



TURKISH REPUBLIC OF NORTH CYPRUS  
NEAR EAST UNIVERSITY  
INSTITUTE OF GRADUATE STUDIES

**Cancer Health Promotion in North Cyprus: A Survey of Community Pharmacist  
Knowledge, Perception and Barriers**

By:

DUBEM HENRY BOSAH

MASTERS

A THESIS SUBMITTED TO THE INSTITUTE OF GRADUATE STUDIES

NEAR EAST UNIVERSITY

CLINICAL PHARMACY

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## **DEDICATION**

This study is whole heartedly dedicated to my beloved parents, who have been my source of inspiration and strength throughout my academic journey, they continually provide moral, spiritual, emotional and financial support.

To my brothers, sister, relatives, mentors, teachers, friends and classmates who shared their words of advice and encouragement to finish this study.

And lastly, we dedicate this study to the almighty God, we thank him for guidance, strength, power of mind, protection, skills, giving me a healthy life and for giving me the knowledge and wisdom to finish this study.

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At this point, I must express my very profound gratitude to my parents for providing me with unfailing support and continuous encouragement throughout my years of study and through the process of researching and writing this thesis. This accomplishment would not have been possible without them. I would like to say thank you, also, to my family and friends for showing me love and support throughout my studies.

Lastly, to everybody that contributed directly and indirectly towards the success of this study, I thank you very much and may God bless us all. To God be the glory.

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## Abstract

**Name of the Student:** Dubem Henry Bosah

**Mentors:** Assoc. Prof. Dr. Abdikarim M. Abdi, Assist. Prof. Dr. Nevzat Birand

**Department:** Clinical pharmacy

**Background:** Cancer has become the second leading cause of death worldwide. Management of this disease proves better outcome for the patients. Health promotion of cancer is important and the community pharmacist has a very close link to the public, they are in a good position to carry out cancer health promotion activities. Community pharmacists can impact health promotion in cancer by providing information on the early detection of cancer and counselling on the patient's medication.

**Aim:** The aim of this study was to observe the roles community pharmacists play in cancer health promotion, their knowledge, perception and the barriers which limit them from performing these roles.

**Method:** This was an observational study design (cross-sectional study) which was carried out by using a cross-sectional survey to assess community pharmacists' knowledge, perception and barriers in cancer health promotion services in North Cyprus. This survey study was conducted by handing out a validated questionnaire, face-to-face to community pharmacists in Northern Cyprus during a period of 6 months.

**Results:** Out of 310 pharmacists approached randomly, 183 accepted and fully completed the questionnaire. Majority of responders were Females (n=118; 64.5%) and the largest age grouping was between 30-39 years old. The community pharmacists' knowledge of cancer in North Cyprus was high, as 70% answered correctly. The majority 93.4% of participant perceived that pharmacist's should be involved in cancer health promotion. 92.5% of participant also agreed that integrating cancer health promotion into daily practice is important. Lack of interest in oncology was the most perceived barrier (96.2%) for health promotion by pharmacist.

**Conclusion:** Community pharmacists showed great promise in cancer health promotion, majority of pharmacists indicated the willingness to be involved in cancer health promotion. They showed high interest in educating people about cancer. Their knowledge of cancer was moderately good which can help them take up the role of cancer health promotion.

*Keywords:* community pharmacists, cancer health promotion, knowledge

## Öz

**Öğrencinin adı:** Dubem Henry Bosah

**Danışman:** Doç. Abdikarim M. Abdi, Yrd. Prof.Dr. Nevzat Birand

**Bölüm:** Klinik Eczacılık

**Arka plan:** Kanser, dünya çapında ikinci önde gelen ölüm nedeni haline gelmiştir. Bu hastalığın tedavisi hastalar için daha iyi sonuç verir. Kanser sağlığının geliştirilmesi önemlidir ve serbest eczacının halkla çok yakın bir bağlantısı vardır, kanser sağlığını geliştirme faaliyetlerini yürütmek için iyi bir konumdadırlar. Serbest eczacılar, kanserin erken teşhisi hakkında bilgi sağlayarak ve hastanın ilaçları konusunda danışmanlık sağlayarak kanserde sağlığın teşviki ve geliştirilmesini etkileyebilirler.

**Amaç:** Bu çalışmanın amacı, serbest eczacıların kanser sağlığının teşviki ve geliştirilmesinde oynadıkları rolleri, bilgilerini, algılarını ve bu rolleri yerine getirmelerini engelleyen engelleri gözlemlemektir.

**Yöntem:** Bu, Kuzey Kıbrıs'ta serbest eczacıların kanser sağlığını geliştirme hizmetlerindeki bilgi, algı ve engellerini değerlendirmek için kesitsel bir anket kullanılarak gerçekleştirilen gözlemsel bir çalışma tasarımıydı (kesitsel çalışma). Bu anket çalışması, Kuzey Kıbrıs'taki serbest eczacılara 6 aylık bir süre boyunca yüz yüze, doğrulanmış bir anket dağıtarak gerçekleştirildi.

**Bulgular:** 310 eczacıdan rastgele yaklaşmış, 183'ü anket formunu kabul etmiş ve tamamen doldurmuştur. Yanıt verenlerin çoğunluğu Kadınlardı (n = 118; %64,5) ve en büyük yaş grubu 30-39 yaşları arasındaydı. Serbest eczacıların Kuzey Kıbrıs'taki kanser bilgisi yüksekti, çünkü %70'i doğru yanıt verdi. Katılımcıların %93,4'ü eczacıların kanser sağlığının teşviki ile ilgilenmesi gerektiğini düşünmüştür. Katılımcıların %92,5'i, kanser sağlığını geliştirmenin günlük uygulamaya entegre edilmesinin önemli olduğunu kabul etti. Eczacı tarafından sağlığın teşviki için en çok algılanan engel (%96,2) onkolojiye ilgisizlikti.

**Sonuç:** Serbest eczacılar kanser sağlığının teşviki konusunda büyük umut vaat etmişlerdir, eczacıların çoğu kanser sağlığının teşviki ile ilgilenme isteklerini belirtmiştir. İnsanları kanser konusunda eğitmeye büyük ilgi gösterdiler. Kanser hakkındaki bilgileri orta derecede iyiydi ve bu da kanser sağlığının teşviki rolünü üstlenmelerine yardımcı olabilir.

Anahtar kelimeler: serbest eczacılar, kanser sağlığını geliştirme, bilgi

## **Introduction**

Cancer health promotion is a major topic today, community pharmacists are at the center of health promotion of cancer, this branch of pharmacists are located in almost every area in big cities and communities. They can impact cancer health promotion with counselling patients of preventative lifestyles and the management of the cancer including lifestyle changes, prescription dosages, how to take their medicines and side effects associated with any cancer medications. It was noticed that some community pharmacists are not involved in cancer health promotion due to a number of reasons. Community pharmacists are not recognized as the profession for a go to advice about cancer, while some community pharmacists were not trained properly about cancer which limits their knowledge about cancer.

The aim of the study is to know the minds of community pharmacists in North Cyprus in regards to cancer health promotion, their knowledge about cancer, their perceptions about the topic and the barriers which limits them from health promotion in cancer. We hope to be in a community where the community pharmacist can manage a cancer patient who walks in for a check-up and also educate the public about the disease.

This thesis will be focused on the health promotion of cancer by community pharmacists, there will be some basic knowledge about cancer explained broadly. The study will be conducted and the methodology will be explained and the results of the study will be explained in the result section. There will be a discussion section which talks about the same studies conducted about cancer health promotion in community pharmacists and all the references will be cited in text.

# 1 Background

## 1.1 Cancer epidemiology and subtypes

Cancer is the second leading cause of death in Cyprus, the first one being cardiovascular disease with 39.2% of death rate. There was 1101 average number of deaths in Cyprus between 2004 to 2011. It was recorded that Cyprus has the lowest cancer death rates in Europe according to Eurostat (Farazi, 2014). The figure below shows the number of death rates between 2004-2011 in **Figure 1**.

Cancer has a huge impact in the world today, it is the second leading cause of death in the world. The U.S. National Cancer Institute define “cancer as a term to describe diseases in which abnormal cells divide without control. (Sigma-Aldrich, 2007)” Cancer is a term which is used to describe a collection of diseases that results from an abnormal growth of cells, this can be also called malignancy.

