National Health Policy & The Non Communicable diseases: A Case Study of Pakistan

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List of acronyms:

CRD- Chronic Respiratory Diseases

CVD- Cardiovascular Disease

COPD-Chronic obstructive pulmonary disease

DRAP-Drug Regulatory Authority of Pakistan

NCD- Non Communicable Diseases

NHSP-National health survey of Pakistan

NPCDS-National program for the prevention and control of diabetes, cardiovascular diseases and strokes

NPHW-non-physician health workers

NPP-National promotion in Pakistan

TB- Tuberculosis

WHO- World Health Organization

Abstract:

Non Communicable diseases (NCDs) are causing a big blow in Pakistan as according to World Health Organization (WHO), 25% deaths are caused by non-communicable diseases. Non Communicable diseases include respiratory diseases, cardiovascular diseases, diabetes and all types of cancer but in some cases it includes mental illness as well. This study includes a comparative study of non-communicable diseases in rural and urban areas and also what are the policies made by the Ministry of Health in order to reduce the effect of these diseases. This study focuses on the impacts of lifestyles on the risk factors of NCDs that how lifestyle is affecting the increase rate on NCDs. This study also explains the role of supply chain management that how supply chain is working for the NCDs in Pakistan. Drug authority is also being involved in knowing the effects of the NCDs within the country.

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Introduction:

In Pakistan, many studies which were previously conducted, mostly focused on the communicable diseases. There is increase in Non-communicable diseases but less attention is given to these diseases, especially in Pakistan. We made an attempt to work on this topic. The topic of our study is "Does the lifestyle of people affect the rise of NCDs?" By looking at the legal perspective, most of the policies are made focuses the communicable diseases. According to the existing literature on the topic asserts, there are almost 40% of the annual deaths because of NCDs. Most of the deaths have been the result of lack of proper treatment and physical activities, also considering the fact of unhealthy diet and exposure towards smoking. There have been some efforts put in by the World Health Organization (WHO) focusing on the reduction of the risk factors in early 2000s. National Action plan (NAP) with the public-private partnership with Control and health promotion in Pakistan, which focused on the policy measures for expansion of the behavioral change, introduced many road safety measures to abstain road traffic crashes. NAP also included control of cancer through NCD prevention structure by specially focusing on the control of tobacco usage. As the tobacco is considered as the necessary source of raising revenue. Which in Pakistan, resulted as a barrier in tobacco control measures. Although there have been no recent actions taken against the non-communicable diseases. A major part of our literature review came from work published by the book "choked pipes", written by Sania Nishtar.

The latter part of our research activities involves interviews, including incorporating diverse perspectives including both minorities and majorities of Pakistan. Authentic opinion was selected. It will help us to understand the background, the nature of the problem, the purpose of the research, especially in a country where there is no action is taken against since 2004.

The main problem lies within the sedentary lifestyle and lack of policy implementation. Scarce attempts have been made to address the issue on the implementation of the policies and improving sedentary lifestyle. This study focus on the lifestyle of humans, whether it has any role in the rise of the NCDs or not.

The methodology employed in this study is the combination of both qualitative and quantitative research. This paper consists of Research methodology, Research problem, quantitative and qualitative analysis (software NVIVO and SPSS were used for the analysis), conclusions and recommendations.

1) Motivation/Problem Statement

The motivation behind interviewing these people is to analyses the causes and effects of NCDs. We want to explore the reasons "why NCD rate is increasing in Pakistan and elsewhere?" "Does the lifestyle of people has an effect on NCDs, if so how?" other than that we wanted to know whether people from Rural areas are more prone to these diseases or people from Urban areas and whether financial conditions has an impact on NCD rate or not. We want to back-up our survey analyses using the experiences of doctors and these patients.

1.1 Theoretical, Legal and Policy Gaps:

We have identified policy gaps wherein both the federal and state governments must focus to combat NCDs. How can we bridge these gaps through learning about the health systems of developed countries?

Contribution in the field:

These interviews assists us in making specific policies related to non-communicable diseases with specific goals rather than vague objectives and policies that we have in our current National Action Plan (NAP) on non-communicable diseases such as providing awareness to citizens using mass media, making a health database which tells us about the statistics so that we can make better health policies using these statistics and doing urban planning in such a way that increases physical activity and enhances the environment.

Literature Review:

Non-communicable diseases are a diverse group of chronic diseases that are not communicable, this means you cannot catch these diseases from another person (Physiopedia, n.d.). They are defined as diseases of long duration; generally slow progression and they are the major cause of adult mortality and morbidity in the whole world (World Health Organization, 2018). These diseases are the result of a combination of genetic, physiological, environmental and behavioral factors.

The Four main dominant NCDs are:

- Cancer
- Cardiovascular Diseases
- Chronic respiratory diseases
- Diabetes

Who is at risk of such diseases?

People of all age groups, regions and countries are affected by NCDs. These conditions are often associated with older age groups, but evidence shows that 15 Million of all deaths attributed to NCDs occur between the ages of 30 and 69 years (WHO, 2018).Of these "premature" deaths, over 80% are estimated to occur in low- and middle-income countries. Children, adults and the elderly are all vulnerable to the risk factors contributing to NCDs, whether from unhealthy diets, physical inactivity, and exposure to tobacco smoke or the harmful use of alcohol.

These diseases are driven by forces that include rapid unplanned urbanization, globalization of unhealthy lifestyles and population ageing. Unhealthy diets and a lack of physical activity may show up in people as raised blood pressure, increased blood glucose, elevated blood lipids and obesity. These are called metabolic risk factors that can lead to cardiovascular disease, the leading NCD in terms of premature deaths.

Risk factors: Definition

"An aspect of personal behavior or lifestyle, an environmental exposure, or a hereditary characteristic that is associated with an increase in the occurrence of a particular disease, injury, or other health condition."

Modifiable Risk Factor is a behavioral risk factor that can be reduced or controlled by intervention, thereby reducing the probability of disease.

World Health Organization has prioritized the following four modifiable risk factors:

i. Physical inactivity,
ii. Tobacco use,
iii. Alcohol use,
iv. Unhealthy diets (increased fat and sodium, with low fruit and vegetable intake).

Non-Modifiable Risk Factor is a risk factor that cannot be reduced or controlled by intervention; for example: Age, Gender, Race and Family history (genetics)

Metabolic Risk Factors

"Metabolic" refers to the biochemical processes involved in the body's normal functioning. Behaviors (modifiable risk factors) can lead to metabolic/physiologic changes.

Following are four World Health Organization's prioritized metabolic risk factors:

i. Raised blood pressure

ii. Raised total cholesterol

iii. Elevated glucose

iv. Overweight and obesity

Why Risk Factors?

Surveillance for non-communicable disease can be difficult because of:

- Lag time between exposure and health condition.
- More than one exposure for a health condition.
- Exposure linked to more than one health condition.

Interventions that target risk factors are needed to prevent disease.

Cancer: Definition

- Generic term for a large group of diseases that can affect any part of the body. (Shodhganga, 2018)

- "Rapid creation of abnormal cells that grow beyond their usual boundaries, and which can then invade adjoining parts of the body and spread to other organs." (Manaf, Ismail, & Cecilia, 2017)
- 70% of all cancer deaths occur in low- and middle- income countries. (WHO, 2018)
- Deaths from cancer are estimated to reach 13.1 million by 2030. (American Cancer Society, 2018)
- About 30% of cancers are attributable to behavior. (Akushevich, et al., 2011)

Cardiovascular Disease: Definition

Cardiovascular disease (CVD) is a group of disorders of the heart and blood vessels, and may include: Coronary heart disease, Disease of the blood vessels supplying the heart muscle, cerebrovascular disease (Stroke), Disease of the blood vessels supplying the brain, Peripheral arterial disease, Disease of blood vessels supplying the arms and legs, Congenital heart disease and malformations of heart structure existing at birth

CVDs are the number one cause of death globally.

- Over 80% CVD deaths occur in low- and middle- income countries. (AD, J, SB, & NK, 2015)
- By 2030, almost 25 million people will die from CVDs. (WHO, 2018)

Cardiovascular Disease: Risk Factors

Major modifiable risk factors

- High blood pressure

- Abnormal blood lipids
- Tobacco use
- Physical inactivity
- Obesity
- Unhealthy diet (salt)
- Diabetes

Other modifiable risk factors

- Low socioeconomic status
- Mental ill health (depression)
- Psychosocial stress
- Heavy alcohol use.
- Use of certain medication
- Lipoprotein

CHRONIC RESPIRATORY DISEASES: (DEFINITION)

Chronic respiratory diseases (CRDs) are diseases of the airways and other structures of the lung. Some of the most common are chronic obstructive pulmonary disease (COPD), asthma, occupational lung diseases and pulmonary hypertension. (WHO, 2018)

- 65 million people worldwide have moderate to severe COPD. (Martin, 2017)
- Almost 90% of COPD deaths occur in low- and middle-income countries. (WHO, 2018)

Diabetes: Definition

- Diabetes is a disorder of metabolism; the way the body uses digested food for growth and energy. (A NIDDK Overview of Diabetes, 2018)
- There are 4 types: Type 1, Type 2, Gestational, and Pre-Diabetes (Impaired Glucose Tolerance). (Tidy, 2017)
- Type 2 is caused by modifiable risk factors and is the most common worldwide.
- 90% of all adult diabetes cases are Type 2.
- 347 million people worldwide have diabetes. (WHO, 2018)
- More than 80% of diabetes deaths occur in low- and middle-income countries. (WHO, 2018)
- Healthy diet, regular physical activity, maintaining a normal body weight and avoiding tobacco use can prevent or delay the onset of type 2 diabetes. (Schulze & Hu, 2005)

Diabetes: Risk Factors

Major modifiable Risk Factors

- Unhealthy diets
- Physical Inactivity
- Obesity or Overweight
- High Blood Pressure
- High Cholesterol

Other Modifiable Risk Factors

- Low socioeconomic status
- Heavy alcohol use
- Psychological stress
- High consumption of sugar
- sweetened beverages
- Low consumption of fiber

Non-modifiable Risk Factors

- Increased age
- Family history/genetics
- Race
- Distribution of fat
- Low birth weight
- Presence of autoantibodies

World Health Organization identifies Non-Communicable diseases as "Group II Diseases," a category that aggregates the following conditions/causes of death:

- Malignant neoplasms, other neoplasms
- Diabetes mellitus
- Endocrine disorders
- Neuropsychiatric conditions

- Sense organ diseases
- Cardiovascular diseases
- Respiratory diseases (e.g. COPD, asthma, other)
- Digestive diseases
- Genitourinary diseases
- Skin diseases
- Musculoskeletal diseases (e.g. rheumatoid arthritis)
- Congenital anomalies (e.g. cleft palate, down syndrome)
- Oral conditions (e.g. dental caries)

These are distinguished from Group I diseases (communicable, maternal, perinatal and nutritional conditions) and Group III diseases (unintentional and intentional injuries).

History: NCD on global scale and NCD in Pakistan pre 2000:

Global scale challenges regarding NCD:

Globally challenges faced regarding non-communicable diseases are: Need professional training reforms, health system modifications, need evidence base evaluation, how to put ideas (e.g. prevent strokes, heart attacks) in practice on large scale with low resources. There is the need of interdisciplinary research to determine what are the possible risks and their outcomes and how to overcome them (Daar, 2007). These factors are needed to be more focused towards the equality,

equity, role and effects of gender and culture and also the access to health care centers. It is said that issues related towards ethics, culture, society, and lack of sustainability needed to be addressed before the emerging interferences and IT can be engaged up by communities, societies and integrated into public-health care systems. Data needed to be addressed and also the research sources, these are the essential things to begin the research. These challenges and duties can be applied in every country. Because the local priorities are similar everywhere. (Daar, 2007)

The Global Burden of Cancer:

As we all know that cancer poses a major threat to the health of the public globally. It is estimated that rate of this threat started from early 1990s in most of the countries. This increasing trend will be effecting the developing nations. One reason of this is the treatment of cancer is highly expensive. More than 28 cancer groups covering cancer incidence, mortality, and disability for 188 countries starting from 1990 to 2013 for both sexes and different age groups. (Onco, 2015)

Tackling chronic diseases:

In Iran (1999) healthy heart program were launched which focused on the physical activities, help people to quit smoking and to improve their diet. But the outcome data is yet not available. (Nishtar, 2006). Mostly Muslims were the one who were in advantage. For example, the program hajj in 2002 it was made (non-smoking) or tobacco free. The religious instruction suggests that tobacco and smoking is "objectionable," this was focused by many religious countries. If more than 7 countries took step against these recognized diseases than this partnership would further get influenced by many other countries and it would have worked towards the healthy in environment in 1998.

Number of deaths, estimates and future projections:

The number of deaths due to NCDs is increasing all over the world especially in developing countries including Pakistan. This can have worse impact on the health sector and the economy of Pakistan. This can further results in increasing poverty and lowering the living standards of people due to more health and medication expenses. This increase is due to many factors. Most important of which is due to the change in eating habits and life style. Pakistan is among the top 10 world nations for high numbers of people with diabetes. 1 in every 3 Pakistani aged more than 45 years have hypertension.

According to WHO, the biggest challenge while combating NCDs globally is that Developing countries have difficulties in moving from commitment to action due to a lack of access to technical expertise and resources. Other problems are that the occurrence of non-communicable diseases is hidden, misunderstood and underreported. NCDs cause more than 14 million premature deaths between the ages of 30 and 70 each year. Most premature deaths from NCDs can be prevented by governments taking a leading role and responsibility. (Who.int, 2013)

Likewise, Atun and his fellows also provided some global statistics including Pakistan. According to them, in 1990, 26·6 million died worldwide from NCDs. And is increasing in 2010 to 34·5 as the leading cause of death in all regions apart from sub-Saharan Africa and South Asia. The global burden of NCDs has increased from 43% in 1990, to 54% of the total number of disability-adjusted life-years in 2010.The global economic burden of NCDs is estimated at US$6·3 trillion in 2010, rising to $13 trillion in 2030. A 10% rise in NCDs leads to a 0·5% decrease in gross domestic product. In Pakistan NCD and injuries accounted for 52% of crude deaths and 66% of age-standardized deaths in 2005 (Atun, 2013). They further state that NCDs became part of national health planning in its 1997 policy.

Moreover, the frequency of diabetes globally for all age groups was estimated to be 2.8% in 2000 and is predicted to increase to 4.4% in 2030. The total number of diabetic patients are approximately 171 million in 2000 and will increase to 366 million in 2030. As it is projected urban populations will be increased to 2 times within 30 years, from 2000-2030.Diabetes were found more on females than males. (Sicree, 2004). These finding indicates that even of the diabetes remain constant, diabetes will be keep on increasing.

NCDs in Pakistan:

According to a survey by National health survey of Pakistan (NHSP) 1990-4, the prevalence of hypertension in adults was estimated to be 23% in urban and 18% and rural areas. The International Diabetes Federation gives an estimate of 12% prevalence in Pakistan, with a total of 8.8 million people with diabetes in 2000. According to their statistics, Pakistan is expected to have about 14.5 million people with diabetes by the year 2025. (Atun, 2013).

In 1996 a report was created by NHSP. It was focused on the Punjab's rural and urban areas. The report the diabetic patients in rural and urban man and women. It was reported that almost 24% urban and 13% rural men had diabetes. While on the other hand it was found that 24% rural women and 13% rural men were diabetic. (Qureshi, 2014). It means that diabetes was more common among women in rural areas.

Moreover, overall occurrence of hypertension was 17.9%. Nearly 14% rural and 24% urban men were found overweight, again these figures were high in women (Qureshi D. H., 2014). Which indicates that women tends to be more victimize by these diseases.

In addition to that, another report in 1996 also describes that there was 53% of abdominal obesity, 40% pre diabetic patients, 18% hypertension and nearly 8% of the diabetes in general population

of Sindh. (Munir, 2014). This trend of diseases is increasing day by day which also includes the tobacco consumption. Unhealthy diet, lack of physical activity leads to overweight and obesity. Due to these increasing factors Pakistan has become a country with high NCD risk. There is poor implementation of laws for anti-smoking and poor system for health care activities. These above mentioned facts are the key contributors to disease prevalence. (Rafique, 2014)

Current scenario of Non Communicable diseases in Pakistan:

Pakistan is the sixth most populous country in the world and due to this reason Pakistan is facing a lot of problems regarding health. The Government is not taking any initiative in providing better health and education facilities to the people of Pakistan. The people are mostly suffering from the Non communicable diseases because they are illiterate and they are not aware of the consequences of these diseases. Most of the areas in Pakistan do not have proper infrastructure and better health facilities, due to this reason many people are not able to have proper health facilities and are dying because of the severe health problems. The terrorist attacks and other threats have affected the brains of the people and also have caused a big blow to the economy due to which most of the individuals are suffering from mental disorders and hypertension. There is a trend of fake medicines in Pakistan due to which the people are not getting better and this has increases the death rate within the country. Pakistan is among the top 10 world nations for high numbers of people with diabetes. 1 in every 3 Pakistani aged more than 45 years have hypertension. According to a survey by NHSP 1990-4, the prevalence of hypertension in adults was estimated to be 23% and 18% in urban and rural areas respectively. The International Diabetes Federation gives an estimate of 12% prevalence in Pakistan, with a total of 8.8 million people with diabetes in 2000. Pakistan is expected to have about 14.5 million people with diabetes by the year 2025. As Pakistani Authors had explained in their articles: (Jafar, Haaland et al. 2013) NCDs including cancers,

mental disorders, diabetes, cardiovascular diseases and different types of injuries have become the major cause of mortality and morbidity in Pakistan. The most important factors which cause the cardiovascular diseases, cancers and respiratory diseases are the use of tobacco and hypertension. Pakistan is the sixth largest country with people having diabetes, every fourth adult is overweight and obese, and there are no proper laws for smoking or road safety and the cigarettes are usually sell at a very cheap price in Pakistan. Pakistan has a mixed health system (public-private partnership) due to which it is facing a lot of problems in dealing with the health issues. In the last few years there were extreme cases of violence and terrorism which is affecting the economy of the country and it is in return affecting the middle and low income people of Pakistan. Due to this reason many of the workers are losing their jobs and most of the graduated individuals are not able to get job for their qualification and this is affecting highly upon their mental health. This is the reason of socio political instability and regional conflict with the country. There will be 3.87 million premature deaths by 2025 because of the non-communicable diseases such as cardiovascular diseases, chronic respiratory diseases and cancers and if Pakistan wants to have a better economy then they have to focus on curing the non-communicable diseases because in the longer run these NCDs will affect the economy in future and also this will reduce the death rate by 20% by 2025.

(Khan, Ahmed et al. 2017) Shangla is a beautiful place of KPK but it is facing a lot of health issues. The people living in this area are not getting proper health facilities and are usually poor who cannot afford the health care facilities. Most of the people are dying because of the Non-communicable diseases as they are not getting proper medication and due to this reason the death rate in Shangla is more and is causing a big blow to the economy of Pakistan. The people are suffering from thirteen different diseases and the most prevalent is the disease of urinary tract

infection which is 2.342%, hypertension 6.09%, peptic ulcer disease 0.523%, Diabetic Mellitus 0.195%, Asthma 0.279%, Depression 0.055%. The scenario is so worst that most of the people are suffering from these type of diseases and the Government is not doing anything for the providing the basic health facilities among the people due to which the death rate is quite high in this area. Another reason of increase in diseases in this area is that the people are not well educated and do not know the real meaning of living a healthy life.

(Wasay, Khan et al. 2014). The NCDs can be reduced if the people are provided with proper awareness of usage of exercise, tobacco cessation, low salt intake and pharmacotherapy. The current focus of policy and planning in Pakistan is disease oriented which has to be health oriented with more focus on the primary care. It is proposed that Provincial Commission for prevention and control of Non communicable diseases be established in order to deal with the health issues being caused by the non-communicable diseases both in public and private sector. Primary prevention program with least cost and most benefit should be prioritized in both national and provincial resource allocation. There is no local government in Pakistan right now and all the burden of solving the problems is on the shoulders of Federal and Provincial Government and it is time that they should think about the people living in villages where there is a need of better infrastructure and better health facilities.

Current Scenarios of Non Communicable Diseases Globally:

Non Communicable diseases is an issue which is causing problem globally, as well and different authors have explained about the issues different countries are facing. Like (Yang, et al., 2008) explained non communicable diseases in China. China is a developed nation and its economy is emerging at a high speed but still it is facing a lot of health issues. Chinese infectious diseases are being converted into chronic diseases from the past few years. This is due to a reason that there is

an increase in physical inactivity, changing of diets and there is an increase in male smokers. As a result of this the morbidity and mortality has been preventable and the cost of health care has been increased. In China they already have 177 million adults with hypertension, 303 million adults smoke and this makes China the third largest country with more smokers, 530 million people in China are exposed to secondhand smoking. The prevalence of overweight people and obesity is increasing in China because of the physical inactivity and change of diet of people. This is a big challenge for Chinese Government and there is a quick need of preventing these chronic diseases in order to increase the life expectancy of the people living in China.

