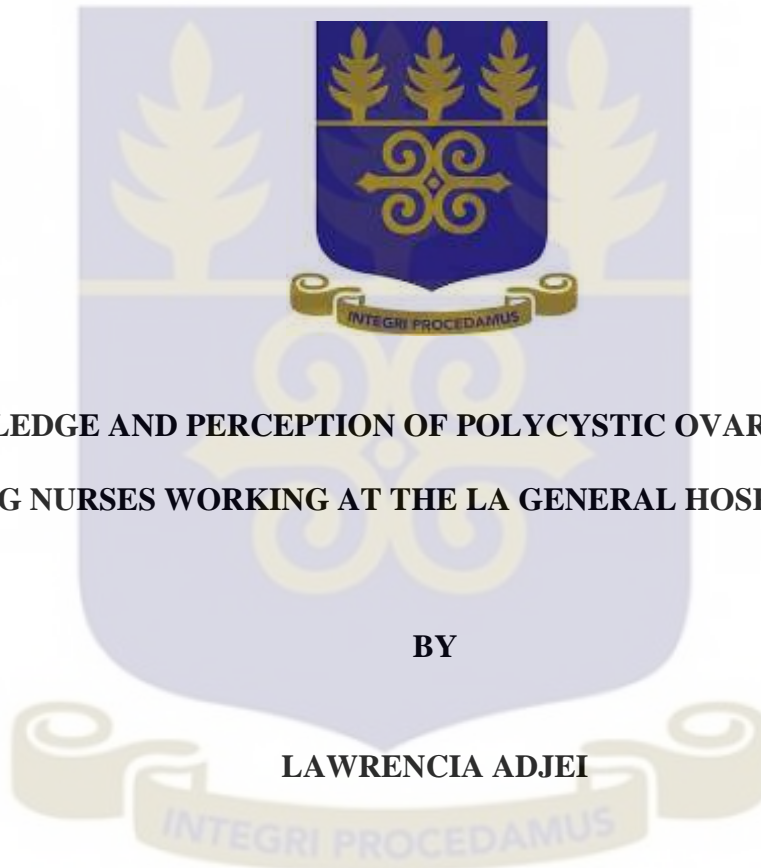


COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

UNIVERSITY OF GHANA



**KNOWLEDGE AND PERCEPTION OF POLYCYSTIC OVARY SYNDROME
AMONG NURSES WORKING AT THE LA GENERAL HOSPITAL ACCRA**

BY

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DEGREE**

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DECLARATION

I, Lawrencia Adjei, do hereby declare that with the exception of reference to the literature works of other researchers which have been duly cited, this proposal is as a result of my original work.

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DEDICATION

This work is dedicated primarily to the Almighty God, for seeing me this far and also to that one person that believed in me and continually encouraged me when I wanted to give up.

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I am thankful to the Almighty God for his unending grace for bringing me this far and to my Academic supervisor Dr Ernest Tei Maya.

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LIST OF ABBREVIATIONS

WHO	World health Organization
PCOS	Polycystic Ovary Syndrome
NIH	National Institute of Health
AE-PCOS	Androgen Excess and Polycystic Ovary Syndrome Society
IVF	in Vitro Fertilization
BMI	Body Mass Index
NGO	Non-Governmental Organizations

ABSTRACT

Background: Polycystic Ovary Syndrome is the fourth gynecological disorder affecting women of reproductive age. The immediate cause of this syndrome is unknown however, abnormal hormonal levels, lifestyle factors are contributing factors to Polycystic Ovary Syndrome. It is estimated that over 116 million are affected with Polycystic Ovary Syndrome in the year 2012 worldwide. The Rotterdam criterion is the most common criteria used to diagnose the disease. Any patient presenting any two of these features that is dysfunctional ovulation, hormonal disorder and polycystic ovarian morphology is diagnosed with Polycystic Ovary Syndrome. Polycystic Ovary Syndrome increases risk to metabolic disorders which are the leading cause of diabetes and cardiovascular disease. Long term complications such as pre-eclampsia, gestational diabetes are found in women with Polycystic Ovary Syndrome. Their unborn children suffer complications such as fetal macrosomia, small-for –gestational age and perinatal mortality.

Aim: The aim of this study was to determine the factors associated with the level of knowledge and perceptions on Polycystic Ovary Syndrome among nurses at the La General Hospital, Ghana.

Methods: A descriptive cross-sectional study was conducted among nurses working at the La General Hospital Accra, Ghana. A self-administered questionnaire consisting of close-ended questions were adopted in this survey. Results was analyzed using stata version 15 and presented as mean, standard deviations, percentages, chi-square and ordinal logistic regression. All statistical tests performed were at a significance level of 5%.

Results: 142 nurses participated in the survey out of which 101(71 %) were females. The mean age was 31.07(0.49). Fifty-one percent thus seventy-three were unaware of

the condition. The main sources of information to nurses were the internet and school. Excellent Knowledge level was 25(17.6 %.) Finally, 28(40.6%) of the respondents agreed to the name being confusing, 43(62.3%) said the condition was hereditary and 53% felt anxious about having the condition.

Conclusion

Nurses' knowledge as well as their awareness on Polycystic Ovary Syndrome is low, there is the need to create awareness and intensify knowledge sources to increase Knowledge about the condition. Nurses had a few misconceptions about the condition and these were the condition neither manageable nor hereditary.

CHAPTER ONE

INTRODUCTION

1.1 Background

Women in reproductive age are faced with diverse endocrine disorders one of which is Polycystic Ovary Syndrome (Gupta et al., 2017). The actual factor contributing to this condition is not known, however, the condition manifests when abnormal changes in hormones occurs and usually during adolescence. Research has attributed causes to genetics, lifestyle or both. The signs that accompany the condition include menstrual dysfunction, acne, chronic anovulation, hirsutism, hyperandrogenism, infertility and metabolic disorder syndrome (Ehrmann, 2005).

WHO estimated that 116 million women were affected with Polycystic Ovary Syndrome (PCOS) in 2012 worldwide (Vos et al., 2012). In the United States of America, one out of every 15 women reports with the condition. In a systematic review by Tao et al (2017) on 42 studies conducted in Europe, America, Asian and the Middle East, the lowest prevalence of 5.6% was recorded amongst Chinese women and the highest prevalence of 16% was recorded amongst women in the Middle East. The prevalence recorded in black women in their study was 7.0%, however a study conducted in south Enugu state in Nigeria at two major infertility centers recorded a prevalence of 18.1% (Ugwu et al 2013) and this result of 18.1% prevalence is not surprising as PCOS is a major cause of infertility in women.

Different sets of criteria are used in diagnosing PCOS; these include the Rotterdam criteria, National Institutes of Health Criteria (NIH) and Androgen Excess Society (AES). The Rotterdam criterion is widely used in diagnosing Polycystic Ovary Syndrome. An individual who presents two out of the three conditions present in the Rotterdam criteria is diagnosed with Polycystic Ovary Syndrome. The three conditions

are menstrual dysfunction, presence of polycystic ovaries on an ultrasound and hyperandrogenism (Kovacs & Norman, 2007). PCOS has been classified into various phenotypes and the basis for this classification is dependent on the presence of the three main symptoms of the syndrome. Polycystic ovarian morphology (PCOM), hyperandrogenism (HA) and ovulatory dysfunction (OD). Based on these features four main phenotypes exist that is phenotypes A, B, C and D (Lizneva et al., 2016).

The risk factors associated with the condition can be categorized as genetic and environmental factors (Shaiban S.Q et al 2016). Obesity is common amongst patients with PCOS and may increase the risk of the metabolic disorders associated with the disease (Sam, 2007). Appropriate lifestyle changes such as diet and exercise are an effective way to managing PCOS. The condition is not only associated with infertility but also increases the risk of contracting metabolic diseases like type 2 diabetes and cardiovascular diseases (Palomba, Santagni, Falbo, & La Sala, 2015).

Polycystic Ovary Syndrome is a chronic disease with lots of complication and has been underestimated over the years. The complications can be fertility based, oncological, obstetric and even psychological. Obesity and metabolic disorders are the commonest complications associated with the syndrome (McDonnell & Hart, 2017). Metabolic syndrome is found to increase risk to pregnancy-related complications in women with PCOS. These complications include gestational diabetes, pre-eclampsia, and for the unborn child, small-for- gestational age, fetal macrosomia and perinatal mortality. There is also an increased risk of cardiovascular diseases and infertility (Boomsma et al., 2006). Depression and reduced quality of life are associated with women with PCOS (Palomba et al., 2015).