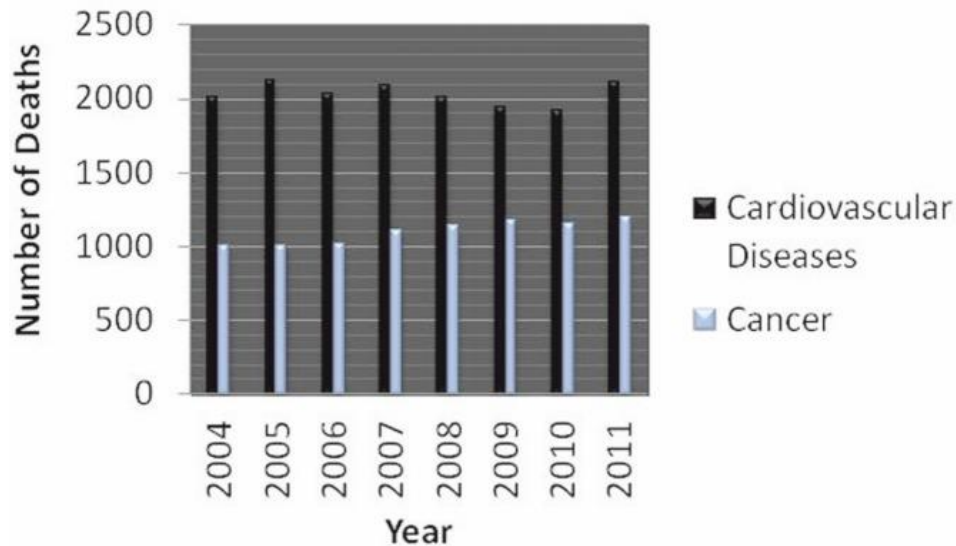
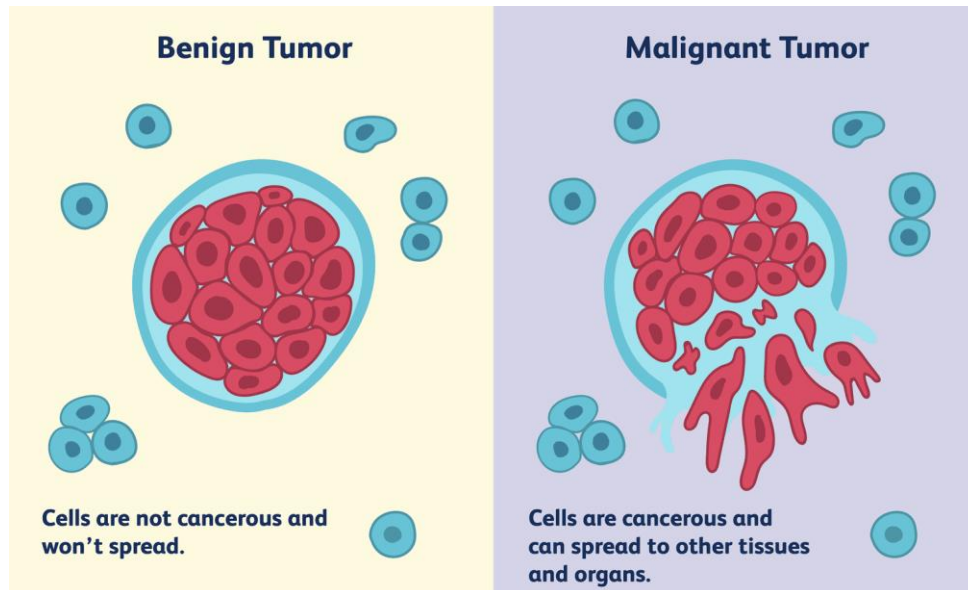


Figure 1 common causes of death in Cyprus (Farazi, 2014)

Cancer begins with a single cell; when a cell starts acting abnormal and begins to grow uncontrollably, we could call it cancer. The body is made up of a trillion cells which grow and divide every second, these cells become old and damaged afterwards they die and a new cell form but with cancerous cells, this process becomes altered and the cells becomes abnormal. When a cell becomes abnormal the old cells don't die instead, they survive and the new cells come at the wrong time. These cancerous cells keep dividing uncontrollably and form growth which are called tumors (NIH, 2015).

There are two types of tumors:

- Benign tumors
- Malignant tumors



*Figure 2 benign and malignant tumor (Fayed, 2020)*

### 1.1.1 Benign tumors

Benign tumors are the non-cancerous tumors, these tumors are localized, they don't spread to different parts of the body or invade tissues close by. Benign tumors can develop on any part of the body. An example of a benign tumor is a lump in the breasts, which majority of women instantly assume it is cancerous but, in most cases, they are benign. The causes of benign tumor are not known but it begins to develop from production of excess cells and growth of the cells. Benign tumor is usually serious if it is pressing on a blood vessel or some vital structures like the nerves (WebMD, 2020).

There are some risk factors linked to benign tumors:

- Genetics
- Diet
- Infection
- Toxins in the environment
- Trauma or injury
- Poor nutrition

Benign tumors can form in different parts of the body, the classification of benign tumors is based on the location of their growth. The different types of benign tumors are listed below.

**Lipomas:**

These types of benign tumors grow from fat cells, they can occur in any areas of the body but they usually occur around the back, necks, shoulders, thighs and arms. A lipoma is round and soft and it moves underneath the skin when pressed (Moore, 2019). It can be painful when it crushes nerves which are under the skin. Lipomas are the most common benign tumors.

**Adenomas:**

Adenomas originate in the epithelial tissues; this is a thin layer which covers the glands and organs. Adenomas can become malignant over time (Mandal, 2019).

**Fibromas:**

Fibromas are made up of connective tissue, this usually forms when there is an uncontrollable growth due to local irritation like injury (Healthgrades, 2019). They develop in any areas of the body.

There are different types of fibromas:

- Angiofibroma's
- Dermatofibromas
- Plantar fibromas
- Oral fibromas

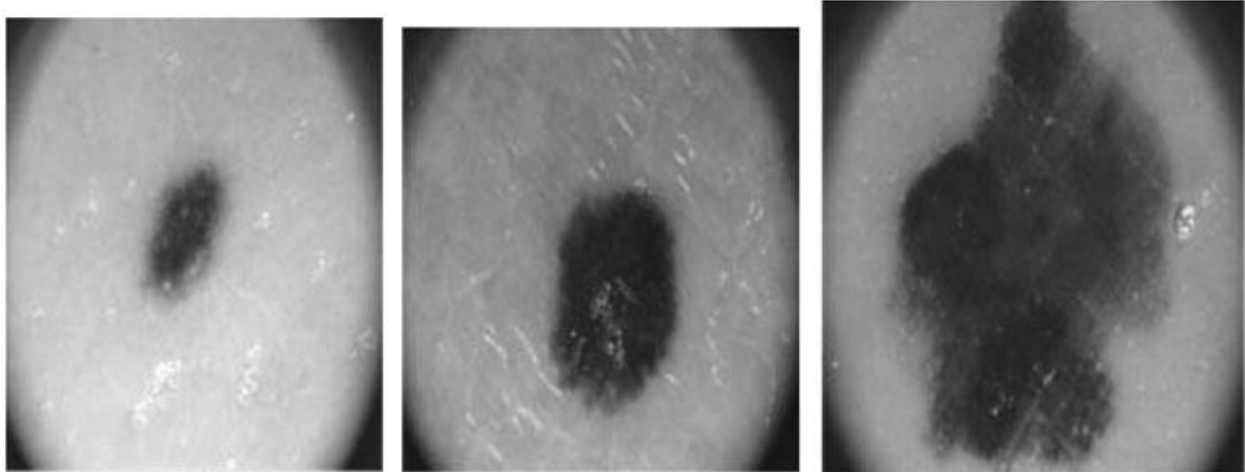
Fibromas usually form in the uterus; they are called uterine fibroids.

**Myomas:**

This type of benign cancer occurs in the walls of blood vessels or muscles, these are smooth tumors that form around the uterus or stomach. They are also called fibroids like fibromas (Azura, 2019).

## **Moles:**

These benign tumors are very common and are located around the skin. There are moles which are not a tumor and there are also cancerous moles. In Figure 2 below the different moles are shown.



*Figure 3 normal mole, benign mole and malignant mole (Thamizhvani, Lakshmanan & Sivaramakrishnan, 2018)*

Sometimes a benign tumor can turn into a cancerous tumor over time, being non-cancerous doesn't always mean they are without problems. Benign tumors are sometimes removed by surgery, this is because they grow large and can be risky when it occurs in some parts of the body like the brain, it can become life threatening. Some benign tumor such as fibromas (uterine fibroids) causes pains in the pelvic and abnormal bleeding.

Benign tumors can occur in any individual including children. Some symptoms experienced with benign tumor are listed below:

- Fever
- Weight loss
- Loss of appetite
- Pain
- Fatigue
- Sweating at night
- Cold (chills)



### **1.1.2 Malignant Tumors**

These are cancerous tumors; they can spread to different tissues and invade them. The DNA can get damaged in the process of the body creating new cells and this can lead to unusual development (Davis, 2016). Cancerous cells travel to several parts of the body through a lymphatic system or the blood, this process is called metastasis. Cancer metastasis is when a cancer originates in one part of the body and then travel to other parts of the body such as the brain, bones, or lungs through the lymphatic system and the blood. Metastatic cancer takes the name of the origin cancer, for example; cancer of the bladder which travels to the liver is called a bladder cancer. These are serious forms of cancer and most are incurable. The organ, liver is the most affected organ in cancer metastasis (Pietrangelo, 2019). There are different types of Malignant tumor, it depends on the origin;

### **1.1.3 Carcinoma:**

These are the most common form of cancer in humans. It is developed in the epithelial cells, this is the tissue that lines the surfaces of the body both inner and outer (Healio, 2017). Carcinoma is obtained putative epithelial cells in the tumor tissue when genome gets damaged which causes the cells to change and show abnormal malignant characteristics. Carcinoma usually occurs in the various organs:

- Prostate
- Pancreas
- Lungs
- Breast
- Rectum and colon

There are different types of carcinomas, the most common carcinomas are listed below:

- Basal cell carcinoma
- Adenocarcinoma
- Squamous cell carcinoma
- Transitional cell carcinoma

#### 1.1.4 Blastoma:

These are cancers which results from malignancies in blasts, these are called precursor cells. Blastomas are usually common in children compared to adults. Blastomas stages occurs first in embryonic tissues and developing cells in the nervous system and brain (Young, 2017). Some types of blastomas are:

- Retinoblastoma
- Hepatoblastoma
- Neuroblastoma
- Nephroblastoma
- Pancreatoblastoma



*Figure 4 Squamous cell carcinoma (Medilex,2020)*

#### 1.1.5 Sarcoma:

This form of malignant tumor begins in the soft tissues, bones and fibrous tissues such as fat, muscle, tendons and blood. This is a rare form of cancer group which affects tissues that support, connect and surround the organs and body structure (NHS, 2019). There are several different types of sarcomas, depending on the part of the body in which it forms, some are:

- Liposarcoma

- Leiomyosarcoma
- GISTs (gastrointestinal stromal tumors)
- Angiosarcoma

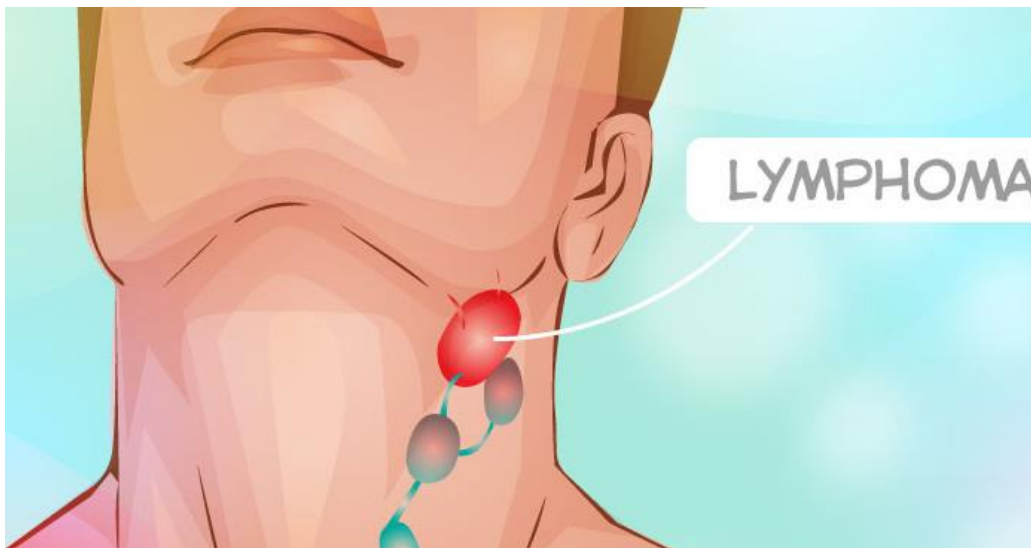
### 1.1.6 Germ cell:

These tumors start in the cells which produce sperm or egg. They develop in few parts of the body such as testicles and ovaries, they also rarely form in the abdomen, brain or chest.

### 1.1.7 Lymphoma:

This form of cancer affects the lymphatic system such as the bone marrow, tonsils, thymus, spleen and lymph nodes (Nall, 2019). There are two types of lymphoma:

1. Hodgkin's lymphoma
2. Non-Hodgkin's Lymphoma



*Figure 5 Lymphoma cancer in the throat (Baker, 2017)*

### 1.1.8 Leukemia:

This is a type of cancer that is focused on the blood and the bone marrow. Leukemia cancer starts in bone marrow cells (LIs, 2020). Some of the different types of leukemia are:

- Acute Myloid Leukemia

- Acute Lymphoblastic Leukemia
- Juvenile Myelomonocytic Leukemia
- Hairy Cell Leukemia
- Chronic Lymphocytic Leukemia

There are several treatment plans for cancer available in the world today, there are treatments which are focused on a specific area of the body where the tumor is located (American cancer society, 2020). Some other treatment method is drug treatment which is called systemic treatment, it affects the whole body. The most common treatment methods of various cancer types are:

- Chemotherapy
- Surgery
- Immunotherapy
- Hormone therapy
- Radiation therapy
- Stem cell or bone marrow transplant
- Targeted therapy

Cancer treatment has different approaches depending on what type of cancer the patient has; they are various treatment plans available and the treatment goals for the patient. Some approaches are:

- Biosimilar Drugs
- Clinical trials
- Off-label drug use
- Palliative care
- Personalized drugs

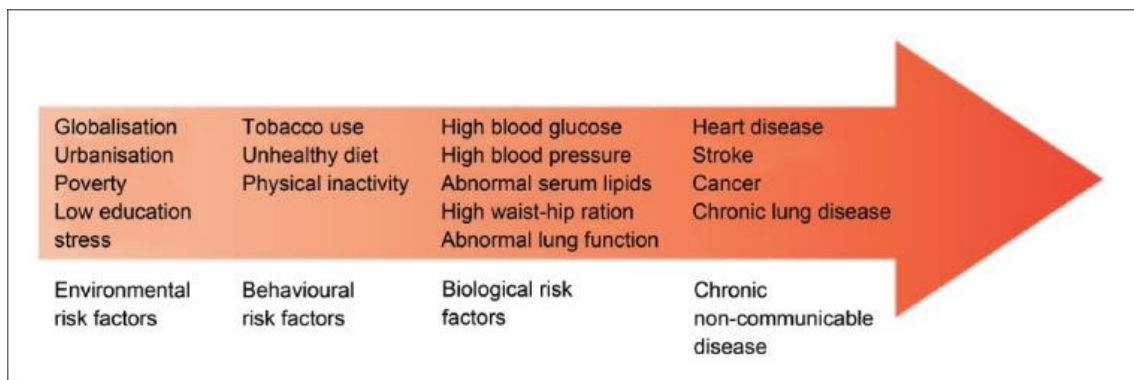
It is important a patient learns all the treatment types and approaches so as to know the best option for them.

## 1.2 Health Promotion

Health promotion is a major concern in the world today, it focuses on the health problems faced by the public. The value of health promotion has increased tremendously over the past year as the world is facing triple the number of diseases unlike before (Kumar & Preetha, 2012).

The lifestyles people keep in recent times is one of the major factors of increase in diseases.

Non-communicable diseases are a major health problem for the public. In 2014, 30% of deaths was accounted for through non-communicable diseases. These deaths were due to cardiovascular disease, diabetes, cancer and respiratory which was about 80% of the deaths (Galayee & Mekonnen, 2018).



*Figure 6 how lifestyles of the community affect diseases in recent times (Kumar & Preetha, 2012)*

Health promotion is defined as the process of empowering individual and communities to gain and increase control over the factors such as prevent diseases, premature death, disability and addiction which influences their health and hence improve their overall health (Tulchinsky & Varavikova, 2014). The phrase ‘health promotion’ was gotten in 1945 by a great medical historian man called Henry E. Sigerist, who defined four vital tasks of medicine;

1. Promotion of health
2. Prevention of illness
3. Restoration of the sick
4. Rehabilitation

He stated that an individual's health can be elevated by good standard of living, education, rest and that these labor conditions are good (Kumar & Preetha, 2012).

It is essential for the public to know about their health status, health promotion ensures that they are informed and up to date. There are several reasons why health promotion is important in our communities, some are listed below:

- It increases the quality of life of the community
- The health status of the community is improved due to health promotion
- Death rates and premature deaths will be decreased due to the influence of health promotion (University of Georgia, 2020).

There are two primary approaches for health promotion which are prevention and treatment (Normand, Dallery & Ong, 2015).

There were an expected 1.7 million new cases of cancer to be diagnosed in 2019. Carcinoma in situ of any site except urinal bladder was not included in the estimate because they don't require reporting to the cancer registries.

Cancer survival rates have improved remarkably over the past years, research shows that there is a five-year survival rate for patients with cancers of 49% or 69% who was diagnosed from 1975 to 2014, which means that cancer patients are living longer due to early diagnosis as well as advanced medical treatment (American Cancer Society, 2019).

There was an intervention which was aimed at prevention of disease such as smoking cessation & vaccination or identification of sick individuals through screening and case findings or maintaining health of people with non-communicable diseases like diabetes and cancer. WHO advocates the participation of pharmacists in health promotion campaigns to raise awareness on health issues (Mensah, Oosthuizen & Bangalee, 2020). There are range of activities in health promotion as listed in the Figure below (Alexander, 2020).



*Figure 7 Range of activities involved in health promotion (Alexander, 2020)*

Cancer health promotion plays a vital role in the condition of the patients and the family due to the cancer therapy being complicated.

Cancer therapy has demonstrated significant psychosocial consequences for both the patients and the family, patients can become scared for the treatment due to long process of therapy and the complication of the therapy. It is advised for patients to be educated about cancer and its therapy because they can care for themselves better and manage some of the side effects which results from therapy, it helps ease the patients fears and anxiety (Vachani, 2016).

Due to early detection of cancer and improved treatments, the survival rates of cancer have improved drastically worldwide. It is essential to plan for the future of cancer in cancer patients, health promotion can prove very vital implementation of interventions during and after treatment. Cancer patients are more in need of health promotion to improve their quality of life. The focus on health promotion in cancer is on increasing the quality of life and more years to live through a healthy lifestyle unlike in the past when health promotion in cancer was mainly about:

- Early detection
- Cancer prevention
- Actions towards cancer

The actions taking towards cancer were several, some are listed below (Lin, 2016):

- Recommendation for cancer prevention
- Screening guidelines
- Mammograms for breast cancer screening
- Human papilloma virus (HPV) screening for cervical cancer
- Prevention of colon cancer
- Testing for prostate cancer

Health promotion is often mistaken for disease management, Disease management in cancer are interventions which are made towards controlling and management of cancer but in contrast health promotion is intervention which are focused on maximizing the health and quality of life. Pharmacists play a crucial role in cancer education, they help in preventing, also in managing any drug related problem relating to cancer and also educates patients about the therapy (Al-Quteimat, 2014).