(Mishra & Khurrana, 2011) South Asians are at higher risk than White Caucasians for the development of obesity and obesity-related non-communicable diseases, including insulin resistance, the metabolic syndrome, type 2 diabetes mellitus and coronary heart disease. Differences in determinants and associated factors for OR-NCDs between South Asians and White Caucasians include body phenotype, biochemical parameters, pro coagulant state and endothelial dysfunction. Finally, differences in response to pharmacological agents may exist between South Asians and White Caucasians, although these have been inadequately studied. Finally, lower cut-offs of obesity and abdominal obesity for South Asians are expected to help physicians in better and more effective prevention of OR-NCDs.

(Ramachandran & Snehalatha, 2008) India has a large population and has an issue of poverty and it is experiencing a rapid socioeconomic progress and urbanization. Diabetes is the most common disease occurring worldwide. Most of the common type which occurs is the type 2 diabetes which is the most severe one. India has 41 million cases of diabetes and this is going to be increased by 70 million by 2025. The rapid increase of diabetes among the people in India is because of the rapid increase in urbanization which resulted in environmental and lifestyle changes. India is the

second most populous country with a diversity in caste, race, religion, color, socioeconomic status and food habits. There is no proper population based data in India due to which it is a burden for the Indian Government to deal with this issue of Non communicable diseases and this is converting the infectious diabetes into the chronic diabetes. The cost of health care and treatment is quite high in India due to which the people are not able to get proper health facilities and due to which the disease is becoming chronic day by day. The average expenditure per patient per person would be a minimum of INR 4500 ($120) and this shows that the estimated cost of diabetes care annually would be approximately 180,000 million rupees. To overcome the problem of diabetes and other non-communicable diseases India Government have launched a National program for the prevention and control of diabetes, cardiovascular diseases and strokes (NPCDS).

(Miranda, Kinra, Casas, Smith, & Ebrahim, 2008) Non-communicable diseases were previously considered to only affect high-income countries. However, they now account for a very large burden in terms of both mortality and morbidity in low- and middle-income countries, although little is known about the impact these diseases have on households in these countries. The organized efforts of societies have resulted in the most remarkable improvements in child and maternal survival, control and eradication of major infectious diseases, an underlying cause of the increase in non-communicable diseases over the last 50 years. Smoking and low fruit and vegetable consumption are significantly higher among lower socioeconomic groups. The magnitude and direction of socioeconomic inequalities showed different patterns across risk factors, sex and country income group. Historically, the adoption of risky health behaviors tends to transition from higher to lower socioeconomic groups as countries grow richer. Lower socioeconomic groups tend to engage in risky health behaviors later in the course of a country's economic development. So this shows that the people living in low income countries will be facing more severe health issues

then the middle income countries as people living in low income countries are illiterate and are facing poverty. Due to poverty the people living in low income countries do not have proper health facilities and cannot cope with the non-communicable diseases.

What is the policy agenda for the prevention and control of NCDs in Pakistan?

Tending to NCDs in a developing nation, for example, Pakistan is a multidimensional test with implications at various levels. Campaigning for proper ventures and strategies to encourage the incorporation of the aversion of NCDs as a major aspect of the global development and wellbeing plan is a basic part of the issue. These observations force to the plan of a three-way partnership between the Ministry of Health, Government of Pakistan, the World Health Organization, Pakistan office, and the NGO Heart file. The National Action Plan for Prevention and Control of Non-Communicable Diseases and Health Promotion in Pakistan has been created with inputs produced through a broad procedure within the different domains of NCDs and is reflective of wide based consensus. The procedure has been designed to overcome the tendency to depend on a disjointed set of small scale ventures, calculating coordination at four levels: gathering NCDs so that these can be focused through an arrangement of actions, coordinating and harmonizing actions, integrating actions with existing public health system and joining contemporary evidence based ideas into this approach. The Action Plan delivers an Integrated Framework for Action (IFA). The IFA has been created as a coordinated way to deal with tending to the multidisciplinary range of issues within a prevention, control and health promotion framework across the wide range of NCDs. It is designed to affect a set of indicators through the combination of a range of actions coupled with thorough formative research. The IFA includes two sets of strategies, those which are common to NCDs and have been consolidated and others which are specific to NCDs.

Behavioral change communication, reorientation of health services and monitoring and surveillance fall in the first set of strategies while the second covers legislative and regulatory issues. The Action Plan attempts to horizontally reorient health services to a more deterrent orientation around NCDs through the scaling up of professional capacity and basic infrastructure and by guaranteeing availability and access to specific medications at all levels of health care. Execution of the Action Plan will lead to generation of new data relevant for improving the performance of the health system by cultivating public-private partnerships within evidence based models. The experience won't just allow an analysis of health system models based on shared responsibility regarding accomplishing reasonable health results but will likewise give a comprehension of how to design, manage and fund such exercises later on. (Health, 2004) Improvement and execution of NCD prevention policies in the developing nations is difficult. There has however been an improvement through a key approach in Pakistan by the model of the National Action Plan. The model is evidence based and incorporates an integrated and coordinated way to deal with NCDs. It has been modeled to affect a set of indicators through the mix of a range of actions capitalizing on the strengths of a public private partnership. The ingredients in this general wellbeing procedure are sound; however, there are a few restrictions of this approach. Initially, it should be upheld by a clear, strong and sustained political commitment; Secondly, the successful implementation of this plan requires the setting up of proper infrastructure and public health workforce with adequate capacity with regards to core public health functions. This has implications for the need to build capacity and related framework as a parallel process. The public-private partnership dimension of this plan radiates from within the overall 'development policy framework', which encourages private-segment interest in state activities. In any case it has its own particular difficulties. This experience therefore shows a clear imperative for tending to moral,

methodological, accountability, sustainability and governance issues out in the public private and other multi-stakeholder arrangements. (Nishtar, 2004) The National Action Plan for Non-Communicable Disease Prevention, Control and Health Promotion in Pakistan (NAP-NCD) joins prevention and control of cardiovascular ailments (CVD) as a feature of a comprehensive and integrated non-transferable Disease (NCD) prevention effort. In this program, observation of cardiovascular risk factors is part of an integrated population based NCD surveillance framework. The population approach to CVD prevention is a priority in this program with focus on expansive policy measures and behavioral change communication. The former incorporate revision of the current policy of diet and nutrition to expand its attention on under-nourishment; the development of a physical activity strategy; procedures to confine the generation of, and access to, ghee as a medium for cooking and farming and fiscal strategies that expand the interest for, and make healthy food more available. It features the need to guarantee the accessibility of headache medicine, beta blockers, thiazides, ACE inhibitors, statins and penicillin at all levels of health care. The program indicates out the need lead clinical end-point trials in the local Pakistani setting to characterize cost effective restorative strategies for primary and secondary prevention of CVDs. Emphasis is laid on building capacity of health systems in support of CVD prevention and control and building a coalition or network of organizations to add momentum to CVD prevention and control efforts. (Nishtar S F. A., 2004) The National Action Plan for Non-Communicable Disease Prevention, Control and Health Promotion in Pakistan consolidates prevention of injuries into a far reaching NCD prevention effort. Action areas for preventing RTCs (Road Traffic Crashes) incorporate intervention to improve road safety education, identification and execution of security measures for traffic black spots, authorization of safety belt and helmet laws and the advancement and implementation of highway ordinances. To prevent worksite injuries, a national consensus has

been accomplished to build up a complete strategy and to order and uphold legislation for occupational health and security; to incorporate preventive health in the mandate of organizations managing worksite safety and to study samples of occupational injuries and their determinants with a view to characterizing exact focuses for preventive interventions. NAP-NCD presents a solid defense for the foundation of a National Safety Commission, the advancement of product security guidelines for family utilization, enforcement of legislation on building safety, and efforts to improve injury care to the degree that a tenable, cost effective analysis suggests. Building capacity in the health system for damage prevention and building partnerships for sustainable outcomes in injury prevention have likewise been characterized as priority areas. (Nishtar S M. K., 2004) The National Action Plan for Non-Communicable Diseases Prevention, Control and Health Promotion in Pakistan coordinates prevention and control of cancer with a comprehensive NCD prevention structure with a particular emphasis on tobacco, diet and physical activity as cross-cutting risks. The program organizes on sustainable institutional help for mature cancer registries In order to facilitate cancer observation; prevention of cancers and early detection as a component of an incorporated NCD behavioral change communication strategy and building capacity in the health framework for cancer prevention and control. The program's research agenda likewise incorporates suitable examinations to bridge critical gaps in evidence identifying to fitting and cost effective methodologies for preventing common cancers in Pakistan. To contain introduction to carcinogenic operators in the environment and in worksites, NAP-NCD weights on the straightforward implementation of National Environmental Quality Standards; the institution to take proactive measures to contain potential dangers to cancers in industrial settings; stricter enforcement of labor laws, stringent regulations overseeing chemical handling and the dynamic consolidation of preventive health in the mandate of organizations giving health coverage for

labor force. NAP-NCD weights on the improvement of institutional systems with a regulatory function for cancer control; these incorporate a National Cancer Control Council, with the order to maintain morals and standards and rules on technical matters and a National Occupational Safety and Health Association. (Nishtar S A. A., 2004) The National Action Plan for Non-Communicable Disease Prevention, Control and Health Promotion in Pakistan incorporates prevention and control of diabetes as part of a comprehensive and integrated national non-communicable disease prevention effort. Building on existing data, the diabetes surveillance process has been integrated with a comprehensive population-based NCD surveillance system using waist circumference as a proxy indicator for the risk of diabetes in the short term; however, the surveillance strategy makes a case for future efforts to upgrade surveillance to allow a more comprehensive assessment incorporating biochemical assessments. The program focuses on diabetes prevention by maximizing risk factor control as a common theme across the range of NCDs and lays emphasis on integrating prevention of diabetes and intensified case finding in high-risk groups into health services as part of a comprehensive and sustainable, scientifically valid, culturally appropriate and resource-sensitive Continued Medical Education program for all categories of healthcare providers. Building capacity in the health system and coalitions in support of diabetes prevention has also been regarded as being critical. (Nishtar S. S., 2004) Reliance on revenue generated from tobacco is one of the fundamental barriers to effective tobacco control in Pakistan. As part of NAP-NCD, surveillance of tobacco use has been integrated with a population-based NCD surveillance system. Featuring tobacco prominently as part of an NCD behavioral change strategy and providing wide-ranging information relevant to all aspects of tobacco prevention and control and smoking cessation have been identified as priority area in NAP-NCD. Other priority areas include the gradual phasing out of all types of advertising and eventually a

complete ban on advertising; allocation of resources for policy and operational research around tobacco and building capacity in the health system in support of tobacco control. The adoption of measures to discourage tobacco cultivation and assist with crop diversification; integration of guidance on tobacco use cessation into health services and insuring the availability and access to nicotine replacement therapy are also part of NAP-NCD. (Nishtar S M. Z., 2004) In Pakistan a public-private partnership-led by the NGO Heart file and constituted additionally by the Ministry of Health, Government of Pakistan and the WHO Pakistan office-was launched in April 2003.Mandated with the task of developing and implementing a national strategy for achieving national goals for the prevention and control of non-communicable diseases. The partnership recently released a strategic framework for action-the National Action Plan for the Prevention and Control of Non-Communicable Diseases and Health Promotion in Pakistan-an integrated and concerted approach addressing the multidisciplinary range of issues within a prevention and control framework across a broad range of NCDs. Incorporating both policies and actions and set within a long-term and life course perspective, NAP-NCD calls for an institutional, community and public policy level change factoring integration at four levels: grouping NCDs so that they can be targeted through a set of actions, harmonizing actions, integrating actions with existing public health systems and incorporating contemporary evidence-based concepts with this approach. The NAP-NCD delivers an Integrated Framework for Action, which has been modeled to impact a set of indicators through the combination of range of actions in tandem with rigorous formative research. The partnership is in harmony with national health priorities, complements state initiatives and is optimally integrated with the national health system. The government has harnessed the technical strength of a private sector partner, which in turn is contributing to the country's National Plan within the framework of priorities set by broad-based national consensus;

WHO, on the other hand, is gaining experience in working in a country model in which the private sector can be supported through WHO country resources, which are typically earmarked for public sector initiatives. (S, 2004).

What are the mechanisms of supply chain with respect to NCDs prescriptions in Pakistan?

The menace of NCDs must be addressed through a multi-faceted approach, such that, the effects of their implications are thoroughly reduced. Abegunde states that cost-effective medicines to treat non communicable diseases (NCDs) are available and in mostly low cost generic forms although they remain inaccessible and unaffordable to many who need them especially in low- and middle-income countries where the prevalence of NCDs are increasing. (Abegunde D. , 2012) Considering this, the mechanisms of supply chain of essential medication must be, studied, analyzed and enhanced in order to combat NCDs at the national level. Furthermore, such mechanisms are assessed on the basis provided by Abegunde, whereby, he concludes that important mechanisms for providing sustainable access to NCDs include efficient procurement and distribution of these medicines in countries, establishment or the provision of viable financing options, generic promotion policies and the development and use of evidence based guidelines for the treatment of NCDs. (Abegunde D. , 2012) The importance of combating NCDs through easy and efficient access to medication is stressed. The use of NCD medicines for addressing NCD burden represents a major intervention technology by itself and is a critical component of diagnostic, investigatory, treatment follow-up and monitoring systems. NCD medicines are an essential component of the treatment of cardiovascular diseases, diabetes, chronic respiratory diseases (i.e. chronic obstructive pulmonary disease, asthma), many cancers (including for palliative care), mental and neurological disorders. (Abegunde D. , 2012)

The review of the literature reveals that there is key incompetency in the supply chain mechanism of medicines pertaining to NCDs, which can be categorized into four main areas:

1. Weakness in Health Systems
2. Fragmented and weak supply and distribution systems
3. The challenge of quality NCD medicines to accessibility
4. Challenges from the skills of the pharmaceutical workforce

In Pakistan, the Drug Regulatory Authority of Pakistan, herein referred to as DRAP, is the key player, which performs several functions pertaining to the regulation of pharmaceutical production and distribution. Licensing of the manufacture of therapeutic goods; registration of therapeutic goods; regulation for the advertisement drug specifications and laboratory practices; regulation and allocation of quota of narcotic drugs, psychotropic substances and precursor substances (chemicals) in consultation with Federal Government; regulation for pricing and mechanism for fixation of prices of various therapeutic goods under its ambit; determining standards for biological manufacturing and testing; implementation of internationally recognized standards such as good laboratory practices, current good manufacturing practices, good distribution practices, cold chain management, bioequivalence studies, stability studies, anti-spurious codes, clinical trials, bio similar evaluations, and endorsement and systematic implementation of World Health Organization, International Conference on Harmonization's and Food and Drug Administration guidelines etc. regulation, ·enforcement and monitoring of advertisement rule and ban on false advertisement; manufacturing of active pharmaceutical ingredients in all its forms. (DRAP, 2012) This means DRAP manages and controls several aspects of the supply chain of NCDs medication. Its functions enable can be summarized as follows:

a) *Pharmaceutical Evaluations and Registration*

b) *Drug Licensing*

c) *Quality Assurance and Laboratory testing*

d) *Medical Devices and Medicated Cosmetics*

e) *Biological Drugs*

f) *Controlled Drugs*

g) *Pharmacy*

h) *Services Health wide OTC Products (non-drugs)*

i) *Costing and Pricing*

Another institution that has jurisdiction over the supply chain of NCDs medicines is the Pharmacy Council of Pakistan constituted through the Pharmacy Council Act 2013 performs regulation of manufacture, production, distribution etc.

The functions of PCP concern the following areas:

a) All activities pertaining to hospital pharmacy management including procurement, storage, manufacture, distribution, compounding and dispensing of drugs, patient counseling, drug information and other related functions;

b) Clinical pharmacy;

c) Community pharmacy;

d) Compounding and dispensing of drugs;

e) Drugs control administration;

f) Industrial pharmacy;

g) Pharmacy-economics, pharmacy-epidemiology, pharmacy-genomics;

h) Primary care pharmacy;

i) Supervision and production of drugs;

j) Supervision and quality control of drugs;

k) Supervision of sales and distribution of drugs; and

l) Teaching of pharmacy; (PPCA, 2013)

The National Drug Policy, 1997, promotes the essential drug concept and the use of the National Essential Drug List (NEDL), 2003, for example by mandating all government and semi-government health institutions to conduct bulk procurement in accordance with NEDL. (The Network for Consumer Protection, 2006) However, in actuality, such procurements have been lacking, that is to say, the said health institutions do not maintain stocks of essential medications, including NCDs medicines. Pakistan has medicine pricing and regulation policies in place, the Price Review Committee, a subcommittee of the Drug Registration Boar formed under the Drug Act 1976 sets the maximum wholesale and retail price for each product and the maximum retail price is printed on the individual medicine package. (The Network for Consumer Protection, 2006) A study conducted by The Network for Consumer Protection carried out in 2006, titled, Prices, availability and affordability of medicines in Pakistan, discovered that "Public health facilities had extremely low median availability of generic medicines (3.3%), Innovator brands were more likely to be found in private retail pharmacies than generics (IB 54.2%, LPG 31.3%) innovator brand

(IB) and lowest priced generic equivalent (LPG; generic product with the lowest price at each facility) (The Network for Consumer Protection, 2006) This clearly indicated that Public health facilities show a lacking performance in effectively and efficiently maintaining the supply and distribution of medications including medicines for NCDs. The study further provides facts "adherence to regulated maximum prices was high, however evidence of overpricing was found in several cases" private pharmacy medicines prices included a total cumulative mark-up of 28% for locally produced and 60.5% for imported medicines. (The Network for Consumer Protection, 2006) Reviewing the study makes it certain that intervention is needed to improve medicine access in the public sector, so that the inequality in regard to access to medicines pertaining to NCDs can be reduced. A multitude of actions must be taken to improve availability, acceptability and affordability of economical, and quality medicines in both the public and the private sector.

Medicines to combat Non-Communicable Diseases can be classified into 6 categories according to their targeted disease:

1. Cardiovascular diseases:
2. Diabetes
3. Chronic respiratory diseases
4. Cancers and Palliative care
5. Mental and Neurological disorders
6. Tobacco dependence

1. *Medicines for treating cardiovascular diseases*

Such medications are subjected to prescription; the availability is high but there is little to no public provision for providing them. Furthermore, there is little control practiced by the relevant authorities on their quality and prices.

2. *Medicines for treating diabetes*:

Medicines to address the issue of diabetes are available through private provision, but the prices are high and non-affordable for the poor population. Access to insulin remains poor in many regions of the world due to high prices, exposing patients to risks of serious complication and disease, such as blindness and amputation and death. (RAND, 2011) In Pakistan, diabetes medicines and insulin are readily available however, prices of insulin are high and unaffordable for the poor population and there are no subsidies on it to increase access to them.

3. *Chronic respiratory diseases:*

Medicines for the treatment of chronic respiratory diseases are relatively cheap and readily available, they can be obtained without prescriptions, and however, quality control is fairly inadequate.

4. *Access to medicines for treating cancers, palliative care:*

Of the 7.6 million deaths in 2005 due to cancer, three quarters were from the low- and middle-income countries where access to cytotoxic (chemotherapeutic) drugs and medicines for palliative treatment remains increasingly inaccessible. (RAND, 2011)

i. Chemotherapeutic medicines.

A number of factors are responsible for the poor accessibility to cytotoxic drugs, prices of cytotoxic medicines are mostly unaffordable even as they are being promoted inappropriately. (RAND, 2011) In Pakistan access to such medication is very limited through the public channels contrarily in the private sector these drugs are available. High prices mean that they are quite inaccessible for the poor population.

ii. *Controlled medicines for cancer pain and palliative care.* Moderate to severe levels of pain are often associated with most cancers and this pain can be controlled with opioid analgesics such as morphine, yet many factors contribute to the lack of access to controlled medicines. (RAND, 2011) The distribution of these drugs is strictly regulated, use is subjected to rigid prescription control and prices are also heavily regulated, however, little attention is given to quality control.

5. *Access to medicines for treating mental and neurological disorders.* Although mental and neurological disorders account for a significant proportion (about 14%) of the global burden of disease as mentioned above, only a minority of those suffering from these disorders receive basic treatment. (RAND, 2011) In the specific context of Pakistan, most instances of mental disorders are poorly diagnosed, often too late and sometimes never diagnosed as the patient's guardian resorts to supernatural healers considering mental illness some kind of inexplicable supernatural disease.
   i. Anti-epileptics.