1.2 Problem Statement

Polycystic Ovary Syndrome is a disease of hormonal imbalance and of public health importance because of its link to infertility. There is high level of unawareness among the populace when it comes this disease. This is because the signs of the disease appear during adolescent phase (Nidhi, Padmalatha, Nagarathna, & Amritanshu, 2011). At this age, the girls do not understand symptoms and they need to be educated of the disease. Due to the low awareness and knowledge on Polycystic Ovary Syndrome, diagnosis is delayed. Late diagnosis increases the risk to cardiovascular diseases and type 2 diabetes and may result in infertility amongst women (Daniilidis & Dinas, 2009). A study conducted amongst Saudi Arabian women revealed minimal knowledge on the signs, complications and overall management of Polycystic Ovary Syndrome (Alsinan & Shaman, 2017). Health education is important in helping patients understand their condition and manage their symptoms (Paterick, Patel, Tajik, & Chandrasekaran, 2017), however, the health professionals are unable to provide them with adequate information, care and support they require to help them manage their disease. Women with PCOS have expressed dissatisfaction in the provision of care and support from healthcare practitioners (Lin et al., 2018). Women with PCOS have expressed certain distrust and misconception when it comes to the diagnosis of the disease, they have had more arguments with healthcare professionals (Lin et al., 2018). Lifestyle management is essential to combating the disease, but the extent to which practitioners are providing life style management for PCOS is not well described (Blackshaw, Chhour, Stepto, & Lim, 2019). In assessing the barriers to lifestyle management among women with PCOS, a key barrier identified was the procedure of consultation and referral of patients (Ko, Teede, & Moran, 2016). There is a knowledge gap among physicians and other health workers in terms of the diagnosis criteria for PCOS (Dokras et al., 2017). The diagnosis of PCOS is lengthy involving a lot of health professionals and this leaves an

unmet need for information among patients, there is the need to explore evidence based resources available to health practitioners as well as test their in-depth knowledge of the condition (Gibson-Helm, Lucas, Boyle, & Teede, 2014). Although extensive research have been done in the area of Polycystic Ovary Syndrome globally, in Ghana there is a gap that needs to be filled in terms of literature in this area (Maya et al, 2018).

1.3 Justification of Study

Prevalence of PCOS is quite high worldwide and it causes a lot of complications during pregnancy to both fetus and mother. However, there is inadequate knowledge on the risk factors and self-management measures amongst patients with PCOS (Sunanda & Nayak, 2016). Patients experience difficulty in sourcing for credible and helpful information on their condition (Tomlinson et al., 2013). Nurses are generally seen as role models in health, and are consulted for health education. Nurses are also vital in providing education to the community on preventive measures to put in place to reduce the incidence of diseases. The nurse's knowledge on a disease is vital to provide adequate and correct information to the patient (Blake & Harrison, 2013). Adequate and the right information when available to patients speeds up the diagnosis process, self-care and treatment (Naidoo, Mahomed, Asmall, & Taylor, 2014). Polycystic Ovary Syndrome when diagnosed early and treatment given improves the quality of life amongst patients and prevents further health complications such as infertility and metabolic disorders like type two diabetes and heart diseases. (Upadhye & Shembekar, 2017).

Several benefits can be obtained globally by enhancing patient knowledge of disease through health education and promotion. The health status of the individuals is improved, and enhances quality of life of individuals as well (Yu, Guo, & Zhang, 2014). In a recent study to assess the perceptions of patients on the importance of nurse's

knowledge on cancer, Patients said they felt safe and secured which helps alleviates suffering during chemotherapy (Kvåle & Bondevik, 2010). The gap in level of knowledge and perception when assessed among nurses will be used as a tool to improve education of the public on PCOS.

1.4 Research Questions

- a) What is the level of knowledge of PCOS among Nurses at La General Hospital?
- b) What are the perceptions about the disease among Nurses?
- c) What are the factors associated with the level of knowledge?

1.5 Objectives

Main objective

- To determine Knowledge and perception of Polycystic Ovary Syndrome among Nurses working at La General Hospital.

Specific Objectives

- To determine the knowledge level among Nurses.
- To assess contributing factors to knowledge level.
- To assess the perceptions of nurses about PCOS

1.6 Definition of Terms

- I. Anovulation- Failure of the ovaries to release an egg during a menstrual cycle
- II. Hirsutism- Unwanted male pattern hair growth in women.
- III. Reproductive age- All women between the ages of 15-49years (WHO, 2016)
- IV. Hyper-androgenism- high levels of androgen the male hormone
- V. Metabolic syndrome- a group of conditions that elevate the risk to cardiovascular diseases and diabetes. It includes high blood pressure and sugar, excessive visceral fat and high cholesterol.

1.7 Conceptual Framework

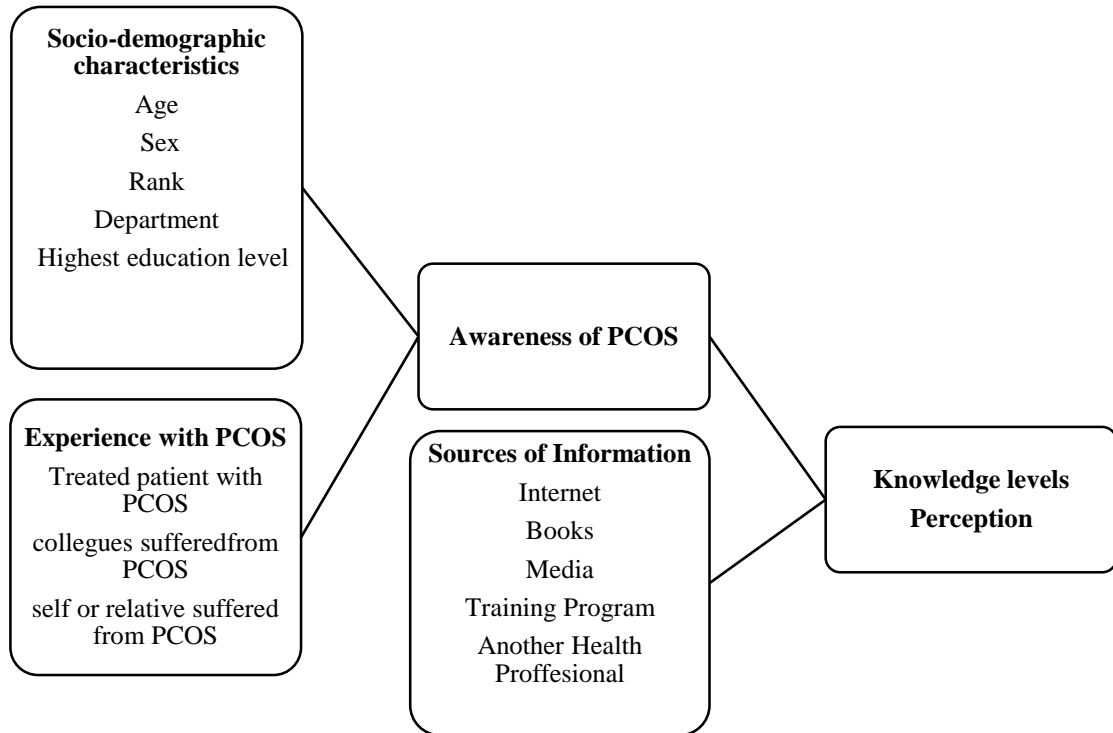


Figure 1.1 Conceptual framework of factors associated with level of knowledge and perceptions.

(Conceptual framework was developed based on a tool used and validated by Alumran, Hou, & Hurst(2013) in their study to assess the overuse of antibiotics amongst parents. From the tool, previous experience, and demographic characteristics affected knowledge and perception. Knowledge affected awareness and sources of information. This framework was further developed based on factors that contributed to knowledge or perception from articles reviewed and the tool from the study)

The knowledge and perception of Polycystic Ovary Syndrome varies among nurses. This variation results from several factors that may be direct or indirect. The direct factors that affect knowledge and perception are awareness of PCOS and the sources of

information available. When credible information on PCOS is available, knowledge gaps are filled with the right information and doubts will be cleared. This increases the knowledge and improves perception. Indirect factors include socio demographic characteristics, education on PCOS and previous experience with PCOS. Education on a disease will provide accurate information to participants. Education will provide answers to questions that may arise on the condition. Similarly, when one becomes a patient of a disease, health professionals at the hospital provide education on the disease. Education on self -management measures, diagnosis and treatment options are given to the patient. This will increase the level of knowledge and clear wrong perceptions on the disease condition. Socio-demographic characteristics such as age have been found to affect knowledge and perception, in the case of PCOS, the patients are usually adolescents and do not understand the condition and as such affects their knowledge and perception. Education level also affects the level of knowledge and perception, women with tertiary education have higher understanding of PCOS and a better perception of the disease compared to women without tertiary education (Alessa et al., 2017).