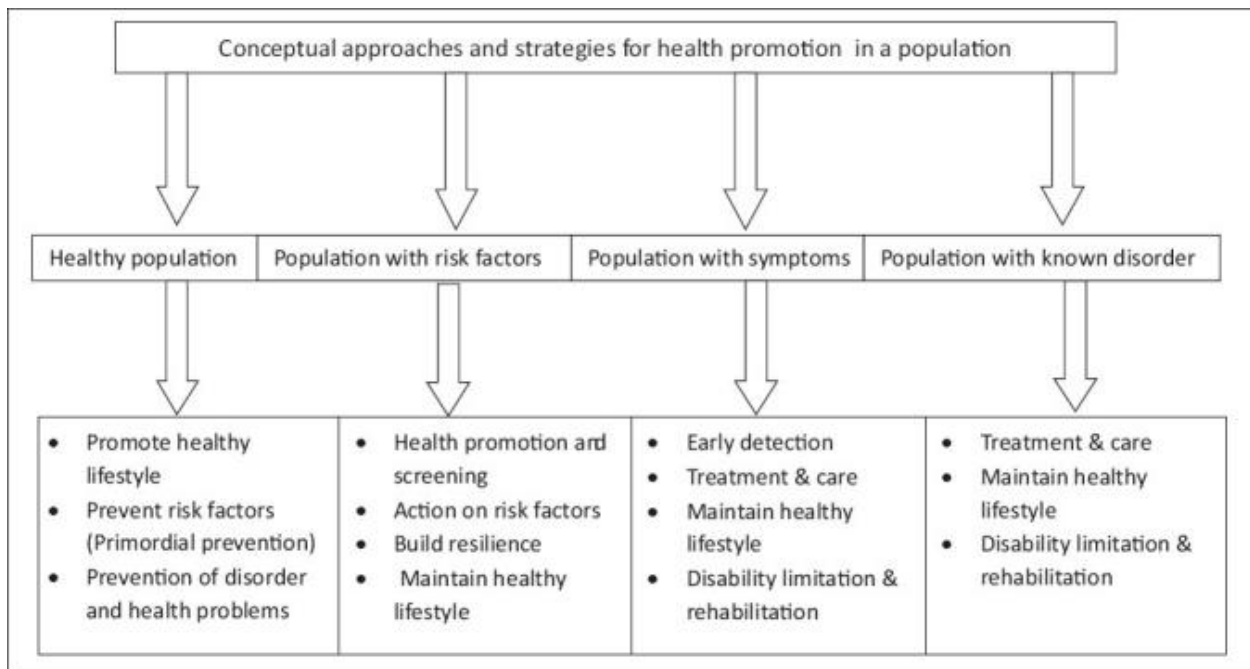


Figure 8 Range of activities involved in health promotion (Kumar & Preetha, 2012)



The figure above shows the needs of the population, dividing them into four groups;

- A. A healthy population
- B. Population with risk factors
- C. Population with symptoms
- D. Population with known disorder

There are specific interventions for each group which will address the whole population (Kumar & Preetha, 2012).

### **1.3 Role of community pharmacists in cancer health promotion**

The conventional role of a community pharmacist is dispensing and distributing medicine, in recent times their role has become more interactive and broader. Community pharmacists are the front line of healthcare professional in the community this is because they are the most accessible healthcare professional to the public and are therefore placed at the heart of the community (Smith, 2019). Some of the most common roles of community pharmacists are:

- They process prescriptions from the doctor, check if it is suitable and compound the medication for the patients.
- Selling of over-the-counter medicines
- Advising patients on the required steps in the treatment of minor illnesses
- Ensuring that the different treatment options are compatible
- Advising the patients on adverse effects of the drugs
- They dispense medication to people with a doctor's prescription or dispenses an OTC medication.
- They label the medications to show the patients the dosage.
- They usually dispose medications from patients, expired medications or medications which are not needed anymore by disposing of it safely.
- Community pharmacists provide counselling to patients who are in need of advice about their medications and their health (CPNI, 2013).
- They check for interactions between drugs to make sure the patients are not taking medications which are not compatible together and if it is in right doses.
- Promotion of health and good lifestyles are one of their important roles.

- Disease management and prevention is a special field led by community pharmacists because 80% of medical treatments always involves a prescription drug (Newman, et al., 2020). Community pharmacists are well positioned to take an active role in cancer monitoring. The view of the pharmacist has changed over the past years, they have become more involved in-patient care (Havlicek & Mansell, 2016).



*Figure 9 community pharmacist roles in recent times (Pradeep, et al., 2010)*

A community pharmacy can be found everywhere in the world, in the streets and the community (CPNI, 2013).

It is known by health care professionals that 40% of cancers can be prevented (Mckesson, 2019). The highest causes of cancer which can be prevented are;

- Obesity
- Smoking

There are services offered by the community pharmacist such as the smoking cessation programs which has impacted the public and helped several individuals quit smoking also fitness programs for the obese individuals.

Community pharmacists are also involved in managing cancer medications. The several roles community pharmacists’ play in regard to cancer;

- Community pharmacists provide a network of easily accessible advice about cancer and educates the patients on the disease (EviQ, 2020).
- They play a vital role in prevention of some types of cancer by providing services to stop the main causes of some cancer such as smoking cessation program.
- They provide a place easily accessible to patients to show their symptoms, that they are worried about and if they need to be referred to a doctor.
- They help in cancer treatment by providing a room or an office where medications can be given to cancer patients or administer cancer treatment to the patients (McKesson, 2019).

In order for the community pharmacist to fully participate in health promotion of cancer they need to have a comprehensive knowledge, and be equipped with the tools to provide pharmaceutical care (Ayoub, et al., 2016).

#### **1.4 Community pharmacists' knowledge in cancer health promotion**

Community pharmacists' knowledge of cancer health promotion is usually limited, some studies show that community pharmacists have poor knowledge in regards to cancer. When questioned about the signs and symptoms of cancer, they show poor knowledge. Studies done in several other countries such as Ghana showed poor knowledge of the risk factors of cancer in both male and female pharmacists (Mensah, Bangalee & Oosthuizen, 2019).

The conventional cancer patient is usually managed in secondary care such as in a health system. Community pharmacists are one of the primary care givers who can give support to the cancer patient due to their traditional qualities which are:

- Their long and extended working hours
- Providing free counselling and consultation
- Being present in different locations in the communities worldwide

Recently, community pharmacists are essential in the health promotion of cancer (Mensah, Bangalee & Oosthuizen, 2019). They are the direct contact to the community for several reasons:

- Screening information
- Patients obtaining health information
- Evaluation of the patient's symptoms and reporting them

Community Pharmacists today are impacting the public in ways such as partaking in cancer prevention by educating the public on which ways to decrease the occurrence of some specific

cancer by identification of risk factors like photosensitizing medications and helping with the sunscreens (Havlicek & Mansell, 2016). They also participate in some preventive efforts which decreases the risk of skin cancer, and by playing a vital role in smoking cessation programs, thereby reducing their risk of cancer of the lungs.

### **1.5 Community Pharmacists' Perception about Cancer Health Promotion**

Community pharmacists' perception showed good values in the studies done in other countries. Most community pharmacists perceived that including cancer health promotion in their daily routines in the pharmacy is very important and provision of education to the public in the pharmacy is also important (Beshir & Hanipah, 2012). Some community pharmacists perceived there are barriers which prevent them from delivery of good health promotion to the public. Community pharmacists' perception of cancer health promotion is limited, as their training in oncology is not broad.

### **1.6 Community Pharmacists' Barriers in Cancer Health Promotion**

There are several barriers which are preventing the community pharmacists towards cancer health promotion, some more important than others such as:

- lack of cancer materials for cancer education. Without materials, the pharmacists cannot provide adequate health promotion for cancer.
- Some of the community pharmacists show a lot interest in oncology education while others have little or no interest in oncology
- Time is a major barrier for community pharmacists in promotion of cancer health, due to several other customers and one pharmacist trying to attend to all their needs. Few have a consultation room
- There are very few workers in a community pharmacy, usually it is one pharmacist and this results to being not able to efficiently promote cancer health.
- Oncology training is not mandatory course for community pharmacists so most have little to no knowledge in oncology and this leads to being unable to promote cancer health to the public.

- Gender is a huge barrier when related to patients, some patients want same gender in counselling while others preferred the opposite, this affects the health promotion in cancer due to the patient not being comfortable enough to listen or talk.

Studies show several other barriers which prevents community pharmacists' cancer health promotion (Mensah, Oosthuizen & Bangalee, 2020).

## 2 Literature Review

Several different articles were used for this literature review, there have been few studies done on community pharmacists' knowledge, perception and barriers in health promotion of cancer. This literature review covers the three aspects of this study; knowledge, perception and barriers.

