DEVELOPING A TEACHING PROTOCOL ON PROSTATISM BASED ON PATIENT EDUCATIONAL FACTORS IN MOI TEACHING AND REFERRAL HOSPITAL, ELDORET, KENYA

BY

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DECLARATION

Declaration by Candidate

This thesis is my original work and has not been presented for the award of any degree in this or any other University. No part of this proposal may be reproduced or transmitted in any form without the prior written permission of the author and/ or Moi University.

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Declaration by the Supervisors

This thesis has been submitted with our approval as University Supervisors.

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DEDICATION

I dedicate this work to, first and foremost, all the men whose experiences went into the data that constitute the study for without them the thesis would never have been.

My family is appreciated for their individual and collective roles in affording me the peace of mind to get this lifetime achievement.

Fellow candidates, faculty in the Department of Medical Education and colleagues in Moi University with whom I interacted and whose valuable inputs and shared experiences led to this PhD thesis are recognised for being part of the long journey to the apex of academia.

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ABSTRACT

Background: Education has been associated with empowerment and better health where pedagogies are aligned with life experiences. It, however, has had a number of flaws that may make going to school less of a predictor of self-improvement. Limited understanding of prostatism among both patients and healthcare workers leads to suboptimal care and attendant complications. With no existing teaching protocol on prostatism across the world, an objectively structured one was desirable. This study developed and pretested a teaching protocol based on patient educational factors and was found to be capable of empowering those taught to improve on their urological health and care.

Objective: To develop and pretest a teaching protocol on prostatism based on patient educational factors among men presenting at Moi Teaching and Referral Hospital, Eldoret, Kenya.

Methods: This was a census study that lasted two years. A purposed consecutive sampling was done and data collected using a pretested interviewer administered questionnaire. The data was analyzed by use of SPSS version 20.0 by subjecting it to cross-tabulation, correlations and linear regression analysis. Discrete data was summarized using frequencies, proportions, ratios and percentages while continuous data was by mean and standard deviations. Statistical significance using Chi square and Student t- test was pegged at p value ≤ 0.05.

Results: One hundred and twenty-six patients were recruited into the study. Their ages ranged from 51to 88years with mean± Standard Deviation of 67.1 ±9.7 years. Those with no formal education were 46% while 55.9% of those who went to school had less than or equal to 7years of primary education. Education beyond secondary school positively correlated with better healthcare and yielded statistically significant differences in terms of active search for health information ($p < 0.001$), awareness of prostatic disorders ($p<0.001$) and health status at presentation in hospital ($p=0.003$). The patients taught using the teaching protocol scored 90% in good understanding of the prostatic disorders, 96.7 % understanding of the symptoms and 100% sense of being empowered to understand prostatism.

Conclusions: Formal education positively influenced healthcare in patients with prostatism with maximum benefits in those with greater than secondary level of education. The developed teaching protocol on prostatism will be able to empower patients and enhance urological care.

Recommendation: It is recommended that the developed teaching protocol on prostatism be incorporated into and widely utilised in patient health education so as to better the urological health of patients.

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ABBREVIATIONS

COPP - Clinically Oriented Prostatism Protocol

DRE - Digital Rectal Examination

HCWs - Health Care Workers

IPSS - International Prostate Symptom Score

IREC - Institutional Research and Ethics Committee

KUB - Kidney, Ureter and Bladder

LUTS - Lower Urinary Tract Symptoms

MTRH - Moi Teaching and Referral Hospital

NBS - National Bureau of Statistics

PBL - Problem Based Learning

PSA - Prostate Specific Antigen

SOPs - Standard Operating Procedures

DEFINITION OF OPERATIONAL TERMS

Co-morbidity: Disease/s other than the primary problem (prostatism) that made the patient seek medical attention.

Direct entry: A patient who presented to the referral facility without going through the referral hierarchy of other health facilities.

Education quality: The infrastructural inputs that enrich the learning process such as books, teacher competencies and the type of school.

Educational achievement: The qualifications one gets as a result of having gone through a learning process within a determined period.

Educational attainment: Chronological period of schooling.

Educational factors: Individual, environmental and societal aspects that determine how and what is learned.

Lower Urinary tract: The portion of the urinary system that constitutes the bladder and urethra

Management: The comprehensive care of patients that includes history-taking, physical examination, investigations and treatment.

Prostate disorders: The aberrations in a prostate that manifest as disturbed urination as occurs in case of enlargement or inflammation.

Prostatism: Urinary symptoms due to a prostate disorder.

Referral: A patient sent to MTRH from other health facilities for specialised care.

Rural: In the traditional settings of village life.

Upper urinary tract: The portion of the urinary system that constitutes the kidneys and ureters.

Urban: In or near a major town.

Vital signs: The core clinical observations of heart rate, respiratory rate, temperature and blood pressure.

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.0 Overview

This chapter addresses the background to the study; statement of the problem; objectives; research questions; study justification and significance; the formulated hypotheses; the philosophy underpinning the study; and the conceptual framework. It lays the foundation for the proper understanding of the study as to the obtaining situation, what needs to be done and the anticipated scientific knowledge and practice it will bring on board to improve the patient understanding and the care of prostatic disorders among the aging males.

1.1 Background to the Study

Education has been associated with better health, self empowerment and greater usefulness to society but only if the pedagogies interrogate the connection between academics and lived experiences (Ntarangwi, 2003). By enlightening people, it brings into their lives new and better perspectives that are not only helpful in their way of thinking but also how they live. It, however, has its peculiarities that in due course manifest as the differences in the ways of life even among those with similar exposures. The quality of education is considered the key determinant of the life experiences including how well one takes care of his/her health. This quality may be manifest in the form of such infrastructural support as the classrooms and number of students, teacher competencies and background environmental enablers as the home setting and parent exposure to education or lack of it.

With education systems dominated by flawed admissions, poor teaching, student unrests, stealing of examinations and semiliterate graduates, the value of education in

our ways of life, including our pursuit and maintenance of health, can be justifiably questioned (Bergmann, 1996). Papers and elaborate graduation ceremonies mean nothing if what was learnt was not transformative to the learner. Meaningful education is helpful to the learner by not only endowing mentally and also making what is learnt of help to self and society. That way, such societal parameters as standard of living, socio-political engagements and self-care in health matters become bettered by exposure to formal education. As found by Tipping and Segall (1995), health is best seen in the individual and societal perspectives which are in turn coloured by educational, geographical, socio-cultural, economic and organizational factors. An enlightened community is a competent community in the varied aspects of living and enhances their quality of life.

But studies have shown that going to school on its own doesn't necessarily make people better for their and communal advancement. While health education has been shown to enable people utilise the health facilities and also seek health information, the interplay between the level of formal education and the quality of education goes a long way in what becomes of the person in terms of pre-empting disease states as well as seeking health care when unwell.

The world prevalence of prostatism is estimated to be 6% yet management of prostate disorders remains a problem even to health professionals (Mofolo et al, 2015). This is due to combined deficiencies in terms of knowledge and practice between the healthcare workers and the patients. Many laymen have no understanding of medical issues because of their level of education as well as cultural inputs. The health care workers, on the other hand, have been found to be inadequately prepared to even share medical views. Jacob (2002) found out that physicians exchange minimal

information with patients during consultation while Schaede et al (2018) in their study on Shared Decision Making found that physicians seem to underestimate by up to 29% the patients' desire to be involved in decision making concerning care. This creates an environment in which patients present late and the care givers view treatment as purely medical. A number of patients present with attendant complications arising from abnormal urination secondary to the prostate disorders. If these patients had gotten early interventions that are not only sound in medical care but also informative on health and healthcare seeking habits, the general quality of life would have been improved.

Lack of awareness about prostate-related conditions has been identified as a cause of low survival and higher mortality rates among black men. Kabore, Kambou , Zango & Ouédraogo (2014) in Ouagadougou found the level of education to strongly correlate with the knowledge and need for early diagnosis of the possible problems. An informed patient is a sure investment in better healthcare with individual and collective benefits to the society.

Cutili (2003) in a study on health seeking behaviour of patients found out that patients needed empathy, effective communication and mutual respect to fully benefit from healthcare workers. The unfortunate thing is that most healthcare workers are not endowed with the gift of the gab and find it difficult to effectively communicate to patients and relatives. As found by Souaid (2018), patients on the other hand, lack knowledge on prostatism, including their associations with lifestyle. This potent combination of workers who are dependent on for information and care but deficient in the two capacities and patients who remain detrimentally ignorant has led to a state in which a need is perceived for there to be a teaching protocol that would not only

make the workers better in health education and care but also empower the patients to take charge of their health and quality of life.

A teaching protocol is a step-by-step guideline that educators use to structure professional conversations or learning experiences (Hill-Kayser et al, 2009). For a protocol to be successful, it should be a simple document that outlines the key information to be relayed with a clear objective or objectives that are to be achieved through the process of teaching (Pembe, Mbekenga , Olsson & Darj, 2017). Such is the kind of guide that would deliver essential information to patients and relatives with focus on understanding the prostate, its disorders, symptoms related to these disorders and what patients should do to better their urological health.

In this age of advanced technology and varied rights including those on access to information and holding opinions, a structured mode of informing patients on their health and particularly on prostatism is not only desirable but also likely to be helpful. There exists at present no known formal teaching protocol on prostatism across the world. Appropriate information at the right time would empower these patients to effectively handle their prostate related problems and enable early presentations, appropriate referral, effective management and better outcomes of interventions. The protocol could, with necessary adjustments, form part of educational curricula in medical teaching institutions as well as Standard Operating Procedures (SOPs) in health institutions.

The educational factors have been juxtaposed on the understanding of prostate disorders and the health status of the patients at presentation to help in formulating an educational protocol that would bring a better urological health to patients with prostate disorders**.** This is in keeping with the findings of Nilsson and others (2011)

that development of culturally sensitive, low-literacy educational materials can improve patient awareness of prostate disorders and improve the frequency of diagnosis and treatment of the ensuing prostatism. This thesis is an actualization of this suggestion; an investigative endeavour that yielded helpful findings that were utilised in the formulation of a teaching guide that will be appropriate for the healthcare workers as well as the patients in need of health education besides treatment.

1.2 Statement of the Problem

Education has been shown to correlate well with the socioeconomic and health status of an individual but there is a knowledge gap on how and to what extent education promotes the understanding of prostate disorders and their effects among the laymen. Patients are handicapped by their limited understanding of the prostate and the consequences of its disorders. This ignorance leads to self-neglect on urological problems emanating from prostatic complications in the aging male. Patients end up presenting late with complications that could have been avoided had they been better-informed on their problem.

Doctors and other healthcare workers also have difficulties with sharing information on health in general and prostatism in particular. A structured guide would help them relay pertinent key points to enlighten the patients on their health problem, basis for symptoms, need for graduated medical and surgical interventions and empowerment on health and healthcare seeking behaviour.

We lack an evidence based teaching protocol on prostatism to address the twin problem of healthcare workers with inadequate competencies and ignorant patients who endanger their lives when faced with prostatism. As such, a teaching protocol on

prostatism based on evidence-based research would be of help not only to the aging males with either existing or potential for prostatism but also the healthcare workers who find it in their line of duty necessary to offer health education to these patients.

The developed protocol would then empower not only the healthcare workers but also the patients for a better urological care and quality of life among the patients.

1.3 Purpose of the Study

The purpose of this study was to develop a teaching protocol on prostatism. The said teaching protocol was to help the health care workers to have a structured, professional guide in the teaching of prostatism. This would in turn enlighten the patients with or who stand the risk of prostatism on the need for active engagement in their health and care.

The protocol was based on the research findings of the investigative arm of the study in which the education factors were utilized to understand the prevailing needs of the affected population and thus formulate a protocol to meet their health needs related to prostatism.

Prostatism is a problem of the aging male 50 years and above. It affects about one in six men in that age group and while it is a prevalent problem, there existed no teaching protocol that could empower these men or even the health care worker with a structured teaching mechanism. Thus a need to develop a teaching protocol on prostatism was perceived and addressed in this study. The developed protocol was then tested and found to meet the objectives set by the study.

1.4 Study Justification

This study is necessary because of the following points:

There has been no similar study done in our setting, country or region and the study will thus be a baseline and benchmark in the topic of education and prostatism.

Health educators will have a research-based teaching guide that addresses the need for a better understanding of prostatism. This guide will make teaching on prostatism easier, simpler and providing information that is user dependent with the level education determining the details on prostate, prostate disorders, basis for symptoms and modes of treatment.

Health practitioners and institutions will have a good understanding on the role of education in prostatism and patient care. Out of the study findings, the healthcare workers will have a better understanding of the patients, the demographics, their level of exposure in education as well as their understanding of their prostate problems.

Institutions, including the Ministry of Health, will have evidence-based teaching on the prostate from which policies and Standard Operating Procedures can be developed. This will be an opportunity to enhance teaching on prostate and prostate disorders, their care and patient involvement in his health care. The teaching institutions can incorporate this teaching into the curricula to produce a better crop of health care workers.

Government policies can be structured along the teaching protocol so as to inform the care of the aging male in line with the referral systems and the competencies in the various health facilities.

1.5 Significance of the Study

The following constitute the study's significance:

Urologists and other healthcare workers will have a better understanding of the role of education in prostatism and its management. This will make them interact effectively with their patients including meeting the expectations and involvement in the care of their prostate disorders.

Health Educationists will have an extra tool in empowering patients in urological care of patients.

The protocol formulated out of the study findings will assist men aged 50 years and above to understand the prostate, its disorders and the value of presenting early to care-givers. In this manner, the general wellbeing of the aging man with prostate disorders will improve and quality of life gets better.

The teaching protocol once incorporated into curricula for better training of health workers on prostatism will help produce health care workers who will be better prepared to offer comprehensive care of these patients transcending all spheres of health including mental and social support.

An envisaged digital form of dissemination will enlighten patients, relatives and seekers of knowledge on prostatism not only in Kenya but also internationally. This version will be an apt contribution in the rapidly changing 21st century where things are increasingly getting done virtually due to new and emerging diseases like Corona Virus Disease (COVID-19) that demand less physical interaction. It is also a convenient application that will allow people to teach themselves each according to the needs in the comfort of their homes, offices or as of where and when needed.

1.6 Objectives of the Study

1.6.1 The Main Objective

The main objective was to develop and pretest a teaching protocol on prostatism based on patients' educational factors among men presenting at Moi Teaching and Referral Hospital, Eldoret, Kenya.