CHAPTER TWO

LITERATURE REVIEW

2.1. Global Estimates of Prevalence

The prevalence rates of polycystic ovary syndrome differ across the population under study as well as the diagnostic criteria used. Globally, prevalence is 6% using NIH criteria, 10% using the Rotterdam criteria and 10% using the AE-PCOS Society criteria (Bozdag, Mumusoglu, Zengin, Karabulut, & Yildiz, 2016). The prevalence is lower when all three criteria is combined in diagnosis compared to when just one criteria is used (Wolf, Wattick, Kinkade, & Olfert, 2018). Variations have been seen in the prevalence rates across different ethnicities, rates are higher among black ethnics compared to Caucasians and Iranians living in the same geographic areas (Ding et al., 2017). In west Africa, a prevalence of 12.2% exist amongst women attending a teaching hospital in southern Nigeria (Ogueh, Zini, Williams, & Ighere, 2014)

2.1.1 Phenotypes

Four main phenotypes exist. Phenotype A is characterized by the presence of hyperandrogenism, ovulatory dysfunction, and polycystic ovarian morphology, B by ovulatory function and hyperandrogenism, C by hyperandrogenism and polycystic ovarian morphology and D ovulatory dysfunction and polycystic ovarian morphology (Lizneva et al., 2016)

2.1.2 Signs and symptoms

Many clinical features characterize Polycystic Ovary Syndrome. These features include Hirsutism, Alopecia, weight gain, appearance of polycystic ovaries on an ultrasound, excess androgen hormones, acne, anovulation or oligo-anovulation resulting in fertility problems and menstrual dysfunction and the metabolic syndrome (Gul, Zahid, & Ansari, 2014). Hirsutism is the growth of excess hair usually around

areas such as chin, chest, abdomen, around the lip. This excess growth results from excess androgens (Loriaux, 2012). Dysfunction ovulation resulting in menstrual dysfunction is always present in women with Polycystic Ovary Syndrome. Anovulation is the absence of ovulation and oligo-anovulation is irregular ovulation. Long term anovulation results in infertility (Palomba et al., 2015). The link between PCOS and obesity is complicated as each condition can result in the other. There is a dysfunction is the production of insulin among women with Polycystic Ovary Syndrome, and this usually results in excess weight gain leading to obesity and other metabolic syndromes like diabetes (Sam, 2007).

2.1.3 Diagnosis

Different sets of criteria are used in diagnosing PCOS; they include the Rotterdam, National Institutes of Health (NIH) and Androgen Excess Society (AES) criteria. The Rotterdam criterion is widely used for the diagnosis of Polycystic Ovary Syndrome (Kovacs & Norman, 2007). The conditions for the diagnosis using each criterion are summarized in the table 1 below.

Table 1: Diagnostic criteria for PCOS globally

NIH 1990	Rotterdam 2003	AE-PCOS 2006	NIH/International PCOS guidelines 2018
Hyperandrogenism Chronic Ovulation	Hyperandrogenism Anovulation/Oligo-anovulation Polycystic ovaries	Hyperandrogenism Ovulation Dysfunction	Hyperandrogenism Oligo-anovulation Polycystic ovaries
Both conditions must be present	2/3 condition must be present for diagnosis	Both conditions must be present	2/3 conditions must be present

Source: (Wolf, Wattick, Kinkade, & Olfert, 2018)

2.1.4 Risk factors and Causal links

The exact cause of the condition is unknown, however multiple mechanisms through which it occurs has been proposed by researchers. Insulin being a common feature associated with the condition led to the conclusion that, there is a causal relationship between metabolic disorders and Polycystic Ovary Syndrome (Setji & Brown, 2007). Factors that increase the risk to Polycystic Ovary Syndrome have been categorized into environmental and genetics. Environmental factors such as sedentary lifestyle, lack of exercise, high intake of fatty food lead to obesity. More than 40% of women with PCOS are obese (Sam, 2007). Women with insulin resistance are at higher risk of having PCOS. Insulin resistance results in higher risk to diabetes and gestational diabetes during pregnancy (Choudhary, Jain, & Chaudhari, 2017) insulin regulates enzymes involved in fat synthesis and this resistance leads to dyslipidemia observed in

women with PCOS (Shaw, Sicree, & Zimmet, 2010). Women with hyper-androgenism are most likely to have PCOS (Hussein & Alalaf, 2013).

2.1.5 Complications

Many complications have been found to be associated with Polycystic Ovary Syndrome. Complications may be long term or short term, affects the pregnancy outcomes and can be psychological as well. During pregnancy complications such as miscarriages, pregnancy induced hypertension, pre-eclampsia. Women with PCOS, who have been treated for fertility have higher risk to perinatal mortality when they have multiple pregnancies. Multiple pregnancies are associated with poorer pregnancy outcomes. Preterm birth, lower gestational age neonates and low birthweight is associated with children born to mother with PCOS. Later in life children are at higher risk to endocrine and cardiovascular dysfunction. There is an increased risk of miscarriage in PCOS patients who conceive (Palomba et al., 2015). Women with PCOS have two times the risk to cardiovascular diseases and more than four times risk to developing diabetes compared to women without PCOS. A combination of hyper insulinemia, hyper-androgenism, and oligo anovulation increases the risk of endometrial cancer and other endometrial disorders. (Palomba et al., 2015). Case studies have showed that women with PCOS are anxious, depressed and have eating and bipolar disorders. The depression is most likely to occur in the teenage because of the trouble of managing body weight and adult women also suffer from frustration because of the sub fertility and miscarriage in their reproductive age. A patient with PCOS also suffers from low self-confidence because of daily struggle with hirsutism. The psychiatric disorders are most likely to happen due to the insufficient sound sleep which is a symptom of PCOS (Sirmans & Pate, 2014)

2.1.6 Management and Treatment Options

Although the exact mechanism and pathogenesis of PCOS is not known, researchers have brought to light certain lifestyle modifications that can help manage the condition. Also there are treatment options for the clinical features associated with the condition. Weight control through exercise and healthy diets improves many aspects of PCOS. Menstrual cycles, androgen levels, lipid and glucose levels are all regularized. Hyperandrogenism in PCOS patients contribute to fat deposition around the stomach and waist region and an increase in Body Mass Index (BMI). Poorer pregnancy outcomes can also be associated with higher BMI (Badawy & Elnashar, 2011). The use of metformin in the treatment of diabetes in PCOS patients have proven very effective in treating the metabolic syndrome in PCOS patients. Women that have infertility issues because of PCOS and are trying to conceive can be put on oral contraceptives to reduce hyperandrogenism and correct anovulation. Alternatively, in vitro fertilization (IVF) can also be used to help women conceive. Use of anti-androgenism medications can be used to reduce features as a result of hyperandrogenism. Direct hair removal can also be adopted to reduce hirsutism. A combination of lifestyle modifications and treatment options can be used to effectively treat and manage PCOS (Pillai, Bang, & Green, 2007).

2.2 Awareness and Knowledge of PCOS

There is generally a low awareness, low level of knowledge and misconception among women of all age groups on Polycystic Ovary Syndrome. In study conducted amongst 350 students of public and private universities in Dhaka, Bangladesh to assess the knowledge of students on symptoms, complications, diagnosis methods and sources of knowledge, treatment and management methods showed the following results: 58% had minimal knowledge on PCOS and only 6% were aware and informed on the condition.

Majority (67.7%) of students had knowledge from their doctor. The main sources of information on PCOS to students were their doctors, internet, media, and physiotherapist (Jahangir S 2013). In a similar study conducted among 150 students of Nitte Usha Institute of Nursing Sciences, 76% had average knowledge and 10.7% had good knowledge regarding Polycystic Ovary Syndrome. The study also revealed that consumption of junk foods and other dietary patterns of the students were influenced by their level of knowledge on PCOS (Sabitha & Sunanda, 2016).

Another study among patients of gynecological clinics conducted in Mumbai, India showed similar results. Twenty one percent of the respondents were well aware and informed about Polycystic Ovary Syndrome. The study concluded on the need for more efforts to intensity creation of awareness on the general public about PCOS (Pitchai, Sreeraj, & Anil, 2016). Amongst 275 women with polycystic ovarian syndrome aged 12-14years in New Delhi. The knowledge of the women with PCOS regarding PCOS and its management was found to be inadequate with mean score of 12.1 out of 33. The study concluded on the need for a development of a special health care package for the women (Dalal, Babu, & Rastogi, n.d.). Conversely, there is high level of awareness among Saudi Arabian women and this is attributed to higher levels of education and the fact that internet was the major contributor to their awareness (Alessa et al., 2017) Many factors such as educational programme, experience with disease, source of information and availability of the information affects the knowledge level.

2.3 Perceptions on PCOS

Divergent perceptions on the PCOS exist. In a recent study conducted by Teede et al ,(2014) in Australia on the perceptions amongst women with the condition as well as primary care providers, 48% of the women felt the name was confusing and 51% of the women suggested the name be changed. In the same study, amongst the primary

healthcare workers studied, 74% agreed on the name being confusing and 81% agreed on change of name. A study conducted by Colwell et al (2010), revealed that 63% of the women felt they had increased knowledge on the syndrome after participation in a clinical research. Another study conducted in Australia also revealed that the name was confusing and needed to be changed (Teede, Gibson-Helm, Norman, & Boyle, 2014).