### 2.1 Cancer Health Promotion

About 8.2 million people died of cancer around the world in 2012 (Edwards, et al., 2010). Having the knowledge of the factors which causes cancer, management and prevention strategies of the disease. Some studies show that the way of life of an individual and the chances of cancer occurring is a big factor and this applies for few common cancers, e.g., colon cancer, breast cancer etc. 30% more or less of these cancer deaths can be prevented or corrected according to *Changizi, et al* (Changizi, et al., 2016). Health promotion of cancer is vital in creating awareness of the disease, this can impact the public in a positive way. It is a cost-effective way that can make the community more conscious and aware of the dangers around the disease so they adopt preventive behaviors towards the disease.

### 2.2 Pharmacists' Knowledge

The community pharmacist's role in the healthcare system is becoming more evolved, there is so much a community pharmacist can do than simple medication dispensing. *Yousuf, et al* said at the start of the twenty first century calls were made to reform the pharmacy curricula to permit the coming future pharmacist to connect with their new roles (Yousuf, 2019), which are enhancing their clinical knowledge and skills towards the patients with increase of communication with the patients and fellow healthcare professionals (Worley, et al., 2007). Communication with the patients leads to sharing knowledge to them by making them know the side effects, according to Worley, et al "talking with the patients even when they have no medical questions". Community pharmacists are required to have a moderate to high knowledge of cancer so as to help the patients when they have questions and when they do not.

Community pharmacists understand the concept of health promotion in cancer, in a study conducted in Australia about bowel and breast cancer (Sendall, et al., 2018), when asked all the community pharmacists present could quote at least one example of a health promotion activity.

This shows that community pharmacists' have good knowledge in regards to cancer health promotion, it was noticed about 30-70% of referrals to cancer screening of the consumers was correct. The findings of *Mensah, et al* revealed that community pharmacists had lack of adequate knowledge on breast cancer and also screening, their knowledge on the signs and symptoms of cancer was average (Mensah, Oosthuizen & Bonsu, 2018).

### **2.3 Pharmacists' Perception**

In a study done in Ghana, 77% of the community pharmacists perceived that cancer health promotion should be incorporated into their daily practice, their perception about their roles is creating awareness to the public rather than only dispensing medication and this is becoming important to them (Mensah, Oosthuizen & Bonsu, 2018). *Beshir & Hanipah* study reveals 90% of community pharmacists agree they should be involved in cancer health promotion by counselling, distributing cancer educational materials and inviting other healthcare professionals to help in cancer education (Beshir & Hanipah, 2012). They also perceive cancer health promotion as their responsibility and also it helps to improve their professional status. More than 800 community pharmacists in a study agreed that it is their responsibility to provide counselling to patients in Jordan (Ayoub, et al., 2016). Some pharmacists perceive their role as valuable, they feel they can influence consumers who visit the pharmacy to engage in cancer screening activities. Over 75% of the community pharmacists in study done in Nigeria are willing to restructure the pharmacy store to allow more space for health promotion services (Oparah & Okojie, 2005).

### **2.4 Pharmacists' Barriers**

*Hassali, et al* noted that lack of time was a significant barrier in health promotion services (Hassali, et al., 2009), lack of education materials was noticed in other studies, lack of personnel, lack of skills. One study report gender as a barrier in cancer health promotion (Beshir & Hanipah, 2012). Recently, the current prescription volumes in the pharmacy might be a barrier to community pharmacist in providing cancer health promotion services in UAE (Ibrahim, 2013). It was also noticed that there was lack of appreciation from the patient in regards to the role of community pharmacists as health promoters. In a systematic review, community pharmacists

perceived that lack of time was due to less staff, there were fewer supporting staff such as pharmacy technicians (Mensah, Oosthuizen & Bonsu, 2018). Lack of time is a barrier that is against the provision of cognitive services in Qatar (El Hajj & Hamid, 2011).

The barriers limiting community pharmacists from cancer health promotion services does not affect the various attitudes shown by community pharmacists towards the importance of health promotion, these are good indicators that the community pharmacists are willing to integrate health promotion into their daily practice.



### **3 Methodology**

#### **3.1 Study Area Description**

The Study area covers all the cities in Northern Cyprus. It was conducted in the community pharmacies.

#### **3.2 Study Design**

This study was a cross-sectional survey which was carried out by using a calculated sampling method to assess community pharmacists' knowledge, perception and barriers in cancer health promotion services in North Cyprus. The survey was conducted by handling out questionnaires to community pharmacists in Northern Cyprus between the period of 6 months.

The questionnaire was composed by making minor modifications from the questionnaires previously used to evaluate the perception, knowledge, and barriers of community Pharmacists in Malaysia, and Ghana and the knowledge of community-based health workers from Sandwell, Birmingham and Solihull about cancer.

In order to ensure the validity of the questionnaire used in this study, it was sent to three academicians who are experts in the oncology department. The questionnaire was revised by their opinions and comments.

#### **3.3 Data Collection**

The questionnaire consisted of four parts:

Part 1 consisted of nine questions based on the demographics of the community pharmacists which were open ended questions.

Part 2 consisted of seven question which were related to the community pharmacists' knowledge in cancer.

Part 3 consisted of eight questions which evaluates community pharmacists' perception about their professional role in providing cancer health promotion services, it comes with 3-point Likert scale responses (Yes=3, Don't know=2, No=1).

Part 4 consisted of seven perceived barriers questions which limits their involvement in cancer health promotion services also with 3-point Likert scale responses (1 =Yes, 2 =No, 3 =Don't Know).

In the first table, we have determined to score for good and bad perception. In scoring, we have given that yes gets 3 points, 2 points for I don't know, and no gets 1 point. If a participant said yes to all of the questions, he got 24 points in total, if a participant said don't know to all of the questions, he got 8 points. Thus, a participant could get a maximum of 24 points and a minimum of 8 points. We have decided participants who got 18 points and above had good perception. We determined that if he got below 18, he had a bad perception.

In the second table, we have determined to score for good and bad knowledge. In scoring, we have given that yes gets 1 points, no gets 0 points and 0 points for I don't know. If a participant said yes to all of the questions, he got 7 points in total, if a participant said don't know and no to all of the questions, he got 0 points. Thus, a participant could get a maximum of 7 points and a minimum of 0 points. We have decided participants who got more than 5 or equal 5 points had good knowledge. We determined that if he got below 5 points, he had bad knowledge. We determined the relationship between social-demographic values and knowledge by applying the chi-square test.

### **3.4 Participants**

The questionnaire was given to all the community pharmacies registered under North Cyprus, it was self-delivered by the investigators to each Community pharmacist and it was provided in Turkish Language. It was translated into the Turkish language by a forward and backward method.

The questionnaire was completed at an estimated time of 10 minutes. Participants had the study aim and confidentiality statement verbally explained to them and asked to sign an approval consent form. The criteria for participants are listed below:

#### **3.4.1 Inclusion Criteria:**

- Pharmacists working in community pharmacies across Northern Cyprus

#### **3.4.2 Exclusion Criteria:**

- Incomplete Questionnaire
- Closed pharmacies

### **3.5 Data Analysis**

Data analysis was carried out by Statistical Package for Social Sciences (SPSS). The sample size was 173 and was calculated by Raosoft rate and proportions which were used to summarize the responses of the community pharmacists. The P-value of less than 0.05 ( $p < 0.05$ ) was considered statistically significant.

Data on demographics, knowledges, perception and barriers to cancer health promotion services were analyzed and the results are shown in percentages and frequencies. We determined the relationship between social-demographic values and perceptions by applying the knowledge analysis test named Pearson chi-square test.

### **3.6 Ethical Consideration**

This study was approved by the Near East Institutional Review (IRB) of Near East University that assigned this research as being cross-sectional study.

## 4 Results

### 4.1 Participants

There was a total of 183 questionnaires which were submitted and used for analysis.

The Table 1 below shows the sociodemographic characteristics of the community pharmacists, in the study, there was a wide variety of community pharmacists' representation according to gender, age, nationality, Education status.

*Table 1 The Demographic Information on the Community Pharmacist*

<i>Demographic information of the community pharmacists</i>	N	%
<i>Gender</i>		
Male	65	35.5%
Female	118	64.5%
<i>Age</i>		
<30 years	65	35.5%
30-39 years	93	50.8%
40-49 years	17	9.3%
>50 years	8	4.4%
<i>Nationality</i>		
North Cyprus	166	90.7%
Turkey	15	8.2%
Others	2	1.1%
<i>Education Status</i>		
Bachelor's Degree (BPharm)	120	65.5%
Master's Degree (MSc-Master of Pharm)	55	30.1%
PhD	7	3.8%
Others (Specify)	1	0.5%
<i>Years of experience</i>		
<5 years	91	49.7%
6-10 years	71	38.8%
11-15 years	10	5.5%
16-20 years	3	1.6%
>20 years	8	4%
<i>Where did you study?</i>		
Turkey	22	12.0%
North Cyprus	150	82.0%
Europe	10	5.5%

USA	1	0.5%
Other	0	0
<i>How many hours do you work on average per week?</i>		
<20 hours	1	0.5%
20-39 hours	3	1.6%
40-59 hours	153	83.6%
60-79 hours	25	13.7%
>80 hours	1	0.5%
<i>Did you receive oncology education during the pharmacy program?</i>		
Yes	52	28.4%
No	131	71.6%
<i>Do you have a family history of cancer?</i>		
Yes	51	27.9%
No	132	72.1%

The Majority of Gender constitutes of the Female gender which was N=118 about 64.5% of the population. The largest age grouping was between 30-39 years old (50.8%). The Nationality majority were from North Cyprus with 90.7%. The education status of most participants was a bachelor's degree in Pharmacy (65.5%). The highest participants in the category for years of practice were less than five years of experience which was 49.7%. 82% of the participants studied in North Cyprus. Highest average hours of work per week was 40-59 hours (83.6%). Most Community pharmacists did not receive oncology education during the pharmacy program as stated by the participants and most has no family history of cancer.