1.6.2 Specific Objectives

1. To establish the demography of men presenting with prostatism in Moi Teaching and Referral Hospital (MTRH).
2. To identify presenting symptoms and their duration, existing co-morbidities and complications and determine the proportion of patients attending routine medical checkups.
3. To identify the patients' sources of information on the prostate and its disorders and establish what patients know about the disorders.
4. To determine the relationship between the level of formal education and the patients' clinical states at presentation in MTRH.
5. To develop and pretest a teaching protocol on prostatism based on the patients' educational factors.

1.7 Research Questions

The study questions, in keeping with the specific objectives, were as follows:

1. What is the demography of men presenting with prostatism in Moi Teaching and Referral Hospital?
2. What are the patients' presenting symptoms, duration, co-morbidity and complications at presentation in Moi Teaching and Referral Hospital and what proportion of these patients attend routine medical checkups?

3. What are the sources of health information and what do patients know about prostate disorders?
4. What is the relationship between education and the clinical state at presentation in Moi Teaching and Referral Hospital?
5. What study findings with regard to educational factors can be used to develop and pretest a teaching protocol on prostatism?

1.8 Hypotheses

Given the complexities of education, learning and outcomes of what is learnt, the past and current challenges in the education system in Kenya with failure to align our education with life skills; together with general limited understanding of medical issues pertaining to the prostate, its disorders and their effects and coupled with the general poor health and healthcare-seeking behaviour, the null (H_0) hypothesis is that the level of formal education has no relationship with the symptoms, duration, co-morbidities and complications in men presenting with prostatism in Moi Teaching and Referral Hospital.

The alternative (H_1) hypothesis is that despite the challenges in the Kenyan education system, the level of education in men presenting with prostatism in MTRH determines their symptoms, duration, co-morbidities and complications.

1.9 Study Philosophy and Theoretical Framework

Research is the endeavour to systematically and in a logical manner discover scientific information that builds on the knowledge pertaining to a particular topic or phenomenon. In the routine ways of life, we are governed by philosophy; the study of being, knowledge and ethics.

In every study, there is an underlying philosophy for, as Collier stated, “Everyone is a philosopher; the seemingly unphilosophical person has an unconscious philosophy they apply in their practice whether of science, politics or daily life” (Collier, 1994).

This study took the philosophical approach of positivism in which it is understood that the universe out there is orderly with a reality that doesn’t depend on our individual perceptions and that scientific findings can be generalised to reflect the society we live in. It relied on inductive reasoning with a little mix of deductive inference from established premises in the educational realm of empowerment and the complex maze of urological care of prostate disorders. It also incorporates critical realism due to the complexities in both education and the challenges in the management of prostatism. Nothing is taken at face value without subjecting it to closer scrutiny, pragmatic analysis and understanding derived from logical conclusion.

The theory is that formal education enlightens the learner and makes his behaviour adjust to reflect that empowerment. The concept of being educated and, in turn, empowered is manifested in such indicators as the active search of information, the extent of awareness on prostate disorders and how well the patient takes care of himself including having routine health checkups. The variables include years of schooling, the type of school attended, patient and parental exposure to formal education, the perceived influence of culture and the status of the patient at presentation to the urology clinic.

1.10 Conceptual Framework

The study explored the relationship between the educational factors in men presenting with prostatism in MTRH and their impact on patient’s health status at presentation in

the hospital. The educational factors considered included the quality, attainment and achievement and the home and school environments.

The conceptual framework has variables as listed below:

1) **Independent variable**: An independent variable is one that influences an outcome. It is also referred to as the experimental variable that is antecedent to the dependent variable that it acts on. The independent variable that could be objectively quantified is the education attainment level in terms of years of schooling. The years were aggregated into categories of those less than or equal to 7 years, seven to thirteen years and more than 13 years. This variable was assessed for correlation and possible causative effect on the dependent variables.
2) **Dependent variables** are those that are outcomes of the independent one. They are also called criterion, descendent or outcome variables. The dependent variables in this study included the health status of the patient at presentation, the active search of information and whether or not the patients have regular medical checkups. The health status included symptoms and their duration and whether the patient has co-morbidity and complications.
3) **Modifying variables** are those that come between the independent and dependent variables but with positive effect on the outcome. Those of that kind here included quality of education as indicated by school locality (rural versus urban) and the home learning environment (parent education level).
4) The **confounding variable** influences the dependent and may accentuate or neuter the effect of the independent variable depending on the nature of

effect. In this study, the confounding variable was cultural influence on the learner. The cultural effect on the learner may be positive or negative. Where the understanding is mythical with beliefs that suggest that the urinary symptoms are as punishment for activities the patient may have engaged in like proscribed sexual activities, time might be required to educate him so as to 'unlearn' what had been learnt. On the other hand, a culture of communal sharing of information and experiences would help the learner understand the basis for the symptoms and need for early interventions.

The framework is as illustrated in figure 1 below

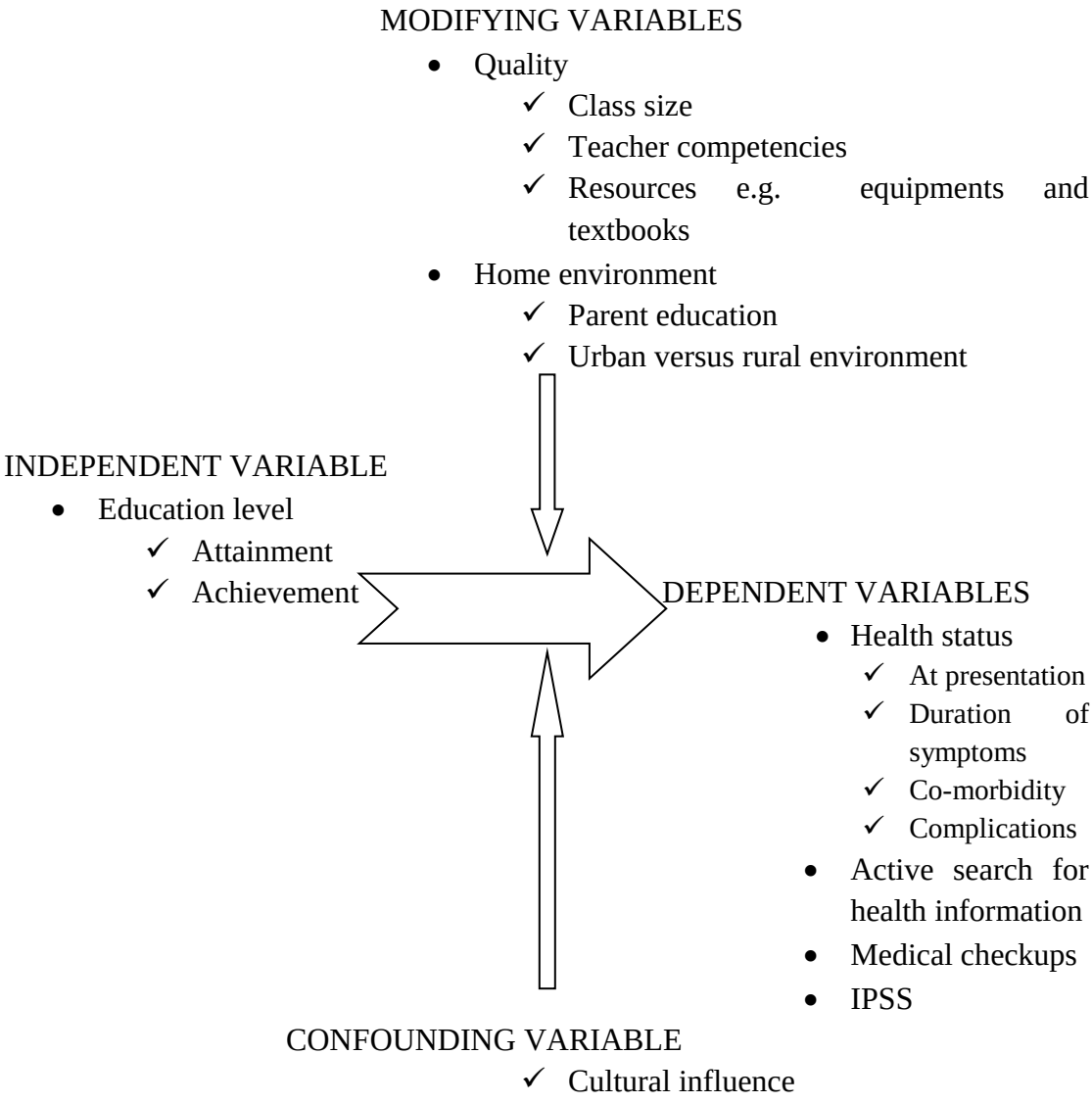

Figure 1: Conceptual framework

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This chapter presents a review of literature related to education and prostatism. It is divided into several sub-sections that capture the following: introduction on education; education in Kenya; learners' education quality, attainment and achievement; education and health status; prostate and its disorders; sources of information on prostate disorders; what patients know about prostate and its disorders and the management of prostate disorders. It puts into perspectives the prevailing state of affairs, what studies have found and where the knowledge gap in need of addressing by the current study was.

2.1 The Types of Education

The English word Education, according to Wikipedia, the free encyclopedia.htm, is **etymologically** derived from the Latin *educatio* meaning a breeding, a bringing up or a rearing. It is an endeavour to develop our latent talents; a process of facilitating learning and the acquisition of knowledge, skills, values, beliefs and habits. To educate is to make one develop an understanding that didn't previously exist and is subsequently subscribed to in a way that there is alteration of beliefs, attitude and practices as well as developing new perspectives and skills. It is the transformation from the ignorant on an issue to the informed. This can be through either informal or formal education.

The informal education began in the days preceding written history with adults training the young in the knowledge and skills deemed necessary in their society orally and through imitation. This form of education still takes place in a variety of

places such as at home, during school breaks or vacations, when youths meet in non academic programmes and at work. People learn through daily interactions and shared relationships among members of society. Through it we acquire the language, culture and manners. This learning has no specified curriculum, occurs in its natural settings and may originate accidentally, sporadically and in association with certain occasions demanding fitness for life; tending to the 'survival for the fittest' mantra espoused by Charles Darwin. It is the backbone of our life skills that correspond to our cultures and is gained over time that may include rites of passage or accidental learning through experiences.

Formal education frequently takes place under the guidance of educators, but learners may also educate themselves in a process called autodidactic learning as first described by (Dewey, 1944). It is derived from the Greek root word *autodidaktikos* which means self-taught. This is the form of learning in which the learner chooses to delve into a given topic after picking the material and mode of learning on their own to the depths of their satisfaction. It is an endeavour to satisfy an academic curiosity in an area of personal interest and may be a complement or replacement of formal education. In the modern day, the Problem Based Learning (PBL) is an approach that can promote autodidacticism through the self-directed learning component. University distance learning and shift into virtual teaching may also be an enabler of autodidactic education.

A formal education and learning occurs in a structured environment whose explicit purpose is teaching students. Usually, formal education takes place in a school environment with classrooms of multiple students learning together with a trained, certified teacher of the subject. Most school systems are designed around a set of

values or ideals that govern all educational choices in that system. Such choices include curriculum, physical classroom design, student-teacher interactions, methods of assessment, class size and educational activities (Bowles & Herbert, 2011). The sum total of these inputs determines what becomes of the product as the learners are subjected to the teaching process. What passes for education in these formal settings is the product of the varied interplays between culture, region, gender, school and home environments, teacher competencies and individual learning capacity (Wong, 2012).

Dweck in a brief on “beliefs that make smart people dumb” asserted that a student’s level of development interacts with the social, emotional and intellectual climate to impact on learning and that their prior knowledge can help or hinder learning (Dweck, 2016). This can easily be understood when one compares the learning capacity of varied learners based on their home and school environment; including the parental exposure to formal education. The teacher competencies as well as material support like the availability of teaching and learning materials as well as the size of the classes will also play a role in the kind and quality of the product. Some previously held beliefs or experiences may hinder or promote learning.

According to Hans and Lipson in their paper “in praise of illiteracy”, every third person in the world then managed to get by devoid of the capacity to read or write (Hans & Lipson, 1986). These people were not considered worse than the educated in terms of meeting their life needs and in fact were occasionally street-wiser than the literate ones. The study also asserted that the real difficulty relating to education is that we hardly give any thought to the most important aspect of education; improving the character of the educated. That there are levels of competencies based on the

exposure to and level of formal education ranging from the below average, average and then proficiency in the written and spoken word as well as math.

While the numbers incapable of reading and writing have undoubtedly dwindled over the years, usefulness has become the aspect of concern. It is increasingly becoming evident that there is a form of education that is worse than illiteracy; the kind that emphasises on grades at the expense of character and life skills as pointed out by (Kivits, 2006). These are the 'educated illiterates' whose proficiency is only on regurgitated expressions with no bearing on self and societal development. Such kind of graduates will have little more than evidence of having attended school with resultant foolishness that is aptly captured in the Ethiopian proverb that "A fool and water will go the way diverted".

2.2 The Evolution of Formal Education in Kenya

Kenya was a British colony up to 1963 when it was granted independence. During the colonial days, education was accessible to a very limited number of the populace; predominantly those who had aligned themselves with the colonial masters and those others who lived close to churches or had converted into Christianity and thus benefitted from the schools build by the missionaries.

The colonial government embarked on an education programme that advanced its imperialist goals. Literacy was meant to ensure that natives did not question their subordinate position in the caste structure of the colonial system. Apparently, "character" and "discipline" meant blind obedience to an oppressive system; they were synonyms for collaboration and sycophancy. The home guards and colony enablers became essential components of the colonial era with limited education that at best only made them hate themselves and others of their race and colour.

Not much has changed since attainment of independence and various scholars like Chege contend that the hegemonic enterprise permeates our collective lives to date due to a sustained approach to education (Chege, 2009). This is because of the approach that pays greater attention to godfathers in the education system with skewed developments and admission process that can be manipulated to disenfranchise those already disadvantaged. The transition from the colonial to postcolonial eras replicated this sorry state for political survival and economic exploitation by the elites. It is a political truism that an ignorant population is easier to manipulate, divide, control and rule.