Up to 80% of the 50 million people with epilepsy worldwide can lead normal lives if properly diagnosed and treated. Anti-epileptic medicines are the cost-effective public health

interventions available for treatment of epilepsy. (RAND, 2011) The distribution channels are adequate however obtaining these medicines are subjected to prescription. Prices are regulated but quality control is not properly executed.

ii. Ant depressive medicines.

Depression affects about 121 million people worldwide and can be reliably diagnosed and treated in primary care. (RAND, 2011) In case of Pakistan, overuse and overreliance on anti-depressants is a major issue along with the problem of counterfeits.

6. *Medicines for treating tobacco dependence*

Currently more than 1 billion people, one third of the world's adults, smoke tobacco, unless urgent action is taken, up to 1 billion people could die from smoking tobacco this century, tobacco use is highly addictive and tobacco dependence is widely recognized as a chronic disease. (RAND, 2011) There are two options available to combat tobacco addiction, chewing gums and transdermal patches combined they constitute Nicotine Replacement Therapy. Availability and access to NRT is poor in Pakistan

Four key areas of improvement can be discerned from analyzing the literature so far:

1. *Realizing product improvement beyond the chemical compound.*
2. *Enhancing supply chain efficiency and integrity.*
3. *Achieving gains from regulatory harmonization.*
4. *Improving access to primary care.*

Although high prices at the manufacturing level are not a major factor in limiting access to NCD medicines, high price at the patient's end as a result of high markups along the supply chain are

Bate et al.(2006), for example, claim that "import tariffs, taxes, duties and bureaucratic rules and regulations deny people medicines," point to an EU study on essential medicine for communicable diseases that found that countries with high tariffs and taxes on pharmaceutical products (such as Nigeria, Pakistan, India, and China) were also those with low access. (Bate, Tren, & Urbach, 2006)

Wholesale and retail markups can be considerable; in an analysis of 36 developing countries, Cameron et al. (2009) found wholesale markups of as little as 2 percent (in Pakistan) (Cameron, Ewen, Degnan, Ball, & Liang, 2009) this means that in Pakistan's case, the major incidence of markups are at the retail end, increasing the prices for the patients.

Studies conducted in Nigeria, China, and Pakistan show that a patient's lack of knowledge and low health literacy had a significant negative impact on adherence to medicine regimens. (Busari, 2010) Ineffectiveness of medicinal treatment can traced back to the lack of knowledge resulting in low adherence to medicines.

One study con- ducted in India (Bangalore) and Pakistan (Islamabad) compared the abilities of non-physician health workers (NPHWs) with those of physicians in improving patients' absolute cardiovascular disease risk profile and in providing timely and appropriate referral decisions in high-risk cases, the study found over 80 percent agreement between the NPHWs and physicians; it also found that NPHWs were able to apply the risk management package in a way comparable to that of the physicians. (Abegunde, et al., 2007) This study presents us with essential information for evidence based policy-making, the requirement of a prescription should be removed from certain medicines in order to enhance the access as NPHWs are easily accessible to poor populace as compared to medical practitioners.

Effectiveness of Behavioral Modification Approach

The number of deaths due to NCDs is increasing all over the world especially in developing countries including Pakistan. This increase is due to many factors. Most important of which is due to the change lifestyle of people such as eating unhealthy junk food and physical inactivity. The process of maintaining healthy weight is usually intervened by some risk factors which include unhealthy diets and physical inactivity (Jamison et al., 2006). One has to avoid these risk factors. One effective way to improve diet is providing incentives to the food manufacturers to replace the unhealthy food ingredients with the healthier ones. For example, change the type of fat. Instead of using inexpensive and unhealthy fat, use of healthier one. Ever greater reliance on motor cars continues to reduce opportunities for daily physical activity (Who.int, 2012). The way urban transportation is designed and their policies are other elements for interventions in lifestyle. These interventions can be minimized if people are encouraged to use non-motorized vehicles and persuade them to use the bicycles and increase their physical activity by walking. The global increase of NCDs has been driven by a combination of personal behavior and environmental conditions. These can increase a person's probability of experiencing one or more NCDs or worsen the impact of an existing disease state (Opim.wharton.upenn.edu, 2007). To combat NCDs various approaches are being used one of which is Behavior modification. Making healthy behavior automatic and easy is a key to reducing NCD risk factors (Opim.wharton.upenn.edu, 2007). According Beaglehole and his colleagues, Policies to promote physical activity and the consumption of foods low in saturated and trans fats, salt, and sugar—particularly sugar-sweetened drinks—will lead to wide-ranging health gains, including prevention of overweight (especially in children), cardiovascular disease, and some cancers (Beaglehole et al., 2011). In Europe many manufacturers have reduced Trans fatty acids by changing the methods of the production.

Netherlands have also reduced these trans-fat content in the supply of food from about 6 percent of the energy content to approximately 1 percent in a single decade. While Other easily focused on the changes in food processing which includes salt reduction and fortifying foods with nutrients like vitamin A, vitamin B12, iodine, iron, and folic acid (Jamison et al., 2006).

Behavior modification:

Halper has defined Behavior modification as treatment approach which is focused on changing behavior. According to Halper (2018), this method is based on the work of B.F. Skinner, a well-known psychologist who developed the operant conditioning theory - which suggests that behavior can be modified by consequences and through reinforcement. The major goal of behavior modification is to replace undesirable behaviors with acceptable ones (Elizabeth Halper, 2018). Whereas in other dictionary, it refers to the techniques used to try and decrease or increase a particular type of behavior or reaction. (Study.com, 2018)

The World Economic Forum suggests that the behavioral triggers that are mostly used in behavior modification of NCDs can be loss aversion, framing, availability heuristic, social connections, choice architecture and defaults and others.

Loss Aversion:

In prospect theory, loss aversion refers to the tendency for people to strongly prefer avoiding losses than acquiring gains (Sewell, 2018). According to Willis Towers Watson, Ways to take advantage of loss aversion to improve personal health are positive incentives which can be reframed so that they are granted but can be withdrawn, such as a bonus for adherence to a medical procedure and Price products such as cigarettes and unhealthy food high enough that consumers are discouraged from buying them (Www3.weforum.org, 2017).

Framing:

Framing theory suggests that how something is presented to the audience (called "the frame") influences the choices people make about how to process that information. (Mass Communication Theory, 2018). According to Kelleher and his fellows, Context matters. A disease seems less dreadful when the consequences are expressed as a survival rate rather than a mortality rate, even if the results are equivalent (Kelleher et al., 2016). World Economic Forum suggests that by emphasizing on the ease of healthy behavior compared with many of the other activities that people voluntarily choose can have a positive effect on controlling NCDs (Www3.weforum.org, 2017).

Availability Heuristic:

Heuristic is involving or serving as an aid to learning, discovery, or problem-solving by experimental and especially trial-and-error methods (Merriam-webster.com, 2018). People respond to what is most immediate and most familiar to their everyday experiences. Learning that a quarter of a million people have died in a natural disaster is less likely to motivate charitable giving than a heart-warming description of a child who needs surgery for a cleft palate (Www3.weforum.org, 2017). Willis Towers Watson suggests that by highlighting easy-to-remember "that-could-happen-to-me" facts can have a huge impact on combating NCDs through behavioral modification. He exemplified this by stating, instead of saying, "Smoking accounts for 30% of all cancer deaths", tell a smoker, "Smoking is associated with 15 different kinds of cancer and your risk of lung cancer is 23 times higher if you smoke" (Www3.weforum.org, 2017).

Social Norms:

Social norms are pattern of behavior in a particular group, community, or culture, accepted as normal and to which an individual is accepted to conform (BusinessDictionary.com, 2018) or it can be defined as being influenced by our family and friends in what we are doing.

World Economic Forum suggests in Human-Centric Health that Risk factors for NCDs often travel in social circles. Those who are in any close relationship with smokers are more expected to smoke (Www3.weforum.org, 2017). Research indicates that new incidence of obesity correlates highly with social network membership and appears to have an epidemiological pattern similar to viral to infections (Christakis et al., 2007).

Choice architecture:

It means presenting options to maximize the chance that people will make the optimal decision (Www3.weforum.org, 2017). The Author of Human-Centric Health: Behavior Change and the Prevention of Non- Communicable Diseases suggests that Ways to recognize choice architecture and defaults to improve healthy behavior. According to the Author, displaying healthy food blatantly in shops and giving unhealthy items a less favorable position so that they buy nutritious items, can be one of technique for behavior modification (Www3.weforum.org, 2017). Likewise, designing buildings which can increase physical activity and be another technique.

Governments can also influence the behavior of individuals directly by adopting some specific kind of policies that targets the individuals. There are many Behavior Modification approaches that the governments can use. Some of which the governments currently using are price regulations, education etc.

Price-based regulations

It includes taxes and subsidies which can result in increase or decrease in the price of the product. This incentivize or dis incentivize consumers to use that product. They can be cost effective strategies in combating NCDs. According to World Bank, it is not feasible to ban smoking in people's homes, but reasonably high and comprehensive taxes are the single most cost effective measure to discourage new smokers and reduce use. Also, increasing fuel taxes and subsidizing public transport will encourage people to walk more (Siteresources.worldbank.org, 2011).

Education and the provision of information:

Educating people, especially youth, about NCDs, their causes and consequences can help to reduce the rate of NCDs, but according to World Bank it has its own limitation and has to work with other sectors simultaneously to be effective. World Bank (2011) states that while increased awareness and information has been shown to modify attitudes about the health consequences of behavior, there remain serious limitations on their effectiveness to modify actual behavior in all but children of school going age (Siteresources.worldbank.org, 2011).

There is irony in the policies of government because they aimed and focus at one specific thing rather than influencing and working all together with different departments or sectors related to that problem. According to Sacks, Swinburn and Lawrence (2008), Government policy action aimed at directly influencing behavior often appears to be almost exclusively limited to education and social marketing programs. There do not appear to be reasonable regulations that would direct eating and physical activity behaviors in the same way that there are regulations that require specific behaviors for wearing seat belts, not smoking in restaurants, drinking under-age and obeying traffic and occupational health and safety laws. (Sacks, Swinburn and Lawrence, 2008)

One of the behavior modification approach that is use to exercise or to change bad habits and create good habits are commitment contracts. It encourages contractors to exercise and change their current unhealthy lifestyle to healthy lifestyle because Failure to keep the contract means having to pay the amount of their commitment contract (Opim.wharton.upenn.edu, 2007).

Statistics:

There is less data available about the statistics of behavior modification approach. The available data talks about a specific category of NCDs such as Diabetes and Cardiovascular Diseases (CVD). The reduction in the saturated fat, by replacing it with mono-saturated fat can reduce CVD by up to 4%. But the cost estimated of these changes is ranging from $1.80 to $4.50 per person per year depending on the region. Polyunsaturated fat also reduces CVD by 7 to 40 percent and also some percent of type two diabetes (Jamison et al., 2006).

According to World Economic Forum, The Diabetes Prevention Program (DPP), works on lifestyle intervention, is a series of 16 classes over 16 weeks. The results of this program suggests that there is decrease in the appearance of type 2 diabetes by 58%. According to the research, Lifestyle changes worked particularly well for participants aged 60 and over, reducing their risk by 71%. About 5% of the lifestyle intervention group developed diabetes each year during the study period, compared with 11% of those in the placebo group (Www3.weforum.org, 2017).

Behavioral changes:

Although, behavior modification techniques can be used to combat NCDs but research has shown that the population with high risk of NCDs automatically changes their behavior and lifestyle to healthier activities. According to a program conducted by Baghaei and his fellows in Iran where they designed three interventional activities such as Policy/Environmental Strategies, Community Outreach/Programmed Services and Surveillance. According to the results of the program, Healthy

lifestyle behaviors have been improved significantly in the high risk population living in the interventional area versus the reference area. Regular daily exercise has been increased by about 45% among the high risk population in the interventional area (from 15 to 28%).Smoking has been decreased among high risk individuals living in the interventional area more than among those living in the reference area. (Baghaei et al., 2010)

WHO has emphasized on Intensive efforts to promote public awareness and a social movement for healthy living with the help of local governments and lawmaking to create healthy environments. According to WHO, a top-down prescriptive approach to health education has not led to the required behavior change in the population (Who.int, 2012). WHO also points out that we need to give importance to regular and intense physical education classes in schools, urban planning and re-engineering for active transport, the provision of incentives for worksite healthy-lifestyle programs, and increased availability of safe environments in public parks and recreational spaces to encourage physical activity (Who.int, 2012).

Role of Health Ministries in combating NCDs in Pakistan:

Establishing a well maintained healthcare system is government's responsibility. The role of government in smooth functioning of the healthcare system is vital as it plays the stewardship role in the healthcare system. Role of ministry is not only limited to run public organizations providing healthcare facilities but also to monitor the private organizations present in the healthcare system. With a range of diversified diseases, the role of health ministry becomes even more important as it has to ensure necessary arrangements to face diversified range of diseases and non-communicable disease must be one of the key concerns for the health ministry.

There are research articles addressing the topic of health ministry's role in combating NCDs and some of the published articles are discussed as under:

Emerging challenges and health system capacity: the case of non- communicable diseases in Pakistan

Pakistan is facing double burden of disease and the contribution of mortality by non-communicable diseases has over numbered the communicable diseases. The focus of health system of Pakistan is inclined more towards communicable disease and maternal & child health. Therefore, there is a need to review health policy, health sector budgeting and health setup in order to meet the needs of healthcare in context of non-communicable disease (Zafar & Malik, 2015).

Health systems framework to NCD means in summary re-examining the planning and organization of the entire health system, from service provision to financing, from information generation to ensuring adequate supply of pharmaceuticals/technologies or human resources, from improving facility management to performance monitoring (Zafar & Malik, 2015).

Prevention of non-communicable diseases in Pakistan: an integrated partnership-based model

Development and implementation of NCD prevention polices in the developing countries is a multidimensional challenge. This article highlights the evolution of a strategic approach in Pakistan. The model is evidence-based and encompasses a concerted and integrated approach to NCDs. It has been modeled to impact a set of indicators through the combination of a range of actions capitalizing on the strengths of a public-private partnership (Nishtar, 2004).

Notwithstanding that there are several limitations of this strategy; it does provide the empirical basis for an integrated response to NCD prevention and health promotion in a developing country setting. The IFA is an innovative tool, which helps to set country targets and defines integrated

actions to meet those targets. However, future efforts must also seek to integrate strategies with communicable disease control, particularly in areas where a life course approach is pursued; this will enable the development of sustainable public health systems for all disease. It is hoped that the findings from this program can be a basis for policy change (Nishtar, 2004).

Process, Rationale, and Interventions of Pakistan's National Action Plan on Chronic Diseases

Most developing countries do not comprehensively address chronic diseases as part of their health agendas because of lack of resources, limited capacity within the health system, and the threat that the institution of national-level programs will weaken local health systems and compete with other health issues. An integrated partnership-based approach, however, could obviate some of these obstacles.

In Pakistan, a tripartite public–private partnership was developed among the Ministry of Health, the nongovernmental organization (NGO) Heart file, and World Health Organization. This was the first time a NGO participated in a national health program; NGOs typically assume a contractual role. The partnership developed a national integrated plan for health promotion and the prevention and control NCDs, which as of January 2006 is in the first stage of implementation.

The NAP-NCD can serve as both an empirical basis for an integrated approach to NCDs and an experimental basis of health sector reform in the area of public–private collaboration; most developing countries have limited experience with each. It is also likely to yield useful lessons for ministries of health, NGOs, and multilateral agencies for establishing chronic disease programs in developing countries (Nishtar, et al., 2005).

Pakistan-Country Profile of Cancer and Cancer Control 1995-2004

The article aiming to address cancer control measures advocated for the next 2 decades identifies 6 key areas that could help in combating cancer as a non-communicable disease which include legislation, public health education, primary prevention, capacity building, counseling and population screening (Bhurgri, et al., 2006).

Legislation and capacity building are the two main areas which come under the domain of health ministry's responsibilities.

Legislation:

Implementation of anti-tobacco legislation in the form of taxation, ban on public smoking or chewing and ban on advertising and enforcement. A curb on the epidemic levels of tobacco and areca nut use would reduce 43.7% of the malignancies in males and 17.8% in females. Establishment of equitable pain control and a palliative care network is an urgent and essential necessity as more than 70% of cancer patients report in very advanced stages of malignancy (Bhurgri, et al., 2006).

Capacity Building:

This is required by the Government to increase the availability of professionals, technical help and technology, and equipment (Bhurgri, et al., 2006).

Problem Statement:

This study wants to find out the effect of lifestyle on the increasing risk factors of NCDs in urban as well as rural areas.

Hypothesis:

H1: The lifestyle of people affects the risks of NCDs in rural and urban areas

H0: The lifestyle of people does not affect the risks of NCDs in rural and urban areas

Research questions:

Our research is focused on the following questions:

1. Which policies have been suggested in the National Action Plans of Pakistan with respect to NCDs?
2. What are the mechanisms of supply chain with respect to NCDs prescriptions in Pakistan?
3. Can behavioral modification interventions be effective in reducing the risks of NCDs?

Research Design and Methodology:

RESEARCH DESIGN:

Our study is an exploratory research. This research is a mix of both qualitative and quantitative research, where quality fieldwork via interviewing of doctors and policy makers, and surveys conducted are the chief sources of data collection.

The objective of this research project is to inculcate an awareness of Non Communicable diseases and policy responses (if any) to NCDs. The necessity of these laws and the problems in implementation of these laws that eventually lead to failure while combating Non-Communicable Diseases. It also aims to create a grounded theory that could be used as a basis for future academic study and policy analysis. Another objective of the research is to find the main causes of non-

communicable diseases and find public's opinion about the healthcare facilities available for combating NCDs.

The overall research strategy is to employ an integrated methodology which carefully draws upon quantitative and qualitative observations and findings to identify the most common and main concerns regarding non-communicable diseases among public and the policies that are formulated to address these concerns.

Occupying the Niche:

This study, conducted on undergraduate level, occupies the niche and fills the gap in literature by targeting both, public affected by non-communicable diseases and regulatory bodies, policy makers, and doctors who are the key actors in combating Non-communicable diseases. The mixed methodology helps compare and contrast the opinions of the general public about Non-communicable diseases, and the expert knowledge and opinions of experts.

Purposes of Research:

"Science is an enterprise dedicated to finding out"

Research design addresses the planning of scientific inquiry, that is, the strategy of finding something out. There needs to be a plan of how the researcher will analyze what they want to analyze, and for this purpose they must clearly identify what they want to study and observe (Babbie, 1983).

There are three main purposes of conducting social science research- exploration, description and explanation.

"Although it is useful to distinguish the three purposes of research, it bears repeating that most studies will have elements of all three."

Much of social research is conducted to provide familiarity with a topic that is relatively new and understudied. Exploratory studies are done for three purposes:

a) To satisfy the researcher's curiosity and desire for better understanding

b) To test the feasibility of undertaking a more careful study

c) To develop the methods to be employed in a more careful study

Hence, exploration is the basic purpose of this study, with specific emphasis on satisfying the desire for an in-depth understanding of NCDs and their underlying causes. The study also aims to find out satisfactory and definitive answers for the stated research problem and to create a grounded theory for further study.

Another major purpose of social science research is to describe events and situations, which is better done in a scientific way than in a casual manner. Thus, the quantitative fieldwork in this research uses surveys to find out about the general perceptions of the people of Pakistan about Non-communicable diseases and their causes. It describes what people believe is the definition of NCDs, and their perception of role of governing bodies in combating the problem. "A third general purpose of social scientific research is to explain things." Describing events and situations is not enough for social research; researchers also aim to explain why certain situations or events occur (Babbie, 1983). The question that follows is, 'what is to be explored, described or explained'

In this effort, quantitative surveys (conducted to describe perceptions about the NCDs and their causes, are supplemented by qualitative interviews and observations, to rigorously explain the role of the institutions in combating NCDs.

Units of Analysis:

Individuals are the most typical units of analysis. We tend to describe and explain social groups and interactions by manipulating and aggregating the descriptions of individuals. Thus, the norm of generalized understanding suggests that findings that are more generalizable and apply to all kinds of people are more valuable in social research (Babbie, 1983).
It is impractical to study all kinds of people in one study, which is why circumscribed groups are taken as units of analysis whose members are then analyzed on an individual level. Formal social organizations may also be units of analysis and when social groups are the units of analysis then the characteristics of these groups are derived from characteristics of individual members (Babbie, 1983).