In America, adolescent girls had significant differences between the groups with self-perception and interpersonal relationships. In terms of self-body image, girls with PCOS had significantly greater negative feelings about their appearance than the non-PCOS group. The study concluded that clinical manifestations of PCOS have a strong negative impact on self-perception and quality of life issues for affected adolescents (Yoo, Adams, & Chang, 2003). Assessing knowledge and the perception of students about PCOS in Bangladesh revealed the following results: 36.57% of students felt the condition was manageable, 10.86% felt it was curable and 14.29% felt the condition was fatal. In the same study, 44.12% felt anxious on having the disease where as 41.18% were depressed (Jahangir, 2013). In Mumbai, India 100 subjects who were recruited through purposive sampling visiting gynecological clinics and revealed that 81% of the respondents felt that the condition was manageable (Pitchai et al., 2016).

In the UK, ten women living with PCOS had their experiences and perceptions documented. This was an exploratory study and themes that were found include change in their life plans to start a family, difficulty with living with the condition and majority of the participants said they suffered from depression, self-harm and suicidal ideation. Participants in the study conveyed their frustration over lack of support for patients with PCOS (Williams, Sheffield, & Knibb, 2015). Among 30 women living with PCOS recruited through a national self-help organization, thematic analysis of the interviews revealed pervasive reports of feeling 'freakish', 'abnormal', and not 'proper' women.

These perceptions were related to three symptoms commonly experienced by women with PCOS. These are excess hair growth, irregular or absent periods and infertility (Kitzinger & Willmott, 2002).

Negative emotions were associated with the disease, the most negative emotion identified by patients with PCOS were the psychological effects of depression and anxiety felt by these females as a result of the co morbidities and physical changes experienced by them (Khalil & Ghaly 2010).

2.4 Influence of Socio demographics on Knowledge and Perception

Socio demographic characteristics such as age was found to be negatively correlated to higher levels of knowledge on PCOS. In a study conducted in tertiary care facilities in Pakistan revealed that the patients of polycystic ovarian syndrome are mostly young and do not have understanding of the disease to the extent they should (Khalil W.K.B, Ghaly I.S, 2010). A study conducted to assess the level of knowledge of PCOS among 2000 women of age group 18-50 years in Saudi Arabia, revealed that the level of knowledge of PCOS was significantly related to higher educational level and the highest knowledge level was recorded among women with health college qualification (Alessa et al., 2017). Age was found to be associated with perception in a study that was conducted among patients with PCOS attending tertiary care hospitals in Pakistan. Most of the PCOS patients were young and did not understand the condition and this has affected their knowledge as well as their perception (Rizvi et al., 2014).

2.5 Experience with the condition, Knowledge and Perception

Experience with a condition affects knowledge positively but its effect on perception is dependent on the outcome of the condition (Kitzinger & Willmott, 2002). Experience with a disease involve a colleague suffering from the disease, treating a patient with the disease or having a close relative or yourself suffering from the disease. Studies have

shown that, those that suffer from the disease or have a long family history of a disease condition have adequate knowledge about the condition with regards to the clinical manifestation or signs, treatment options or lifestyle changes to manage the disease (Tian et al., 2011). Despite the adequate knowledge developed, a negative perception may develop if the disease outcome was fatal and a positive outcome may be developed if the outcome was not fatal (Blendon et al., 2012). Women living with PCOS when they had their experiences documented had a negative perception with of the condition and this was attributed to the negative outcomes of the disease on their features (Williams et al., 2015).

2.6 Influence of Education Programme on knowledge and perception

Education is associated with a higher level of knowledge on the condition. In a study conducted among nursing students using the quasi experimental method to assess the level of knowledge of the condition, post-test scores were significantly higher than pretest scores (Mohamed, 2016). Among 500 female science students attending public universities in Pakistan, majority (90.2%) of the respondents had good knowledge of PCOS after an educational intervention. The study concluded that different educational programs should be done to provide knowledge about polycystic ovarian syndrome (Haq et al., 2017). In another clinical based research study in Canada, involving 68 women who were counseled and educated on PCOS. After the education session, an online survey was used to assess their perceptions as well as level of knowledge, 63% of participants felt they had increased knowledge after participating in the study. Education was also found to be positively associated with enhanced knowledge (Colwell, Lujan, Lawson, Pierson, & Chizen, 2010). Effective educational intervention conducted especially for nurses have been found to significantly increase their level of knowledge on diseases. A study conducted in Hoshangabad, India to test the

effectiveness of the of education programme on their knowledge on PCOS revealed a positive correlation between education and level of knowledge (Gupta et al., 2017). Factors such as age and health education have been found to be associated with perception. Health education has been found to positively affect the perception as well as the knowledge level of a disease. Students in China after education on PCOS had higher levels of knowledge and their perception changed (Wang et al., 2018).

2.7 Sources of Information and Knowledge Level

Sources of information positively or negatively affects the level of knowledge on a disease condition. There is the need to strengthen the information sources on PCOS to enhance their credibility (Ali & Ameera, 2010). Knowledge scores on diseases increases with increasing credible sources of information on the disease. The available source of information include Television, Radio, internet, pamphlets and books (Wen et al., 2015). Upadhye & Shembekar, (2017) conducted a study to assess the knowledge on PCOS among 200 medical students. Data were collected from the students using a structured questionnaire. The study revealed that 33% girls had information from teacher, 19% got information from friends, 11.5% got information a doctor, 3.5% got from newspaper, and 5% got information from internet. Seventy-two percent of girls were aware of PCOS. The study concluded that knowledge of the disorder and counseling for adolescents should be included in the curriculum. Different levels of knowledge exist amongst professional health workers and students. In a study among 200 teenage girls, to estimate the level of knowledge on PCOS, majority thus about 123 of the girls had fair knowledge on the condition. The study recommended that administration of an information booklet on the condition will help teenage girls understand and have better knowledge on PCOS (Brar, Kaur, & Ramanadin, 2016). The

internet as a source of information on PCOS has greatly affected knowledge and cleared a lot of misconception about the disease (Alessa et al., 2017)

CHAPTER THREE

METHODOLOGY

Introduction

This chapter presents the study design, study area, study population, sample size and sampling method, inclusion criteria, data collection tools and technique, data processing and analysis, quality control, ethical consideration and pretesting of data collection tools.

3.1 Study Design

This study employed a cross-sectional design using quantitative data collection techniques to collect data among nurses at the La General Hospital in Accra, Ghana. Data was collected between May and June 2019. Survey was designed to examine socio-demographic characteristics of participants, perception, level of knowledge and contributing factors to knowledge level on Polycystic Ovary Syndrome.

3.2.1 Study Site

The study site was the La general hospital, in the La Dadekotopon Municipality, Greater Accra. The hospital was established in 1963 and become a district hospital in 2004. It has a bed capacity of 150. The hospital is a primary facility and sees a greater number of patients compared to other hospitals in the Municipality. The hospital serves population of La and neighboring communities. The la Dadekotopon municipality has a population of one hundred and eighty three thousand, five hundred and twenty eight (183,528). It has a total staff strength of three hundred and forty-seven (347) but has two hundred and fifty-nine (259) nurses. The hospital has over twenty units that renders various services to all. The hospital has a dedicated Gynecological department. Other services provided at the hospital include general medicine, surgery, maternal health,

dentistry, adolescent counselling and family planning. The hospital serves as a referral point for other private clinics in and around the La Dadekotopon Municipality (LGH, 2016).

3.2.2 Study population

The study population was all staff nurses at the La General Hospital.

The study population was nurses from the hospital. Nurses from all department in the hospital especially those from Gynecology and Obstetrics participated in the study.

3.2.3 Sample Size and Sampling Method

The sample size was calculated using Cochran's (1977) equation for sample size of proportion.

$$n = \frac{z_{1-\alpha}^2 P(1 - P)}{\varepsilon^2}$$

n = sample size

z = the selected critical value of 1.96 at 95% confidence level,

p = the estimated proportion of good knowledge 10.7% (Sunanda & Sabitha, 2016)

ε = the level of precision of 5%

A minimum sample size of 138 was obtained but after 10% adjustment to account for non-response rate, a total sample size of 152 was used in data collection. I had initially planned on obtaining the list of all staff nurses from administration and using simple random sampling to select participants for the study. However, Most of the selected nurses refused to consent for the study and others were on leave. Due to the limited time allocated for data collection, nurses were enrolled consecutively until the maximum sample size of 152 was obtained. There was 100% response rate.

3.2.4 Inclusion Criteria

- All staff Nurses of the hospital at the time of data collection were recruited.
- Nurse should have been practicing post training for at least a year.

3.2.5 Exclusion Criteria

- Nurse that were on leave and not present at the time during data collection were excluded from the study.
- Nurses who did not consent to participate in the study were excluded from the study.

3.3 Study Tools

A self-administered questionnaire with both open and close-ended questions were used in this study. Data collected include socio-demographic characteristics such as age, educational level, marital status, rank and department. Information was also collected on the perception, knowledge on risk factors associated with PCOS, clinical features, diagnosis, managements, treatment methods, and complications A questionnaire that has been validate and used in a similar study by Fannana & Jahangir (2013) was adopted and modified to suit the objectives of the study.