Under the Jomo Kenyatta (1963-1978) and Daniel Moi (1978-2002) presidential leaderships, University education was meant to be an apparatus for producing what has been referred to as "intellectual home-guards" by scholars (Oketch & Ngware, 2010). These were the times when it was not what but whom you knew and full professors kowtowed to the political whims of the leadership. The quality of education was significantly lowered with teachings that emphasised on self-preservation as opposed to academic excellence. The curriculum could change, not on the recommendations of education experts but, on the fancy of the presidential liking. Then came the Mwai Kibaki regime of 2002-2012 that brought about an opening of democratic space and even introduced free primary education in the year 2003. This is the leadership that brought respite to academia and learning became a liberal endeavour with no infiltrates from National Intelligence Service in University classrooms to inform the government on those considered radicals just because of having open, probing minds that questioned more than was allowed by the political system. Many private schools and universities emerged from a previously strangling

environment with the number of learners increasing exponentially with each passing day.

According to the National Bureau of Statistics, the Kenya national literacy level as of 2018 was 82%. It varies from region to region and is higher in urban as compared to rural areas. The literacy is higher among the younger people as compared to the older; ranging from 12.5% in the rural females older than 60 years to 98% in the urban male between 15 and 24 years of age. About 30% of our national budget every year is committed to educating our children.

Unfortunately, even with the more liberal approach, political squabbles intertwined with economic scandals led to the desire to maintain curtailing of critical thinking by suppressing divergent views. Kibaki's noble idea was messed by poor implementation and political patronage all the way to University level. The free primary education subsequently became less attractive as more people preferred private academies and Universities as well as parallel degree programmes in the public Universities. By 2015, adult literacy rate for Kenya had gradually declined from 82.2 % in 2000 to 78 % according to the National Bureau of Statistics report of that year. To date, the culture of silence remains deeply entrenched in higher education and "banking" education - the kind of teaching that views students primarily as "containers" or "receptacles" to be "filled" by the all-knowing teacher remains the predominant pedagogy (Chege, 2009 ; Oketch &Rollestein,2007). A notable exception to this, despite its being a drop in the ocean, is the innovative Problem Based Learning (PBL) domiciled in the School of Medicine, Moi University. This is a Student-centred, Self-directed learning in which problems are tailored to form an integral part of learning in small group tutorials. The student ends up owning

what is learnt and integration, recall and application of what learnt is found to be better than the cathedral lecture method of the years gone by.

The pedagogies that Kenyan educators have employed over the years are seemingly in need of tweaking to produce the desired societal transformation through meaningful education. As of today, the greatest challenge with education delivery in Kenya is quality of education.

Research from the Kenya Institute for Public Policy Research and Analysis (Kippra,2013) showed approximately 4% of youth had no formal education and 36% of youth had attained at most incomplete primary education, meaning that in total 40% of 15-24 year olds had not completed primary education in Kenya. The academic survival rate from Class One to Form Four was below 20 per cent, while those who survived from Class One to University were 1.7%. By 2017, 1.9% of the total Kenya population had a University degree according to the Kenya National Bureau of Statistics.

True education should give its practitioners life sustaining understandings that lead them to self-reliance. What we currently have is too much schooling and very little education as noted by Shujaa in a critique on our mode of teaching and learning (Shujaa, 1994). We are grappling with a system reportedly overloaded with non-life skill subjects and focused on exams to the detriment of our collective existence as a nation. Cheating in University exams (Musau, 2018) and lifestyles that believe in instant success are matters of great concern up to this moment. Students of such a system must be transformed if their acquired education is to be of help in practical living.

Lecturers must appreciate the critical role of moulding students into active citizens equipped to challenge the opportunism of politicians, the active polarizing of the country along tribal lines, chronic corruption, nepotism, the abuse of human rights and poverty, all of which are aggravated by inequalities in access to quality education. It is time for educators and students to embrace a new paradigm that will adopt pedagogies that interrogate the connection between academics and lived experiences (Ntarangwi, 2003).

Institutions of learning should cultivate teaching styles and curricula that stimulate the mind and open it up to lifelong learning. This unlimited potential will then be utilised to empower learners in all spheres of their lives including health and healthcare seeking behaviours. A teaching protocol on health may help them integrate what they learnt with life experiences to achieve self-empowerment to a better living and improvement of their urological health.

2.3 Education Quality, Attainment and Achievement

Three aspects of education are readily identifiable: attainment defined as years of schooling completed; achievement which is what students have been certified on completion; and quality as a value measured by proxy in form of textbook availability, school facilities, teacher training, class size and location of school. Educational quality variables are much more powerful predictors of life skills and occupation than either educational attainment or educational achievement. The quality of teachers makes a significant difference to the performance of students on tests. Not only does the entry of a high quality teacher improve the results of students, but also the presence of ‘bad teachers’ negatively impacts on the performance of students. Once a minimum threshold for resources is met, extra resources may not enhance

quality; the teacher and student type including inherent intelligence become more important (Schiefelbein & Farrell, 1984). This is why schools in urban centres with better infrastructural support and teachers than rural settings do better but only to a certain point beyond which other parameters like parent education, home environment and inherent learner intellect become determinants of the overall performance.

An enabling early interventional environment at home is important since children of educated parents have been found to get better quality than those from academically disadvantaged parents and schools in rural settings. A report by (Uwezo,2009), a Non -Governmental Organization found that children, whose mothers are educated, particularly beyond primary school, tend to have much higher rates of literacy and numeracy and greater quality of education. This, at the very lowest level of understanding, is because the learners are exposed to formal education long before they get to school unlike those from homes dominated by illiteracy. They also have people to emulate, if not compete with in achievements, and the family support system, including school fees and schools the learners attend , is a greater enabler among those with formally educated parents.

In reviewing the literature related to quality of education, the United Nations International Children Education Fund (UNICEF) took a broader perspective and embraced a view that included the learners, content, processes, environments and outcomes (Bergmann, 1996). In the final analysis, the difference between people with similar educational attainments and achievements can be explained by the quality of education as well as the home and school learning environments. These factors will then determine the knowledge, attitude, skills and practice that vary from one individual to the other.

2.4 The Role of Education in Health

There is a well known, large and persistent association between education and health. This has been observed in many countries and time periods, and for a wide variety of health measures. In age-adjusted models, the least educated men (as reflected in attainment of less than high school), compared to those with the most education (postgraduate), had increased risks of developing a number of cancers (Mouw, Koster, Wright &Blank, 2008). This is because the uptake of such health matters as health information, health-seeking and utilisation of health facilities, including routine checkups, is poor among the lowly educated and those with no formal education. An additional four years of education lowered five-year mortality by 1.8 percentage points (Barbosa et al, 2013). Bennett and colleagues found that people with less than 8 years of education were 4.8 times more likely to develop metastasis (disseminated malignancy) than those with more than 11 years of education (Bennett, 1998).

Tipping and Segall took note of the finding that people can get exposed to formal education but not necessarily have behaviour alteration, especially among those inadequately educated (Tipping & Segall,1995). Low education level is a determinant of outcome just like such serious factors as a patient's age, salvage radiation therapy and respiratory disease. It was more dangerous than Body Mass Index (BMI), prostate weight, presence of diabetes or previous transurethral resection that were found not to influence the prevalence of urinary incontinence after surgery of the prostate found (Nilsson, 2011). The amount of education acquired plays a role in change of perspectives, beliefs and understanding with subsequent incorporation into life to reflect the health status among other social and societal aspects. Low literacy may be an overlooked but significant barrier to the diagnosis of prostate disorders

among the formally uneducated or lowly educated men aged more than 50 years and thus likely to develop prostatism.

The development of culturally sensitive, low-literacy educational materials may improve patient awareness of prostate disorders and better the health and quality of life among these aging men (Nilsson, 2011). The development of a teaching protocol aimed at enlightening and empowering men with or in danger of prostatism as the aging process sets in would go a long way in improving patient participation in their healthcare. It would also come in handy in providing a structured manner of educating to the healthcare workers who interact with these patients and have been found to be deficient in not only communication skills but also the understanding of prostatism. The teaching protocol would then improve the two aspects of health services: the health care seeking behaviour focused only on utilization of the systems and the health seeking behaviour which entails such aspects as active search of health information and engaging in preventive measures. The health seeking behaviour can be improved by education that stimulates the mind to a lifetime of learning and self-improvement. It is understood that health is influenced by behaviour and behaviour can be modified by education; bordering on the cognitive process of “I know, therefore I act”. The educated person is, therefore, capable of better understanding and utilization of the health care system as well as getting more informed on taking the steps to prevent adverse events that may compromise the general wellbeing.

2.5 What is Known about the Prostate and its Disorders

The prostate is an accessory gland in the reproductive system of men found in close proximity to the urinary bladder outlet. It has spurts of growth at puberty, about 25 years and after the age of 50 years. It is this last spurt of growth that becomes of

clinical significance; causing Lower Urinary Tract Symptoms (LUTS) characterized by disordered urination (Roehrben, 2005).

The two key prostate disorders are enlargement and inflammation; enlargement leads to Benign Prostatic Hyperplasia (BPH) and cancer of the prostate while inflammation causes prostatitis. Once these set in, there is narrowing of the prostatic urethra with resultant impairment of the effective flow of urine out of the bladder. It may lead to obstruction of urine. This in turn leads to the patient exhibiting the symptoms of hesitancy at initiation of urination, straining, weak urinary stream, dribbling of urine and sense of incomplete emptying of bladder. These obstructive symptoms lead to what are called irritative symptoms that are usually due to the urinary stasis that can precipitate infection, stone formation and backup pressure into the ureters and kidneys. The irritative symptoms include frequency, urgency, urge incontinence and nocturnal urination in excess of two times since retiring to bed to waking up. The complications may then manifest as blood in urine, fevers and features in keeping with compromised renal functions. The changes resulting from enlarged or inflamed prostate are depicted in Figure 2 below:

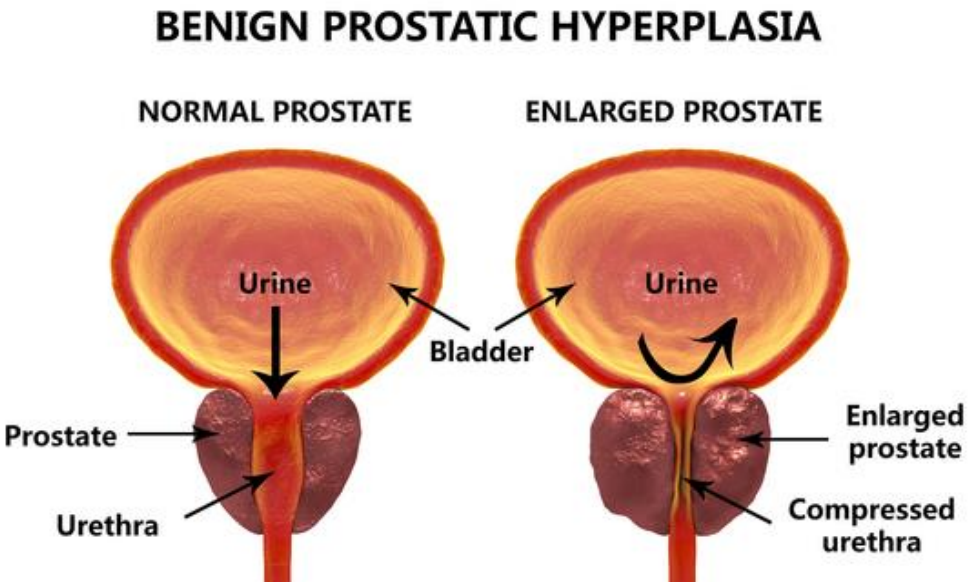

Figure 2: Effect of prostate enlargement on urine flow;

From Securemedical Inc (USA): Don Amerman, 2018.

Due to the alteration in the calibre of the urethra, the urinary flow gets impaired with resultant straining, weak stream, frequency, urgency, intermittency (interrupted urination), incomplete emptying of bladder, dribbling at end of urination and nocturia (frequent urination at night). These symptoms have been computed into the International Prostate Symptom Score (IPSS) and the sum of the various scores estimate the severity of the symptoms: Mild (0-7), Moderate (8-19) and Severe (20-35). The IPSS has also been found to correlate well with whether a patient will benefit most from medical or surgical treatment (Shabbir &Kirby, 2005).

Complications like haematuria (blood in urine), painful micturition, urinary tract infections, stone formation, urinary retention and possible renal failure may ensue depending on severity and duration of urinary obstruction. This is particularly so in men who assume the symptoms to be part of an inevitable progression of the aging process and thus take no action to resolve them. They delay in presenting to health

facilities and may only turn up when they can no longer pass urine spontaneously or due to systemic manifestations of the complications like anaemia and kidney failure.

The cause of Benign Prostatic Hyperplasia (BPH) is thought to be the aging process with an accompanying disruption of the fine balance between the male hormone testosterone and the female one called oestrogen that is in small quantities in men. All that a man requires to have a prostatic enlargement is functional testicles to produce androgenic hormone testosterone and the progression in years. The hormonal imbalance in the body causes proliferation of the prostate cells. The prostate will increase in size from 30gm at 40 years to 45gm at 60 years of age. The urinary flow will reduce from 20.3ml/sec to 11.5 ml/sec in the same age brackets (Roehrbon, 2005).

Other causes for prostatic hyperplasia are less defined and include smoking, inadequate levels of vitamin K and the urethral angulations. Obesity and any quantity of sexual activity (be it assessed as excessive or reduced) have no role in enlargement of the prostate. Regular exercise and alcohol in moderation have been found to delay the progression to enlarged prostate (Kupeli, 1997; Cho, 2008 and Donaldson, 2015).

2.6 Patients' Sources of Information on Prostate Disorders

People have varied sources of information and these may differ from place to place in keeping with the level of development. In general, information may spread from person to person, through media and by access through the internet. Use of print media and interpersonal sources of health information are most consistently associated with self-reported health behaviours (Redmond, 2010). This is because people will tend to divulge their infirmity to their close relatives or friends and seek to

understand what could be ailing them. Those endowed with formal education may also search this information in print or through the internet.

In a study by Wolters and others, advice from peers or information from the media were stronger predictors of seeking care than the influence of symptoms on daily life (Wolters, 2002). Men with prostate disorders tend to take long with symptoms partly because of their thinking that it is part of the aging and partly because of cultural influence that emphasises male stoicism in the face of health challenges. The embarrassment that ensues on matters pertaining to disorders of urination may also play a role in the delayed divulgence of the problem.

Mills and Davidson found that most patients got information from health workers with only 10% quoting the internet (Mills &Davidson, 2015). Age was found to be the greatest predictor of the kind of information source; the younger generation relying more on technology while the older one depending more on peers. In actual fact, the various sources of information and their utilisation are determined by the developmental factors, literacy levels and health facility utilisation. Where the literacy is low and people have no ready access to facilities, the option remains largely one of relying on peers.