The organizational units of analysis are major public and private hospitals of Rawalpindi and Islamabad (Shifa international, Quaid Azam Hospital).

Points of Focus:

1) Individual characteristics such as age, gender, urban/rural, comprise the basic points of focus in individual units of analysis.

In this research paper, the main characteristics chosen to identify individual units of analysis through the larger population are as follows:

*Gender:

1) Male

2) Female

3) Others

*Age Brackets:

1) 17-30

2) 31-44

3) 45-58

4) 59-72

5) 73 and above

2) Additionally, the concept of orientations refers to the attitudes, beliefs, and ideologies of individuals and groups in units of analysis. In this research paper, the main orientations in emphasis are individuals (general public and healthcare experts) from rural and urban areas.

The Time Dimension:

Despite the complexity of the subject, researchers have been unable to use prolonged longitudinal observations in this research paper due to time constraints.

The Research Process:

Like all social science research, it begins with the identification of a broad area of interest, which is then transformed into an idea with specific variables to be studied. Then a theory is developed around the idea, based on which selections are made on who is going to be studies and about whom conclusion will be drawn. This helps in the choosing of appropriate research methods (e.g. surveys,

interviews, observations, content analysis and field research), which are then used to collect data for analysis and interpretation, transforming the data into a form that can be manipulated and analyzed, drawing conclusions from the analyzed data and to finally report results and implications.

It is important to conceptualize the study, i.e. to go through the process of defining the agreed meanings of the terms used in the study. Indicators must be set, to demonstrate the absence or presence of a concept, and to establish interchangeability of indicators, to show that several indicators represent or behave in the same way as one concept. Nominal and operational definitions of the research stem from conceptualization. Operational definitions are specific and unambiguous, and should define the procedures and steps used to measure a concept.

RESEARCH METHODOLOGY:

The methodology opted for this research paper is mixed methodology. It involves collection, analysis and integration of data through quantitative and qualitative instruments, primarily questionnaires and expert interviews (operated via field research).

The Questionnaire and Surveys:

The questionnaire comprises a total of twenty-one questions, with a combination of multiple choice questions, closed questions, opinion-based, and open ended question. The purpose of operating the survey is to identify gaps between public needs and facilities available to meet those needs, and how they suggest that the rising cases of non-communicable diseases can be controlled. The nature of the topic is such that it is more inclined towards qualitative debate, however, objective findings are equally important to establish certain facts. For example, survey statistics help us identify number the number of possible victims of NCDs and healthcare facilities, while

focus group interviews allow us to inquire in-depth about the causes of NCDs and the necessary measures that are taken or that should be taken to cope with the problem.

Variations in Qualitative Interviewing:

Informal Conversational, The Standardized Open-ended Interview. The two main methods utilized to collect qualitative data in this study are Informal Conversational Interview and The Standardized Open-ended Interview. Unlike formal structured interviews which take place in an official setting, Informal Conversational interviews help to make the respondents comfortable with the interviewers and to establish a freestyle conversation, which allows free exchange of information. A limitation of this method, however, is that the data collected is too broad and needs to be narrowed down and trimmed according to the research problem and focus (Patton, 2002). Informal Conversational Interview, along with a short Interview Guide (a set of broad categories of questions to be asked) was employed in the interview with the victims of NCDs in different hospitals.

With the rest of the interviewees, the approach was more formal and the interviews structure was standardized and Open-ended. This is because majority of the interviewees are healthcare experts, regulatory body or policy makers. Thus, any informal method could not have been used in the

Interview process.

Observations:

Observations are critical to social science research (Babbie, 1983). They permit us to make sense of the world around us and to offer explanations for why and how social phenomenon develop and occur.

While making observations during field research, there are two main perspectives that can be used by the researcher: insider v/s outsider perspectives. In other words, the researcher uses an emic or an etic approach to observe and record social phenomena (Patton, 2002).

These approaches represent a viewpoint, i.e. whether the researcher is studying the problem as a part of the problem or just observing the behavior of others from a vantage point. The sociocultural and human environment also plays a role in making sound observations, as it is these environmental factors and materials that create meaning and value in social interactions. Therefore, the arrangement of buildings, streets, communities and villages, décor in a room or a library, the accent, tone and gestures of subjects (or interviewees), makeup the complex human environment and affect field research and its findings. (Patton, 2002) Another crucial part of observational technique is opting between the different methods of observation, which are mainly two: Overt v/s Covert Observations. Covert observations involve the researcher not informing the members of the group the reason for their presence, keeping their true intentions a secret. This automatically raises ethical concerns. Overt participant observation, where the observer becomes part of the social environment and conceals her identity, hence an overt non-participant observation technique, was employed during field research, where the attitudes, behaviors, opinions and surroundings of the respondents were carefully observed.

Setting and Social Environment:

Setting is the physical environment within which the program takes place and social environment refers to the ways in which human beings interact with each other, it affects how participants behave towards each other in those environments.

The environment overall was peaceful and friendly. The setup in most cases was just like consultant's office, a table with a desktop and some files, papers, some of the basic equipment a doctor needs for a routine check-up. Doctors discussed the same formation with us that they were presenting to the internees and other doctors.

RANDOM PROBABILITY SAMPLING VS. PURPOSIVE SAMPLING:

Conceivably, nothing arrests the difference between quantitative and qualitative research than the sampling methods. It is so because different reasons undergird these approaches. (Patton, 230). The focus of a qualitative research is an "in depth" study of the phenomenon, so much so that it can even study single cases(N=1). On the other hand, a quantitative study focuses larger samples which are randomly selected. The random sampling technique has its roots in "statistical probability theory". A randomly selected population/sample has the capacity to yield results which can be generalized to the whole population. Hence, it is a popular method in quantitative research. Furthermore, the Central Limit Theorem asserts that if a random sample of N cases is drawn from a population with mean (μ) and standard deviation (σ) then the sampling distribution around the mean will be normal.

Contrastingly the qualitative research uses purposive or judgment sampling. "In judgment sampling, you decide the purpose you want informants (or communities) to serve, and you go out to find some" (Patton, 2002).

The motive and vigor of purposeful sampling is in selecting information-rich cases. "Info-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the inquiry, thus the term purposeful sampling." (Patton, 230).

Since this research is based in both quantitative and qualitative methods, so both random sampling and purposive sampling are used.

For quantitative research, surveys were distributed to a random population. For qualitative research we visited both public and private hospitals. The hospital we visited were Pakistan Ordinance Factory (POF) Hospital, Wah Cantt, The Shifa Interntional Hospital, Islamabad, Valley Clinic, Rawalpindi, Maryam Memorial Hospital, Rawalpindi and Saad Shaheed Hospital, Rawalpindi. We targeted some doctors in Lahore but we were not able to add their interviews in our thesis because we updated questionnaire after the interview of these doctors and were not able to retrieve information about the updated questionnaire.

The research further makes use of "Stratified random sampling" and "Maximum variation (heterogeneity) sampling" in this regard. Here are the definitions of both these kinds of sampling:

STRATIFIED RANDOM SAMPLING:

"Stratified samples are samples within samples. A stratified random sample, for example, might stratify by socioeconomic status within a larger population as to make generalizations and statistically valid comparisons by social class as well as to generalize to the total population." (Patton, 240).

MAXIMUM VARIATION (HETEROGENEITY) SAMPLING:

"How does one maximize variation in a small sample? One begins by identifying diverse characteristics or criteria for constructing the sample. Suppose a state-wide program has project sites spread around the state, some in rural areas, some in urban areas, and some in suburban areas. The evaluator can study a few sites from each area and at least be sure that the geographical

variation among sites is represented in the study. While the evaluation would describe the uniqueness of each site, it would also look for common themes across sites. Any such themes take on added importance precisely because they emerge out of great variation. For example, in studying community –based energy conservation efforts state-wide using a maximum heterogeneity sampling strategy, a researcher can construct a matrix sample of 10 communities in which each community was as different as possible from every other community on such characteristics as size, form of government (e.g., strong mayor/ weak mayor), ethnic diversity, strength of the economy, demographics and region. In the analysis, what stands out across these diverse cases was the importance of a local, committed, cadre of people who make things happen." (Patton, 235).

Ethical Considerations in Research:

When using human beings as subjects of research there are several issues to address with regards to the integrity, safety, respect and privacy of subjects. Babbie highlights four main considerations in the ethics of research (Babbie, 1983):

1) Voluntary Participation

2) No harm to participants

3) Anonymity and Confidentiality

4) Disclosure of Technical Shortcomings in Analysis and Reporting

It is vital for the researcher to respect the voluntariness of the subject's participation in research activities. If the respondent is reluctant to respond, then the researcher must not force them to do so either aggressively, or passively.

Moreover, the research should not harm the participants, physically, mentally or emotionally. For example, exposure to longitudinal psychological studies in a controlled research environment may permanently damage the ability of research subjects to behave and react naturally, and some may even go in depression if the topic under study is intense and emotionally challenging. Research must not risk the safety of human subjects, and consider the voluntariness of participants once full disclosure of associated risks to the participants has been made.

A third thing requiring respect for the human subjects is anonymity and confidentiality issues. Researchers must conceal the identity of the participants if they wish so. Topics of social science research, such as the idea of blasphemy in this particular research paper, are often tabooed, complex, sensitive and risky. Many scholars and lawyers interviewed for this study instructed the researchers not to disclose their names and other personal details because of the nature of the topic, and of the fear of criticism and harassment by any extremist elements.

The final ethical consideration is the disclosure of technical shortcomings and various limitations of the study to be reported in the analysis section of the thesis. It must "tell the truth" about all the technical pitfalls in the research, including the lack of availability of resources and technical expertise, errors in data aggregation and interpretation, problems of accessing the research sample, and any legal or moral shortcomings accounted so far. It is human to make mistakes, so this disclosure is essential, as it identifies weaknesses in the study (which can be rectified and avoided in future studies), outlines the limitations of reliability of the information collected, and increases the worth of the study overall (Babbie, 1983).

Theoretical Framework

Supply Chain mechanisms with respect to NCD Medication in Pakistan

RAND Corporation's Model

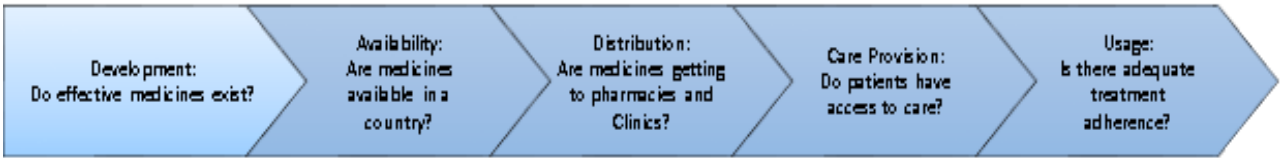
In order to understand the functioning of supply chain mechanisms of NCD medication is Pakistan, this study will adopt the RAND Corporation's "Framework for understanding obstacles to NCD medicine access". The model is proposed in the paper "Improving Access to Medicines for Non-Communicable diseases in the Developing World", an occasional paper published as a part of a series. The model is devised to assess the situation in developing countries and recommends areas for improvements in NCD medicine access in developing countries. However, there are limitations to the applicability of the model in the context of this study, similar to most developing nations, Pakistan's health surveillance system is precisely non-existent, which creates a huge problem for the application of RAND's model to this study. To overcome the problem, this study modifies the model, areas of 'Care Provision' and 'Usage' will not be considered and instead will aim to asses' affordability through comparison of approximate monthly costs of medicines with approximate monthly income.

"In Figure S.1, we present a simple conceptual framework that follows this continuum and lays out the major issues or potential obstacles along the way—that is, those related to the development of effective medicines, the availability of those medicines in the country or jurisdiction of interest (i.e., related to product importation and registration policies and procedures), the distribution of those medicines throughout the country (i.e., related to the robustness and completeness of the supply chain), the provision of those medicines for patients in need (i.e., related to access to health

care services and an appropriately trained health care workforce), and the usage of (or adherence to) those medicines by patients (i.e., related to patient beliefs and costs)." (RAND, 2011)

Figure 1.1

A Conceptual Framework of Obstacles to NCD Medicine Access



Our Framework:

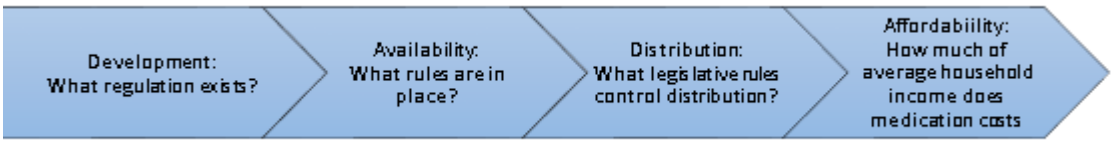
The RAND model is structuralized to find obstacles to medicine access but this study will adapt it to be used to observe the supply chain mechanisms in Pakistan pertaining to NCDs medication. Our study will majorly adhere to RAND Corporation's framework model however; we will adapt this to cater to our question. In order to understand the supply chain mechanisms of NCD medication in Pakistan, we will examine several facets of supply chain. Using development, availability, distribution, like RAND, we will elaborate upon our question. DRAP regulates and governs the realm of development; Pharmacies Act provides rules that control availability and distribution. Care provision and usage data, however, might not be available for Pakistan as the country lacks a health surveillance system, therefore, this research will evaluate affordability of NCD medication, this will present average monthly medication costs as a percentage of monthly average household income. Imported medicines are subjected to customs and tariffs; this study will also delve into apparatuses formulating and regulating costs of imported medicines.

Regulations that govern manufacture, distribution, pricing, storage, and selling of NCD medication will be analyzed. Affordability will be evaluated through calculations of prices and average monthly household income.

RAND's model will be modified to entertain the purposes of this study. Areas of observation will roughly remain the same, however, the criteria of evaluation will be changed.

To evaluate the Development context of NCD medication in Pakistan, the study will conduct qualitative analysis of legislation that relates to pharmaceutical manufacturing concerns. To evaluate availability of the medication, the study will examine rules and procedures that govern selling of such medication. The study will survey the legislative controls that pertain to the distribution of NCD medications. As a modification, however, this study adds Affordability to the model. Fig 1.2 illustrates upon the adapted model applicable to this study.

Fig 1.2



In order to gauge and evaluate:

1. Development

DRAP

The research will qualitatively analyze the regulations ratified in the act that established DRAP, it will aim to ascertain the themes

2. Availability?

Pharmacies Act

The pharmacies act governs the sale and storage of medication, the study will delve into a literature analysis of the Pharmacy act

3. Distribution

In order to scrutinize the distribution mechanisms, the study will consider the applicable laws and regulations including but not limited to; taxes, and custom duties that apply to locally manufactured as well as imported NCD medication

Customs, Taxes, Laws

Local/Imported

4. Affordability

Average household income/ Prices of medicines

This study will obtain data pertaining to the average monthly household income for Pakistan; this data will be compared to approximate monthly cost of different NCD medications.

Scope and Research Approach:

Our discussion will focus on qualitative research of enacted laws; these laws lay down the legislative framework that controls several facets of supply chain of NCD medication in Pakistan. Several developing countries prove that access to medication, let alone NCD medication is weak. That is to say that several aspects of supply chain suffer.

Medication supply chain has missing links, inadequate implementation of legislative framework, weak quality control mechanisms, and inequitable policies regarding the taxation and custom duties.

The medication is essentially not too expensive and yet in developing countries taxes and custom duties result in relatively higher prices of these medicines. The incidence of higher prices is not felt and does not affects the upper classes as much as strongly it is received by the poorer strata of the population. The brutal reality is that a major proportion of the population has reduced access to medication due to financial constraints. Affordability being a major issue amongst poor countries is being considered in this framework to provide an overview of the situation. Even though this study will evaluate affordability, it is to be understood that this representation is not adequate to understand the phenomena in a wholesome manner, the study merely considers average household income, which in itself is does not give a relatively fair depiction of actual situation, this result from using the average. The population dynamics are varied, i.e. high proportion of outliers exists on sides, the extremely rich and the extremely poor, and using averages merely gives an approximate image and not a complete picture.

This research will examine a few facets of the supply chain of NCD medication in Pakistan through the outlaid framework.

"The most immediate gains in health can be achieved by improving access to existing medicines, as opposed to developing new compounds." (RAND, 2011) While credible researches into the matter have made such recommendations, it is pertinent for the country to identify weakness in, and improve the supply chain, this will in turn increase access to NCD medication and therefore prove remedial for the damages caused by NCD; such damages include, but are not limited to, economic loss, and social loss. Economic loss is the burden of NCDs on the economy, such that,

the loss of human hours to the diseases. High mortality rate in developing countries is owed to NCDs and this reduces the quantity of the workforce. Symptoms of non-communicable diseases render a consistent deterioration of the quality of the human capital. In the social context, the diseases and their subsequent implications present several issues; the quality of social lives of the patients' deteriorates as well. Medications for NCDs do not necessarily cure the patient but they do provide a better and improved lifestyle by somewhat controlling the symptoms. (RAND, 2011)

Pakistan Pharmacy Council Act, 2013

Executive Summary

Excerpts:

1. "Short title, extent and commencement. - (1) This Act may be called the Pakistan Pharmacy Council Act, 2013." (GOP, 2013)

"(k) "practice of pharmacy" is defined whereby following activities are undertaken independently or in unison with each other, namely: -

i. all activities pertaining to hospital pharmacy management including procurement, storage, manufacture, distribution, compounding and dispensing of drugs, patient counseling, drug information and other related functions;
ii. Clinical pharmacy;
iii. Community pharmacy;
iv. Compounding and dispensing of drugs;
v. Drugs control administration;
vi. Industrial pharmacy;
vii. Pharmacy-economics, pharmacy-epidemiology, pharmacy-genomics;

viii. Primary care pharmacy;

ix. Supervision and production of drugs;

x. Supervision and quality control of drugs;

xi. Supervision of sales and distribution of drugs; and

xii. Teaching of pharmacy;" (GOP, 2013)

Functions of the Council:

(1) The functions of the Council shall be: -

(a) To approve examinations in pharmacy for the purpose of qualifying persons for registration as pharmacists, pharmacy technicians and apprentices in pharmacy;

(b) To prescribe the subjects in which approved examinations shall be held;

(c) To approve the courses of study and practical training in pharmacy for the purpose of admission to approved examination;

(d) To prescribe the conditions and procedure for admission of candidates to an approved examination;

(e) To lay down the standards of teaching to be maintained by institutions conducting the approved courses of study and to prescribe the qualifications for teachers;

(f) To prescribe the equipment and facilities to be made available to the students;

(g) to recognize degrees, diplomas and certificates in pharmacy granted by institutions in and outside Pakistan, for the purpose of registration as pharmacists, pharmacy technicians or enrolment as Apprentices in Pharmacy;

(h) To cause inspection of institutions which conduct any courses of study in pharmacy and of the teachings imparted and examinations held by them;

(i) To lay down the qualification and conditions of registration as pharmacists, pharmacy technicians and to review these conditions and qualifications whenever deemed fit;

(j) To lay down and prescribe the Code of Ethics and Conduct for pharmacy professionals;

(k) To formulate Inquiry Commission/Committees to conduct any inquiry;

(l) To prepare and maintain registers of Pharmacists and Pharmacy Technicians;

(m) To register pharmacists and pharmacy technicians and grant certificate of registration;

(n) To conduct examination for the purpose of registration as pharmacist and pharmacy technician, as and when required or deemed fit;

(o) To prescribe fee for registration, examination, renewal of registration, inspection of Pharmacy institutions and other purposes and review the same whenever required;

(p) To conduct and organize training courses and programs for continued education; and

(q) To do such other acts and things as it may be empowered or required to do by or under this Act:

Provided that if the Council is of the opinion that it is necessary for the advancement and uniformity in the education to introduce examination for the purpose of registration as pharmacist, it may do so, by notifying its intention in the official Gazette.

(2) The Council, with the previous approval of the Federal Government may by notification in the official Gazette, make Rules, Regulations and or by-laws for the purposes of sub-section (1) and other functions to be performed by the Council." (GOP, 2013)

STATEMENT OF OBJECTS AND REASONS

"1. The present Pharmacy Act was promulgated in 1967 i.e. some 42 years back. At that time, there were very few pharmacy graduates as only two Universities were awarding degree in Pharmacy I.e. University of the Punjab, Lahore and University of Karachi, Karachi, whereas now there are more than 30 institutions conducting pharmacy degree courses.

2. The present Pharmacy Act provides for registration of persons other than those holding a qualification in Pharmacy E.g. Dispensers, compounders, apprentice etc. The Rules made under the present Act also allow the issuance of Drug Sale License to non-professionals and those holding no training or qualification in Pharmacy.