3.3.2 Method of Data Collection

Nurses from all departments were recruited for this study. The research team stationed in a private room at the Out patients Departments (OPD) , for the ease of data collection and nurses were directed to complete the questionnaires there. The principal investigator approached nurses at their workstations in the hospital, explained study to them, and those that consented to participate were directed to the OPD to fill out the questionnaire. Data collection was over a month duration and collected during the day and night shifts

3.4 Summary of variables

3.4.1 Dependent variables

- Knowledge Level of Polycystic Ovary Syndrome
- Perceptions about Polycystic Ovary Syndrome.

3.4.2 Independent Variables

- Age (In completed years)
- Educational level (highest level of Education attained)
- Marital status
- Department (Department of work at the hospital)
- Rank (Nurses rank)
- Sources of Information on PCOS
- Experience with Condition (Experience with the condition was defined as either treated a patient, had a family member, self, or colleague suffer from the condition)

3.5 Quality Assurance and Data Processing

Research assistants were trained on the ethics of research and questionnaire was pre-tested at Lekma hospital before data collection began. To prevent participants from being recruited twice for the study, they were asked if they had already been recruited for the study, their integrity was counted on. The consent form were cross-checked for repeated identifiers.

3.6 Data Analysis

Each completed questionnaire was scored on knowledge of risk factors, clinical features, diagnosis, treatment and complications. There were total of five categories

under which questions were asked. These categories were clinical features, diagnosis, risk factors, complications, and management.

Each correct answer attracted a mark of 0.5 and wrong answer attracted no mark. Clinical features attracted a maximum of 2.5 marks. Respondents were asked to list five clinical features. For the section on Diagnosis, respondents were required to state the three main features for diagnosis under Rotterdam criteria or National Institute of Health criteria for diagnosing PCOS. The maximum scored attained was 1.5. Risk factors also had three answers which attracted a maximum score of 1.5. For complications, respondents were expected to provide complications to mother, unborn child and psychological complications. The maximum score for this section was 2.5 marks. The maximum score for management was 1.0.

The computed scores were further re-categorized as poor, average and good knowledge. Three levels were used to show a clearer presentation of knowledge. Participants with less than five overall score were grouped as having poor knowledge; scores from 5 to 7 were grouped under average knowledge and scores greater than 7 were classified as good knowledge. All respondents that were unaware of the condition were grouped as having poor knowledge.

Questions on perception were scored on a five point Likert scale ranging from 1-5 depending on the type of answer chosen. Strongly disagree was coded as 1, disagree=2, neither agree nor disagree =3, agree=4 and strongly agree=5. The scale was further categorized into a three-point scale having agree, disagree and neither agree nor disagree.

Statistical analysis were performed using stata version 15. Descriptive statistics were used to summarize data and chi-square to examine the association between

demographic data, experience with disease and knowledge as well as perception. Ordinal Logistic regression was used to identify the contributing factors to the knowledge levels after the proportionality assumption test was performed and it showed no significance, ($P=0.3$). Hence, the model was fit for use.

3.7 Ethical Considerations

Ethical Clearance (GHS-ERC053/02/2019) was sought from the Ghana Health service Ethics Review committee for approval for this study. Permission was also taken from the regional health directorate and the administration of the La General Hospital prior to data collection. The consent of participants was sought by the use of an informed consent for this study. Participant's privacy and confidentiality were assured for this study. This study was voluntary to participant and participation was at his or her own will. A participant was free to withdraw at from the study at any time during the study. All soft copy data was kept on a laptop which was password protected. All hardcopy data and questionnaires were kept under lock and key.

3.7.1 Conflict of Interest

There was no conflict of interest by the researcher.

3.7.2 Funding

This study was self- funded by principal Investigator.

3.7.3 Consent

The details of the study were explained clearly to all participants before they consented for the study. The fact that they (the participants) were going to be answering a series of question was explained. In addition, each participant was told that they had the right to refuse to participate or stop their participation at any point of the data collection

process. Therefore, participants were free at any point in time during the data collection process to stop, pause or skip any questions they are not comfortable answering. Furthermore, each participant received a copy of their consent forms and was urged to call the principal investigator or the Ghana Health Service Ethics Review Committee representative if they feel that their rights have been infringed upon.

3.7.4 Data Storage, Usage and Confidentiality

Participants were assured that their details would be kept completely confidential for five years and then the questionnaires discarded through burning. Identifiers was removed in case the work was to be published. Participant personal information was kept in a locked drawer. No one, apart from the investigator and her supervisor had access to participant information. Data collected were coded in such a way that none of the responses could be tied to any one specific participant. There was no way whatsoever for anyone (except the PI) to be able to identify participants by their answers to any part of the questionnaire. During data analysis and report writing, log files and data sets were stored on a laptop protected by password known only to the principal investigator. If data were to be used again in another study, ethical clearance will be sort again from the ethical review committee at Ghana Health Service.

3.7.5 Risk and Benefits

This study poses no health risk to the nurses whatsoever, however the time involved in filling out questionnaire may have pose discomfort to the nurses. There is no direct benefit to the participants; however, the results of the study would be made available to the hospital after research.

3.7.6 Reimbursement

There was no remuneration for this study however; a token of a pen and note pad were given to nurses for their time.

CHAPTER FOUR

RESULTS

Table 4.1 Shows the summary of Demographic Information of study Participants (pages 27-28)

Characteristics	Frequency	Percentage (%)
Age(Years)		
Mean (SD)	31.07(±0.49)	
23-32	96	67.6
33-42	41	28.9
43-52	3	2.1
53-62	2	1.4
Totals	142	100
Sex		
Male	41	28.9
Female	101	71.13
Totals	142	100
Marital Status		
Single	66	46.5
Married	68	47.9
Divorced	4	2.8
Widowed	4	2.8
Totals	142	100
Highest Qualification		
Certificate	20	14.2
Diploma	55	38.7
Higher National Diploma	2	1.4
Degree	65	45.7
Totals	142	100
Department		
Out Patient Department	21	14.9
Obstetrics and Gynecology	14	9.9
Emergency	15	10.6

Characteristics	Frequency	Percentage (%)
Pediatrics	17	11.9
Surgical	20	14.0
Medical	34	23.9
Reproductive Child Health	21	14.8
Totals	142	100
Rank		
Health Assistant Curative	11	7.8
Community Health Nurse	10	7.0
Midwife	8	5.6
Nursing Officer	63	44.4
Senior Midwifery Officer	4	2.8
Senior Nursing Officer	40	28.2
Principal Midwifery Officer	1	0.7
Principal Nursing Officer	5	3.5
Totals	142	100

Source: field data 2018

4.1 Characteristics of study participants

There was 100% response rate for this study; one hundred and fifty-two questionnaires were sent out and all were received. However, there was ten incomplete questionnaires, these lacked vital information such as the age and years of experience. Incomplete questionnaires were excluded from data analysis. One hundred and fifty-two nurses from all departments at the La General Hospital participated in this study. Thirty-four (23.9%) of the participants for this study were from the medical department of the hospital, 14(10.6%) were from the Obstetrics and gynecology, 21(14.8%) were from RCH departments of the hospital. Amongst the participants recruited 63(44%) were nursing officers, 8(5.6%) were midwives and 40(28.2%) were senior officers. The mean age was 31.07(\pm 0.49) years and the age range was between 23-56 years. More than half

of study participants, 101(71.3%) were females and 68(47.9%) were married. Sixty-five (45.7%) of the participants had a degree from a university.

4.1.2 Awareness of Polycystic Ovary Syndrome

Majority thus 73(51.4%) of the Nurses were unaware of the condition and 69(49.3%) were aware of the condition.