#### **4.2 Knowledge**

Community pharmacists' knowledge of cancer in North Cyprus was high, 181 participants confirmed Yes to the question asked which was that cancer is when abnormal cells divide in an abnormal or uncontrolled way (98.9%). The highest number of the reply No was from 66 participants to the question of Cancer not being a life-threatening disease.

*Table 2 Community pharmacists' knowledge about the signs and symptoms of cancer*

<b><i>Community pharmacists' knowledge about the signs and symptoms of cancer</i></b>	<b>Yes (%)</b>	<b>No (%)</b>	<b>Don't Know (%)</b>
Cancer is when abnormal cells divide in an abnormal or uncontrolled way	181(98.9)	0	2(1.1%)
Cancer is not a life-threatening disease	110(60.1%)	66(36.1%)	7(3.8%)
The most common treatments for cancer are surgery, chemotherapy, and radiation	162(88.5%)	13(7.1%)	8(4.4%)
Change in bowel or bladder habits is a warning sign or symptom of cancer	140(76.5%)	20(10.9%)	23(12.6%)
Indigestion or difficulty in swallowing is a warning sign or symptom of cancer	124(67.8%)	25(13.7%)	34(18.6%)
Tobacco Smoking	174(95.1%)	4(2.2%)	5(2.7%)
Overweight and obesity	94(51.4%)	28(15.3%)	61(33.3%)

Total of highest participants was 61 who didn't know if overweight or obesity causes cancer.

### **4.3 Perception**

Community pharmacists' perception in regards to health promotion in North Cyprus had a positive turn out. The majority 93.4% of participant perceived that pharmacists should be involved in cancer health promotion. 92.5% of participant also agreed that integrating cancer health promotion into daily practice is important. The highest No reply was 17.5% to the question if pharmacists should invite other healthcare professionals to provide cancer education in the pharmacy.

Table 3 Community pharmacists' perceptions of health promotion in cancer

<i>Community pharmacists' perceptions of health promotion in cancer</i>	<b>Yes(%)</b>	<b>No(%)</b>	<b>Don't Know(%)</b>
Pharmacists should be involved in cancer health promotion	171(93.4%)	6(3.3%)	6(3.3%)
Integrating cancer health promotion into daily practice is important	169(92.5%)	10(5.5%)	4(2.2%)
It is pharmacist's responsibility to provide cancer counseling and this can improve my professional status	141(77%)	19(10.4%)	23(12.6%)
It is pharmacist's responsibility to provide cancer counseling and this can improve my professional status	157(85.8%)	19(10.4%)	7(3.8%)
A pharmacist can influence patients to adopt cancer screening and detection practices	150(82%)	23(12.6%)	10(5.5%)
Pharmacists should invite other healthcare professionals to provide cancer education in the pharmacy	128(69.9%)	32(17.5%)	23(12.6%)
Patient demand to get counseling on cancer screening and early detection from the pharmacist	141(77%)	29(15.8%)	13(7.1%)
Patient appreciate pharmacist's effort to counsel them about cancer	154(84.2%)	18(19.8%)	11(6%)

There are two set of questions (12.6%) with the highest participant who don't know the answers which, some community pharmacists don't know if pharmacists should invite other healthcare professionals to provide cancer education in the pharmacy while the other set don't know if It is pharmacist's responsibility to provide cancer counseling and this can improve their professional status.

#### 4.4 Barriers

Community pharmacists identified several barriers affecting cancer health promotion in North Cyprus. Lack of interest in oncology was the highest with 96.2%, lack of time was the most common barrier people didn't identify. Most participant didn't know lack of time and lack of incentives as a barrier in cancer health promotion.

*Table 4 Barriers to cancer detection and prevention by community pharmacists*

<b><i>Barriers to cancer detection and prevention by community pharmacists</i></b>	<b>Yes (%)</b>	<b>No (%)</b>	<b>Don't Know (%)</b>
Lack of cancer education materials	172(94%)	6(3.3%)	5(2.7%)
Lack of interest in oncology	176(96.2%)	2(1.1%)	5(2.7%)
Lack of adequate knowledge	165(90.2%)	14(7.7%)	4(2.2%)
Lack of motivation	146(79.8%)	32(17.5%)	5(2.7%)
Lack of incentives (consulting fees)	114(62.3%)	43(23.5%)	26(14.2%)
Lack of time	106(57.9%)	51(27.9%)	26(14.2%)
Patients do not appreciate the pharmacist 's role as a breast cancer health promoter	133(72.7%)	31(16.9%)	19(10.4%)



<i>Association between demographic factors and community pharmacist's perception on cancer health promotion</i>							
		<b>N</b>	<b>%</b>	<b>Good</b>	<b>Poor</b>	<b>Total</b>	<b>P-value</b>
Q1	<i>Gender</i>						
	Male	65	35.5%	63	2	65	0.292
	Female	118	64.5%	110	8	118	
Q2	<i>Age</i>						
	<30 years	65	35.5%	60	5	65	0.348
	30-39 years	93	50.8%	90	3	93	
	40-49 years	17	9.3%	15	2	17	
	>50 years	8	4.4%	8	0	8	
Q3	<i>Nationality</i>						
	North Cyprus	166	90.7%	156	10	166	0.582
	Turkey	15	8.2%	15	0	15	
	Others	2	1.1%	2	0	2	
Q4	<i>Education Status</i>						
	Bachelor's Degree (BPharm)	120	65.5%	116	4	120	0.197
	Master's Degree (MSc-Master of Pharm)	55	30.1%	49	6	55	
	PhD	7	3.8%	7	0	7	
	Others (Specify)	1	0.5%	1	0	1	
Q5	<i>Years of experience</i>						
	<5 years	91	49.7%	85	6	91	0.0001*
	6-10 years	71	38.8%	69	2	71	
	11-15 years	10	5.5%	10	0	10	
	16-20 years	3	1.6%	1	2	3	
	>20 years	8	4%	8	0	8	
Q6	<i>Where did you study?</i>						
	Turkey	22	12.0%	20	2	22	0.753
	North Cyprus	150	82.0%	143	7	150	
	Europe	10	5.5%	9	1	10	
	USA	1	0.5%	1	0	1	
	Other	0	0	0	0	0	
Q7	<i>How many hours do you work on average per week?</i>						
	<20 hours	1	0.5%	0	1	1	0.0001*
	20-39 hours	3	1.6%	3	0	3	
	40-59 hours	153	83.6%	149	4	153	
	60-79 hours	25	13.7%	21	4	25	
	>80 hours	1	0.5%	0	1	1	

Q8	<i>Did you receive oncology education during the pharmacy program?</i>						
	Yes	52	28.4%	51	1	52	0.184
	No	131	71.6%	122	9	131	
Q9	<i>Do you have a family history of cancer?</i>						
	Yes	51	27.9%	47	4	51	0.379
	No	132	72.1%	126	6	132	
(MAX POINT=24, MIN POINT=8, Less than 18 is Poor, equal to 18 and more than 18 are good)							

The resulting figures of the table above in regard to gender which is 0.292, age which is 0.348, nationality which is 0.582 and educational status which is 0.197 all shows that they did not affect the perception of the community pharmacists about health promotion in cancer. It was observed that there are high percentage of community pharmacists who did not receive any oncology education during their pharmacy program.

<i>Community pharmacists' perceptions of health promotion in cancer</i>	<b>Mean±SD</b>
Pharmacists should be involved in cancer health promotion	2.9±0.39
Integrating cancer health promotion into daily practice is important	2.87±0.47
It is pharmacist's responsibility to provide cancer counseling and this can improve my professional status	2.67±0.66
It is pharmacist's responsibility to provide cancer counseling and this can improve my professional status	2.75±0.63
A pharmacist can influence patients to adopt cancer screening and detection practices	2.69±0.68
Pharmacists should invite other healthcare professionals to provide cancer education in the pharmacy	2.52±0.78
Patient demand to get counseling on cancer screening and early detection from the pharmacist	2.61±0.75
Patient appreciate pharmacist's effort to counsel them about cancer	2.74±0.62
Total Score	21.77±2.36

In the table below, it indicates that some demographic features such as gender, age, nationality and educational status with results respectively 0.408, 0.023, 0.426 and 0.128 these shows that they affect the knowledge of the community pharmacists in regard to health promotion in cancer.