3. Due to gaps and weaknesses of the present Act more than 80,000 pharmacy stores (medical stores) are present in Pakistan, which are very difficult to be efficiently controlled and regulated by Drugs Control Authorities, as very limited number of regulatory officers are there to regulate the said business. This huge number of medical stores which remain un-checked, is a rich source of spurious, counterfeited, substandard and un-registered drugs in Pakistan. This huge number is unprecedented, which is not seen in any other part of the world.

4. The Supreme Court of Pakistan on 12-05-2006 vide Misc. APP No. 66/2006 has taken very serious notice of the spread of spurious and counterfeited drugs in the Country. The Supreme Court in its orders has directed the Federal and Provincial Governments to ensure the safety to the public health by taking all necessary measures.

5. To protect the public health from the hazards of drugs by their misuse, it is the urgent need of the hour to replace the existing Pharmacy Act with this "Pharmacy Council of Pakistan Act" in the best interest of the public.

6. The proposed Act will have the following benefits: -

(a) To stop the registration of the non-professional, non-qualified person as pharmacist, this will ensure public health safety by professional handling of medicines and drugs as already being practiced in other countries of the world;

(b) The proposed Act will encourage the establishment of community pharmacy, which is already present even in under-developed countries like Iran, Egypt, UAE, Saudi Arabia and Sri Lanka etc.;

(c) The flow of spurious and counterfeited drugs could be easily stopped through professionally trained and qualified pharmacy graduates;

(d) This Act will provide quality and standardized pharmacy education;

(e) This Act will provide jobs to the thousands of un-employed pharmacy graduates, which are produced each year by over 30 Universities/ institutions conducting Pharmacy degree courses;

(f) The proposed Act will bring the Pharmacy profession in conformity with the global situations especially keeping in view the challenges of WTO about pharmaceuticals; and

(g) This is an effective step forward about ensuring good implementation of law, which will be uniform throughout the country." (GOP, 2013)

Drug Regulatory Authority of Pakistan Act

Executive Summary

“1. Short title, extent and commencement. -(1) This Act may be called the Drug Regulatory Authority of Pakistan Act, 2012.

(2) It extends to the whole of Pakistan.

(3). It shall come into force at-once. “ (GOP)

“2. **Definitions. - In** this Act, unless there is anything repugnant in the subject or context, -

(i) "Act" means the Drugs Act, 1976 (XXXI of 1976);

(iv)"Authority" meal’s the Drugs Regulatory Authority of Pakistan established under section 3;

(xii)"drug" means drug as defined in Schedule-I;

(xiii)"fee" means fee prescribed by the Board for any service;

(xv) "health and OTC Products (non-drugs)" include probiotics and disinfectant, nutritional products, food supplements, baby milk and foods, medicated cosmetics, medicated soaps and medicated shampoos;

(xvi)"Inspector" means the Inspector appointed under the Act as specified in Schedule-V;

(xxi)"OTC" mean over-the-counter non-prescription products;

(xxv)"pharmaceutical field" means regulation, manufacturing, quality control, quality assurance, research, academia, import, export, and pharmacy services in drugs;

(xxvi)"pharmacy services" means services rendered by a pharmacist in pharmaceutical care, selection, posology, counseling, dispensing, use, administration, prescription monitoring, pharmacy-epidemiology, therapeutic goods information and poison control, pharmacy-vigilance, pharmacy-economics, storage, sales, procurement, forecasting, supply chain management, distribution, drug utilization evaluation, drug utilization review, formulary based drug utilization and managing therapeutic goods at all levels including pharmacy, clinic, medical store, hospital or medical institution;" (GOP)

Chapter-II

"3. Establishment of the Authority. – (1) As soon as may be, after the commencement of this Act, the Federal Government shall, by notification in the official Gazette, establish an Authority to be known as the Drug Regulatory Authority of Pakistan, to can-y out the purposes of this Act." (GOP)

"(2) The Authority shall be a body corporate having perpetual succession and a common seal, and may sue and be sued in its own name and, subject to and for the purposes of this Act, may enter into contracts and may acquire, purchase, take, hold and enjoy moveable and immovable property of every description and may. convey, assign, smTender, yield up, charge, mortgage, demise, reassign, transfer or otherwise dispose of or deal with, any moveable or immovable property or any interest vested in it." (GOP)

"(3) The Authority shall be an autonomous body under the administrative control of the Federal Government with its headquarters at Islamabad." (GOP)

"(4) The Authority may set up its establishments including sub-offices and laboratories at provincial capitals and such other places, as it may deem necessary from time to time. The existing

Federal Drugs Control Administration and the sub- offices set up in a11 provinces and laboratories called the Central Drugs Laboratory,

Karachi; the National Control Laboratory for Biologicals, Islamabad; and the Federal Drug Surveillance Laboratory, Islamabad shall, upon the commencement of this Act, become part of the Authority." (GOP)

"(5) The common seal of the Authority shall be kept in .the custody of the Chief Executive Officer or such other person as may be prescribed by regulations and documents required or permitted to be executed under the common seal shall be specified and authenticated in such manner as may be prescribed by regulations." (GOP)

"7. Powers and functions of the Authority. -The powers and functions of the Authority shall be to,

(a) Administer the laws specified in the Schedule-VI that apply to Federal Government, and advise the Provincial Governments for the laws that are applicable to the Provinces;

(b) Monitor the enforcement of laws specified in the Schedule-VI and collect relevant data and information;

(c) Issue guidelines and monitor the enforcement of,

(i) Licensing of the manufacture of therapeutic goods;

(ii) Registration of therapeutic goods;

(iii) Regulation for the advertisement;

(iv) Drug specifications and laboratory practices;

(v) Prosecution and appeals under this Act and the Drugs Act, 1976 ' (XXXI of 1976) relating to Federal subject;

(vi) Regulation and allocation of quota of narcotic drugs, psychotropic substances and precursor substances (chemicals) in consultation with Federal Government;

(vii) Regulation for pricing and mechanism for fixation of prices of various therapeutic goods under its ambit;

(viii) Determining standards for biological manufacturing and testing;

(ix) implementation of internationally recognized standards such as good laboratory practices, current good manufacturing practices, good distribution practices, cold chain management, bioequivalence studies, stability studies, anti-spurious codes, clinical trials, biosimilar evaluations, and endorsement and systematic implementation of World Health Organization, International Conference on Harmonization's and Food and Drug

Administration guidelines etc.

(x) Regulation, ·enforcement and monitoring of advertisement rule and ban on false advertisement;

(xi) Manufacturing of active pharmaceutical ingredients in all its forms; and

(xii) Use of central research fund. " (GOP)

"15. **Integration of Federal Drugs Control Administration its sub- offices and Laboratories. "**Upon the commencement of this Act the Drugs Control Administration, its sub-offices and its Laboratories hereinafter referred to as the said offices as referred in sub-section (4) of section 3) shall become part of the Authority." (GOP)

“18. Conflict of interest.-_ (1) No person shall be appointed as CEO, Director, consultant, advisor, officer or employee of the Authority if he or she has- any financial or professional conflict of interest.” (GOP)

CHAPTER-III

“FUND, BUDGET AND ACCOUNTS·

19. Drug Regulatory Authority of Pakistan Fund. - (1) there shall be a fund to be known as the Drug Regulatory Authority of Pakistan Fund which. shall vest in the Authority and shall be utilized by the Authority to meet its expenses and charges properly incurred in connection with the carrying out of its functions and duties assigned or transferred to it under this Act, including but not limited to the payment of salaries and other remuneration to the CEO, Director, members of the different Boards, employees, experts, consultants and advisers of the Authority. “ (GOP)

CHAPTER-IV

RULES AND REGULATIONS

“23. Power to make rules.-The Authority may, with the approval of the Federal Government, by notification in the official Gazette, make rules for carrying out the purposes of this Act.” (GOP)

“24. Power to make regulations.-The Authority may, by notification in the official Gazette, with the approval of the Board, make regulations, for its internal working and terms and condition of employees not inconsistent with the provisions of the Act or the rules, for the carrying out of its functions under this Act.” (GOP)

“DRUG includes: -any substance or mixture of substances that is manufactured, sold, stored, offered for sale or represented for internal or external use in the treatment, mitigation, prevention or diagnosis of diseases, an abnormal physical state, or the symptoms thereof in human beings or

animals for the restoration, correction, or modification of organic functions in human beings or animals, including substance used or prepared for use in accordance with the Ayurvedic, Unani,

Homoeopathic, Chinese or biochemical system of treatment except those substances and in accordance with such conditions as may be prescribed;" (GOP)

"SCHEDULE-V

POWERS. OF INSPECTORS

(1) Subject to the provisions of this Schedule and of any rules made in this behalf, an Inspector may, within the local limits for which he is appointed, and in any other area within the permission of the licensing Authority or Licensing Board as the case may be, -

(a) inspect any premises where in any therapeutic good is manufactured, the plant and process of manufacture, the means employed for standardizing and testing the therapeutic goods and all relevant records and registers;

(b) Inspect any premises wherein any therapeutic good is sold or is stocked or exhibited for sale or is distributed, the storage arrangements and all relevant records and registers;

(c) Take samples of any therapeutic good which is being manufactured, or being sold or is stocked or exhibited for sale or is being distributed;

(d) enter and search, with such assistance, if any, as he considers necessary, any building, vessel or place, in which he has reason to believe that an offence under this (e) call any person to be present as witness in the course of search or seizure or in connection with any other matter where the presence of witnesses is necessary;

(f) seize such therapeutic good and all materials used in the manufacture thereof and any other articles, including registers cash memos, invoices and bills, which he has reason to believe may furnish evidence of the commission of an offence punishable under this Act or any rules;

(g) require any person to appear before him at any reasonable time and place to give statement, assistance or information relating to or in connection with the investigation of any offence under this Act and the Drugs Act 1976 (XXXI of 1976) or the rules:

Provided that the exemption under sections 132 and 133 of the Code of Civil Procedure, 1908 (Act V of 1908), shall be applicable to requisitions for attendance under this Schedule;

(h) lock and seal any factory, laboratory, shop, building, store-hose or go down, or a part thereof, where any therapeutic good is or is being manufactured, stored, sold or exhibited for sale in contravention of any of the provisions of this Act, the Drugs Act 1976 or the rules;

(i) forbid for a reasonable period, not exceeding four weeks or such further period, which shall not be more than three months, as the Inspector may, with the approval of the Provincial Quality Control Board, the Licensing Board, the Registration Board, as the case may be, specify, any person in charge of any premises from removing or dispensing of any therapeutic good, article or other thing likely to be used in evidence of the commission of an offence under this Act or the rules; and

(j) Exercise such other powers as may be necessary for carrying out the purposes of this Act or any rules:" (GOP)

Customs Schedule for NCD Medications:

THE FIRST SCHEDULE (PAKISTAN CUSTOMS TARIFF)

"Section 30 Chapter 30 Pharmaceutical products

1. - This Chapter does not cover:

(a) Foods or beverages (such as dietetic, diabetic or fortified foods, food supplements, tonic beverages and mineral waters), other than nutritional preparations for intravenous administration (Section IV);

(b) Preparations, such as tablets, chewing gum or patches (transdermal systems), intended to assist smokers to stop smoking (heading 21.06 or 38.24)

(c) Plasters specially calcined or finely ground for use in dentistry (heading 25.20);

(d) Aqueous distillates or aqueous solutions of essential oils, suitable for medicinal uses (heading 33.01);

(e) Preparations of headings 33.03 to 33.07, even if they have therapeutic or prophylactic properties;

(f) Soap or other products of heading 34.01 containing added medicaments;

(g) Preparations with a basis of plaster for use in dentistry (heading 34.07); or

(h) Blood albumin not prepared for therapeutic or prophylactic uses (heading 35.02).

2. - For the purposes of heading 30.02, the expression "immunological products" applies to peptides and proteins (other than goods of heading 29.37) which are directly involved in the regulation of immunological processes, such as monoclonal antibodies (MABs), antibody

fragments, antibody conjugates and antibody fragment conjugates, interleukins, interferons (IFN), chemokines and certain tumor necrosis factors (TNF) growth factors (GF), hematopoiesis and colony stimulating factors (CSF).

3. - For the purposes of headings 30.03 and 30.04 and of Note 4 (d) to this Chapter, the following are to be treated:

(a) As (1) (2) (3)

(b) As (1)

(2) (3)

Unmixed products:

Unmixed products dissolved in water;

All goods of Chapter 28 or 29; and

Simple vegetable extracts of heading 13.02, merely standardized or dissolved in any solvent; products which have been mixed:

Colloidal solutions and suspensions (other than colloidal Sulphur);

Vegetable extracts obtained by the treatment of mixtures of vegetable materials; and

Salts and concentrates obtained by evaporating natural mineral waters.

4. - Heading 30.06 applies only to the following, which are to be classified in that heading and in no other heading of the Nomenclature:

(a) Sterile surgical catgut, similar sterile suture materials (including sterile absorbable surgical or dental yarns) and sterile tissue adhesives for surgical wound closure;

(b) Sterile luminaria and sterile luminaria tents;

(c) Sterile absorbable surgical or dental hemostatic; sterile surgical or dental adhesion barriers, whether or not absorbable;

(d) Pacifying preparations for X-ray examinations and diagnostic reagents designed to be administered to the patient, being unmixed products put up in measured doses or products consisting of two or more ingredients which have been mixed together for such uses;

(e) Blood-grouping reagents;

(f) Dental cements and other dental fillings; bone reconstruction cements;

(g) First-aid boxes and kits;

(h) Chemical contraceptive preparations based on hormones, on other products of heading 29. 37 or on spermicides;

(ij) Gel preparations designed to be used in human or veterinary medicine as a lubricant for parts of the body for surgical operations or physical examinations or as a coupling agent between the body and medical instruments;

(k) Waste pharmaceuticals, that is, pharmaceutical products which are unfit for their original intended purpose due to, for example, expiry of shelf life;" (GOP, 2017)

PCT CODE		DESCRIPTION	CD (%)
Heading / Sub-heading	Statistical suffix		
(1)	(2)	(3)	(4)
30.03		**Medicaments (excluding goods of heading 30.02, 30.05 or 30.06) consisting of two or more constituents which have been mixed together for therapeutic or prophylactic uses, not put up in measured doses or in forms or packings for retail sale.**	
3003.1000		- Containing pencillins or derivatives thereof, with a penicillanic acid structure, or streptomycins or their derivatives	11
3003.2000		- Other containing antibiotics	11
		- Other containing hormones or other products of heading 29.37 :	
3003.3100		- - Containing insulin	11
3003.3900		- - Other	11
		- Other, containing alkaloids or derivatives thereof:	
3003.4100		- - Containing ephedrine or its salts	11
3003.4200		- - Containing pseudoephedrine (INN) or its salts	11

(GOP, 2017)

Affordability

Pakistan Household Income per Capita. Pakistan's Annual Household Income per Capita reached **649.97 USD** in Jun 2016. (Ceicdata, 2018) This roughly converts into 76000 PKR.

Diabetes:

Tablets: from Rs.4 to Rs.30 per tablet depending on origin and manufacturer.

Monthly Usage: 60-90 tablets

Insulin Vial: Around Rs.500

Monthly Usage: 2 Vials

Monthly Costs:

Tablets: Rs. 240-2700

Insulin: Rs. 1000

Percentage of household income:

Tablets: Ranging from 0.32% to 0.36%

Insulin: 1.33%

Respiratory:

Medication range: Rs.20-100.

Usage: 30-60 tablets

Inhaler: Rs.200-1000.

Usage: 1

Monthly Costs:

Tablets: Rs.600-6000

Inhaler: Rs.200-1000

Percentage of Household income:

Tablets: 0.8%-8%

Inhaler: 0.26%-1.33%

Cardiovascular Medicaments:

Cardiac Tablets Range: Rs.1-181

Usage: 30-60 tablets

Cholesterol Tablets Range: Rs.10-700

Monthly Costs:

Cardiac Tablets: Rs.30-10860

Cholesterol Tablets: Rs.300-42000

Percentage of Household income:

Cardiac Tablets: 0.04%-14.48%

Cancer:

Tablets: Rs.40-450,000

Solutions: Rs.2000-38000

Usage: Variable

Treatment Costs per day: Rs.1000-30000

Monthly Costs:

Tablets: Rs.5000-500000

Solutions: Rs.10000-1000000

Treatment: Rs.30000-5000000

Percentage of Household income:

Tablets: 6.6%-657%

Solutions: 13.5%-1315%

Treatment: 39.47%-6579%

Although this study aimed to discern the affordability of NCD medication in Pakistan, it was determined that there were great limitations to the capacity of this research. Household income data that has been used is averaged, which does not give a clear picture of the actual income situation, the data acquired was also two years old, due to lack of resources, Pakistan does not have up to date statistics. Prescriptions are dynamic, several different combinations of compounds are used and therefore, it is inadequate to determine affordability in terms of range. Despite being insufficient information and resources, the analysis depicts a rough picture, medications for diabetes, cardiovascular diseases, and respiratory diseases exist in the market at affordable prices, the range of product is also huge such that cheaper alternatives are available, and however, cancer medication and treatment is in particular very expensive. It is pertinent to understand that such treatment and medication is expensive worldwide, however, the high costs in Pakistan are owed to taxes, custom duty, markups, and the inefficient and weak health system. Lack of resources such as time and financial resources have also hindered the extent and scope of this study.

Quantitative Section:

DEMOGRAPHICS:

In accordance with the survey analysis done for our research, we conducted 301surveys, out of which 45.5% were Male and 53.8% were female participants whereas 0.7% constituted the 'others'

category. The addition of more than two genders, inclusion of individuals from rural areas, unemployed individuals and students from intermediary to PhD level show how the survey has been completely random in terms of its respondents. The respondents belong to various age groups, backgrounds, educational and employability statuses. Majority of the respondent i.e. 83.4% belonged to the age group of 17-30 and the second highest number of respondents belonged to the age group of 45-58, which was 6% of the entire population. Various other age groups also account for a small measure of the aggregate sample size. This demonstrates that a majority of the respective respondents are youths and in the educational part of their lives. Additionally, this interfaces with our inherent limitation of time and resources to conduct interviews similarly from all age groups. Apart from this, it fulfills our basic random data collection technique. In terms of educational level, the highest number of respondents, 70.1 %, belonged to the bachelors group. This further proves the fact about our limited time and resources for being bachelor's students ourselves. The total number of unemployed respondent is 65.8%. Therefore, the educational and the employability variables are coinciding. In terms of background, 65.1% of the individuals belong to the urban areas whereas that of rural areas was 34.9%.

A cross tabulation analysis was done in order to check a proper relationship amongst the two variables i.e. dependent and independent variables. The demographics were taken in account as the independent variables which basically meant that they could affect the dependent variables owing to their nature of being the universal truth themselves. The given demographics were tested against various dependent variables like awareness of NCD's, their knowledge, effects of public awareness programs, life style choices etc. A variety of results were then gathered from the above tested variables with the various respective demographics.

AGE

The results generated through this particular demographic and various dependent variable indicate that the respondents belonging to the age group of 17-30 i.e. mostly teenagers and young adults are the most active individuals as opposed to the rest of the respondents. They possess the majority of knowledge, awareness, participation and effort in terms of NCD's. Individuals belonging to this particular age gap not only were more aware regarding what NCD's were, but also were more active in working towards changing things like diet, exercise and lifestyle in general as opposed to the respondents belonging to the other age groups. These results show that there is a growing sense of awareness in the new generation regarding battling life threatening but yet preventable diseases and working towards a change of environment and a better life style.

GENDER

While taking gender as the independent variable amongst the dependent ones, we were able to come to the conclusion that in terms of gender, females as opposed to males and the transgender community were more aware, more active, more willing to work and overcome the concept of NCD's in Pakistan. In almost all the variables apart from the one about smoking, we see that women possess the majority in terms of information and efforts and the majority of them too belonged to the age group of 17-30 years.

EDUCATION:

Demographics selected here tend to define the condition of the concept of NCD's in Pakistan currently. The results of the dependent variables tested against this demographic show cases how

the students of the bachelor's level were the most active and involved respondents in terms of knowledge and awareness. They were the ones who knew the possible future affects that NCD's might have and were the ones most in favor to work on focusing on a better lifestyle and improved quality of life.

EMPLOYIBILITY STATUS:

On the questions that took employability status as an independent variable, we came to terms with the fact that considering how majority of the respondents were young students, the unemployed individuals here were the most active and knowledgeable in terms of NCD's. we can also assume that the working class individuals are generally older, busier and less aware because of less exposure to things like electronic, print and social media as opposed to the younger generation, which may be why there was a majority of unemployed respondents in our survey and these very respondents displayed that they possessed more knowledge, awareness and willingness to work towards a change of life style.