4.1.3 Sources of Information for Awareness

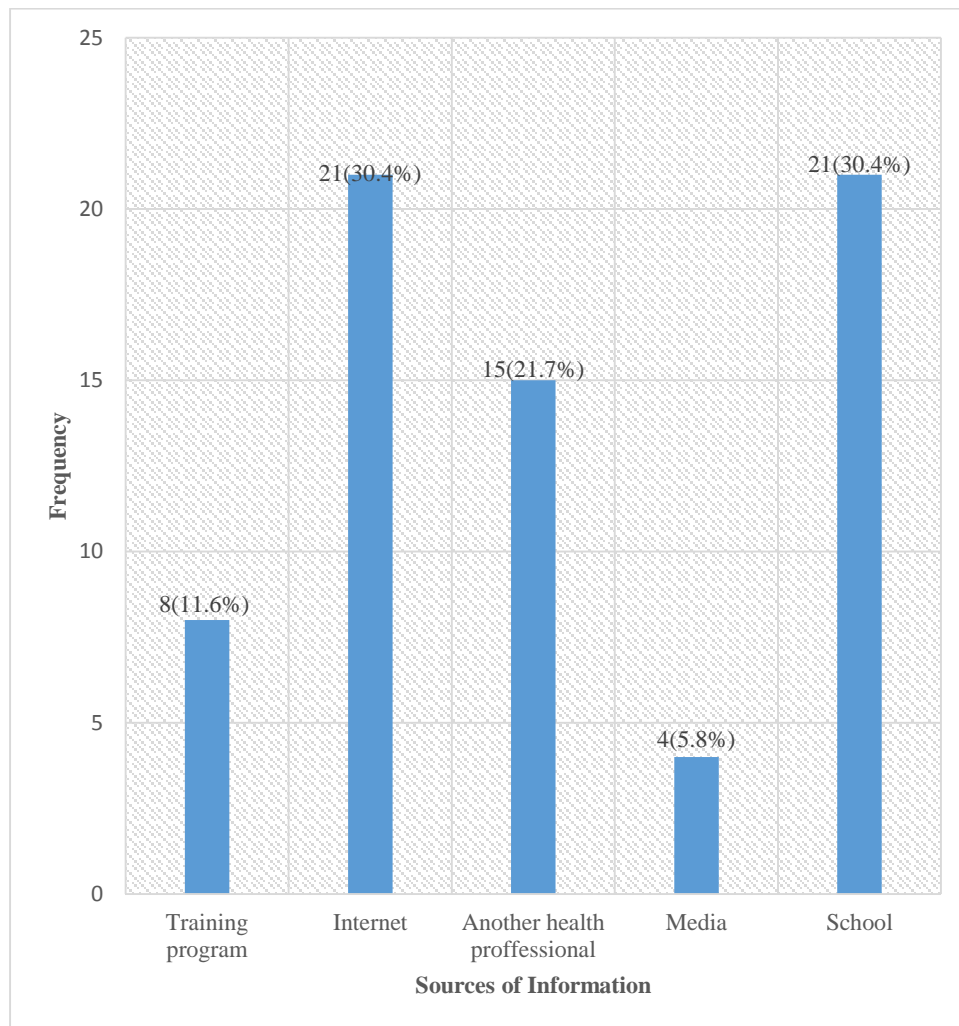


Figure 4.1.3 A graph showing the sources of awareness of PCOS

Source: field data 2018

Table 4.1.4 The experience with PCOS

Variables	Experience with condition N (%)		
	Treated Patient	Colleague had condition	Relative or self-had condition
Experience	9(6.3)	19(13.4)	16(11.3)
No Experience	56(39.4)	42(29.6)	46(32.4)
Don't Know	77(54.2)	81(57.0)	80(56.3)
Totals	142(100)	142(100)	142(100)

Source: field data 2018

4.1.4 Nurses Experience with PCOS

Overall, those that had experience with the condition were 30(20.98) and 112(79.0) did not have experience with PCOS.

4.2 Level of Knowledge of Nurses on PCOS

Out of the 69(49.3%) of the Nurses that were aware of the condition, 90(63.4%) had poor knowledge on the condition, the rest had average and excellent knowledge on the condition. The mean knowledge score was 5.89 (SD= ±0.31). Below is a figure showing the distribution of knowledge levels among nurses of La General Hospital.

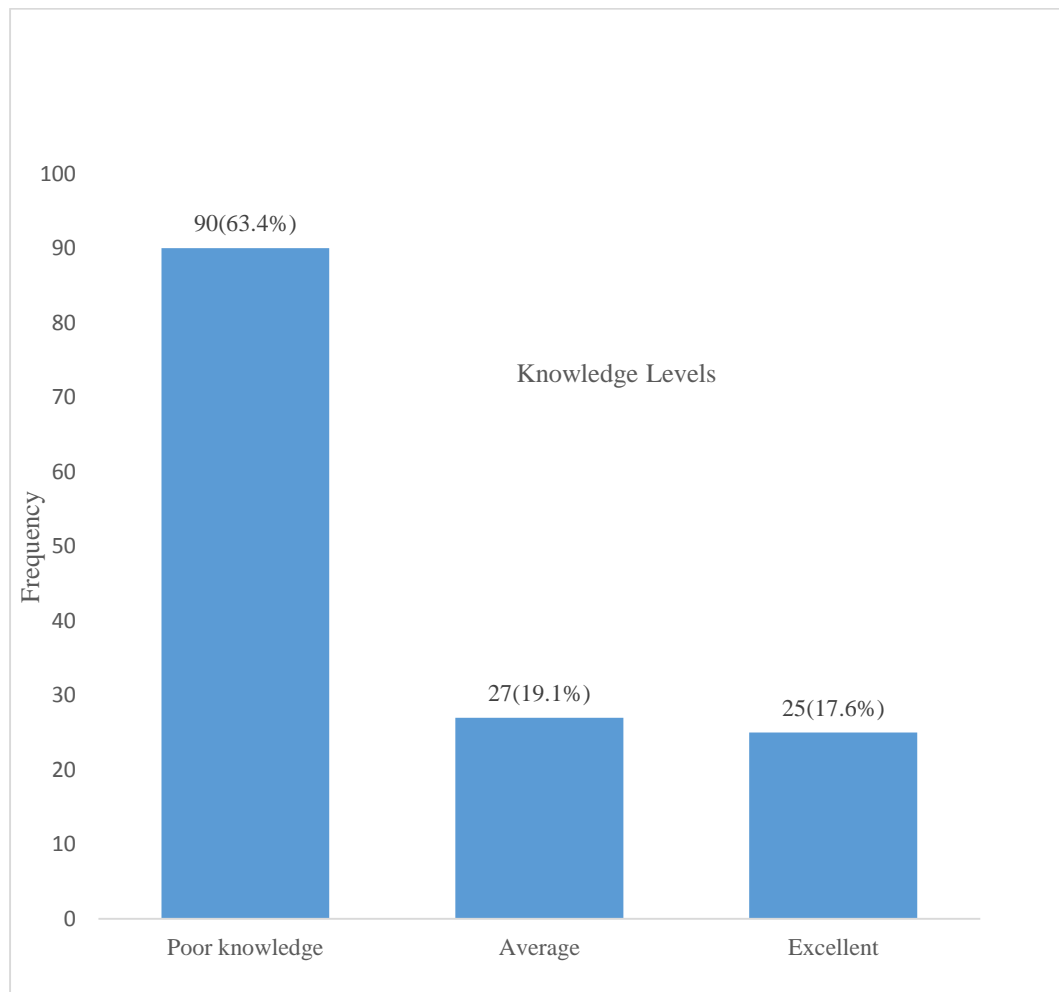


Figure 4.2 A Bar chart showing knowledge levels of Nurses

Source: field data 2018

Table 4.3 Shows the association between socio-demographic characteristics and knowledge level.

Variables	Poor	Average N (%)	Knowledge level	
			Excellent	Chi P-value
Age (years)				6.34 0.385
23-32	60(42.3)	21(14.8)	15(10.6)	
33-42	28(19.7)	5(3.5)	8(5.6)	
43-52	2(1.4)	0	1(0.7)	
53-62	0	1(0.7)	1(0.7)	
Sex				14.95 <0.001
Male	36(25.4)	2(1.4)	3(2.1)	
Female	54(38.0)	25(17.6)	22(15.5)	
Marital status				7.57 0.27
Single	42(29.6)	16(11.3)	8(5.6)	
Married	42(29.6)	10(7.0)	16(11.3)	
Divorced	3(2.1)	0	1(0.7)	
Widowed	3(2.1)	1(0.7)	0	
Education Qualification				7.57 0.27
Certificate	13(9.2)	4(2.8)	3(2.1)	
Diploma	39(27.5)	11(7.7)	5(3.5)	
Higher National Diploma	1(0.7)	1(0.7)	0	
Degree	37(26.1)	11(7.7)	17(12.0)	
Rank				25.97 0.06
Community Health Nurse	10(7.0)	0	0	
Health Assistant	10(7.0)	1(0.7)	0	
Midwife	5(3.5)	1(0.7)	2(1.4)	
Nursing Officer	33(23.2)	16(11.3)	14(9.9)	
Principal Midwifery Officer	0	1(0.7)	0	
Senior Midwifery Officer	1(0.7)	1(0.7)	2(1.4)	
Senior Nursing Officer	26(18.3)	8(5.6)	7(4.9)	
Department				22.4 0.07
Out Patients Department	9(6.3)	6(4.2)	6(4.2)	
Obstetrics &Gynecology	4(2.8)	4(2.8)	6(4.2)	

Variables	Poor	Average N (%)	Knowledge level		
			Excellent	Chi	P-value
Emergency	9(6.3)	3(2.1)	3(2.1)		
Pediatrics	14(9.9)	3(2.1)	0		
Surgical	17(12.0)	1(0.7)	2(1.4)		
Medical	21(14.8)	7(4.9)	6(4.2)		
Reproductive and Child Health	16(11.3)	3(2.1)	2(1.4)		

* Significance at $p < 0.05$

4.3 Association Between Knowledge levels and Sociodemographic Characteristics of Respondents

Chi square was performed to find out the association between independent variables and the primary outcome variable which is knowledge level. After the analysis, sex and experience with the condition were found to have an association with knowledge level of nurses.