<i>Association between demographic factors and community pharmacists' knowledge on cancer health promotion</i>							
		N	%	Good	Poor	Total	P-value
Q1	<i>Gender</i>						
	Male	65	35.5%	56	9	65	0.408
	Female	118	64.5%	96	22	118	
Q2	<i>Age</i>						
	<30 years	65	35.5%	47	18	65	0.023*
	30-39 years	93	50.8%	81	12	93	
	40-49 years	17	9.3%	16	1	17	
	>50 years	8	4.4%	8	0	8	
Q3	<i>Nationality</i>						
	North Cyprus	166	90.7%	139	27	166	0.426
	Turkey	15	8.2%	12	3	15	
	Others	2	1.1%	1	1	2	
Q4	<i>Education Status</i>						
	Bachelor's Degree (BPharm)	120	65.5%	101	19	120	0.128
	Master's Degree (MSc-Master of Pharm)	55	30.1%	46	9	55	
	PhD	7	3.8%	5	2	7	
	Others (Specify)	1	0.5%	0	1	1	
Q5	<i>Years of experience</i>						
	<5 years	91	49.7%	69	22	91	0.76
	6-10 years	71	38.8%	64	7	71	
	11-15 years	10	5.5%	9	1	10	
	16-20 years	3	1.6%	2	1	3	
	>20 years	8	4%	8	0	8	
Q6	<i>Where did you study?</i>						
	Turkey	22	12.0%	18	4	22	0.96
	North Cyprus	150	82.0%	125	25	150	
	Europe	10	5.5%	8	2	10	
	USA	1	0.5%	1	0	1	
	Other	0	0	0	0	0	
Q7	<i>How many hours do you work on average per week?</i>						
	<20 hours	1	0.5%	0	1	1	0.184

	20-39 hours	3	1.6%	3	0	3	
	40-59 hours	153	83.6%	126	27	153	
	60-79 hours	25	13.7%	22	3	25	
	>80 hours	1	0.5%	1	0	1	
Q8	<i>Did you receive oncology education during the pharmacy program?</i>						
	Yes	52	28.4%	42	10	52	0.603
	No	131	71.6%	110	21	131	
Q9	<i>Do you have a family history of cancer?</i>						
	Yes	51	27.9%	42	9	51	0.874
	No	132	72.1%	110	22	132	
(MAX POINT=7, MIN POINT=0, less than 5 is poor, equal to 5 and more than 5 are good)							

## 5 DISCUSSION

There have been no other studies conducted in North Cyprus which describes community pharmacist knowledge, perception and barriers in cancer health promotion.

Some of the demographic features of the community pharmacist such as the age, gender and number of years practicing influenced their viewpoint of cancer health promotion, for example women are more inclined to promotion of breast cancer screening compared to men. The study showed that community pharmacists had basic knowledge of cancer and health promotion in cancer.

The findings from the study show that community pharmacists should be more involved in health promotion services and provide counselling to the patients. They also want other healthcare professionals to help in provision of cancer materials for the patients while others do not feel the need to invite of other health care professionals in cancer health promotion. Recent studies show that community pharmacists are getting more involved in health promotion services in screening such as cardiovascular risk screening or medication therapy management (Mensah, Bangalee & Oosthuizen, 2019).

In a study done on prostate cancer education by Odedina *et al*, community pharmacists were glad to educate patients about prostate cancer (Odedina, 2008). In another study done on breast cancer in Australia, community pharmacist showed similar attitude, they gave a brief explanation how community pharmacist should be involved in health promotion and how vital it is that patient should know that a pharmacy isn't only a place to dispense medication but a place for your overall health status (Sendall, 2018). This was similar for the community pharmacist who participated in this study, high number of participants agreed that they should be involved in the cancer health promotion in Cyprus. The community pharmacist perceived their role to be very important in providing counselling in patients and in cancer screening, it was the highest perception of community pharmacist. The perception of community pharmacists in North Cyprus was positive, they agreed they can influence patient in the need to seek cancer screening and making it their daily routine to help in cancer health promotion while also assisting other healthcare professionals in health promotion of cancer.

In a breast cancer study done in Qatar, community pharmacists displayed poor involvement in cancer health promotion, it further proved that the job of community pharmacist is mainly

limited to dispensing medication (El Hajj & Hamid, 2010). In this study done in Cyprus, 93.4% of community pharmacist agreed that community pharmacists should be involved in cancer health promotion. The study done in Qatar show that community pharmacist showed interest in activities related to cancer health promotion, they believed it is their duty to give cancer education and awareness.

It is vital to understand the barriers affecting community pharmacists in order solve and educate community pharmacists around the world to help public better. The major barrier observed in the study in Qatar was lack of educational materials. In a similar study done in Malaysia, their barrier was lack of enough time while lack of education materials came in second (Beshir & Hanipah, 2012).

Lack of interest in oncology was the highest barrier in this study which is accompanied with lack of education materials. This proves that lack of educational materials is the most common problem for community pharmacists in the world which affects their involvement with cancer health promotion. It also shows that there is lack of motivation from the community pharmacist this can be as a result of lack of educational training in cancer, most community pharmacists do not receive cancer education in school.

Solving these barriers will require a lot from the community and from the healthcare system such as restructuring of the community-based pharmacy practice and the system of healthcare in other to provide cancer preventative services to the community pharmacies, expand the role of community pharmacists to also public health educators, cancer training for community pharmacists, and addition of cancer education in school curriculums.

Restructuring of the healthcare system and the community pharmacy practice will require commitment and investments from stakeholders in pharmacy and all this will take some time and engagement from the community. This will provide community pharmacies with the preventive services such as educational materials and time which will help them in cancer health promotion. Expanding the role of the community pharmacist is a delicate matter and there are vital questions which needs to be asked such as “Are community pharmacists prepared to hold the role of public health educators?” This can be answered with the high number of community pharmacists who agreed in the survey that they should integrate cancer health promotion into their daily practice giving them time to be public health educators. The expanded role can help the community

pharmacist have vast knowledge in cancer which will help them to enable patient make good decision about their health such as early detection of cancer and prevention.

Cancer training of community pharmacists is vital in health promotion, community pharmacists' knowledge of cancer was a bit good compared to other studies done in different countries. They can do better with a good cancer training; this will not be a problem due to time being the least barrier in survey.

The curriculum of pharmacy schools usually trains the graduate to be clinical pharmacists, the skills learned from clinical pharmacy is not sufficient for a community pharmacy setting. The curriculums observed may not sufficiently prepare the graduates to be health educators.

Some question rises up about skills of pharmacy graduate, "what roles are associated in community pharmacy that is different from clinical pharmacy?", "can a graduate of clinical pharmacy practice in a community pharmacy?", "Can a pharmacy graduate take the responsibility of health educators in the community pharmacy?" These questions need to be answered in order to know if curriculum is a good solution to the barriers observed.

## **5.1 Strengths and Limitations**

310 questionnaires were distributed and 183 accepted responses was obtained, this could be considered as good response rate for this study, this number forming more than 50% of community pharmacist in Northern Cyprus can be also considered as a reflective sample size.

Another strength of this study is that the surveyed community pharmacist included those of all the major cities in North Cyprus: Lefkosa, Kyrenia, Magusa, Lefke, Omrofo.

An expert translated the questionnaire from English to Turkish and a health professional who is familiar with the terminology of the area covered by the survey, then it was sent to two independent Turkish native speakers for the translation, they translated the questionnaire backward into English to maintain equivalence of the test questionnaire in the target language.

Community pharmacists who participated in this survey were generally positive towards their role in the health promotion of cancer but some pharmacists who were not willing to participate may have had different views, most especially those of older age since the majority of responders were young and middle aged.

There are several limitations in this study, there were no wide range of variations on community pharmacist respond maybe due to close ageing.

The generalization to every community pharmacist in North Cyprus is made carefully due to 183 responses only. There is a possibility of self-selection bias such as tendency to select some socially desirable responses, tendency to agree that is acquiescence. Also, there may be selection bias due to some participants not be inclined to the study.



## 6 CONCLUSION

This study shows the findings observed from a survey about cancer health promotion and the community pharmacists' knowledge, perception, and barrier observed in North Cyprus. Community pharmacists in North Cyprus play a vital role in the public, their services offered over the years have improved, from the traditional role of medication dispensing to counselling patient. The roles of community pharmacists have increased overtime to counseling of patients, promoting health etc. The result indicated that community pharmacists have little involvement in cancer health education but they showed high interest in educating people about cancer. Their knowledge of cancer was moderately good which can help them take this role in cancer health promotion and their perception about the role they play in cancer health promotion in regards to cancer screening and counselling is vital. There were several barriers which makes it difficult for them to achieve these roles. A lot of work needs to be done to help them overcome these barriers and focus on health promotion. Community pharmacists are vital in helping to achieve a good health promotion in cancer with their direct link to the public all over the world.

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## 8 APPENDIX

### Kuzey Kıbrıs'ta Kanser Sağlığının Teşviki: Eczane Eczacılarının Bilgisi, Algısı ve Engelleri Üzerine Araştırma

Bu Çalışma, Kuzey Kıbrıs'taki eczane eczacılarının kanser sağlığını geliştirme hizmetlerindeki algılarını, bilgilerini ve algılanan engelleri değerlendirmeyi amaçlamaktadır.

#### Bölüm 1: Katılımcıların, demografik bilgiler bölümü

##### 1. Cinsiyetiniz?

- Erkek
- Kadın

##### 2. Yaşınız?

- <30 yaş
- 30-39 yaş
- 40-50 yaş
- >50 yaş

##### 3. Uyuşgunuz?

Kuzey Kıbrıs Türk Cumhuriyeti

Türkiye Cumhuriyeti

Diğerleri (Belirtiniz.....)

##### 4. Eğitim Durumunuz?

- Degree Lisans Derecesi (BPharm)
- Yüksek Lisans Derecesi (MSc veya Mpharm)
- Doktora PhD
- Diğer (Belirtiniz.....)

**5. Deneyiminiz?**

- <5 yıl.
- 6-10 yıl
- 11-15 yıl
- 16-20 yıl
- >20 yıl

**6. Eğitim aldığınız yer?**

- Türkiye
- Kuzey Kıbrıs
- Avrupa
- Amerika
- Diğer (Belirtiniz.....)