BACKGROUND:

The respective results gathered by crossing the respective dependent variables across this particular demographic show the obvious result of the urban class being more aware, knowledgeable, willing to work towards a change but also the more affected party by NCD's as opposed to their rural counterparts.

Individuals belonging to the urban areas generally possess greater amount of knowledge because of greater exposure, better education and general modernization. Whereas reasons for existence of greater degree of NCD's in urban areas as opposed to the rural areas can be attributed to

factors like, ignorance, laziness, bad eating habits etc. however because of raising awareness, more people are willing to work towards improving their life style as opposed to before.

Frequencies

Notes

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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES=Age Gender Education Employability Status Background /ORDER=ANALYSIS.
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	Elapsed Time	00:00:00.02

Statistics

		Age:	Gender:	Education:	Employability status:	Background:
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	Missing	0	0	0	0	0

Frequency Table

Age:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	17-30	251	83.4	83.4	83.4
	31-44	15	5.0	5.0	88.4
	45-58	18	6.0	6.0	94.4
	59-72	12	4.0	4.0	98.3
	72 & above	5	1.7	1.7	100.0
	Total	301	100.0	100.0	

The total pool of people from the 17-72 and above age group is 301. Out of those 301 people, the frequency that falls within the 17-30 age bracket is 251, which is 83.4% of the total. Similarly, the frequency of people that falls between the age group of 31-44 is 15, which is 5%. The 45-58 age bracket occupies a frequency of 18 which is 6%, the 59-72 bracket has a frequency of 12, which is 4% and finally, the 72 and above category has a frequency of 5 which is 1,7% of the total. Cumulatively, these groups form a 100%

Gender:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	137	45.5	45.5	45.5
	Female	162	53.8	53.8	99.3
	Other	2	.7	.7	100.0
	Total	301	100.0	100.0	

In the gender table, the total number of people included is 301, which translates to a 100%. Males are 137 in number, which is 45.5% of the 100%. Females make up 162 of the 301, which is 53.8%. Lastly, the "other" category is 2 people, which forms 0.7%.

Education:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Intermediate	38	12.6	12.6	12.6
	Bachelors	211	70.1	70.1	82.7
	Post Graduate	48	15.9	15.9	98.7
	PhD	4	1.3	1.3	100.0
	Total	301	100.0	100.0	

In the education table, the total pool is 301, the categories are split in to Intermediate, Bachelors, Post Graduate, and PHD, each signifying the maximum education that particular group has received. The Intermediate group is 38 people, which is 12.65, and the Bachelors group is 211 people and forms 70.1%. There are 48 Post graduates and that forms 15.9% and lastly, the PHD group is a total of just 4 people who form 1.3% of the 100%.

Employability status:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Employed	79	26.2	26.2	26.2
	Unemployed	198	65.8	65.8	92.0
	Self Employed	24	8.0	8.0	100.0
	Total	301	100.0	100.0	

Next, we looked at the employability status and the total pool surveyed is 301. The categories are split in to Employed, Unemployed and Self Employed. The total number of people employed are 79, which translates to 26.2% of the total. Unemployed individuals are 198 that is 65.8% of the total. Lastly, self-employed individuals are 24 in number and 8% when translated in to a percentage.

Background:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Urban	196	65.1	65.1	65.1
	Rural	105	34.9	34.9	100.0
	Total	301	100.0	100.0	

Lastly, we looked at the background these people belonged to and that is split in to rural and urban.

The total sample size is 301 and the urban individuals form 65.1% of the total, a number that translates to 196 in raw data form. The individuals that form the rural segment are 105 in number and this is 34.9%

Age: * Do you k1w about 1n-communicable diseases?

Cross tabulation

Count

		Do you k1w about 1n-communicable diseases?		Total
		Yes	No	
Age:	17-30	129	122	251
	31-44	4	11	15
	45-58	8	10	18
	59-72	3	9	12
	72 & above	0	5	5
Total		144	157	301

The cross tabulation of age and awareness regarding non-communicable diseases shows that out of the total respondents i.e. 301, 251 belonged to the age group of 17-30 out of which 51.39% were aware whereas 48.60% individuals were unaware about the concept of NCDs. Out of 15 respondents from the age group 31-44, 26.6% were aware while 73% were not aware about the concept or existence of NCDs from the age group of 45-58, 44% individuals were aware whereas 55% were not aware about what NCD's were. From the age group of 59-72, 13% were aware regarding what NCD's were whereas, 75% had no knowledge of it. Lastly, respondents from the age group of 72 and above, 100% were unaware regarding the concept of NCD's

Age: * Has any of your family member encountered NCDs?

Cross tabulation

Count

		Has any of your family member encountered NCDs?		Total
		Yes	No	
Age:	17-30	120	131	251
	31-44	9	6	15
	45-58	14	4	18
	59-72	12	0	12
	72 & above	4	1	5
Total		159	142	301

The cross tabulation amongst the dependent and independent variable shows that Out of the total respondents of 301, 47.8% of the individuals amongst the age group of 17-30 have family members that have encountered NCD's whereas 52.1% have not. From the age group of 31-44 years, 60% have families suffering from NCD's whereas the remaining 40% do not. The age group from 45-58 years possess 77% of the individuals did have relatives encountering NCD's whereas 22% did not. The individuals that belonged to the age group of 59-72 years, 100% of them had relatives that had encountered NCD's. Lastly, the age group of 72 and above, indicates that 80% of these respondents have family members that have encountered NCD's whereas 20% do not.

Age: * Do you smoke?

Cross tabulation

Count

		Do you smoke?		Total
		Yes	No	
Age:	17-30	50	201	251
	31-44	8	7	15
	45-58	4	14	18
	59-72	5	7	12
	72 & above	4	1	5
Total		71	230	301

The cross tabulation between age and smoking indicates that out of the total 301 respondents, 19.9% of the individuals amongst the age group of 17-30 years are smokers whereas 80.07% are non-smokers. 53.3% of the individuals from the age group of 30-44 years are smokers whereas 46.6% are non-smokers. 2% of the respondents from the age group of 45-58 are smokers whereas 77.7% are non-smokers. From the age gap of 59-72 years, 41.66% are smokers whereas, 58.33% are non-smokers.

Age: * Do you think public service messages on television, social media and packets of cigarettes alongside various 1 smoking board signs have had any effect on your perception or decision towards smoking?

Cross tabulation

Count

		Do you think public service messages on television, social media and packets of cigarettes alongside various 1 smoking board signs have had any effect on your perception or decision towards smoking?				Total
		Yes	No	Maybe	Don't know	
Age:	17-30	54	84	50	63	251
	31-44	2	4	4	5	15
	45-58	2	5	2	9	18
	59-72	2	1	1	8	12
	72 & above	0	1	1	3	5
Total		60	95	58	88	301

The cross tabulation between the independent and independent variables shows that out of the total 301 respondents, 17.9% of the individuals amongst the age group of 17-30 years said that public service messages did change their perception, 33.5% thought otherwise and 19.9% were not sure. , 13.3% of the individuals amongst the age group of 31-44 years said that public service messages did change their perception, 26.6% thought otherwise and 26.6% were not sure. , 11.1% of the individuals amongst the age group of 45-58 years said that public service messages did change their perception, 27.7% thought otherwise and 11.1% were not sure. , 16.6% of the individuals amongst the age group of 59-72 years said that public service messages did change their perception, 8.33% thought otherwise and 8.33% were not sure. No individuals amongst the age group of 72 years and above said that public service messages did change their perception, 20% thought otherwise and 20% were not sure.

Age: * If you are a diabetic Patient, which type is it?

Cross tabulation

Count

		If you are a diabetic Patient, which type is it?			Total
		Type 1	Type 2	N/A	
Age:	17-30	17	4	230	251
	31-44	2	0	13	15
	45-58	5	4	9	18
	59-72	3	3	6	12
	72 & above	0	3	2	5
Total		27	14	260	301

The cross tabulation between the independent and independent variables shows that out of the total 301 respondents, 6.7% of the individuals amongst the age group of 17-30 years knew they had Type 1 Diabetes, 1.6% knew they had Type 2. The rest either didn't know about the types or were not diabetic. 13.3% of the individuals amongst the age group of 31-44 years knew they had Type 1 Diabetes, no individual in this age group knew they had Type 2. The rest either didn't know about the types or were not diabetic. 27.7% of the individuals amongst the age group of 45-58 years knew they had Type 1 Diabetes, 22.2% knew they had Type 2. The rest either didn't know about the types or were not diabetic. 25% of the individuals amongst the age group of 59-72 years knew they had Type 1 Diabetes, 25% knew they had Type 2. The rest either didn't know about the types or were not diabetic. None of the individuals amongst the age group of 72 years and above knew they had Type 1 Diabetes, 60% knew they had Type 2. The rest either didn't know about the types or were not diabetic.

Age: * How many times do you go for a regular check-up?

Cross tabulation

Count

		How many times do you go for a regular check-up?				Total
		Once a week	Once a month	More than six months	More than once a year	
Age:	17-30	2	19	83	147	251
	31-44	1	2	4	8	15
	45-58	2	1	7	8	18
	59-72	1	0	5	6	12
	72 & above	1	2	0	2	5
Total		7	24	99	171	301

The cross tabulation between age and regular check-ups shows that out of the individuals belonging to the age group between 17-30 years, 0.7% go for check-ups once a week, 7.56% get themselves checked once a month, 33.06% get themselves checked more than six months later whereas 58.56% get themselves checked up once a year. The respondents belonging to the age gap between 31-44 shows that 6.6% get themselves checked once a week, 13.3% get themselves checked once a month, 26.6% after six months and 53.3% after a year. The respondents from 45-58 show that 11.1% of the individuals get themselves checked once a week, 5.5% of them get

themselves checked once a month, 38.8% get themselves checked after six months whereas 44.4% get themselves checked after a year. The age gap of 59-72 shows that 8.3% of the respondents get themselves checked once a week, 0% get themselves checked once a month, 41.6% get themselves checked after six months and 50% get a regular checkup after a year. 20% of the Individuals from the age 72 and above get themselves checked once a week, 40% get themselves checked once a month whereas 0% get themselves checked after six months and 40% get themselves checked after a year.

Age: * Have you ever been a part of a stress management course/ program? Cross tabulation

Count

		Have you ever been a part of a stress management course/ program?		Total
		Yes	No	
Age:	17-30	49	202	251
	31-44	0	15	15
	45-58	0	18	18
	59-72	1	11	12
	72 & above	1	4	5
Total		51	250	301

The cross tabulation between the dependent and independent variable shows that 19.5% of the individuals belonging to the age group of 17-30 years were or had been part of a stress management program whereas 80.47% had not. None of the respondents from the age gap of 31-44 had ever been part of a stress management course, the same goes for the respondents belonging to the age group of 45-58 years. Respondents with age ranging from 59-72 possessed 8.3% of which attended or had been part of a stress management course whereas the remaining 91.6% had never been part

of such a thing. 20% of the respondent belonging to the age group of 72 and above had been a part of the stress management program whereas the remaining 80% had never taken part in it.

Age: * Is there any specific local cure facility for NCDs available in your area? Cross tabulation

Count

		Is there any specific local cure facility for NCDs available in your area?		Total
		Yes	No	
Age:	17-30	122	129	251
	31-44	6	9	15
	45-58	14	4	18
	59-72	9	3	12
	72 & above	4	1	5
Total		155	146	301

The cross tabulation between the dependent and independent variable here indicates that 48.6% of the respondents from the age group of 17-30 years possessed a local facility for NCD's close to them whereas, 51.39% did not. 40% of the respondents from the age group of 31-44 had the local cure facility for NCD's close by their region whereas 60% did not. 77.7% of the individuals from the age gap of 45-58 did possess the facility for cure of NCD's whereas 22.2% did not. 75% of the respondents belonging to the age gap of 59-72, did possess the facility of cure center for NCD's in their area whereas 25% did not. Respondents belonging to the age group of 72 and above possess 80% individuals who did have the local cure facility close-by whereas 20% did not.

Age: * Do you get at least 30 minutes of exercise or activity every day? Cross tabulation

Count

		Do you get at least 30 minutes of exercise or activity every day?		Total
		Yes	No	
Age:	17-30	129	122	251
	31-44	6	9	15
	45-58	10	8	18
	59-72	5	7	12
	72 & above	0	5	5
Total		150	151	301

The cross tabulation between the dependent and independent variable here indicates that 51.4% of the respondents from the age group of 17-30 got at least 30 minutes of exercise daily whereas, 48.6% did not. 40% of the respondents from the age group of 31-44 got at least 30 minutes of exercise daily whereas 60% did not. 55.6% of the individuals from the age gap of 45-58 got at least 30 minutes of exercise daily whereas 44.4% did not. 41.67% of the respondents belonging to the age gap of 59-72, got at least 30 minutes of exercise daily whereas 58.3% did not. All Respondents belonging to the age group of 72 and above did not get at least 30 minutes of exercise daily.

Age: * Do you k1w that there are more than 40% of deaths are due to NCDs? Cross tabulation

Count

		Do you know that there are more than more than 40% of deaths are due to NCDs?		Total
		Yes	No	
Age:	17-30	69	182	251
	31-44	3	12	15
	45-58	8	10	18
	59-72	5	7	12
	72 & above	1	4	5
Total		86	215	301

Only 28.5% of the total respondents knew that 40% of the deaths are due to NCDs. 22.92% were aged between 17-30, 0.9% between the age of 31-44, 2.6% from 45-58, 1.66% from 59-72 and only 0.33% above the age of 72 had any idea of the fact.

Age: * Do you 0: [Better lifestyle will help in preventing NCDs?] Cross tabulation

Count

		Do you 0: [Better lifestyle will help in preventing NCDs?]					Total
		Agree	Highly Agree	Neutral	Disagree	Highly Disagree	
Age:	17-30	135	84	26	4	2	251
	31-44	3	6	6	0	0	15
	45-58	12	6	0	0	0	18
	59-72	5	7	0	0	0	12
	72 & above	1	3	0	0	1	5
Total		156	106	32	4	3	301

A total of 156 respondents, which makes 51.8% of the total responses agreed to the above point. 35% respondents highly agreed to the point, 10.63% were neutral, 1.32 % highly disagreed and 0.99% disagreed to the point. 83.58% of the total responses either agreeing or highly agreeing

were aged 17-30 and only 16.42% were above 30.

Age: * Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?] Cross tabulation

Count

		Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?]				
		Agree	Highly Agree	Neutral	Disagree	Highly Disagree
Age:	17-30	111	71	50	14	1
	31-44	3	5	6	0	1
	45-58	10	5	1	0	0
	59-72	7	4	0	1	0
	72 & above	2	2	0	0	1
Total		133	87	57	15	3

A total of 73.08% responses were either agreeing of highly agreeing to the statement (82.7 % aged 17-30, 3.6% from 31-44, 6.8% from 45-58, 5% from 59-72 and 1.8% were above 722), 18.9 % were neutral and only 5.9% disagreed.

Gender: * Do you k1w about 1n-communicable diseases? Cross tabulation

Count

		Do you k1w about 1n-communicable diseases?		Total
		Yes	No	
Gender:	Male	50	87	137
	Female	93	69	162
	Other	1	1	2
Total		144	157	301

Out of the total male respondents, 36.5% knew about NCD's whereas 64.5% did not. Out of the total female respondents, 57.4% knew about NCD's whereas 42.6% did not.

Gender: * Has any of your family member encountered NCDs? Cross tabulation

Count

		Has any of your family member encountered NCDs?		Total
		Yes	No	
Gender:	Male	74	63	137
	Female	85	77	162
	Other	0	2	2
Total		159	142	301

Out of the total male respondents, 54.01% had at least one family member that encountered NCD's

whereas 55.99% did not. Out of the total female population, 52.5% had at least one family member that encountered NCD's whereas 47.5% did not. 100% of the third gender respondents had no family member that encountered NCD's.

Gender: * Did he/she was able to get a proper treatment? Cross tabulation

Count

		Did he/she was able to get a proper treatment?		Total
		Yes	No	
Gender:	Male	46	91	137
	Female	72	90	162
	Other	1	1	2
Total		119	181	301

Out of the total male respondents, 33.6% were able to get a proper treatment while 66.4% did not. Out of the total female respondents 55.6% were able to get a proper treatment while 44.4% did not. Out of the total third gender respondent's half were able to get a proper treatment while half were not.

Gender: * Do you smoke? Cross tabulation

Count

		Do you smoke?		Total
		Yes	No	
Gender:	Male	56	81	137
	Female	14	148	162
	Other	1	1	2
Total		71	230	301

Out of the total male respondents, 40.8% were smokers while 59.2% did not. Out of the total female respondents 8.6% were able to get a proper treatment while 91.4% did not. Out of the third gender respondents half received a proper treatment while the other half did not.

Gender: * Do you think public service messages on television, social media and packets of cigarettes alongside various 1 smoking board signs have had any effect on your perception or decision towards smoking? Cross tabulation

Count

		Do you think public service messages on television, social media and packets of cigarettes alongside various no smoking board signs have had any effect on your perception or decision towards smoking?				Total
		Yes	No	Maybe	Don't know	
Gender:	Male	22	59	20	36	137
	Female	37	36	38	51	162
	Other	1	0	0	1	2
Total		60	95	58	88	301

Out of the total male respondents, 16.5% think public service messages did have an effect on their perception towards smoking, 43% think otherwise, 14.6% were not sure and 26.3% didn't know. Out of the total female population 22.8% think public service messages did have an effect on their perception towards smoking, 22.2% think otherwise, 22.8% are not sure and 31.5% didn't know.

Out of the total third gender respondents, 50% think public service messages did have an effect on their perception towards smoking whereas the rest don't know if it actually had an effect or not.

Gender: * Were you ever motivated to quit smoking? Cross tabulation

Count

		Were you ever motivated to quit smoking?			Total
		Yes	No	Non-Smokers	
Gender:	Male	40	32	65	137
	Female	23	15	124	162
	Other	0	1	1	2
Total		63	48	190	301

Out of the total male smokers, 55.5% were at some point motivated to quit smoking whereas 44.5% were not. Out of the total female smokers 60.5% were motivated to quit smoking whereas 29.5% were not. Out of the total third gender respondents, none were motivated to quit smoking.

Gender: * If you are a diabetic Patient, which type is it? Cross tabulation

Count

		If you are a diabetic Patient, which type is it?			Total
		Type 1	Type 2	Don't know	
Gender:	Male	22	8	107	137
	Female	4	6	152	162
	Other	1	0	1	2
Total		27	14	260	301

Out of the total male respondents, 16.1% knew they had Type 1 Diabetes, 5.8% knew they had Type 2 diabetes and 78.1% did not know. Out of the total female respondents, 2.4% knew they had Type 1 diabetes, 3.7% knew they had Type 2 diabetes and 93.9% did not know. Out of the total third gender respondents, 50% knew that they had Type 1 Diabetes whereas 50% didn't know.

Gender: * How many times do you go for a regular check-up? Cross tabulation

Count

		How many times do you go for a regular check-up?				Total
		Once a week	Once a month	More than six months	More than once a year	
Gender:	Male	3	8	48	78	137
	Female	3	16	50	93	162
	Other	1	0	1	0	2
Total		7	24	99	171	301

Out of the total male respondents, 2.2% had checkups at least once a week, 5.8% had checkups at least once a month, 35% had checkups after six months and 56.9% had checkups after more than a year. Out of the total female respondents, 1.9% had checkups at least once a week, 9.8% had checkups at least once a month, 30.8% had checkups after six months and 57.4% had checkups after more than a year. Out of the total third gender respondents, 50% had a checkup once a week while the rest had a checkup after more than a year.

Gender: * Have you ever been a part of a stress management course/ program? Cross tabulation

Count

		Have you ever been a part of a stress management course/ program?		Total
		Yes	No	
Gender:	Male	22	115	137
	Female	28	134	162
	Other	1	1	2

Total	51	250	301

Out of the total male respondents, 16% had been part of a stress management program whereas 84% had not. Out of the total female respondents, 17.3% had been part of a stress management program whereas 82.7% had not. Out of the total third gender respondents, 50% had been part of a stress management program whereas 50% had not.

Gender: * Is there any specific local cure facility for NCDs available in your area? Cross tabulation

Count

		Is there any specific local cure facility for NCDs available in your area?		Total
		Yes	No	
Gender:	Male	61	76	137
	Female	93	69	162
	Other	1	1	2
Total		155	146	301

Out of the total male respondents, 44.5% had local cure facilities for NCD's in their area whereas 55.5% did not. Out of the total female respondents, 57.4% had local cure facilities for NCD's in their area whereas 42.6% did not. Out of the total third gender respondents, 50% had been part of a stress management program whereas 50% had not.