The exploitation of the internet as an information tool on the part of patients varies from place to place, and may have great national, regional and geographic variations. Santos found internet use for medical information in Spain to be low (Santos, 2007). Other studies have found that many patients use internet to augment what the health workers tell them due to knowledge gaps on the information gotten from care givers especially on diagnosis, treatment side effects and prognosis and would search for

information on the net prior to or after visit to health personnel (Medlock ,2015; Royak,2008).

In the United States of America, Hesse and colleagues found that 63.7% of adult who had access to internet looked for health information for themselves or others at least once in the previous 12 months (Hesse et al, 2005). Physicians remained the most highly trusted information source to patients but there appears to be a shift in the ways in which patients consume health and medical information, with more patients looking for information online before talking with their physicians both in the developed and developing nations (Cutili, 2010). With increased technological development and ease of access to the internet, more and more people will be resorting to searching information in the comfort of their homes, offices or wherever and whenever they require it.

2.7 What Patients know about the Prostate and its Disorders

The prostate is a gland in the male urogenital tract that most of those not in the medical field have difficulties understanding and is a challenge even to those in medical practice (Molero, 2020). Its complexity gets enhanced by the privacy accorded parts in the reproductive tract and myths pertaining to the basis of the prostatic disorders and ensuing difficulties with urination. As such, the general understanding among varied populations is markedly low.

Mofolo and friends in a study done among men attending a urology clinic in South Africa found that more than half (54.4%) of the respondents had not heard of prostate disorders and those who did had attained a moderate level of formal education (Mafolo et al, 2015). Apolone and others in an Italian community-based survey concluded that Italian males had a poor knowledge and perception of prostate-related

conditions and did not adequately care about them and, thus, did not seek medical attention (Apolone, 2002). Prostate awareness was very unsatisfactory in the Turkish male population and knowledge lacked throughout all education levels necessitating the need for urologists to better inform the general population (Haluk et al ,2014**).** Diefenbach and others found that over 50% of men in an American urology clinic had not heard of the Prostate Specific Antigen (PSA) test and higher education level was the only predictor of PSA-test knowledge (Diefenbach, Ganz, Pawlow & Guthrie, 1996). Dutkiewczand and Jędrzejewska observed an almost complete lack of knowledge about prostate disorders and these patients did not report for screening tests. They also found that the education process influenced the level of knowledge and interest in the care of prostate disorders (Dutkiewezand & Jedrzejewska, 2011).

It is, therefore, evidently clear that irrespective of geographical, political or even developmental differences, the general understanding of the prostate, its disorders and basis for the symptoms accompanying the disorders is very low and requires to be improved. Patients already having or likely to end up with prostatism need information on how to better their health and quality of life so as to preempt the avoidable complications promoted by rampant ignorance across the globe. The fact that there exists no teaching protocol on prostatism in the world is an expression of how such a protocol would make a great impact in the care of these patients the world over.

2.8 The Management of Prostate Disorders

As usually happens in other clinical settings, history, physical examination and investigations play crucial roles in the management of prostate disorders. A comprehensive general and urological history together with an International Prostate

Symptom Score (IPSS) is the beginning of the management. A thorough physical examination with focus on Digital Rectal Examination (DRE) will aid in forming the right impression and possible differentials. Investigations may be laboratory or imaging. The laboratory investigation of importance will include a full haemogramme, renal function tests and Prostate Specific Antigen (PSA) among other indicated workups based on the presentation of the patient and possible state of health. Imaging studies are conducted to establish the state of both the lower and upper urinary tracts. A decision on the treatment method is then reached. Pharmacological agents and minimally invasive procedures, when appropriate, are generally preferred to more invasive surgery (Burnett &Wein, 2006).

Benign Prostate Obstruction is highly treatable, but should be managed in close collaboration with the patient. At the end of the 19th century, prostate enlargement was treated effectively by bilateral removal of the testes (orchidectomy). Unsurprisingly, this treatment option never gained widespread popularity.

By the end of the 20th century, surgery and watchful waiting were the only considered treatment options for BPH. We now have a number of medical therapies and minimally invasive treatment options available that can effectively treat lower urinary tract symptoms secondary to benign prostatic obstruction. The leading medical options are the use of alpha-adrenergic receptor blockers and 5-Alpha Reductase Inhibitors. The alpha-adrenergic receptor blockers include Prazosin, Terazosin, Doxazosin and Alfuzosin. Prazosin is short-acting while the rest are long-acting. Tamsulosin is a subtype 1A selective receptor blocker.

The 5-Apha Reductase Inhibitors (5-ARI) drugs prevent the conversion of testosterone to Dihydrotestosterone (DHT) in the prostate and thus minimise the proliferation of cells. They include Finasteride and Dutasteride.

In the current environment of evidence-based clinical practice, awareness and interpretation of data from the numerous studies on medical treatment of the prostate is paramount (Shabbir and Kirby, 2005). Combination therapies exist and have synergistic effect on the care of the patient but surgery is the ultimate treatment option in those who have failed medical care or have severe obstructive symptoms from the outset.

The surgical approach in turn has an array of modes of treatment that range from the minimally invasive to open surgery of different approaches. The determinants of the procedures include the equipment status of the facility, the expertise and the prostate size. It is generally agreed that prostates bigger than 75gm are best done open surgery to minimise the complications that come with prolonged periods of endoscopic surgery (Roehrbern, 2005).

CHAPTER THREE

RESEARCH DESIGN AND METHODS

3.0 Overview

This chapter details the process of conducting the study. It is a step by step indication of the study design, where it was conducted, the study population, the inclusion and exclusion criteria, sampling, data collection and data analysis. The methods indicated in here are the basis for the ultimate findings as well as reliability and generalisability of the results where applicable.

3.1 Study Design

This was a census study involving men presenting with prostatism at the MTRH Urology clinic for the first time during the period June 2016 to May 2018. A census study is one in which all the subjects of interest are included in the study unless they fit the exclusion criteria. It has the advantage of directly including the whole population but lacks the randomness of probabilistic designs that also offer every member of the population equal opportunities to be sampled.

3.2 Study Site

The study was conducted in the Urology clinic of Moi Teaching and Referral Hospital (MTRH). This hospital began in 1916 as a 60 bed Cottage designed to cater for the African health needs during the colonial days. It later served as a District Hospital before attaining referral status as the second national Teaching and Referral Hospital in Kenya in 1998. MTRH is the teaching ground for the Moi University's College of Health Sciences among other medical training institutions and sees approximately 1500 outpatients on daily basis. It is approximately 350km North-West of Nairobi,

Kenya's capital city, and caters for approximately 40% (about 22million) of Kenya's population with a bed capacity of 1000 beds.

3.3 Study Population

The study population were men 50 years of age and above in the MTRH catchment area of Western Kenya with prostatism. The age of 50 years is considered to be when men predisposed to the development of prostatic urinary symptoms begin to exhibit clinically detectable signs and symptoms (Roehrbern, 2005).

The problem of interest was prostatism and how formal education related to it in terms of health status at presentation to hospital. The sample frame were the men with prostatism presenting to health facilities in the catchment area while the sample were those who presented to MTRH from whom 126 patients were recruited into the study.

3.3.1 Inclusion Criterion

The inclusion criterion was men who were 50 years and above and presented with prostatism to MTRH Urology Clinic for the first time in the period of study.

3.3.2 Exclusion Criteria

Those patients who qualified for the study were excluded if they had any of the following:

i) Patients who, besides an enlarged prostate, had problems related to the bladder or urethra and likely to have exaggerated International Prostate Symptom Score. Associated urinary tract problems usually make clinical assessment for the prostatic disorder difficult and unreliable.

ii) All men who qualified for the study but declined to give an informed consent to participate in the study. This was in keeping with the ethical principle of autonomy and free will to participate in a study of any kind.

3.4 Sample Size

From the Urology Clinic attendance register in the 3 preceding years, an average of seven new cases presented with prostatism monthly, giving an estimated figure of 84 new patients in a year. Under normal circumstances, this would have been the number targeted in the census study but in the period of the study, there were two industrial unrests in the medical field with strikes involving doctors in 2017 and nurses in 2018. This affected the patient flow and care of the patients and it became necessary to establish the calculated sample size appropriate for the study.

Using Fisher's formula (1998), a sample size based on a world prostatism prevalence of 6% and an alpha of 0.05 was:

$$n = \frac{z^2\, p\, (1-p)}{d^2}$$

Where n is the desired number , Z (1.96) is the value assigned one standard deviation, p (0.06) is the prevalence of the condition and d (0.05) is the acceptable value for statistical significance. This yielded 90.24, round off to 90, men with prostatism presenting to the Urology Clinic. An extension of the study period to two years due to the small number of patients presenting gave a total of 126 patients that were recruited into the study.

3.5 Sampling Method

The study was done using a purposive consecutive sampling of all consenting men with prostatism presenting to the Urology Clinic in the 2 years' period of study.

3.6 Study Variables

These were divided into independent, modifying, confounding and dependent variables as outlined below:

Independent Variable

The educational level as indicated by the attainment in chronological years of schooling was considered to be the measurable independent variable that would cause an effect and outcome on the considered dependent variables.

Dependent Variables

These dependent variables included the following:

a) Health status: How the patient's clinical presentation in the clinic was in terms of symptoms and their duration, co-morbidities and any evident health complications.
b) The active search for health information from varied sources singly or in combinations.
c) The International Prostate Symptom Score (IPSS). This is a clinical score given to a symptomatic prostate condition based on points awarded the symptoms a patient presents with.
d) The use of planned medical checkups which are scheduled clinical examinations to prevent or ensure early detection of a disease condition.

These dependent variables were likely to be influenced by the independent variable to varying degrees in keeping with the power of association. They are the ones whose outcome was supposed to show the relationship between formal education and the health status.

Modifying Variables

These are the variables deemed capable of adding to the influence of the independent variable and thus contribute to the measured outcome. They included the quality of education as measured through the infrastructure such as equipments and textbook availability as well as teacher competencies. Home environment as measured in terms of locality (rural versus urban) and the parent education level were also considered to be modifying variables.

The modifying variables are considered to enhance the effect of the independent on the dependent such as improved understanding of what is learnt by virtue of being in an urban as opposed to rural school or due to having a formally educated parent as compared to the learner whose parent did not go to school. While it is difficult to objectively quantify the effect of a confounding variable on a dependent variable, its presence accentuates the outcome.

Confounding Variable

The influence of culture in the education process was considered a confounding variable that could affect the outcome bi-directionally and thus synergistically compounding the ease or difficulty of learning in the defined aspects of acquisition, retention, recall and application of knowledge.

The primary outcome measure was the relationship between the level of education and the health status of the patient. The secondary outcome measures were the active search of health information and the use of planned medical checkups.

3.7 Data Collection

3.7.1 Data Collection Tool

Data was collected using an interviewer administered questionnaire that contained the demographics, patient symptoms and their duration as of the time of presentation, presence or absence of co-morbidities and complications, one's perspective on the influence of culture in their daily life, formal education level of the parent and patient, schools attended as to the locations with regard to rural or urban centres , source and active search of health information and attendance of routine medical checkups. Data on physical examination and the estimated International Prostate Symptom Score was then entered into the relevant section of the questionnaire (see appendix 2).

3.7.2 Internal Validation of Questionnaire

To ensure validity and reliability of the questionnaire, the investigator (PM) conducted a pretesting of the questionnaire in the nearby Uasin Gishu county hospital. A randomly sampled group of ten men presenting with urinary tract symptoms due to prostatism were requested to participate in the pretesting in which the designed questionnaire was administered to check for clarity and reproducibility of gathered information. It was found that the participants had difficulties understanding what a prostate is and subsequently what the problem exactly was. The questionnaire was refined to reflect their understanding of the condition and that way ease the communication and clarity of the questions posed. The questionnaire was then prepared for the actual study with the understanding that the sought information could be provided on the basis of the questions asked. The data collected in the validation process was not included in the actual study but was only used in refinement of the questionnaire.

3.7.3 Data Collection

The study data was collected by the said investigator with assistance from a postgraduate in General Surgery nearing completion of his studies (Part Two registrar). Patients who met the criterion for recruitment were briefed about the study and requested to participate after being informed of their right to opt in or out of the study without any detrimental effect on the services offered in the clinic, his incurring no extra charges in terms of investigations if he joined the study and the utmost confidentiality of data gathered that would only be for the stated use in the study. Upon giving consent, data was collected in line with the primary and secondary outcome measures using the structured, pretested questionnaire after ascertaining clinically through history, physical examination and, where indicated, imaging studies that the patient had prostatism. The physical examination included general examination to pick any possible complications and Digital Rectal Examination (DRE) for the size, morphology and consistency of the prostate.

Demographic data was sought alongside the presenting complaints, duration of symptoms and co-morbidities. Information on education was based on whether he and his parents had formal education, where schooled, to what level, whether there was adequate textbooks and satisfactory interaction with the teachers, how supportive the home and school environments were in enhancing the learning process, one's opinion of cultural influence on his outlook on life, his source of information on health, whether he actively sought this information and whether one had had any medical checkups in the past one year. The patient was then scored using the IPSS and all data confirmed correctly gathered.

3.8 Data Analysis

The data collected as outlined above was then edited for completeness, classified according to attributes or class intervals, coded and a spread sheet made. The information was then entered into a computer using the Statistical Package for Social Sciences (SPSS), cleaned and then subjected to analysis using SPSS version 20.0.

Continuous data was summarized using measures of central tendency (mean, median and mode) and measures of dispersion (range and standard deviation) while discrete data was in frequencies, proportions, odds, ratios and percentages. Associations were analyzed using cross-tabulation and Pearson's Correlation coefficient while causality was established by use of bivariate and multivariate linear regression analysis subjected to Chi-square for categorical and Student t-test for continuous data. Statistical significance was pegged at p value ≤ 0.05. The findings are presented in form of narratives and tables.

3.9 Ethical Considerations

Research ethical considerations are anchored on the key ethical principles of respect for persons, truthfulness and confidentiality, autonomy and informed consent, beneficence, non-malfeasance and justice. In keeping with the said principles, the following was done:

Approval from Institutional Research and Ethics Committee (IREC) was sought and duly granted prior to starting the study. The authorization certificate was FAN: IREC 1643 for one year beginning 2nd June 2016 and was later on extended to 25 July 2018.

The Moi Teaching and Referral Hospital formally granted clinical approval for the study to be conducted in the urology clinic.