**7. Hafta da ortalama kaç saat çalışıyorsunuz?**

1. <20 saat
2. 20-39 saat
3. 40-59 saat
4. 60-79 saat
5. >80 saat

**8. Eczacılık eğitimi aldığınız dönemde onkoloji eczacılığı eğitimi aldınız mı?**

- Evet
- Hayır

**9. Aileniz de kanser öyküsü var mı?**

- Evet
- Hayır



**Bölüm 2: Katılımcıların, Kanser'in belirtileri ve semptomları hakkında bilgi değerlendirme bölümü**

**1. Kanser, hücrelerin olağandışı veya kontrolsüz bir şekilde bölünmesine denir.**

A. Evet      B. Hayır      C. Bilmiyorum

**2. Kanser, hayatı tehdit eden bir hastalık değildir.**

A. Evet      B. Hayır      C. Bilmiyorum

**3. Kanser için en yaygın olarak kullanılan tedavi yöntemleri; Cerrahi, Kemoterapi ve Radyasyon tedavisidir.**

A. Evet      B. Hayır      C. Bilmiyorum

**4. Bağırsak veya mesane alışkanlıklarındaki değişiklik, kanserin belirtileri arasındadır**

A. Evet      B. Hayır      C. Bilmiyorum

**5. Hazımsızlık veya yutkunma zorluğu, kanserin belirtileri arasındadır.**

A. Evet      B. Hayır      C. Bilmiyorum

**6. Sigara Kullanımı kanseri tetiklemektedir.**

A. Evet      B. Hayır      C. Bilmiyorum

**7. Aşırı kilo almak ve obezite durumu kanseri tetiklemektedir.**

A. Evet      B. Hayır      C. Bilmiyorum

### **Bölüm 3: Katılımcıların, kanser sağlığının teşviki ile ilgili algı değerlendirme bölümü**

**1. Eczacılar, kanser sağlığının geliştirilmesine katkı koymalıdır.**

A. Evet Katılıyorum      B. Hayır Katılmıyorum      C. Bilmiyorum

**2. Kanser sağlığının teşviki ve geliştirilmesinin günlük pratiğe entegre edilmesi gerekmektedir.**

A. Evet Katılıyorum      B. Hayır Katılmıyorum      C. Bilmiyorum

**3. Kanser danışmanlığı sağlamak eczacının sorumluluğundadır ve bu benim profesyonel durumumu iyileştirebilir.**

A.Evet Katılıyorum      B. Hayır Katılmıyorum      C. Bilmiyorum

**4. Eczaneler de kanser eğitim materyallerinin dağıtılması önemlidir.**

A. Evet Katılıyorum      B. Hayır Katılmıyorum      C. Bilmiyorum

**5. Eczacılar, hastaları kanser tarama ve tespit uygulamalarını benimsemede etkileyebilirler.**

A. Evet Katılıyorum      B. Hayır Katılmıyorum      C. Bilmiyorum

**6. Eczacılar, diğer sağlık uzmanlarını eczanede kanser eğitimi vermeye davet etmelidir.**

A. Evet Katılıyorum      B. Hayır Katılmıyorum      C. Bilmiyorum

**7. Hastalar, kanser taraması ve erken teşhisi hakkında eczacılardan danışmanlık talep edebilirler.**

A. Evet Katılıyorum      B. Hayır Katılmıyorum      C. Bilmiyorum

**8. Hastalar, eczacının kanser konusunda danışmanlık hizmeti vermelerini takdir edebilirler.**

A. Evet Katılıyorum      B. Hayır Katılmıyorum      C. Bilmiyorum

**Bölüm 4: Eczacılar tarafından kanser tespiti ve önlenmesindeki engellerin değerlendirme bölümü**

**1. Kanser eğitim materyallerinin eksikliği**

A. Evet      B. Hayır      C. bilmiyorum

**2. Onkoloji eczacılığına yönelik ilgi eksikliği**

A. Evet      B. Hayır      C. bilmiyorum

**3. Onkoloji alanında yeterli bilgiye sahip olmama**

A. Evet      B. Hayır      C. bilmiyorum

**4. Motivasyon eksikliği**

A. Evet      B. Hayır      C. bilmiyorum

**5. Teşvik eksikliği (danışmanlık ücretleri)**

A. Evet      B. Hayır      C. bilmiyorum

**6. Zaman eksikliği**

A. Evet      B. Hayır      C. bilmiyorum

**7. Hastalar, eczacıların meme kanseri sağlığına yönelik destekleyici rolünü takdir etmemesi**

A. Evet      B. Hayır      C. bilmiyorum

# **Cancer Health Promotion in Northern Cyprus: Research on Knowledge, Perception and Barriers of Community Pharmacists**

This Study aims to evaluate the perceptions, knowledge and perceived barriers of community pharmacists in North Cyprus in cancer health promotion services.

## Questionnaire for the Community Pharmacist

### **Section 1: Demographics**

#### **1. Age**

- <30
- 30-39
- 40-50
- >50

#### **2. Gender**

- Male
- Female

#### **3. Nationality**

- Cyprus
- Turkey
- Others (Specify)

#### **4. Highest Pharmacy Degree**

- Bachelor Degree (BPharm)

- Master's Degree (MSc or Mpharm)
- PhD
- Others (Specify)

**5. Years of experience**

- <5.
- 6-10
- 11-15
- 16-20
- >20

**6. Country of education**

- Turkey
- Cyprus
- Europe
- USA
- Others (Specify)

**7. Average number of working hours per week**

- <20
- 20-39
- 40-59
- 60-79
- >80

**8. Did you receive oncology education during pharmacy program?**

- Yes  No

**9. Family history of cancer**

- Yes  No

### **Section 2: Knowledge**

#### **Knowledge of Cancer with its sign and symptoms among the Community Pharmacist**

**1. Cancer is when abnormal cells divide in an abnormal or uncontrolled way**

- Yes  No  Don't Know

**2. Cancer is not a life-threatening disease**

- Yes  No  Don't Know

**3. The most common treatments for cancer are surgery, chemotherapy and radiation**

- Yes  No  Don't know

**4. Change in bowel or bladder habits is a warning sign or symptom of cancer**

- Yes  No  Don't Know

**5. Indigestion or difficulty in swallowing is a warning sign or symptom of cancer**

- Yes  No  Don't Know

**6. Tobacco Smoking**

- Yes  No  Don't Know

**7. Overweight and obesity**

- Yes  No  Don't Know

### Section 3: Perception

#### Perception of the participants regarding cancer health promotion

1. **Pharmacists should be involved in cancer health promotion**

Yes  No  Not sure

2. **Integrating cancer health promotion into daily practice is important**

Yes  No  Not sure

3. **It is pharmacist's responsibility to provide cancer counselling and this can improve my professional status.**

Yes  No  Not sure

4. **Distributing cancer education materials is important in pharmacy.**

Yes  No  Not sure

5. **Pharmacist can influence patients to adopt cancer screening and detection practices.**

Yes  No  Not sure

6. **Pharmacists should invite other healthcare professionals to provide cancer education in the pharmacy.**

Yes  No  Not sure

7. **Patient demand to get counselling on cancer screening and early detection from the pharmacist.**

Yes  No  Not sure

8. **Patient appreciate pharmacist's effort to counsel them about cancer.**

Yes  No  Not sure

## Section 4: Barriers

### Barriers to cancer detection and prevention by community pharmacists

**1. Lack of cancer education materials**

Yes  No  Don't know

**2. Lack of interest in oncology**

Yes  No  Don't know

**3. Lack of adequate knowledge**

Yes  No  Don't know

**4. Lack of motivation**

Yes  No  Don't know

**5. Lack of incentives (consulting fees)**

Yes  No  Don't know

**6. Lack of time**

Yes  No  Don't Know

**7. Patients do not appreciate the pharmacist 's role as a breast cancer health promoter**

Yes  No  Don't know



## 2. CV

Name	DUBEM HENRY	Surname	BOSAH
Place of birth	PORT- HARCOURT	Date of birth	21-04-1996
Nationality	NIGERIAN	Tel	+905338390469
Email	<a href="mailto:dbosah@yahoo.com">dbosah@yahoo.com</a>		

### Education Level

	Name of the Institution where he/she was graduated	Graduation year
Postgraduate/ Specialization	–	–
Masters	NEU (CLINICAL PHARMACY)	2021
Undergraduate	NEU (M. PHARM) GAU (PRE-MED)	2019 2015
High school	HALLEL COLLEGE	2013

### Job experience

Duty	Institution	Duration (Year-Year)
ADMINISTRATIVE ASSISTANT	BEREAN OILFIELD AND ENERGY SERVICES, Port Harcourt. Rivers State.	2011- 2012
REGIONAL ADMISSIONS OFFICER	NEAR EAST UNIVERSITY, INTERNATIONAL STUDENTS' OFFICE, AFRICA	2019- 2019

Foreign Language	Reading Comprehension	Speaking	Writing
English	VERY GOOD	VERY GOOD	VERY GOOD
Turkish	GOOD	GOOD	GOOD

Foreign Language Examination Grade								
YDS	ÜDS	IELTS	TOEFL IBT	TOEFL PBT	TOEFL CBT	FCE	CAE	CPE
		7.5						

	Math	Equally weighted	Non-math
ALES Grade			
Other grade			

### Computer Knowledge

Program	Use proficiency
Microsoft office	VERY GOOD
SPSS	GOOD