The younger the nurse the lower the knowledge level on PCOS. Married nurses recorded the highest number of excellent knowledge levels. Divorced and widowed levels showed lower levels of knowledge. Nurses having a university education showed higher levels of knowledge compared to other education qualifications. Nursing officers had better knowledge levels compared to other ranks. For midwives, the higher the rank the lower the number of nurses that had higher knowledge levels. The OPD, Obstetrics, Gynecology, and Medical departments had six nurses each having excellent knowledge, however nurses from the emergency department had all respondents having average and excellent knowledge levels.

Table 4.3.1 The Association between Knowledge levels, Experience with the condition and Sources of information among Nurses

Variables	Knowledge Levels			Chi	P-value
	Poor	Average	Excellent		
Experience with condition				30.28	<0.001
No Experience	83(54.5)	18(12.6)	11(7.75)		
Experience	7(4.9)	9(6.3)	14(9.9)		
Source of Information				5.51	0.70
Training Program	1(0.7)	4(2.8)	3(2.1)		
Internet	7(4.9)	6(4.2)	8(5.6)		
Another Health					
Professional	3(2.1)	7(4.9)	5(3.5)		
Media	2(1.4)	2(1.4)	0		
School	4(2.8)	8(5.6)	9(6.3)		

* Significance at $p < 0.05$

4.3.1 Association between Non-demographic Characteristics and Knowledge Level.

Chi square used to test the association between known demographic characteristics showed no sufficient association except sex however, with regards to non-demographic characteristics experience with the condition showed sufficient relationship with knowledge levels (chi=30.28, $P < 0.001$).

Table 4.4 Factors associated with Nurses having higher knowledge of PCOS

Variables	Odds Ratio of Higher Knowledge	[95% Conf. Interval]	P-value
Sex			
Male	Ref		
Female	1.45	0.155 13.571	0.75
Educational Qualification			
Certificate	Ref		
Diploma	0.17	0.027 1.202	0.17
Higher National Diploma	0.33	0.004 2.605	0.07
Degree	1.12	0.180 6.967	1.04
Department			
Out Patients Department	Ref		
Obstetrics and Gynecology	2.81	0.309 23.302	0.34
Emergency	1.33	0.136 13.004	0.80
Pediatrics	0.08	0.008 0.911	0.04
Surgical	0.33	0.211 5.134	0.42
Medical	0.19	0.379 0.978	0.45
Reproductive and Child Health	0.40	0.050 3.181	0.38
Source of Information			
Training Program	Ref		
Internet	0.24	0.316 1.783	0.16
Another health Professional	0.28	0.312 2.577	0.26
Media	0.06	0.005 0.909	0.04
School	0.68	0.885 5.270	0.72
Experience with Condition			
Experience	2.47	0.374 16.318	0.35
No Experience	Ref		
Age			
23-32	Ref		
33-42	0.64	0.177 2.309	0.50
43-52	796224.5	0	1.00
53-62	0.10	0.002 5.200	0.25

* Significance at $p < 0.05$

4.4 Factors associated with Nurses having higher knowledge of PCOS

Ordinal Logistic regression was used to predict the association between knowledge levels and independent variables. Factors that were associated with knowledge included Department and sources of information. Pediatric department was significantly associated with lower knowledge. If a nurse worked in the pediatric department, she was 92% less likely to possess higher knowledge of PCOS compared to if she worked in OPD. (OR= 0.08.CI= 0.008-0.911, $P < 0.05$). Media as a source of information was associated with lower knowledge. If a nurse had media as a source of information, she was 94% less likely to have higher knowledge about PCOS compared to if she heard her information from a training program (OR=0.06, CI= 0.005-0.909, $P < 0.05$).

Table 4.5 Shows the Perception of Nurses on Polycystic Ovary Syndrome

Variable	Agree	Neutral N (%)	Disagree
Difficulty associating with people	24(34.8)	11(15.9)	34(49.3)
PCOS patients are depressed	43(62.3)	10(14.5)	16(23.2)
PCOS patients require support	48(69.6)	5(7.3)	16(23.2)
PCOS patients are suicidal	11(15.9)	14(20.3)	44(63.8)
PCOS is difficult to live with	29(42.0)	16(23.2)	24(34.7)
PCOS patients are not proper women	7(10.1)	6(8.7)	56(81.2)
PCOS cannot be managed	37(53.6)	14(20.3)	18(26.1)
PCOS patients have low body image	29(42)	16(23.2)	24(34.8)
PCOS cannot be controlled	8(11.6)	3(4.35)	58(84.1)
Anxious about Having PCOS	18(26.1)	4(5.8)	47(68.1)
PCOS is hereditary	17(24.6)	9(13.0)	43(62.3)
PCOS is a permanent condition	17(24.6)	9(13.0)	43(62.3)
The name is confusing	28(40.6)	8(11.6)	33(47.8)

4.5 Perception of Nurses on Polycystic Ovary Syndrome

Likert scale was used to evaluate individual perception of respondents regarding PCOS. Majority of the respondents disagreed to the fact that PCOS patients had difficulty associating with people. They are not suicidal although they are depressed. They also disagreed to the fact that they are not proper women even though they have low body image. They agreed to the fact that PCOS patients require social support because the condition is difficult to live with. The respondents did not feel anxious about having PCOS. Negative perceptions associated with the condition were low body image and difficulty leaving with the condition. Some misconceptions were spotted from the responses given. The condition is hereditary and can be managed.

CHAPTER FIVE

DISCUSSION

5.1 Awareness and Knowledge level of respondents

It is common for people suffering from an ailment to have low level of knowledge and misconceptions about the condition due to beliefs associated with the condition. It is natural to assume nurses will have a better knowledge and no misconceptions about conditions. However, in this study there was a high level of unawareness, poorer knowledge levels and misconceptions associated with the conditions.

Nurses play a role in patient education during the caregiving process, during the process they pass on their knowledge about the condition to patients. When nurses are unaware about a condition and have low knowledge, there is a tendency of transmitting wrong information to the patients and this will result in misconceptions about the condition.

Polycystic Ovary Syndrome is prevalent among women with fertility issues as this condition is a major contributor to infertility among women. Various misconceptions and wrong information have been passed across because of the lack or inadequate information sources available to them.

Nurses were generally not knowledgeable because they were neither aware nor had experience with the condition. These results are in contrast with other studies conducted among nursing students and other health professionals. In a similar study conducted among nursing students in India, more of the respondents had average knowledge compared to this study. The study population in the India study were all females in the same school. This study has revealed that sex is associated with being knowledgeable about the condition, hence the higher level of average knowledge in their study (Haq, Khan, Riaz, Nasim, & Tahir, 2017)

In another study conducted in the United States of America amongst physicians, one third of the respondents in the study did not know the diagnostic criteria they used in diagnosing the condition. They were also unaware of the cardio metabolic comorbidities associated with the condition, however the psychological complications such as depression, anxiety and low quality of life were mentioned (Dokras et al., 2017). Gaps in knowledge with regards to diagnostic criteria used and complications of the condition negatively affects the knowledge of Physicians. In another study, amongst adolescent girls (Upadhye & Shembekar, 2017) only a third were aware of the condition and this is similar to the results obtained in this study.

5.2 Perception of Respondents

Various misconceptions are attributed to the condition, however, among nurses these misconceptions should not exist. It was unexpected when this study found that nurses had misconceptions about the condition. The misconceptions they had were with the condition was not manageable; it was not hereditary and was difficult to live with. These misconceptions exist because nurses have poor knowledge on the condition and they have not had enough experience with the condition as well. Although majority of the respondents agreed to depression, being associated with the condition they disagreed to the fact that the patients had suicidal ideations. Negative perception associated with the condition were depression and low body image. Although the PCOS patients were depressed, respondents agreed to the fact that they were not suicidal yet required social support to cope with living with the condition. Positive perceptions were condition being temporal, proper women and condition can be controlled. Despite them agreeing to the name being confusing, they were not anxious about having the condition. This results is similar with a study conducted by Colwell et al (2010). The study also concluded on the name being confusing. The results of this study is also

similar to a study conducted by Yoo et al (2003). Respondents from their study agreed that PCOS patients have low self-image and are depressed. Another study also confirmed the results of this study as it concluded that the condition was difficult to live with and patients are depressed (Williams et al., 2015)

5.3 Factors associated with higher knowledge of Nurses on PCOS

From various studies that have been reviewed, knowledge was associated with the source of information, socio-demographic characteristics such as age, and if respondents have had any health education on the condition, regardless in this study the socio-demographic feature associated with knowledge was sex. Source of information was also associated with knowledge.

In testing the strength of association, Department and source of knowledge were associated with higher knowledge level. Despite Internet and School being the highest source of information, training programs were preferred as a source of obtaining knowledge compared to media. It is therefore expedient to encourage more training programs for health professionals .