Patients were briefed on the study and its purpose as well as the benefits likely to accrue on the basis of its findings. They were then asked to participate and if willing grant the informed consent. Only those who gave this consent were involved in the study.

The study was at no extra cost or investigations to the patients. This is in keeping with the principles of beneficence and non-malfeasance in which a study is to maximize on providing benefits to the participants while doing no harm of any kind.

There was no enticement or special considerations for those who participated in the study. There was equity in the care of the patients whether in or out of the study.

The patients retained the power to withdraw at any stage of the interview without fear of victimization. This is in line with respect for the autonomy and independence of decision making for mentally competent adults.

Data collection was devoid of features like names that could readily identify the patients. At all times, confidentiality was maintained till the end of the study.

Patients had right to feedback once the study was completed and varied modes of dissemination including public thesis defense and publications in peer reviewed journals have been done.

3.10 Limitations of the Study

As a tertiary institution, Moi Teaching and Referral Hospital receives referral patients that may skew the findings of the study but this is mitigated by:

a) The Uasin Gishu County in which the hospital is located has no level 4 or 5 hospitals, making this the only significant hospital and thus being capable of a true representation of the population.

b) The referral system in Kenya, and particularly this catchment area, is not strictly adhered to as found in a 2012 study (Musau&Mteta, 2012) where the referral rate was a mere 36% with everybody else walking in to the referral hospital like they would in any other lower facilities. This would suggest that the participants in the study were representative of the population of interest in the region.

3.11 Reporting Study Findings

This study is in partial fulfilment of a Doctor of Philosophy in Medical Education, Moi University. Its findings were shared during the defence of the thesis that had the public as part of the audience. The findings will also be disseminated in appropriate fora like conferences, symposia and seminars. Some of the findings have already been presented in an annual conference of the Kenya Association of Urological Surgeons (KAUS). Efforts will be made to publish as much of the findings as will be the possible number of peer reviewed papers. Two papers have already been published as part of the requirements before defending the thesis. Journalists who will find newsworthy information from this study will also be allowed to disseminate for the greater reach in the nation and beyond. It is also envisaged that the protocol can be rolled out as an android phone application to reach a wider audience.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.0 Overview

This chapter presents the results of the study in keeping with the study objectives. It captures both descriptive and inferential statistics with correlative and regression analysis.

Data is presented in subsections that reflect the respective specific objectives.

4.1 Demographic Features

One hundred and sixty five patients with prostatism presented during the two year period of study. Thirty nine were excluded based on the exclusion criteria; twenty-five had associated urinary tract problems while fourteen declined to participate in the study. The remaining one hundred and twenty-six patients were then recruited into the study. Their ages ranged from 51 to 88 years with mean ± Standard Deviation (SD) of 67.1± 9.7 years. About a third (32.6%) were older than 70 years with the majority of the patients (35.7%) being in the age group 51-60 years.

Forty-three (34.1%) parents of the patients had formal education in which 69.8% were both parents and the rest had one parent who had formal education and happened to be the male parent in all cases. Of these parents, only 7% had gone beyond primary education and none had reached college.

Sixty-eight (54%) of the patients had formal education and were distributed as 55.9% primary, 26.5% secondary and 17.6% college level of education. None of those older than 70 years of age had formal education while all those in the 51-60 years age group had been exposed to formal education and accounted for two thirds (66.1%) of the formally educated.

The years of schooling ranged from 5 to 16 years with the majority (55.9%) being in the category of less than or equal to 7 years. Fifty patients had primary schooling in rural areas while 18 were schooled in urban areas. The urban schools outscored the rural schools in every aspect of education quality: the school environment was considered enabling 1.7 times as often, satisfactory teacher interaction in classrooms was 2.8 times better and textbook availability was 3.4 times as much in urban as compared to rural schools respectively .

The patients were all born and predominantly raised in rural settings with only 18 (14.3%) having urban exposure during their formal schooling as shown in Table 1 below.

Table 1: Age Groups and Place of Formal Education

AGE GROUP(Years)	PRIMARY SCHOOL EDUCATION			TOTAL
	None	Rural	Urban	
51-60	0	28	17	45
61-70	17	22	1	40
71-80	26	0	0	26
>80	15	0	0	15
TOTAL	58	50	18	126

There were only 11 rural pupils who progressed to secondary while all the 18 who schooled in urban areas advanced to secondary schooling. The odds of progression to secondary school were 4.5 in favour of urban schooling.

The influence of culture on the daily lives of the patients was assessed. When the patients were asked how much their traditional culture influenced their daily lives as of the time of presentation to hospital, 59.5% said significantly, 33.3% moderately and 7.2% mildly. Table 2 below shows the relationship between education and cultural influence.

Table 2: The Relationship Between Formal Education and Cultural Influence

	Exposure to Education		
Cultural influence	No	Yes	P value
MILD	1	8	
MODERATE	14	28	<0.001
SIGNIFICANT	44	31	

There was a strong correlation between exposure to education and the effect on culture with 8 of the 9 mildly influenced having formal education and the ratio of those moderately exposed being 2:1 in favour of formal education. Majority (58.7%) of those significantly influenced had no formal education. The effect of formal education on culture was statistically significant at $p<0.001$ with greater exposure to education leading to less cultural consideration in the day to day decision making while no education led to greater emphasis on cultural factors and effect on their way of life.

4.2 Health Status at Presentation

At the time of presentation, the urinary symptoms were 53.2% obstructive, 9.5% irritative and 37.3% a combination of the two. The obstructive symptoms included straining on micturition, incomplete emptying of bladder, weak urinary stream, intermittent voiding and dribbling at end of urination. The irritative ones were frequent urination, urge to void and excessive nocturnal urination.

Obstructive symptoms were commoner in those older than 60 years while irritative ones were mainly in the younger patients below that age.

The duration of symptoms ranged from one month to four years with more than a half (50.8%) of the patients having had symptoms for more than one year.

Thirty patients had co-morbidities, giving a point prevalence of 23.8%. Majority of these (43.3%) had more than one condition and these were mainly a combination of hypertension and diabetes or osteoarthritis and gastritis. The leading conditions identified were hypertension (30%), arthritis (20%) and diabetes (15%).

Nine patients (7.1%) had urological complications; six with anaemia and the remaining three having renal insufficiency. Eleven patients (8.7%) had a past history of admission to hospital for the urological problem and complications; the number of admissions ranging from once to thrice since the onset of symptoms.

The International Prostate Symptom Score (IPSS) ranged from 11 to 26 with a mean ± Standard Deviation of 20.6±3.7. None of the patients presented with mild symptoms. The relationships between education level, existence of co-morbidities, complications and past admissions are shown in table 3 below.

Table 3: Relationship Between Patient Education Level, Co-morbidity and Complications

Patient education level	Co-morbidity		Complications		Past admissions	
	No	Yes	No	Yes	No	Yes
None	35	23	52	6	49	9
Primary	32	6	36	2	36	2
Secondary	11	1	11	1	12	0
College	18	0	18	0	18	0

A higher level of education led to less of co-morbidities, complications and the need for admission to hospital. This benefit was most evident after primary school and peaked in college with none of the 18 patients with college education having co-morbidities, complications or history of past admissions to hospital.

4.3 Source of Health Information and Knowledge on Prostate Disorders

4.3.1 Source of Health Information

Majority (81%) of the patients got their health information from peers, 8.7% got it from the internet while the rest had multiple sources of information comprising of peers, internet and health workers. Patients who had attained less than secondary education accounted for 93.1% of those relying on peers for source of information and only 4.1% of the other sources of information.

Formal education was positively correlated with the source of information, active search of health information and scheduled medical checkups ($p<0.001$). Higher level of formal education created greater variety of sources of information while peers were depended on by those with no or limited level of education. Those with multiple sources of information were all college educated patients.

4.3.2 Patients' Knowledge on Prostate Disorders

Thirty-two (25.4%) patients were aware of the prostate and its disorders. The disorders mentioned included enlargement (43.8%), infections (6.3%), malignancy (3.2%) and a combination of these as multiple answers (46.7%). All patients with a past history of admission as well as those presenting with complications were not aware of the prostate and its disorders. Those not aware of the prostate and its disorders accounted for 84.4% of patients presenting with symptoms lasting longer than one year.

Prostate enlargement was mentioned with rising numbers across the three levels of formal education (4 for primary, 9 for secondary and 14 for College) while hormonal changes was mentioned by 5 post primary patients ; four being college educated.

Close to two-thirds (65.6%) of those aware of the prostate and its disorders did not know of screening for prostate diseases. Formal education was found to be positively correlate with awareness on prostate disorders, screening for them and also the possible investigations (all $p<0.001$).

4.4 Active Search of Information and Medical Checkups

Twenty-two patients (17.5%) actively sought health information. This is the same number that was also attending annual medical checkups. They were all beyond primary school education level; 7 secondary and 15 college educated patients. This information is shown in table 4 below that is the relationships between formal education and active search of information, awareness of the prostate and its disorders and attendance of medical checkups.

Table 4: Effect of Formal Education on Health Care

Patient's formal education	Awareness of prostate disorders		Active search of information		Medical checkups	
	No	Yes	No	Yes	No	Yes
None	57	1	58	0	58	0
Primary	35	3	38	0	38	0
Secondary	2	10	5	7	5	7
College	0	18	3	15	3	15
Total	94	32	104	22	104	22

Education beyond primary school level was found to be a very strong predictor of active search for health information and likelihood of attending medical checkups. This was even more evident beyond secondary education. College educated patients were twice as likely to seek information on health issues and attend medical checkups when compared with those with secondary education.

Awareness of prostate disorders, on the other hand, while marked among post primary school education, could be found across the whole spectrum including a small portion of those not formally educated. The awareness was greater the higher the level of education.

4.5 Relationship between Education and Health

Seventy- six patients (60.3%) presented directly to the hospital while the rest were referred from Mission and County hospitals. Utilization of referral system was at 36.1% for those whose parents had no formal education, 42.5% for primary and 100% for secondary education. Overall, those whose parents were formally educated utilized the referral system at 46.5% compared to the 36.1% for those whose parents had no formal education. Besides formal education, a history of past admission for the presenting complaints, existence of co-morbidity and presence of complications also positively correlated with likelihood of a patient presenting as a referral. Patients whose parents had attained secondary education were 2.4 times as likely to use the referral system as those from primary.

The patient formal education also influenced better use of referral system. The overall use of referral system for the study group was 39.7% while it was 36% among those with no formal education and 50% among the college educated.

Table 5 below shows the relationship between education attainment level and patient health status.

Table 5: Education Attainment Level and Patient Health Status

Years at school	**Co-morbidity**		**Complications**		**Past admissions**		**Referral status**	
	Absent	Present	No	Present	No	Yes	Direct	Referred
None	35	23	52	6	40	09	37	21
≤7	29	6	33	2	30	05	19	16
7.1-13	14	1	14	1	13	02	11	4
>13	18	0	18	0	18	0	9	9

The lowest category of education (less than or equal to 7 years) had low rates closely comparable to those who didn't attend formal schooling in terms of use of referral systems. This improved to a maximum 50% among those with education beyond 13 years. Complication rates, presence of co-morbidities and past history of admission to hospital were highest among the least educated and diminished as people progressed to more than 13 years of schooling.

Exposure to formal education as well as the level of education had negative correlations with past admissions, co-morbidity and complications while it positively correlated with utilization of referral systems. A longer period of schooling was beneficial to the health status of the patients in the study.

The mode of treatment was nearly three quarters (74.6%) surgical and the rest was medical interventions. Ninety-two point six percent of those operated on had severe IPSS while the rest had moderate scores.

The mode of treatment was positively correlated with duration ($p<0.001$) co-morbidity ($p=0.001$), age group ($p=0.030$) and IPSS ($p<0.001$); and not the chief complaint ($p=0.206$) or the presence of complications ($p=0.070$). On linear regression, only IPSS ($p<0.001$) and duration of symptoms ($p=0.007$) were significantly related

to mode of treatment. The mode of treatment correlated significantly with the level of education (0.042) with medical interventions predominantly in those younger than 60 years of age and exposed to greater levels of formal education.

4.6 Developing A Teaching Protocol on Prostatism

Based on the study findings, a teaching protocol was developed that in particular addressed the prostate as a gland, the common prostate disorders, complications and presenting symptoms. This protocol also utilised the findings on the sources of information and, while the majority relied on peers, the health care workers are known to be the most reliable source of health information on matters related to health.

The protocol, therefore, will be of help to the patients with prostatism and is to be delivered primarily through health care workers who will also benefit from the protocol by getting a structured mode of teaching on prostatism. Given that there has been no previous teaching protocol, this will be a great improvement on not only teaching health education but also empowering both the patients and healthcare workers. The digital version will make the protocol available beyond the confines of health facilities and be of help to those who can guide themselves based on their education level. It will thus make the protocol go beyond the affected by enlightening people who may not be having prostatism. Since these potential patients and others interested in understanding prostatism will not be afflicted by the condition, the protocol will have transcended into the realm of preventive health education in which case the goal of early detection and disease control will have been achieved. It, therefore, and as of necessity, required that the protocol be in both basic and advanced versions of the teaching on prostatism.

4.6.1 Background Information

This particular protocol is premised on the general understanding that health care workers are not adequately trained to teach on matters health (Royak et al, 2008); understanding the prostate and its disorders remain a challenge even to the health professionals; there is limited understanding of prostatism among patients the world over that precipitates unnecessary delays and attendant complications; and that an empowered patient is capable of taking control of his health with resultant benefits of avoiding advanced disease states, complications and morbidity.

4.6.2 The Target Group

This teaching protocol will be suitable for men 50 years of age and above with or at risk of getting prostatism as well as any individuals or groups keen on learning about prostatism. It addresses prostatism at varied levels of progression and symptoms as well as co-morbidities and complications. Depending on the stage in the spectrum, each of the patients will have a teaching that is specifically tailored to meet their health education needs.

The teaching targets adult learners and the maxims most applicable will include progression from known to the unknown, simple to complex and concrete to abstract (Rajev, 2017). It is also cognisant of the sensitivity surrounding prostatism and emphasises on teaching that is culturally acceptable and delivered in appropriate settings. The protocol has room to utilise patient experiences with prostatism as illustration of the prostate disorders and the resultant symptoms. In this way, it makes it easier for the patients to relate with the lesson and appreciate the teaching. They will then be able to understand the need for the subsequent interventions, including the treatment mode.

4.6.3 The Protocol Model

The protocol is moulded along the **GROW** model; a training model conceptualised and popularised for corporate training in the 1980-1990s in Britain (Whitmore, Kaufman &David, 2014). It is an acronym that encompasses:

Goal(s): What the protocol aims at achieving.