Gender: * Do you get at least 30 minutes of exercise or activity every day? Cross tabulation

Count

		Do you get at least 30 minutes of exercise or activity every day?		Total
		Yes	No	
Gender:	Male	68	69	137
	Female	81	81	162
	Other	1	1	2
Total		150	151	301

Out of the total male respondents, 49.6% got at last 30 minutes of exercise daily whereas 50.4% did not. Out of the total female respondents, 50% got at last 30 minutes of exercise daily whereas 50% did not. Out of the total third gender respondents, 50% got at last 30 minutes of exercise daily whereas 50% did not.

Gender: * Do you k1w that there are more than 40% of deaths are due to NCDs? Cross tabulation

Count

		Do you k1w that there are more than 40% of deaths are due to NCDs?		Total
		Yes	No	
Gender:	Male	26	111	137
	Female	59	103	162
	Other	1	1	2
Total		86	215	301

Out of the total male respondents, 18.9% knew that there are more than 40% of the total deaths are due to NCD's whereas 50.4% did not. Out of the total female respondents, 36.4% knew that there are more than 40% of the total deaths are due to NCD's whereas 63.6% did not. Out of the total

Third gender respondents, 50% knew that there are more than 40% of the total deaths are due to NCD's whereas 50% did not.

Gender: * Do you 0: [Better lifestyle will help in preventing NCDs?] Cross tabulation

Count

		Do you 0: [Better lifestyle will help in preventing NCDs?]					Total
		Agree	Highly Agree	Neutral	Disagree	Highly Disagree	
Gender:	Male	63	58	13	1	2	137
	Female	92	48	19	3	0	162
	Other	1	0	0	0	1	2
Total		156	106	32	4	3	301

Out of 301 responses 51.8% (156/301) respondents agreed to the point that better lifestyle will help in preventing NCDs. Number of women agreeing to the point were higher than men which makes 58.9% of total respondents agreeing to the point.,

Gender: * Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?] Cross tabulation

Count

		Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?]	Total
		5	
Gender:	Male	2	137
	Female	4	162
	Other	0	2
Total		6	301

98 % of the total respondents agreed to the point that poverty hinders proper treatment (52.49% females and 44.85% males). 2% were against the statement (0.66% male and 1.34% females)

Education: * Do you know about non-communicable diseases? Cross tabulation

Education: * Do you k1w about 1n-communicable diseases? Cross tabulation

Count

		Do you k1w about 1n-communicable diseases?		Total
		Yes	No	
Education:	Intermediate	12	26	38
	Bachelors	103	108	211
	Post Graduate	27	21	48
	PhD	2	2	4
Total		144	157	301

The cross tabulation between education and awareness indicates that 31.57% of the students of intermediate level were aware of the concept regarding NCD's whereas 68.4% were no.48.8% of the bachelor's students knew about NCD's whereas 51.1% did not. Amongst the post graduate

students, 56.25% were aware regarding what NCD's were whereas 43.75% were not aware. Amongst the PhD students, 50% were aware whereas 50%were unaware of what NCD's were.

Education: * Has any of your family member encountered NCDs? Cross tabulation

Count

		Has any of your family member encountered NCDs?		Total
		Yes	No	
Education:	Intermediate	23	15	38
	Bachelors	102	109	211
	Post Graduate	31	17	48
	PhD	3	1	4
Total		159	142	301

In the cross tabulation between education and its encounter, 60.5% of the intermediate students have had family members that have encountered NCD's whereas 39.4% had not. 48.3% of the respondents belonging to the bachelor's level had family that had encountered NCD's whereas 51.6% did not. Amongst the post graduate level, 64.5% did have family that had encountered NCD's whereas 35.4% did not. 75% of the PhD respondents had family members that had encountered NCD's whereas, 25% had not.

Education: * Did he/she was able to get a proper treatment? Cross tabulation

Count

		Did he/she was able to get a proper treatment?			Total
		Yes	No	Don't know	
Education:	Intermediate	11	11	16	38
	Bachelors	84	36	91	211
	Post Graduate	23	5	20	48
	PhD	1	1	2	4
Total		119	53	129	301

The cross tabulation between education and proper treatment shows that 28.9% of the respondents belonging to the intermediate level had family members receive proper treatment for NCD's, 28.9% did not whereas 42.1% were unaware of the details of the matter at hand. Amongst the Bachelors respondents, 39.81% believed that proper treatment for NCD's was given, 17.06% believed otherwise and 43.12% did not know whether proper treatment was being given or not. 47.9% of the post graduate students believed that proper treatment regarding NCD's was given, 10.4% believed otherwise whereas 41.6% were not sure. 25% of the PhD respondents believed that proper treatment was being given, 25% disagreed and 50% were not sure.

Education: * Do you smoke? Cross tabulation

Count

		Do you smoke?		Total
		Yes	No	
Education:	Intermediate	13	25	38
	Bachelors	42	169	211
	Post Graduate	15	33	48
	PhD	1	3	4
Total		71	230	301

The cross tabulation between education and smoking shows that 34.2% are smokers whereas

65.7% were not smokers. 19.9% of the bachelor's students were smokers whereas 80% were not. 31.25% of post graduates were smokers whereas 68.75% were not. 25% of the PhD respondents were smokers whereas the remaining 75% were not.

Education: * Do you think public service messages on television, social media and packets of cigarettes alongside various 1 smoking board signs have had any effect on your perception or decision towards smoking? Cross tabulation

Count

		Do you think public service messages on television, social media and packets of cigarettes alongside various 1 smoking board signs have had any effect on your perception or decision towards smoking?			
		Yes	No	Maybe	3
Education:	Intermediate	7	12	6	13
	Bachelors	45	68	39	59
	Post Graduate	7	15	13	13
	PhD	1	0	0	3
Total		60	95	58	88

The cross tabulation between education and public service awareness campaigns shows that 18.4% of the intermediate students did have an effect on their perception towards smoking through public campaigns whereas31.5% did not and 50% were not sure if it did or did not.

21.3% of the respondents from the bachelor's degree did get affected by these public campaigns, 32.2% did not whereas 46.4% were not sure. Amongst the Post graduates,

14.5% of the respondents did get affected by public campaigns whereas 31.25% did not and 54.16% were not sure. 25% of the PhD respondents were affected by the campaigns whereas the remaining 75% weren't sure.

Education: * If you are a diabetic Patient, which type is it? Cross tabulation

Count

		If you are a diabetic Patient, which type is it?			Total
		Type 1	Type 2	Don't know	
Education:	Intermediate	5	2	31	38
	Bachelors	16	8	187	211
	Post Graduate	5	4	39	48
	PhD	1	0	3	4
Total		27	14	260	301

The cross tabulation between education and diabetes shows that 13% of the intermediaries were type 1 diabetic, 5.2% were type 2 diabetic and 81.57% were not aware. 7.5% of the respondents from bachelor's degree had type 1 diabetes, 3.79% had type 2 and 88.6% were either not aware or did not have diabetes. 10.4% of the post graduate respondents had type -1 diabetes, 8.3% had type -2 diabetes whereas 81.25% were either not aware or were not diabetic. 25% of the PhD respondents had type-1 diabetes whereas the rest of the 75% either did not have diabetes or weren't aware of it.

Education: * How many times do you go for a regular check-up? Cross tabulation

Count

		How many times do you go for a regular check-up?				Total
		Once a week	Once a month	More than six months	More than once a year	
Education:	Intermediate	0	2	10	26	38
	Bachelors	4	19	69	119	211
	Post Graduate	1	3	20	24	48
	PhD	2	0	0	2	4
Total		7	24	99	171	301

The cross tabulation between education and regular checkups indicate that no respondent from the intermediate level goes for a checkup once a week, whereas 5.26% get themselves checked once a month, 26.31% get themselves checked once a month and 68.4% get themselves checked once a year. The respondents from the bachelor level indicate that 1,89% of the respondents get themselves checked once a week, 9% get themselves checked once a month, 32.7% get themselves checked every six months whereas 56.3% get themselves checked after more than a year. 2.08% of the respondents from the post graduate level got themselves checked once a week, 6.25% get themselves checked once a month, 41.6% got themselves checked after 6 months whereas 50% got themselves checked after a year. 50% of the PhD respondents got themselves checked every week whereas the remaining 50% of the respondents got themselves checked after more than a year.

Education: * Have you ever been a part of a stress management course/ program? Cross tabulation

Count

		Have you ever been a part of a stress management course/ program?		Total
		Yes	No	
Education:	Intermediate	2	36	38
	Bachelors	41	170	211
	Post Graduate	6	42	48
	PhD	2	2	4
Total		51	250	301

The cross tabulation of education and stress management shows that amongst the intermediate level, 5.26% of the respondents had participated in a stress management course whereas the remaining 94.7% had not. 19.4% of the respondents from the bachelor's level had been a part of a stress management course whereas the remaining 80.5% had not. 12.5% of the post graduate individuals had been part of a stress management course whereas 87.5% had not.

Education: * Is there any specific local cure facility for NCDs available in your area? Cross tabulation

Count

		Is there any specific local cure facility for NCDs available in your area?		Total
		Yes	No	
Education:	Intermediate	15	23	38
	Bachelors	103	108	211
	Post Graduate	34	14	48
	PhD	3	1	4
Total		155	146	301

The cross tabulation between the dependent and independent variable shows that 39.4% of the

respondents from the intermediate level had a local facility in a nearby area, whereas 60.5% did not. Amongst the bachelor's respondents, 48.8% possessed a local facility nearby whereas 51.1% did not. 70.8% of the respondents from the postgraduate level did possess a local facility nearby whereas 29.16% did not. 75% of the respondents possessed a facility nearby whereas 25% did not.

Education: * Do you get at least 30 minutes of exercise or activity every day?

Cross tabulation

Count

		Do you get at least 30 minutes of exercise or activity every day?		Total
		Yes	No	
Education:	Intermediate	17	21	38
	Bachelors	109	102	211
	Post Graduate	22	26	48
	PhD	2	2	4
Total		150	151	301

The cross tabulation between education and exercise shows that 44.7% of the intermediate level respondents exercised daily for 30 minutes whereas 55.2% did not. 51.65% of the respondents from the graduate level did exercise for a minimum of 30 minutes whereas 48.3% didn't. 45.8% of the respondents from the post graduate level did indulge in exercise whereas 54.1% did not. 50% of the PhD respondents involved themselves with exercise whereas the other 50% did not.

Education: * Do you k1w that there are more than 40% of deaths are due to NCDs? Cross tabulation

Count

		Do you k1w that there are more than 40% of deaths are due to NCDs?		Total
		Yes	No	
Education:	Intermediate	6	32	38
	Bachelors	62	149	211
	Post Graduate	16	32	48
	PhD	2	2	4
Total		86	215	301

The cross tabulation between education and knowledge about NCD's shows that 15.78% of the respondents from the intermediate level knew whereas 84.2% did not know that NCD's cause 40% of deaths across the world. Amongst, the bachelor's level, 29.38% of the respondents knew about the seriousness of NCD's whereas 70.6% were unaware. 33.3% of the respondents from post graduate level were aware about the severity of NCD's whereas 66.66% were unaware. 50% of the PhD respondents knew about the dangers of NCD's whereas the other 50% did not.

Education: * Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?] Cross tabulation

Count

		Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?]	Total
		No	
Education:	Intermediate	1	38
	Bachelors	4	211
	Post Graduate	1	48
	PhD	0	4
Total		6	301

The cross tabulation between education and poverty shows that 97.3% individuals from the intermediate level believe that poverty is responsible for proper treatment towards NCD's whereas 2.6% believe otherwise. 98.1% of the respondents from the bachelor's level agreed that poverty is a hindrance towards proper treatment towards NCD's whereas 1.8% disagreed. 97.9% of the individuals from the post graduate level believed that poverty is the main hindrance towards proper treatment of NCD's whereas 2% disagreed. 100% of the respondents from PhD level believed that poverty was the hindrance towards treatment of NCD's.

Employability status: * Do you k1w about 1n-communicable diseases? Cross tabulation

Count

		Do you k1w about 1n-communicable diseases?		Total
		Yes	No	
Employability status:	Employed	35	44	79
	Unemployed	100	98	198
	Self Employed	9	15	24
Total		144	157	301

The cross tabulation between employability and awareness shows that 44.3% of the individuals

employed knew about NCD's whereas 55.6% did not. 50.5% of the unemployed respondents were aware about what NCD's were whereas 49.49% were not. 37.5% of the self-employed respondents were aware about the concept of NCD's whereas 62.5% were not.

Employability status: * Has any of your family member encountered NCDs? Cross tabulation

Count

		Has any of your family member encountered NCDs?		Total
		Yes	No	
Employability status:	Employed	43	36	79
	Unemployed	101	97	198
	Self Employed	15	9	24
Total		159	142	301

The cross tabulation between employability and encountering NCD's shows that 54.4% of the individuals had family members that had encountered NCD's whereas 45.56% of those individuals did not have relatives encountering NCD's. Amongst the unemployed respondents, 51% have family members suffering from NCD's whereas 48.9% do not.62.5% of the self-employed respondents had family members suffering from NCD's and 37.5% of them did not.

Employability status: * Did he/she was able to get a proper treatment? Cross tabulation

Count

		Did he/she was able to get a proper treatment?			Total
		Yes	No	I don't know	
Employability status:	Employed	32	7	40	79
	Unemployed	81	41	76	198
	Self Employed	6	5	13	24
Total		119	53	129	301

The cross tabulation between employability status and proper treatment indicates that 40.5% of the employed individuals did receive proper treatment whereas 8.8% did not and 50.6% were not sure. Amongst the unemployed respondents, 40.9% of the individuals received proper treatment for NCD's, 20.7% did not whereas 38.38% were not sure and didn't know. 25% of the self-employed respondents felt as though they did receive proper treatment for the case of NCD's, 20.8% of those however felt the opposite and did not think that they received proper treatment whereas 54.1% of the respondents were not sure.

Employability status: * Do you smoke? Cross tabulation

Count

		Do you smoke?		Total
		Yes	No	
Employability status:	Employed	23	56	79
	Unemployed	37	161	198
	Self Employed	11	13	24
Total		71	230	301

The cross tabulation between employability status and smoking shows that 29.1% of the employed respondents were smokers whereas 70.8% were non-smokers. 18.6% of the unemployed respondents were smokers whereas, 81.3% were non-smokers. Lastly, 45.8% were smokers whereas 54.1% were non-smokers amongst the self-employed respondents.

Employability status: * Do you think public service messages on television, social media and packets of cigarettes alongside various 1 smoking board signs have had any effect on your perception or decision towards smoking? Cross tabulation

Count

		Do you think public service messages on television, social media and packets of cigarettes alongside various 1 smoking board signs have had any effect on your perception or decision towards smoking?			
		Yes	No	Maybe	
Employability status:	Employed	21	27	11	20
	Unemployed	37	60	43	58
	Self Employed	2	8	4	10
Total		60	95	58	88

The cross tabulation between employability status and public awareness campaigns shows that 26.58% of the employed respondents did get affected by the public campaigns whereas 34.17% did not and 39.24% were not sure. Amongst the list of unemployed respondents, 17.53% did get affected by the public campaigns, 28.4% did not whereas, and 47.86% were not sure. Lastly, 8.3% of the self-employed respondents did get affected by the public campaigns, 33.3% were not affected whereas, and 58.33% were not sure.

Employability status: * If you are a diabetic Patient, which type is it? Cross tabulation

Count

		If you are a diabetic Patient, which type is it?			Total
		Type 1	Type 2	2	
Employability status:	Employed	13	4	62	79
	Unemployed	11	7	180	198
	Self Employed	3	3	18	24
Total		27	14	260	301

The cross tabulation shows a relationship between employability status and diabetic patients.

16.4% of the employed respondents had Type-1 diabetes and 5.06% had type-2 diabetes whereas 78.4% either didn't have diabetes or weren't aware of this. 5.5% of the unemployed respondents had type-1 diabetes, 3.5% had type- 2 diabetes whereas 90.9% either weren't diabetic or were not aware of it. 12.5% of the self-employed respondents had type-1 diabetes whereas 12.5% had type-2 diabetes and 75% were either unaware or did not have diabetes.

Employability status: * How many times do you go for a regular check-up? Cross tabulation

Count

		How many times do you go for a regular check-up?			
		Once a week	Once a month	More than six months	More than once a year
Employability status:	Employed	1	8	24	46
	Unemployed	3	14	69	112
	Self Employed	3	2	6	13
Total		7	24	99	171

The cross tabulation shows a relationship between employability status and checkups. 1.2% of the employed respondents get themselves checked once a week, 10.1% got themselves checked once a month, 30.3% got themselves checked after six months whereas lastly, 58.2% got themselves checked after more than a year. 1.5% of the unemployed respondents got themselves checked once a week, 7% get themselves checked once a month, 34.8% get themselves checked after more than six years whereas, 56.5% got themselves checked after more than a year.

Employability status: * Have you ever been a part of a stress management course/ program? Cross tabulation

Count

		Have you ever been a part of a stress management course/ program?		Total
		Yes	No	
Employability status:	Employed	17	62	79
	Unemployed	29	169	198
	Self Employed	5	19	24
Total		51	250	301

The cross tabulation shows a relationship between employability status and stress management.21.5% of the employed individuals did take part in a stress management whereas 78.4% did not. 14.6% of the unemployed respondents had taken part in a stress management course and 85.3% did not. Amongst the self-employed 20.8% did take part in stress management course whereas 79.1% did not.

Employability status: * Is there any specific local cure facility for NCDs available in your area? Cross tabulation

Count

		Is there any specific local cure facility for NCDs available in your area?		Total
		Yes	No	
Employability status:	Employed	36	43	79
	Unemployed	106	92	198
	Self Employed	13	11	24
Total		155	146	301

45.5% of the employed individuals possessed a local facility in the nearby are whereas 54.5% did

not. 53.53% of the unemployed respondents believed to have a local cure facility nearby whereas 46.6% did not. Amongst the self-employed respondents, 54.1% did have a local care facility nearby but 45.8% did not.

Employability status: * Do you get at least 30 minutes of exercise or activity every day?

Cross tabulation

Count

		Do you get at least 30 minutes of exercise or activity every day?		Total
		Yes	No	
Employability status:	Employed	36	43	79
	Unemployed	101	97	198
	Self Employed	13	11	24
Total		150	151	301

The cross tabulation shows a relationship between employability status and exercise. 45.5% of the employed respondents are involved in regular exercise whereas 54.4% are not. 51.1% of the unemployed are involved in regular physical activity whereas 48.9% were not. Amongst the self-employed individuals, 54, 1% were involved in exercise whereas 45.83% were not.

Employability status: * Do you k1w that there are more than 40% of deaths are due to NCDs? Cross tabulation

Count

		Do you k1w that there are more than 40% of deaths are due to NCDs?		Total
		Yes	No	
Employability status:	Employed	22	57	79
	Unemployed	55	143	198
	Self Employed	9	15	24
Total		86	215	301

The cross tabulation shows a relationship between employability status and deaths. 27.8% of the employed respondents were aware about the deaths caused because of NCD's whereas 72.51% were not. 27.7% of the unemployed were aware about the consequences of NCD's and 72.2% were not. 37.5% were aware about the consequence of NCD's amongst the self-employed respondents whereas 62.5% were not.

Employability status: * Do you 0: [Better lifestyle will help in preventing NCDs?] Cross tabulation

Count

		Do you 0: [Better lifestyle will help in preventing NCDs?]				
		Agree	Highly Agree	Neutral	Disagree	Highly Disagree
Employability status:	Employed	38	34	6	1	0
	Unemployed	107	63	23	3	2
	Self Employed	11	9	3	0	1
Total		156	106	32	4	3

The cross tabulation shows a relationship between employability status and life style. 48.1% employed respondents believed to agree that better life style can help prevent NCD's, 43.03% highly agreed to it, 7.5% were neutral to this and 1.2 % disagreed. 54.04% of the unemployed respondents agreed with the belief of prevention of NCD's through a better life style, 31.8% highly agreed, 11.6% were neutral, 1.5% disagreed whereas 1% highly disagreed. Amongst the self-employed respondents, 45.83% agreed with the concept of a better life style helping towards

prevention of NCD's whereas, 37.5% highly agreed, 12.5% were neutral and 4.1% highly disagreed.