Nurses from pediatric department had higher knowledge levels compared to nurses from other departments. This may be because nurses from those department probably had experience with the condition and may have done rotations previously in the Obstetric and Gynecology department. All the nurses from pediatrics were also females so they having higher knowledge is not astonishing as females are the ones affected compared to males. This result is consistent with another study conducted by Alessa et al. (2017). The study also found the internet as the highest source of information on PCOS to all especially adolescent girls. In contrast, age was found to be associated with knowledge. Although age negatively correlated to knowledge in their study. Experience with the condition was also found to be associated with knowledge by some studies

however; in this study experience was not associated with knowledge (Alessa et al., 2017). Sources of information were also found to be associated with knowledge level, in this study not all the sources of information was associated. Only the media as a source of information was associated with knowledge. Other sources of information on PCOS was another health professional, through a training programme, internet and books.

5.4 Limitation of Study

Despite the use of a large sample size in this study, non-probability sampling method was used and as such, some limitations should be noted when drawing conclusions from this study. The study sample is not representative of the entire nurse population at the La General Hospital. Findings from this study however should not be generalized to the entire nurse population of Accra.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.0 Summary of Findings

At the end of the study majority of the respondents were unaware of the condition. Knowledge level was very low amongst nurses as more than half of the respondents had poor knowledge. Factors associated with knowledge were from chi square analysis were sex and experience with the disease, however after the ordinal logistic regression, media as a source of knowledge and pediatric department were strongly associated with lower knowledge levels. Various misconceptions associated with the condition were that the condition was difficult to live with; it was not hereditary and cannot be managed. The negative perceptions associated with the disease were the fact that women with the condition had low body image, and are depressed. Although the women may be depressed, the respondents agreed to the fact that they were not suicidal. Positive perceptions associated with the condition that majority of the respondents were not anxious about having the condition, women did not have difficulty associating with people, are proper women, condition is not permanent and can be controlled. They also agreed that the name itself was confusing

6.1 Conclusion

The main objective of this research was to determine the level of knowledge, perception and factors associated with knowledge of Polycystic Ovary Syndrome among nurses at La General Hospital, Accra Ghana. There is low level of knowledge among nurses at the La General hospital and this is because of inadequate experience with the condition as well as the fact that more than half of respondents were unaware of the condition. Factors contributing to knowledge was sex and experience with the condition. Females were more knowledgeable compared to the male nurses for this study. This is not

surprising as PCOS is a condition affects women. Those that had experience with the condition were more knowledgeable than those without experience with the condition were. Factors contributing to higher knowledge levels were source of information and department of work. The media as a source of knowledge and pediatric department showed correlation to higher levels. From this study, depression and difficulty living with the condition were associated with the condition. Suicidal ideations, conditions being permanent and not being proper women were not associated with the condition.

6.2 Recommendations

6.2.1 Recommendations to Researchers

- Similar studies should be conducted across various facilities among Nurses.

6.2.2 Recommendations to Ghana Health Service

- Ghana Health Service should institute a campaign to create awareness on Polycystic Ovary Syndrome among nurses.
- In service, training unit of the hospital should conduct frequent training session for staff nurses to educate them and clear all misconceptions they may have on the condition.
- Ghana Health Service should collaborate with NGOs who are involved on female reproductive issues to run workshops aimed at creating awareness and educating nurses on Polycystic Ovary Syndrome.

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APPENDIX

Appendix 1: Questionnaire

Date

Questionnaire code.....

**KNOWLEDGE AND PERCEPTION OF POLY CYSTIC OVARY SYNDROME
AMONG NURSES IN ACCRA**

(All the questions asked are for research purpose only and all the information will be kept confidential) **Place circle your choice of answer**

A. Demographic Information

1. Date of birth:
2. Sex: 1. Male 2. Female
3. Marital status: 1. Single 2. Married 3. Divorced 4. Widowed
4. Education (qualification): 1. Certificate 2. Diploma 3. HND 4. Degree
5. Rank
6. Which department do you work in? 1. OPD 2. Obstetrics' and Gynecology 3. Emergency 4. Pediatrics 5. Surgical 6. Medicals 7.RCH
7. How long have you been working as a Nurse? Years.....

B. Awareness and Sources of Information Polycystic Ovary Syndrome (PCOS)

8. Have you heard of Polycystic Ovary Syndrome is? 1. Yes 2. No

(Discontinue interview if answer is no)

9. Where did you hear of PCOS? 1. Through a training program 2. Internet 3. Another health professional 4. Media 5. Print media 6. In school

10. Have you had any form of health education on PCOS? 1. Yes 2. No 3. I don't know

11. If yes, where did you get the health education?

12. Have you treated any patients with PCOS? 1. Yes 2. No 3. I don't remember

13. Has any close relative or have you suffered from PCOS before? 1. Yes 2. No 3. I don't remember

14. Have any of your colleagues suffered from PCOS before? 1. Yes 2. No 3. I don't remember

C. Knowledge On Polycystic Ovary Syndrome

<p>CLINICAL FEATURES</p>	<p>16. List 5 clinical features of PCOS</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
<p>DIAGNOSIS</p>	<p>17. How is PCOS diagnosed?</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
<p>RISK FACTORS</p>	<p>18. List three risk factors associated with PCOS?</p> <p>.....</p> <p>.....</p> <p>.....</p>

COMPLICATIONS	<p>19. What are three long term complications of PCOS to the woman?</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>20. What are two complications of PCOS to the unborn child?</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>21. List two psychological complications associated with PCOS?</p> <p>.....</p> <p>.....</p>
MANAGEMENT	<p>22. List two ways PCOS be managed?</p> <p>.....</p> <p>.....</p> <p>.....</p>

D. Perception on Polycystic Ovary Syndrome

For each of the following questions choose from the following alternatives

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
23.The name PCOS is confusing and gives no clue about the disease					
24.PCOS is hereditary and can be transferred from mother to daughter					
25.PCOS is a permanent condition and cannot be cured					
26.PCOS cannot be managed through diet and exercising					
27.PCOS patients have no control over the disease					
28.PCOS patients have low body image					

29.I feel anxious about having PCOS					
30.PCOS is a difficult condition to live with					
31.Women with PCOS are not proper women					
32.Women with PCOS are suicidal					
33.Depression is associated with women with PCOS					
34.PCOS patients have trouble associating with other people					
35.PCOS patients require support social support					

Appendix 2: Participant Information Sheet



University of Ghana School of Public Health Consent Form

Title of project: Knowledge and Perception of Polycystic Ovarian Syndrome among Nurses in Accra

Principal Investigator: This project is being carried out by Lawrencia Adjei as part of her fulfillment for a Master's in Public Health. Information collected is mainly for research purposes.

Introduction

My name is Lawrencia Adjei and I am from the *University of Ghana*. I am conducting a study among Nurses to assess their knowledge and perception on Polycystic Ovarian syndrome.

This study will last for 3 months. 152 nurses who work at La general hospital in Accra will be involved in the study. There is only one interview which will be done today.

If you grant permission to participate in this study, I will ask you some questions on Polycystic Ovarian Syndrome. Everything will take no more than 15 minutes.

Background.

Polycystic Ovarian Syndrome (PCOS) is common endocrine disorder that affects women. Symptoms usually appear during adolescence and if not treated can result in infertility and other metabolic disorders. This study aims to assess your knowledge and perception associated with Polycystic Ovary Syndrome

Nature of study

This is a cross-sectional quantitative study

Risk/Benefits

There are no risks involved in participating in this study and the information received will not affect your work performance in anyway. The time involved in the study may pose discomfort to you. However, you will be compensated with a note pad and a pen for your time. There is no direct benefit to you in this research, findings from this study will allow the researcher to understand your perception and knowledge, and some factors associated with it.

Voluntary Participation and Right to Leave the Research

It is entirely your decision to grant permission to participate in the study.

If you are not comfortable with participation, you can deny permission and you will not be asked any questions.

Compensation

There is no payment and there are no costs to you for participating in the study. However, a small token of a pen and a note pad will be given to you at the completion of the study for your time.

Confidentiality

No one will be able to know how you responded to the questions. The information will only have a study or ID number and not your name. All information will be kept safe and seen only by the researchers. The information will be kept for five years and after that

discarded through burning, in case this information will be needed in another study, ethical clearance will be sort again.

Contacts for Additional Information

You may ask me any questions about this study now or the next time you see me.

You may also call or e-mail:

Lawrencia Adjei

0265600518

E-mail: adjei.lawrencia@yahoo.com or

Hannah Frimpong, GHS-ERC Administrator.

Office: +233 302 681109

Mobile: 233 (0) 243235225 or 0507041223.

Email: Hannah.Frimpong@ghsmail.org

PARTICIPANTS' STATEMENT

I acknowledge that I have read the purpose and contents of the Participants' Information Sheet read and has satisfactorily been 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.

Participant Initials: _____ **Code:**

Participant Signature: _____

Date: _____

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: _____