Reality: The actual situation on the ground with regard to the identified problem.

Obstacles and **O**ptions: The challenges and notable opportunities on the way to achieving the set goals.

Way forward: What to be done by whom and when in order to achieve the set goal.

Table 6 below shows the protocol guide in the context of the GROW model.

Table 6: Protocol model

GOAL	To teach a predominantly adult population on the prostate and its disorders.
REALITY	Men older than 50 years have great potential of getting prostatism. There is limited information on prostatism. Culture and low level of understanding lead to late presentation and possible urological complications. Healthcare givers have limited capacity to effectively disseminate health information. There is need for standardised information on prostatism to correct current state and improve the urological health of men already with or have interest in learning about prostatism.
OBSTACLES/ OPTIONS	**Obstacles** Low formal education among most of the patients. Secrecy based on culture that keeps these patients from openly disclosing their problem even to their partners and relatives. Need for privacy that leads to limited fora and time for enlightening the greater public on prostatism. Small number of people with the capacity to adequately relay the relevant information to impact on the targeted group. **Options** Use of common experiences to explain prostatism, treatment modes and common complications. Utilization of formal and informal fora to get the message across, including a digital application of the teaching protocol.
WAY FORWARD	Utilise available opportunities and time in health facilities to address the key areas of the prostate, its disorders, symptoms and modes of treatment in culturally acceptable manner.

4.6.4 Development of Teaching Protocol

This protocol is anchored on the key findings of this study that include:

i) Patient population with a mean age± standard deviation of 67.1± 9.7 years and may need special considerations if taught by a relatively young population of health care workers.

ii) Limited formal education with majority being ≤ 7years attainment and closely resemble those not formally educated on health seeking behaviour. This group would particularly require special attention on the myths and misinformation that they may have gotten relating to prostatism. It is a group that might need to unlearn what they learnt before they can then understand the content of the teaching protocol.

iii) Predominantly rural settings with 14.3% exposure to urban living; suggesting a need for largely informal settings at individual and/or organised groups' levels.

iv) A population in which majority (59.5%) consider culture to significantly influence their health seeking behaviour. These are people that may delay in presentation due to aversion to modern medicine and will need patience and dedication to teaching them.

v) People who largely depend on peers (81%) for information on health and may require the inputs of relatives or trusted friends to learn. This is even more so when there is a language barrier between the patient and the health care worker.

vi) A population in which close to 75% of them are unaware of the prostate and its disorders and two-thirds of those aware don't know any screening tests.

This ignorance will have to be combated with simple expressions and use of illustrations in form of drawings, charts, models, dummies or simulators.

vii) Varied symptoms and International Prostate Symptom Scores in the moderate and severe categories that can help illustrate the meaning of prostatism and its effects on male health including the attendant complications.

viii) A small proportion (17.5%) that actively seeks health information or plan routine medical checkups. This group may need greater interaction including the advanced version of the protocol.

ix) Treatment options identified to be predominantly surgical interventions. This should trigger discussion on the modes of treatment and the value of early presentation in the spectrum of treatment.

x) Evidence of the positive impact of exposure to formal education (and by extension the concept of "knowledge is power") and its correlation with better health status. The patients will gain tremendously from the protocol on the general care and preventive measures for a fulfilling urological health.

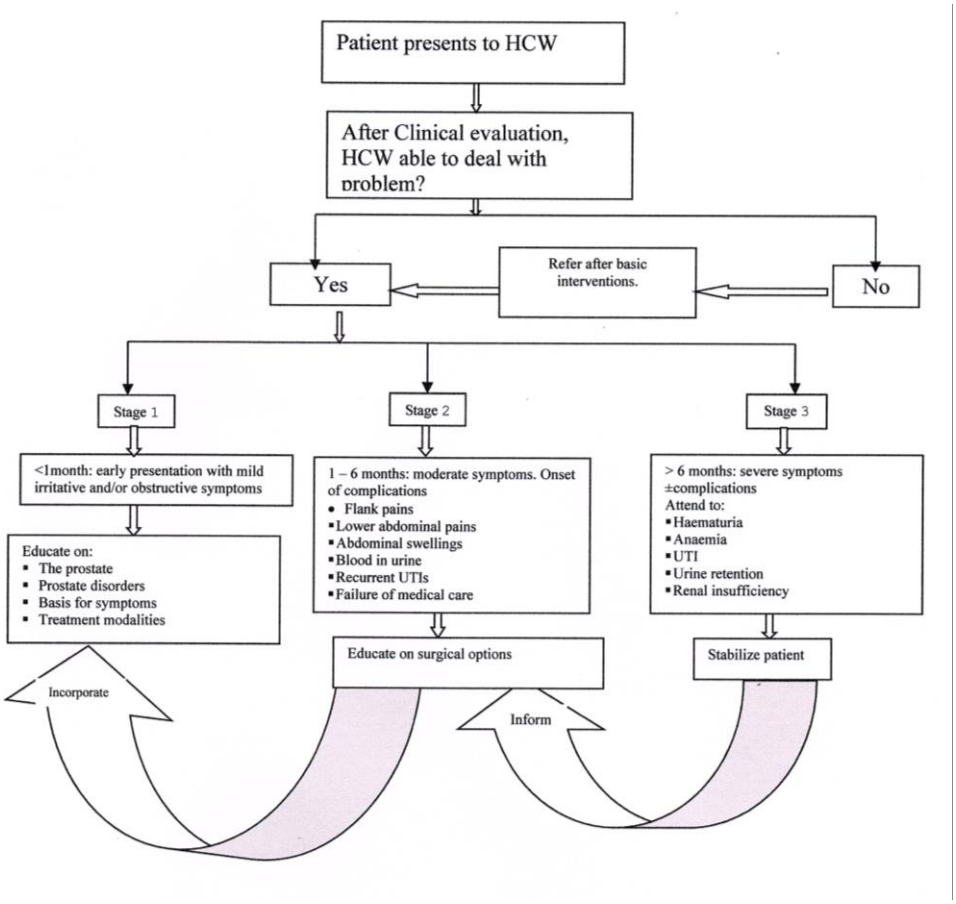

Figure 3: Clinically Oriented Prostatism Protocol (COPP) Flow Chart

KEY:

1. **HCW-**Health Care Worker.
2. **Basic intervention**- First aid and relieve of life threatening state.
3. **Stage duration in months**- The respective period since onset of symptoms.
4. **Stabilize patient**- Optimize the vital functions of the body
5. **Inform**- Let stabilised stage 3 patient know about the interventions for stage 2
6. **Incorporate-** Include the lessons for stage 1 into the interventions for stages 2 and 3

Table 7: The (COPP) Teaching Protocol on Prostatism

Step	Basic understanding on prostatism	Advanced understanding
1. Preliminaries	Introduction and climate setting. Let the patient understand his urological problem. Explain why he needs to understand his problem for greater participation in his care. Highlight the benefits of an enlightened patient including early diagnosis and effective treatment.	
2. The lessons	i) The prostate as a gland in the genitourinary tract. ii) The common disorders of the prostate. iii) Complications of prostatism	i) The role of the gland in reproduction. ii) Prostatitis, benign prostatic hyperplasia and prostate cancer. iii) The effect of disordered urination on the urinary tract.
3. Applied teaching	Understanding the reason for obstruction in prostatism. The basis for irritative and obstructive symptoms. Incorporating patient experiences in the symptoms of prostatism.	
4. Treatment	Watchful waiting, medical and surgical modes of treatment.	The concept of progression in the decision-making from the least to the most invasive methods.
5. Take home message	Question and answer session, clarifications and an understanding that the prostate in the aging man undergoes growth that can cause urinary problems that need early interventions to pre-empt complications and improve on patient health.	

4.6.5 Teaching Notes on Prostatism

THE PROSTATE is to be presented as a part of the male reproductive system that due to the design of the urogenital tract in males is sited in close proximity to the outlet of the urinary bladder and the “pipe” (urethra) that delivers urine from the bladder passes through it. Its **ROLE** in reproduction is to secrete 70% of what constitutes semen, the rest being sperms from the testes and secretions from seminal

vesicles to make up the ejaculate. The secretion from the prostate makes the semen thick initially to allow the utilisation by the sperms of the fructose, a source of energy, in the seminal vesicle fluid. It subsequently liquefies it for ease of flow in the female reproductive tract thus facilitating fertilization of the ovum.

The prostate has been noted to be under the influence of the male androgen hormone Dihydrotestosterone (DHT) which is a derivative of Testosterone through the enzyme 5-alpha reductase. It is thought that DHT influences the **GROWTH** of the prostate in spurts. The first is at puberty, then at approximately 25 years and the final, which is the major one, at or after 50 years of age. It is this last one, which is considered to also be influenced by the female hormone oestrogen that is of clinical significance. From the size of a pea at birth to as big as an orange, the prostate growth narrows the prostatic urethra and may also have extension into the bladder outlet, causing mechanical obstruction to urine flow.

DISORDERS of the prostate can be divided into those due to enlargement of the prostate and those due to inflammation and infections. The former can lead to Benign Prostatic Hyperplasia (BPH) and cancer of the prostate while the latter leads to prostatitis.

BPH is an increase in number of prostate cells accompanied by the growth in size of the prostate. It is found in about 40% of those aged 60 and about 80% of those at 80 years of age.

Cancer of the prostate is a disease that one in six men have the potential of developing, especially those with a family history and those with advanced age.

Prostatitis is an infection of the prostate that can be due to bacteria causing Urinary Tract Infections (UTI) or by other atypical microorganisms.

These common disorders of the prostate will, by virtue of narrowing the prostatic urethra, cause urinary symptoms.

The **COMMON SYMPTOMS** are ascribable to either the primary problem (narrowed calibre of the urethra with possible mechanical problems) or complications ensuing from poor urinary flow, stasis of the urine and build up pressure that can affect the urinary tract at various points.

a) Those due to **primary problem** are as a result of disordered storage and evacuation of bladder contents and, where present, inflammation.
    i) Storage problems: Frequent urinations less than 2 hours since the last one, overwhelming urge to urinate that may lead to involuntary loss of urine and urinating more than twice at night since retiring to bed. These are the irritative symptoms.
    ii) Voiding problems: Delay in initiating urination, straining on urination, weak stream of urine, occasional interruption of urine midstream with a new start of urination, sense of incomplete emptying of bladder and dribbling of urine at the end of urination. These are the obstructive (mechanical) symptoms.
    iii) Due to prostate and urethral inflammation: Lower abdominal pains, pain on passing urine, blood in urine and intense desire to urinate with minimal urine expelled. The inflammation may be due to infective microorganisms or the chemicals and toxins in the stagnated urine.

b) Those **due to complication** can be as a result of effects on urinary system or general manifestations.

i) Due to complications in the urinary tract: these may be as a result of secondary infections, bleeding in the tract, stone formations, anaemia, urinary tract obstructions and impaired kidney functions.

ii) Systemic manifestations: lethargy, anorexia and vomiting, swollen limbs and altered brain function manifesting as confusion or delirium. Weight loss might signify possible cancer of the prostate especially when associated with a family history and low back pains.

DIAGNOSIS of prostatism is based on clinical and investigative arms. In the clinical, there is history and physical examination while in investigations we have laboratory and imaging investigations.

a) Clinical diagnosis

i) History seeks the symptoms, duration, progression and possible co-morbidities and complications including the need for catheterisation. Family history of malignancies is important as it might suggest likely presence of prostate cancer. The International Prostate Symptom Score as well as the Quality of Life question guide the clinician on the severity of the symptoms and can suggest appropriate interventions.

ii) Physical examination is systemic and specific, including Digital Rectal Examination that would assist in size and state of the prostate. The clinical acumen will help in deciding, on the basis of physical findings, the most appropriate investigations to do.

b) Investigations

i) Laboratory tests include blood and urine tests. The blood would check for infections, kidney and liver functions and other indicated tests based on existence of co-morbidities and complications that may have arisen. Tests like PSA as well as its density and velocity can help in differentiating benign from malignant prostate enlargement.

ii) Imaging can be by use of ultrasound, X-rays, Computed Tomographic (CT) scans, Magnetic Resonance Imaging (MRI) and Radioisotope scans. They are chosen based on the pathology sought and can diagnose varied states including malignancies that have spread to other parts of the body.

TREATMENT progresses from the simplest to the most complex and can be medical or surgical

a) **Watchful waiting** is the simplest of the approaches. It involves modification of lifestyle and monitoring of the symptoms that are usually minimal and not bothersome. No medication needed.

b) **Medical treatment** is considered for patients with mild to moderate symptoms. The medicines either reduce the DHT levels to counter prostate growth or block the alpha adrenergic effect on the smooth muscles of the bladder neck and fibro-muscular component of the prostate and thus ease the urinary flow. Medicines can also be for treating infections or bladder irritability. For patients with advanced cancer of prostate, the spread of the disease is countered by abolition of the male hormones either medically or surgically.

c) **Surgical treatment** is for patients who have failed to benefit from medical treatment or those with mechanical obstruction of urine that cannot be relieved medically. These procedures vary from minimally invasive to open surgeries.

The **TAKE HOME MESSAGE** should consistently be that the prostate inevitably grows and enlarges with age or can get inflamed or infected. The resultant impaired flow of urine may culminate in retention of urine and other complications. These should be addressed the earliest they show so as to ensure better health of the aging male and restore normal urological status.

4.6.7 Pretesting the Protocol

Thirty patients who presented with prostatism over a period of two months were randomly picked by the Candidate from the Urology Clinic and taken through the teaching protocol to check its effectiveness. Their age ranged from 52 to 88 years with Mean ± SD 66.9 ±10.6 years.

They were then asked questions on their understanding of the prostate and its disorders, the basis for the symptoms and empowerment on their future healthcare regarding prostatism. The questions were graded on a Likert scale of 1-4; with 1= Poor (Did not understand the lesson), 2= Satisfactory (Understood what taught at level of information but cannot relate), 3 = Good (Could relate the lesson back) and 4= Excellent (Capable of teaching others).

Table 8 below shows the varied competencies after the teaching.

Table 8: Level of patient competencies after teaching with COPP

	Level of competence		
Area of Education	**Satisfactory**	**Good**	**Excellent**
The prostate	18	6	6
Prostate disorders	4	20	6
Basis of symptoms	1	24	5

Conceptualising the prostate in its anatomical position was the biggest challenge. The understanding improved with exposure to higher level of education with 61.9% of those in the satisfactory group having either no formal education or less than 7 years of learning while 55.6% of those with good to excellent understanding had secondary education. Understanding prostate disorders was easier with only 13.3% in the satisfactory category. Nearly all the patients taught understood the basis for the symptoms to the point of either relating them or teaching others. The teaching required a sketch outlining the significant anatomical position of the prostate in relation to the bladder outlet, how a disorder distorts the urethral calibre thus interfering with urinary flow and how this forms the basis for the symptoms experienced by the patient. A model or an animation depicting the same could also help as an instructional medium.

All the patients, regardless of education level, felt that they were empowered through the protocol to be able to understand the prostate and its disorders. They were confident of taking better care of their health after the teaching.

CHAPTER FIVE

DISCUSSION

5.0 Introduction

In this chapter, the findings of the study are discussed with respect to the information deciphered from the findings, relation to other studies done elsewhere and the realization of the objectives that had been set to be achieved. It tells the reader the additional information the study has added to the scientific body of knowledge in the area researched and the implications in terms of furtherance of knowledge in the said area. The presentation is in keeping with the objectives outlined earlier in chapter one where the study was introduced.

5.1 Discussion of Results

5.1.1 Demography

The literacy level among Kenyans is a reflection of the history of education in the country from the colonial to post-colonial days. It is an indicator of the socio-political and economic developments through the various regimes and the emphasis on education to the level that the country presently consumes about a third of its budget on education.

This study found that the generation older than 70 years during the study period had no formal education. It is evidence of the selective manner the colonialists applied when it came to education. Those exposed to formal education were extremely few and privileged to either be collaborators as colonial administrators or in close liaison with the missionaries who set up few schools for the natives.

With the passing of time since independence in December 1963, the literacy gradually increased. The government made education among its three pillars of development;

the other two being fight against poverty and diseases. The findings of this study showing a rise from 34.1% among the parents to 54% of the offspring can thus be understood in the context of the increased availability of schooling places and government support through social and welfare organizations to enable even the poor to access formal education. The study, however, shows that the majority (55.9%) of these people had attained less than or equal to seven years of primary education. The National Bureau of Statistics report for 2018 and Kippra (2013) address the same problem of significant numbers of youth in the ages between 15 and 24 years having achieved incomplete primary education. These are people who, in spite of spending time in school, end up with limited benefits from formal education as shown in this study that the health and healthcare seeking behaviours and status at presentation to hospital did not change much compared to those with no formal education.

While the literacy figure in 2018 is an impressive high of 81.5%, there are hidden intricacies that are clothed in gender, region and socio-economic disparities that determine the quality and relevance of the educational experience. It, for example, does not out rightly tell one that it had been better in the past. The literacy was 82.2% in the year 2000 before dropping to 72.2 % in 2007 then climbing to 78.7% in 2014 and on to the 81.5% in 2018. This shows the delicate balance between socio-economic and political stability and the uptake of education. The period of decline was the period of political and socio-economic upheavals in the country.

Rural settings and regions far flung from the major towns and administrative centres fare badly not only on enrolment but also completion rates. This study found a poor 22% rate of transition from primary to secondary school in the rural setting. These people are disadvantaged by inequitable distribution of resources such as textbooks,

infrastructure and qualified teachers. As (Schiefelbein & Farrel ,1984) found, educational quality as exemplified by textbooks, proper teacher -training, school location and facilities and class size are better predictors of meaningful education than educational attainment (years of schooling) and achievement (certification on completion). The disadvantaged rural folks will thus end up with poor education and be encumbered by limited view of self and the world. They will end up with low self-care because of ignorance and financial handicap that, inevitably, places such learners on a pathway of lifetime disadvantage that would manifest not only socio-economically but also on their healthcare status both individually and communally. They will require greater patience and understanding from the Health Care Workers when being taught on prostatism using this protocol. The approach should be one in which the communication is as basic as it can get with full awareness of cultural sensitivity and a drive conveying the needed essential information so as to gain an understanding that would empower the patient on prostatism. Local dialects would help boost the understanding.

The past pedagogies that considered learners as empty vessels in need of filling with "knowledge" resulted in compartmentalised learning with limited life-skills (Ntarangwi, 2003). This in turn could possibly lead to the so-called "educated illiterates" who have nothing to show for their grades when it comes to lived experiences (Oketch & Rolleston, 2007). It is likely that these learners would not differ much from those with no formal education on both matters of healthcare and health seeking behaviour (Tipping & Segall, 1995) and this study shows similar findings when those poorly educated (less than or equal to 7 years) are compared with those with no formal education.

The demographic picture is of a relatively young population among those likely to suffer prostate disorders with consequent prostatism when compared to Western literature (Cutili, 2010). It, however, resembles that of a Nigerian study (Ofoha et al, 2013) in which the mean age was 62.6 with the oldest being 85 years old and this might suggest Africa to be generally a continent populated by relatively young people .This age outlook has been found, as in this study, to influence the intervention and outcome of the prostate disorder with most below 60 years benefitting from medical as opposed to surgical treatment.

5.1.2 Sources of Health Information and Attendance to Medical Checkups

Hill-Kayser and colleagues discovered that patient demographics and overall health status were strong predictors of sources of health information (Hill-Kayser et al, 2009). They realised that those adequately exposed in formal education to college and beyond utilised varied sources of information while the rest relied more on their peers. In this study, 81% relied on peers, 8.7% sought information on the net while the remaining 10.3% had a combination of sources. This is a true picture of a population that is still moored to traditional approach of disseminating information but gradually getting transformed as the technological advancement takes pace.

Mills and Davidson found that only 10% of patients used internet as a source of health information in the USA (Mills & Davidson, 2002). Compared to this study's 8.7% more than a decade later, this might suggest a lag in uptake of internet use over the years in Africa and Kenya in particular but is in keeping with the observation by others (Santos et al , 2007 and Hess et al, 2005) that internet use varies with national, regional and geographical factors. Those with primary or lower levels of education predominantly (93.1%) depended on friends while all those with multiple sources of

information were college educated. This is in keeping with past literature that age and education level were strong predictors of likely sources of information. With the recent need for virtual engagements due to the contagious Covid-19 disease, there surely exists the potential for more people to arm themselves with technology so as to remain relevant as well as reap the maximum benefit of the modern world.

In line with the quoted study by Hill-Kayser and colleagues, this study also found that the level of education and state of health of the patients had correlation with source of information, active search of information and attendance to routine medical checkups. Other studies (Medlock et al, 2015; Royak et al, 2008) found out that patients were increasingly turning to internet to augment what health workers had told them given the likely existence of gaps on health information from them. In this study, it was found that internet was the least of the sources but in keeping with the rising use in both developing and developed world as noted by a previous study (Shaede et al, 2018). The teaching protocol will fill a void that has existed for long leading to delayed presentation to hospital due to patient ignorance. It will also provide a structured approach to the issue of enlightening the patients on prostatism by healthcare workers who have been found deficient on the topic the world over.

While health professionals still remain the most trusted sources (Mills &Davidson, 2002), the changing demographics will most likely shift from reliance on peers due to culture to the internet where the empowered patient will seek information in the privacy and comfort of electronic devices as opposed to word of mouth (Cutili, 2010). This is a trend that has been noted across the globe with varying degrees of rapidity but likely to become a new normal in the global village. It will then be a great

opportunity to have the protocol disseminated in an electronic application readily available through smart phones.

This study found a dismal 25% awareness by patients on the prostate and its disorders. Depressingly, close to two-thirds (65.5%) of this quarter were not even aware of any routine or screening tests for the prostate disorders. This appalling state of affairs is a replica of the rest of the world. Mofolo (Mafolo et al, 2015) in South Africa, Apolene (Apolene et al,2002) in Italy and Haluk (Haluk et al,2014) in Turkey had consistent and similar findings over the years that more than 50% of those interviewed had not heard of the prostate and its disorders. Diefenbach and colleagues in America as well as Kabore and others made findings similar to those in this study that besides the poor knowledge on prostate and its disorders, even fewer men had an idea on possible routine or screening tests (Diefenbach ,1996; Kabore et al, 2014). In both studies, as in this one, higher education was the predictor for better understanding.

While the above is in keeping with the world scenario on patient awareness of urological problems with ignorance being noted to be harmful to health (Souaidi et al, 2018), it may easily explain our local challenge of patients who present late with severe symptoms, co-morbidities and complications as elicited in the study. It is also manifested by the small number of patients (17.5%) who actively search for health information and attend to scheduled medical checkups with education beyond primary school as the major useful determinant.

The problem on poor knowledge by patients is compounded by a known fact that most health workers are neither endowed with the gift of simple explanations nor the patience to sustain any meaningful discussion with the patient (Jacob, 2002). This

combination of ignorant patients and health care workers inadequately prepared to enlighten them reinforces the dire need for the envisaged teaching protocol on prostatism.

5.1.3 Presentation to the Urology Clinic

The International Prostate Symptom Score gives an idea as to how bothersome the urological problem is in terms of the irritative and obstructive symptoms. The scores are summed up and graded into mild, moderate and severe categories and contribute to the decision making process as to appropriate intervention in terms of treatment.

The patients in this study had no mild symptoms and the majority (69%) were in the severe category. This could be due to the long duration of symptoms where 51% had symptoms for more than one year. It could also be explained by the existence of co-morbidities that could worsen the presenting symptoms. The long delays ranging up to four years as well as resultant urological complications could also contribute to the state of the patients at presentation. One would consider the identified low level of understanding on the prostate disorders, symptoms and effect on urological health as the basis for the presentation. The delayed presentations can also be the reason why surgery was done on almost three-quarters of the patients.

Just like in this study, Imam-Abasi and colleagues found presence of moderate to severe IPSS in men over 50 years seeking care for Lower Urinary Tract Symptoms (LUTS) (Imam-Abasi et al,2018). Agrawal and others in a Nepalese study found the median duration of symptoms to be one year but that the proportion of obstructive symptoms was 3% compared to this study's 53.2% (Agrawal et al, 2008). This could point to two possibilities; the likelihood of early presentation prior to dominant obstruction in the Nepalese group or the established regional differences in prostate

sizes and disorders with the African male exhibiting greater symptoms than the Asian and Caucasian (Ofoha et al, 2013). The Caucasians generally have smaller-sized prostates than the Asians who are in turn found to have smaller prostates than the Africans. Prostate sizes, however, are not a problem other than when they become symptomatic. A small prostate with an intravesical extension of the median lobe would be more bothersome than a big prostate with no mechanically obstructive effect.

In a Nigerian study (Ofoha et al, 2013) the mean age was 62.6 years with IPSS mean of 15.3. When compared to this study's corresponding means of 67.1 and 20.6 respectively, one would infer that the IPSS rises with age and this can be explained by the finding that older patients not only presented with longer durations but also with worse obstructive symptoms. The older one gets, the higher the tendency to obstructive symptoms, failure of medical care, development of complications and the use of surgical procedures as mode of definitive intervention.

5.1.4 Relationship between Education and Health

The unstated statement on education is the expectation that it should lead to learning, knowledge acquisition, skills, values, beliefs and habits. When one considers the relationship between educational factors and clinical states of patients, the implication is that education should alter the behaviour of one to be better to self and others. What is not openly stated is that the benefits of formal education are proportional to the duration and quality of education acquired. This study looked into education attainment, which was in turn influenced by such other factors as the location of school and parental support. These other factors in turn determined the quality of education in terms of sustainability, achievement, infrastructure, teacher competences

and textbook availability. Attainment was therefore the easily discernible and objectively measurable proxy of the educational factors.

While referral was not adequately enforced with an overall 39.7%, there was evidence that patients with educated parents had a better percentage of 46.5% and up to 3.6 times likelihood of utilising the referral system compared to those whose parents had no formal education. There was also evidence that the use of referral systems improved with greater patient education level from 36.2 % for those not formally educated to 50% for those college educated. This suggests a better conformity with structured ways of life with increase in education level. It might also suggest that the highly educated had a better self-care with minimal co-morbidities or complications as established by the study.

Patients who had less than or equal to 7 years of education exhibited proportions similar to those who had not been to school in terms of symptom severity and duration, existence of co-morbidities , presence of complications and past admissions. It was evident that higher level of education lowered adverse health effects. This suggests that those with better level of education have incorporated into their lives the pre-emptive move of prevention. It is the group that was active in search for information on health and attending medical checkups. They were also the people with early presentation and limited effect on the quality of life.

Bennett and partners noted that patients who had less than 8 years of education fared 4.8 times worse than those who had more than 11 years of education (Bennett et al, 1998). Mouw and colleagues observed that the least educated men stood increased risks of multiple malignancies compared to those college educated while Barbosa and others found out that an additional 4 years of education lowered the five year

mortality rate for prostate cancer by 1.8%(Mouw et al, 2008; Barbosa et al, 2013). This study affirms that the benefits of education on health are most evident after primary education and maximised beyond 13 years of schooling.

Tipping and Segall postulated that exposure to education might not necessarily lead to behavioural change (Tipping& Segall, 1995) and this could explain the finding in this study that patients with education level up to 7 years were not much different behaviour- and health wise from those with no formal education. It is evidence that limited exposure to formal education might not guarantee reforms on behaviour. These are the people who end up with the worst of the two worlds because of assuming they know even when they really didn't get to understand the issues at hand. They will find it difficult to confess to their limitations yet they in due course become evident either as a complication or manifestation of beliefs with no scientific basis. Nilsson and others found out that low education level were independent predictors of bad health (Nilsson et al, 2011). This low education level was, in fact, determined to have worse prognosis than Body Mass Index (BMI), prostate weight and co-morbidities in prostate surgical outcomes. They then advocated for low-literacy educational efforts to enlighten this kind of patients so as to save them from avoidable morbidities and mortalities. That is the challenge gladly addressed by this study on the development of a teaching protocol on prostatism.

5.1.5 The Developed Teaching Protocol

This protocol was developed to aid in a structured teaching on prostatism. It is embodied in the principles of adult learning with the aim of empowering actual and potential patients of prostatism. It recognises the findings by Allen and Blythe that protocols are affected by the backgrounds and experiences as well as the skills and

self-concepts of those involved in them (Allen & Blythe, 2004). In this regard, the patient symptoms can easily be utilised as teaching aid in the teaching process so as to maximise on the understanding among those with limited understanding.

Since there are no agreed competencies among healthcare workers for optimal patient education (Bart, Brent & Karl, 2011) this protocol is conceptualised around a functioning health education in a hospital in which there is regular patient education and those experienced in teaching patients are actively involved. Given the sensitivity surrounding male urological problems, the protocol will require programmes that are focused, culturally sensitive and information culled to meet the most relevant and desired teaching. In case of a one-on-one encounter in a consultation room, the clinician will have the leeway based on the patient's level of exposure and the clinical presentation that can be used to illustrate the lesson given. The digital version, once available, will be the most convenient mode of teaching in which one can access as much information as can handle. He can then use this information to understand the symptoms or teach friends or colleagues in accordance with the acquired information. It is important to constantly bear in mind that these are adult learners who have competing life interests and would prefer a focused, directed teaching that would address their immediate needs in terms of understanding the prostate, the symptoms and mode of intervention as recommended by (Bandura,2014).

The teachers have to bear in mind that learning is a convergence of the teacher, the learner, learning styles and the content (Wong, 2012). The level of exposure to formal education, past experiences including cultural beliefs and the needs to be addressed are of paramount consideration. As previously stated (Dweck , 2011) the learner's

prior knowledge can help or hinder learning and given the big proportion that relies on informal sources of information, efforts might have to be made to demystify some of the myths that may have taken root regarding prostatism (Foster, Upsdell ,& O'Reilly ,1990).

There is a wealth of symptoms and personal experiences among these people that can be used as teaching aids. It would also help to have charts, drawings or models that would concretise the lesson offered. Real life experiences, story-telling and integration of ideas can go a long way in teaching on prostatism (Pascarella & Terenzini, 2014) if the teaching is in a group of concerned men. Where there is a ready group of men with prostatism as happens in urology clinics, these men could be taught away from the rest or, to maximise on the opportunity, together with the rest of the men who may gain information on prostatism before they start experiencing the symptoms. The latter approach would help in early detections and effective interventions with better outcomes and quality of life for they are primed well in advance.

The ultimate goal of any teaching protocol is to empower the learner with new information that not only brings knowledge but also alters attitude and behaviour while enhancing life skills and experience (Walton & Cohen, 2015). This particular one will teach prostatism to people of varied educational and experience levels to ultimately know about the prostate, its disorders, the symptoms and their basis as well as the need for interventions to pre-empt complications. That way, they would be able to enjoy a fruitful urological life.

The protocol picked on the GROW model that is practically oriented with proven benefits and high returns on learning. It also draws heavily on the findings of the

study to ensure that it not only relays information but also does so in a scientific and appropriate manner. It suggests that those to be taught on prostatism using this protocol have to be identified in terms of educational level, their age and cultural beliefs, the things they know about prostatism in both positive and negative ways with regard to the scientific aspects and the knowledge gaps they would wish addressed. Then the teacher would ensure that the teaching is conducted with due respect to persons and culture, maximising on the wealth of information available and cultivate an enabling of the learner that would promote better urological health in terms of both healthcare- and health seeking behaviours. It would then correct such discrepancies as in the knowledge and disorders of the prostate, the use of referral systems, duration prior to presentation to health facilities, existence of co-morbidities and the presence of complications between the formally and informally educated. This would, inevitably, lead to early presentation to hospital and better outcomes of interventions on prostate disorders as suggested by the piloting findings.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

This chapter draws conclusions based on the findings of the study in line with the set objectives. It then draws recommendations on key issues related to the conclusions.

6.1 Conclusions

1. Majority of the patients presenting with prostatism are in the sixth decade of life and most have either low or no formal education.
2. Most of the patients present late with predominantly obstructive symptoms, co-morbidities as well as complications and less than a fifth of them all attend medical checkups.
3. A leading number of patients rely on peers for health information and only a quarter of them all are aware of the prostate and its disorders.
4. There is evidence that formal education has positive influence on urological health at presentation to clinic with the benefits rising as the number of years of schooling increase.
5. The developed teaching protocol on prostatism will be able to empower patients with prostatism and improve urological care.

6.2 Recommendations

1. It is recommended that the developed teaching protocol on prostatism be incorporated into and widely utilised in patient health education so as to better the urological health of patients.

2. The developed protocol can be modified into the curricula of medical institutions to help in training health professionals who will in turn have a good understanding leading to effective teaching of patients on prostatism.
3. A further study can be undertaken to establish the reasons behind the widespread patient ignorance on the prostate and how best to resolve it so as to enhance the wellbeing of these urological patients.

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APPENDICES

Appendix 1 (A): Consent Form

My name is Pius Musau, a doctoral candidate in the Department of Medical Education, Moi University. I am conducting a study on the role patient formal education plays in the management of patients presenting to this Urology Clinic with your condition of disturbed urination due to prostate disorders. I would like to request you to grant your informed consent to participate in this study. If you choose to participate, it will be at no extra charge to you and you will not be subjected to any clinical or investigative procedures more than already done. This study will adhere to the highest levels of privacy and confidentiality. The gathered data will only be used for the stated study and purpose. You will have a right to information on the outcome of the study on request.
As a sign of good faith and confirmation of your willingness to participate, I request that you append your signature below. Thank you.

I…….from…….here by consent to participate in the study **"DEVELOPING A TEACHING PROTOCOL ON PROSTATISM BASED ON PATIENT EDUCATIONAL FACTORS IN MTRH, ELDORET, KENYA"**

Signed……. Date……

Witnessed…… Date……....
(Investigator)

Appendix 1 (B): Kibali cha Kushirikishwa Kwenye Utafiti

Jina langu ni Pius Musau, mwanafunzi wa shahada ya uzamifu kwenye kitengo cha masomo ya kiafya.Nafanya utafiti juu ya uhusiano kati ya kiwango cha masomo wagonjwa walionashida yako yakushinikana kukojoa kwa sababu ya tezi na huduma tunayowapa kwa kliniki hii. Nakuomba ukubali kushirikishwa kwenye huu utafiti.
Ukikubali kushirikishwa itakuwa bila gharama yoyote kwako.Hautafanyiwa vipimo wala uchunguzi wowote zaidi ya vyenye umefanyiwa tayari.Nakusihi, kama ishara ya kukubali kwako, kuweka sahihi yako hapa chini.
Asante sana.

Mimi…….kutoka……. nakubali kushiriki katika utafiti ambao madhumuni yake nikuthibitisha uhusiano kati ya kiwango cha masomo wagonjwa waliona shida ya kushinikana kukojoa kwa sababu ya tezi na huduma inayopeanwa kwa kliniki ya MTRH **"DEVELOPING A TEACHING PROTOCOL ON PROSTATISM BASED ON PATIENT EDUCATIONAL FACTORS IN MTRH, ELDORET, KENYA"**

Sahihi…….. Tarehe……..

Shahidi…….Tarehe……..
(Mtafiti)

Appendix 2: Questionnaire

"DEVELOPING A TEACHING PROTOCOL ON PROSTATISM BASED ON PATIENT EDUCATIONAL FACTORS IN MTRH, ELDORET, KENYA"

Serial No…… File No…….....Age ……

HISTORY

1) Presenting complaints and duration

2) Any past admissions for this problem? Yes ☐ No ☐

3) If yes, indicate the number of admissions since onset of problems……

4) Is this patient a referral from other facility or a direct entry? Referral ☐
   Direct entry ☐

5) If referred, the referring facility is :
   Dispensary ☐ Health Centre ☐ County Hospital ☐ Mission Hospital ☐

6) Dose the patient have co-morbidities? Yes ☐ No ☐

7) If yes, list the specific co-morbidities.

8) If no catheter in situ, indicate the International Prostate Symptom Score (IPSS).....

9) For those with catheters give the duration of catheterization……

10) Estimate the IPSS before catheterization……..

PHYSICAL EXAMINATION

11) The vital signs on presentation:
   Heart rate…… Blood pressure…….
   Respiration rate…… Temperature…….

12) Does the patient have a urinary catheter in place? Yes ☐ No ☐

13) If yes, is it: Urethral ☐ or Supra-pubic? ☐

14) Indicate any other significant clinical findings

15) Any evidence of urological complications? Yes /No

16) If yes state the complication…….

INVESTIGATIONS

17) What are the full haemogram findings? Normal ☐ Abnormal ☐

18) Indicate the abnormality

19) What are the Urea/Electrolyte and Creatinine findings? Normal ☐ Abnormal ☐

20) Indicate the abnormality

21) Where indicated, what is the PSA level?.....

22) Imaging studies:

a) Ultrasound KUB findings…….

b) Contrast study findings……

c) Others (specify)……

TREATMENT

23) What intervention was instituted/ planned? Medical ☐ Surgical ☐

PATIENT BACKGROUND

24) Location of birth : Rural ☐ Urban ☐

25) Patient raised predominantly : Rural ☐ Urban ☐

26) Parents' highest level of formal education

a) Mother …….
b) Father …….

27) To what extent were you exposed to the traditional life of your people? Minimal/ moderate/ significant (where minimal means it rarely, moderate means it often and significant means it mostly influences your major decisions on your health)

28) Similarly, do you consider informal education to influence your health seeking behaviour minimally, moderately or significantly?.....

FORMAL EDUCATION

29) Did you attend an urban or rural primary school?.....

30) Was the primary school private or public?.....

31) In your opinion, did you have satisfactory interaction with the teachers given the size of the class? Yes/No.

32) In your opinion, were the textbooks adequately shared out? Yes/No

33) In your opinion, was the environment at home supportive for your academic pursuits? Yes/No

34) In your opinion, was the environment at school supportive for your academic pursuits? Yes/No

35) Did you attend an urban or rural secondary school?.....

36) Was the secondary school public or private?.....

37) In your opinion, did you have satisfactory interaction with the teachers given the size of the class? Yes/No.

38) In your opinion, were the textbooks adequately shared out? Yes/No

39) In your opinion, was the environment at school supportive for your academic pursuits? Yes/No

40) Did you attend a public or private University?.....

41) What was your total number of years spent schooling?.....

42) What academic certificate did you get on completion of schooling? …….

SELF APPRAISAL

43) Do you consider yourself to have gotten quality education? Yes /No

44) Do you consider yourself advantaged or disadvantaged by your level of education when interacting with health professionals in this or any other health facility? Yes/ No

    Briefly explain……..

45) Do you think that a higher level of formal education would have made a difference in your health care? Yes/No
    Briefly explain……..

KNOWLEDGE ABOUT PROSTATE DISORDERS

46) Prior to today, have you ever heard of the prostate and/or its disorders? Yes/No

47) If yes, what do you know about it?.....

48) What common disorders of the prostate do you know?.....

49) From what you know, what causes enlargement of the prostate?.....

50) Are you aware of any screening for prostate disorders? Yes/No

51) What are some of the investigations you know for prostate disorders?

52) Have you ever heard of Prostate Specific Antigen (PSA)? Yes/No

53) If yes, what is it?.....

SOURCE OF INFORMATION

54) What is the source of your information? Internet/Peers/Health workers/Media (Tick)

55) If media is it Radio/TV/Newspapers? (Tick)

56) Do you actively search information on health? Yes/No

57) If yes, is it : Internet/Asking professionals/Reading books or Newspapers/Others (Tick)

58) Over the past one year have you made any efforts to have a medical checkup? Yes/No

Thank you

END

Appendix 3: International Prostate Symptom Score (IPSS)

In the past month:	Not at All	Less than 1 in 5 times	Less than half the time	About half the time	More than half the time	Almost always	Your score
1. Incomplete Emptying How often have you had the sensation of not emptying your bladder?	0	1	2	3	4	5	
2. Frequency How often have you had to urinate less than every two hours?	0	1	2	3	4	5	
3. Intermittency How often have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5	
4. Urgency How often have you found it difficult to postpone urination?	0	1	2	3	4	5	
5. Weak Stream How often have you had a weak urinary stream?	0	1	2	3	4	5	
6. Straining How often have you had to strain to start urination?	0	1	2	3	4	5	
Nocturia experienced	None	1 time	2 Times	3 Times	4 Times	5 times	
7. Nocturia How many times did you typically get up at night to urinate?	0	1	2	3	4	5	
Total I-PSS Score							

Score: 0-7: Mild 8-19**:** Moderate 20-35: Severe

Appendix 4: Qualityof Life Score

Quality of life due to urinary symptoms	Delighted	Pleased	Mostly satisfied	Satisfied	Mostly dissatisfied	Unhappy	Terrible
If you were to spend the rest of your life with your urinary symptoms just the way you are now, how would feel about that?	0	1	2	3	4	5	6

Appendix 5: Post C.O.P.P Teaching Questionnaire

5(a). After the teaching, how do you assess your competence in the following areas? Please score yourself appropriately where 1=Poor (Did not understand), 2=Satisfactory (Understood what taught), 3=Good (Can relate the teaching) and 4=Excellent (Can teach others).

1. The understanding of the prostate.
2. Prostate disorders and their causes.
3. Basis of the symptoms of prostatism.
4. The level of empowerment on prostatism.

5(b). Baada ya mafunzo uliyopata, waona vipi kiwango chako cha kuelewa? Jipime kulingana na unavyojihisi 1=Duni (Sikuelewa funzo), 2=Ridhika(Nilielewa funzo) 3=Vyema (Naweza kueleza nilichofunzwa) na 4= Kamilifu (Nawezafunza wengine).

1. Kuelewa kwako juu ya korodani
2. Kuelewa kwako juu ya shida za korodani
3. Sababu ya shida za mkojo
4. Uwezeshwaji katika hali yako ya afya.

Appendix 6: IREC Approval

INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

MOI TEACHING AND REFERRAL HOSPITAL
P.O. BOX 3
ELDORET
Tel: 33471//2/3

MOI UNIVERSITY
SCHOOL OF MEDICINE
P.O. BOX 4606
ELDORET

Reference: IREC/2016/46
Approval Number: 0001643

2nd June, 2016

Dr. Pius Musau,
Moi University,
School of Medicine,
P.O. Box 4606 - 30100,
ELDORET-KENYA.

Dear Dr. Musau,

RE: FORMAL APPROVAL

The Institutional Research and Ethics Committee has reviewed your research proposal titled:-

"Developing a Teaching Protocol on Prostatism Based on Patient Educational Factors in MTRH, Eldoret, Kenya.

Your proposal has been granted a Formal Approval Number: ***FAN: IREC 1643*** on 2nd June, 2016. You are therefore permitted to begin your investigations.

Note that this approval is for 1 year; it will thus expire on 1st June, 2017. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The Committee expects to receive a final report at the end of the study.

Sincerely,

PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

cc	CEO	-	MTRH	Dean	-	SOP	Dean	-	SOM
	Principal	-	CHS	Dean	-	SON	Dean	-	SOD