Employability status: * Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?] Cross tabulation

Count

		Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?]			
		Agree	Highly Agree	Neutral	Disagree
Employability status:	Employed	36	20	15	5
	Unemployed	89	60	36	9
	Self Employed	8	7	6	1
Total		133	87	57	15

The cross tabulation shows a relationship between employability status and poverty. 45.5% of the employed respondents agreed that poverty is the main hindrance towards proper treatment towards NCD's, 25.31% highly agreed, 18.9% were neutral whereas 6.3% disagreed. 44.94% of the unemployed respondents agreed that poverty causes hindrance towards treatment of NCD's, 30.3% highly agreed, 18.1% were neutral and 4.5% disagreed. 33% of the self-employed respondents agreed poverty to be a hindrance, 29.16% highly agreed to this, 25% were neutral whereas 4.16% disagreed.

Count

		Do you k1w about 1n-communicable diseases?		Total
		Yes	No	
Background:	Urban	98	98	196
	Rural	46	59	105
Total		144	157	301

Out of the total respondents from urban areas of Pakistan, 50% knew about NCD's whereas 50% did not. Out of the total rural population 43.8% knew about NCD's whereas 56.2% did not.

Background: * Has any of your family member encountered NCDs?

Cross tabulation

Count

		Has any of your family member encountered NCDs?		Total
		Yes	No	
Background:	Urban	103	93	196
	Rural	56	49	105
Total		159	142	301

Out of the total urban population, 52.5% had at least one family member who encountered NCD's whereas 47.5% did not. Out of the total rural population 53.3% had at least one family member who encountered NCD's whereas 46.7% did not.

Background: * Did he/she was able to get a proper treatment? Cross tabulation

Count

		Did he/she was able to get a proper treatment?			Total
		Yes	No	NO NCD's	
Background:	Urban	88	25	83	196
	Rural	31	28	46	105
Total		119	53	129	301

Out of the total urban population who had at least one family member who encountered NCD's, 85.4% were able to receive proper treatment whereas 14.6% did not. Out of the total rural population who had at least one family member who encountered NCD's, 55.3% were able to receive proper treatment whereas 44.7% did not.

Background: * Do you smoke? Cross tabulation

Count

		Do you smoke?		Total
		Yes	No	
Background:	Urban	43	153	196
	Rural	28	77	105
Total		71	230	301

Out of the total urban respondents, 21.9% were smokers whereas 78.1% were nonsmokers. Out of the total rural respondents, 26.6% were smokers whereas 73.3% were nonsmokers.

Background: * Do you think public service messages on television, social media and packets of cigarettes alongside various 1 smoking board signs have had any effect on your perception or decision towards smoking? Cross tabulation

Count

		Do you think public service messages on television, social media and packets of cigarettes alongside various no smoking board signs have had any effect on your perception or decision towards smoking?				Total
		Yes	No	Maybe	3	
Background:	Urban	40	69	35	52	196
	Rural	20	26	23	36	105
Total		60	95	58	88	301

Out of all the smokers, 27.7% of the urban respondents thought public service messages did have an effect on their perception towards smoking, 47.9% thought it did not and 24.3% were not sure. Out of all the smokers, 28.9% of the rural respondents thought public service messages did have an effect on their perception towards smoking, 36.2% thought it did not and 33.3% were not sure.

Background: * If you are a diabetic Patient, which type is it? Cross tabulation

Count

		If you are a diabetic Patient, which type is it?			Total
		Type 1	Type 2	N/A	
Background:	Urban	16	10	170	196
	Rural	11	4	90	105
Total		27	14	260	301

Out of all the urban respondents, 8.1% knew they had Type 1 Diabetes, 5.1% knew they had Type 2 Diabetes while the rest either didn't know about the types or were not diabetic. Out of all the rural respondents, 12.2% knew they had Type 1 Diabetes, 4.4% knew they had Type 2 Diabetes while the rest either didn't know about the types or were not diabetic.

Background: * How many times do you go for a regular check-up? Cross tabulation

Count

		How many times do you go for a regular check-up?				Total
		Once a week	Once a month	More than six months	More than once a year	
Background:	Urban	5	11	70	110	196
	Rural	2	13	29	61	105
Total		7	24	99	171	301

Out of the total urban respondents, 2.5% had checkups once a week, 5.6% had checkups once a month, 35.7% had checkups after more than six months and 56.12% had checkups after more than a year. Out of the total rural respondents, 1.9% had checkups once a week, 12.3% had checkups once a month, 27.6% had checkups after more than six months and 58.1% had checkups after more than a year.

Background: * Have you ever been a part of a stress management course/ program? Cross tabulation

Count

		Have you ever been a part of a stress management course/ program?		Total
		Yes	No	
Background:	Urban	32	164	196
	Rural	19	86	105
Total		51	250	301

Background: * Is there any specific local cure facility for NCDs available in your area? Cross tabulation

Count

		Is there any specific local cure facility for NCDs available in your area?		Total
		Yes	No	
Background:	Urban	120	76	196
	Rural	35	70	105
Total		155	146	301

Background: * Do you get at least 30 minutes of exercise or activity every day? Cross tabulation

Count

		Do you get at least 30 minutes of exercise or activity every day?		Total
		Yes	No	
Background:	Urban	87	109	196
	Rural	63	42	105
Total		150	151	301

Background: * Do you k1w that there are more than 40% of deaths are due to NCDs? Cross tabulation

Count

		Do you k1w that there are more than 40% of deaths are due to NCDs?		Total
		Yes	No	
Background:	Urban	55	141	196
	Rural	31	74	105
Total		86	215	301

Background: * Do you 0: [Better lifestyle will help in preventing NCDs?] Cross tabulation

Count

		Do you 0: [Better lifestyle will help in preventing NCDs?]					Total
		Agree	Highly Agree	Neutral	Disagree	Highly Disagree	
Background:	Urban	107	64	22	1	2	196
	Rural	49	42	10	3	1	105
Total		156	106	32	4	3	301

Background: * Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?] Cross tabulation

Count

		Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?]				
		Agree	Highly Agree	Neutral	Disagree	Highly Disagree
Background:	Urban	86	51	42	12	1
	Rural	47	36	15	3	2
Total		133	87	57	15	3

ANOVA

		Sig.
Do you k1w about 1n-communicable diseases?	Between Groups	.024
	Within Groups	
	Total	
Are you aware NCDs pertains to Cardiovascular diseases (such as heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma), diabetes and Common mental Diseases (Such as depression and anxiety)?	Between Groups	.012
	Within Groups	
	Total	
Did he/she was able to get a proper treatment?	Between Groups	.515
	Within Groups	
	Total	
Do you think public service messages on television, social media and packets of cigarettes alongside various 1 smoking board signs have had any effect on your perception or decision towards smoking?	Between Groups	.016
	Within Groups	
	Total	
How many times do you go for a regular check-up?	Between Groups	.022
	Within Groups	
	Total	
Have you ever been a part of a stress management course/ program?	Between Groups	.072
	Within Groups	
	Total	

Is there any specific local cure facility for NCDs available in your area?	Between Groups	.027
	Within Groups	

The above presented ANOVA table signifies the relation between the variables used as independent variables, regressed against respective age of the respondents. The results show that there is a:

- Highly, statistically significant relationship between a respondent's age (i.e. independent variable) and knowing about the existence of 1n-communicable diseases', its pertinence to cardiovascular diseases, cancers, etcetera', the impact of public service messages via various communication media on one's perception or decision towards smoking, the number of times one went for a regular checkup, the respondent's history of association with a stress management course/program and the existence of any specific local cure facility for NCDs available in one's area (i.e. dependent variables) as p-value is less than the significance level of 9%, respectively.

- Highly, statistically insignificant relationship between a respondent's age (i.e. independent variable) and whether (s) he was able to get a proper treatment (i.e. dependent variable) as the p-value exceeds the significance level of 9%.

ANOVA

		Sig.
Do you limit the amount of salt and sugar in your diet?	Between Groups	.519
	Within Groups	
	Total	
Do you get at least 30 minutes of exercise or activity every day?	Between Groups	.176
	Within Groups	
	Total	
Do you k1w that there are more than 40% of deaths are due to NCDs?	Between Groups	.397
	Within Groups	
	Total	
Do you 0: [Better lifestyle will help in preventing NCDs?]	Between Groups	.005
	Within Groups	
	Total	
Do you 0: [NCDs are becoming a major health risk?]	Between Groups	.031
	Within Groups	
	Total	
Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?]	Between Groups	.409
	Within Groups	
	Total	

The above presented ANOVA table signifies the relation between the variables used as independent variables, regressed against respective age of the respondents. The results show that there is a:

- Highly, statistically significant relationship between a respondent's age (i.e. independent variable) and the perceptions that a better lifestyle will help in preventing NCDs and that

NCDs are becoming a major health risk (i.e. dependent variables) as the p-value is less than the significance level of 9%, respectively.

Highly, statistically insignificant relationship between a respondent's age (i.e. independent variable) and the limitation of the amount of salt and sugar ingested, the respondent's ability to obtain at least 30 minutes of exercise/activity per day, the knowledge of the fact that 40% of global deaths are associated with NCDs, and the perception that poverty is the main hindrance towards proper treatment of NCDs (i.e. dependent variables) as the p-value exceeds the significance level of 9%.

ANOVA

		Sig.
Do you k1w about 1n-communicable diseases?	Between Groups	.001
	Within Groups	
	Total	
Are you aware NCDs pertains to Cardiovascular diseases (such as heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma), diabetes and Common mental Diseases (Such as depression and anxiety)?	Between Groups	.007
	Within Groups	
	Total	
Did he/she was able to get a proper treatment?	Between Groups	.230
	Within Groups	
	Total	
Do you think public service messages on television,	Between Groups	.624

social media and packets of cigarettes alongside various 1 smoking board signs have had any effect on your perception or decision towards smoking?	Within Groups	
	Total	
How many times do you go for a regular check-up?	Between Groups	.020
	Within Groups	
	Total	
Have you ever been a part of a stress management course/ program?	Between Groups	.442
	Within Groups	
	Total	
Is there any specific local cure facility for NCDs available in your area?	Between Groups	.085
	Within Groups	

The above presented ANOVA table signifies the relation between the variables used as independent variables, regressed against respective gender of the respondents. The results show that there is a:

- Highly, statistically significant relationship between a respondent's gender (i.e. independent variable) and knowing about the existence of 1n-communicable diseases', its pertinence to cardiovascular diseases, cancers, etcetera', the number of times one went for a regular checkup, and the existence of any specific local cure facility for NCDs available in one's area (i.e. dependent variables) as p-value is less than the significance level of 9%, respectively.

Highly, statistically insignificant relationship between a respondent's gender (i.e. independent variable) and the impact of public service messages via various communication media on one's perception or decision towards smoking, whether (s) he was able to get a proper treatment, and the

respondent's history of association with a stress management course/program (i.e. dependent variables) as the p-value exceeds the significance level of 9%.

ANOVA

		Sig.
Do you limit the amount of salt and sugar in your diet?	Between Groups	.714
	Within Groups	
	Total	
Do you get at least 30 minutes of exercise or activity every day?	Between Groups	.998
	Within Groups	
	Total	
Do you k1w that there are more than 40% of deaths are due to NCDs?	Between Groups	.003
	Within Groups	
	Total	
Do you 0: [Better lifestyle will help in preventing NCDs?]	Between Groups	.029
	Within Groups	
	Total	
Do you 0: [NCDs are becoming a major health risk?]	Between Groups	.030
	Within Groups	
	Total	
Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?]	Between Groups	.407
	Within Groups	
	Total	

The above presented ANOVA table signifies the relation between the variables used as independent variables, regressed against respective gender of the respondents. The results show

that there is a:

- Highly, statistically significant relationship between a respondent's gender (i.e. independent variable) and the knowledge of the fact that 40% deaths are associated with NCDs, and the perceptions that a better lifestyle will help in preventing NCDs and that NCDs are becoming a major health risk (i.e. dependent variables) as the p-value is less than the significance level of 9%, respectively.

- Highly, statistically insignificant relationship between a respondent's gender (i.e. independent variable) and the respondent's ability to obtain at least 30 minutes of exercise/activity per day, limitation of the amount of salt and sugar ingested, and the perception that poverty is the main hindrance towards proper treatment of NCDs (i.e. dependent variables) as the p-value exceeds the significance level of 9%.

ANOVA

		Sig.
Do you k1w about 1n-communicable diseases?	Between Groups	.141
	Within Groups	
	Total	
Are you aware NCDs pertains to Cardiovascular diseases (such as heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma), diabetes and Common mental Diseases (Such as depression and anxiety)?	Between Groups	.017
	Within Groups	
	Total	
Did he/she was able to get a proper treatment?	Between Groups	.753

	Within Groups	
	Total	
Do you think public service messages on television, social media and packets of cigarettes alongside various 1 smoking board signs have had any effect on your perception or decision towards smoking?	Between Groups	.505
	Within Groups	
	Total	
How many times do you go for a regular check-up?	Between Groups	.026
	Within Groups	
	Total	
Have you ever been a part of a stress management course/ program?	Between Groups	.038
	Within Groups	
	Total	
Is there any specific local cure facility for NCDs available in your area?	Between Groups	.012
	Within Groups	

The above presented ANOVA table signifies the relation between the variables used as independent variables, regressed against respective education level of the respondents. The results show that there is a:

- Highly, statistically significant relationship between a respondent's education level (i.e. independent variable) and knowing about NCD's pertinence to cardiovascular diseases, cancers, etcetera', the number of times one went for a regular checkup, the respondent's history of association with a stress management course/program and the existence of any specific local cure facility for NCDs available in one's area (i.e. dependent variables) as p-value is less than the significance level of 9%, respectively.

- Highly, statistically insignificant relationship between a respondent's education level (i.e. independent variable) and knowing about the existence of 1n-communicable diseases, the impact of public service messages via various communication media on one's perception or decision towards smoking, and whether (s)he was able to get a proper treatment (i.e. dependent variables) as the p-value exceeds the significance level of 9%.

ANOVA

		Sig.
Do you limit the amount of salt and sugar in your diet?	Between Groups	.047
	Within Groups	
	Total	
Do you get at least 30 minutes of exercise or activity every day?	Between Groups	.808
	Within Groups	
	Total	
Do you k1w that there are more than 40% of deaths are due to NCDs?	Between Groups	.210
	Within Groups	
	Total	
Do you 0: [Better lifestyle will help in preventing NCDs?]	Between Groups	.000
	Within Groups	
	Total	
Do you 0: [NCDs are becoming a major health risk?]	Between Groups	.001
	Within Groups	
	Total	
Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?]	Between Groups	.999
	Within Groups	

	Total	

The above presented ANOVA table signifies the relation between the variables used as independent variables, regressed against respective education level of the respondents. The results show that there is a:

- Highly, statistically significant relationship between a respondent's education level (i.e. independent variable) and the respondent's limits on addition of sugar and salt in his/her diet, and the perceptions that a better lifestyle will help in preventing NCDs and that NCDs are becoming a major health risk (i.e. dependent variables) as the p-value is less than the significance level of 9%, respectively.

Highly, statistically insignificant relationship between a respondent's education level (i.e. independent variable) and the respondent's ability to obtain at least 30 minutes of exercise/activity per day, the knowledge of the fact that 40% of global deaths are associated with NCDs, and the perception that poverty is the main hindrance towards proper treatment of NCDs (i.e. dependent variables) as the p-value exceeds the significance level of 9%

ANOVA

		Sig.
Do you k1w about 1n-communicable diseases?	Between Groups	.373
	Within Groups	
	Total	
Are you aware NCDs pertains to Cardiovascular diseases (such as heart attacks and stroke), cancers,	Between Groups	.783
	Within Groups	

chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma), diabetes and Common mental Diseases (Such as depression and anxiety)?	Total	
Did he/she was able to get a proper treatment?	Between Groups	.202
	Within Groups	
	Total	
Do you think public service messages on television, social media and packets of cigarettes alongside various 1 smoking board signs have had any effect on your perception or decision towards smoking?	Between Groups	.082
	Within Groups	
	Total	
How many times do you go for a regular check-up?	Between Groups	.273
	Within Groups	
	Total	
Have you ever been a part of a stress management course/ program?	Between Groups	.339
	Within Groups	
	Total	
Is there any specific local cure facility for NCDs available in your area?	Between Groups	.473
	Within Groups	

The above presented ANOVA table signifies the relation between the variables used as independent variables, regressed against respective employability status of the respondents. The results show that there is a:

- Highly, statistically significant relationship between a respondent's employability status (i.e. independent variable) and the impact of public service messages via various

communication media on one's perception or decision towards smoking (i.e. dependent variable) as p-value is less than the significance level of 9%, respectively.

- Highly, statistically insignificant relationship between a respondent's employability status (i.e. independent variable) and knowing about the existence of 1n-communicable diseases, its pertinence to cardiovascular diseases, cancers, et cetera, whether (s)he was able to get a proper treatment, the number of times one has gone for a regular check-up, the respondent's history of association with a stress management course/program, and the existence of any specific local cure facility for NCDs available in one's area (i.e. dependent variables) as the p-value exceeds the significance level of 9%.

ANOVA

		Sig.
Do you limit the amount of salt and sugar in your diet?	Between Groups	.377
	Within Groups	
	Total	
Do you get at least 30 minutes of exercise or activity every day?	Between Groups	.651
	Within Groups	
	Total	
Do you k1w that there are more than 40% of deaths are due to NCDs?	Between Groups	.603
	Within Groups	
	Total	
Do you 0: [Better lifestyle will help in preventing NCDs?]	Between Groups	.639

	Within Groups	
	Total	
Do you 0: [NCDs are becoming a major health risk?]	Between Groups	.046
	Within Groups	
	Total	
Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?]	Between Groups	.303
	Within Groups	
	Total	

The above presented ANOVA table signifies the relation between the variables used as independent variables, regressed against respective employability status of the respondents. The results show that there is a:

- Highly, statistically significant relationship between a respondent's employability status (i.e. independent variable) and the perception that NCDs are becoming a major health risk (i.e. dependent variable) as the p-value is less than the significance level of 9%, respectively.

- Highly, statistically insignificant relationship between a respondent's employability status (i.e. independent variable) and the limitation of salt and sugar in one's diet, the ability to obtain at least 30 minutes of exercise/activity per day, the knowledge of the fact that 40% of global deaths are linked to NCDs, and the perceptions that a better lifestyle will help in preventing NCDs and that poverty is the main hindrance towards proper treatment of NCDs (i.e. dependent variables) as the p-value exceeds the significance level of 9%.

ANOVA

		Sig.
Do you k1w about 1n-communicable diseases?	Between Groups	.307
	Within Groups	
	Total	
Are you aware NCDs pertains to Cardiovascular diseases (such as heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma), diabetes and Common mental Diseases (Such as depression and anxiety)?	Between Groups	.808
	Within Groups	
	Total	
Did he/she was able to get a proper treatment?	Between Groups	.126
	Within Groups	
	Total	
Do you think public service messages on television, social media and packets of cigarettes alongside various 1 smoking board signs have had any effect on your perception or decision towards smoking?	Between Groups	.119
	Within Groups	
	Total	
How many times do you go for a regular check-up?	Between Groups	.696
	Within Groups	
	Total	
Have you ever been a part of a stress management course/ program?	Between Groups	.698
	Within Groups	
	Total	
Is there any specific local cure facility for NCDs available in your area?	Between Groups	.000
	Within Groups	

The above presented ANOVA table signifies the relation between the variables used as

independent variables, regressed against respective background of the respondents. The results show that there is a:

- Highly, statistically significant relationship between a respondent's background (i.e. independent variable) and the existence of any specific local cure facility for NCDs available in one's area (i.e. dependent variable) as p-value is less than the significance level of 9%, respectively.
- Highly, statistically insignificant relationship between a respondent's background (i.e. independent variable) and knowing about the existence of 1n-communicable diseases', its pertinence to cardiovascular diseases, cancers, et cetera', the impact of public service messages via various communication media on one's perception or decision towards smoking, the number of times one went for a regular checkup, the respondent's history of association with a stress management course/program, and whether (s)he was able to get a proper treatment (i.e. dependent variables) as the p-value exceeds the significance level of 9%.

ANOVA

		Sig.
Do you limit the amount of salt and sugar in your diet?	Between Groups	.538
	Within Groups	
	Total	
Do you get at least 30 minutes of exercise or activity every day?	Between Groups	.010
	Within Groups	
	Total	
Do you k1w that there are more than 40% of deaths are	Between Groups	.790

due to NCDs?	Within Groups	
	Total	
Do you 0: [Better lifestyle will help in preventing NCDs?]	Between Groups	.270
	Within Groups	
	Total	
Do you 0: [NCDs are becoming a major health risk?]	Between Groups	.684
	Within Groups	
	Total	
Do you 0: [Do you think poverty is the main hindrance towards proper treatment of NCDs?]	Between Groups	.419
	Within Groups	
	Total	

The above presented ANOVA table signifies the relation between the variables used as independent variables, regressed against respective background of the respondents. The results show that there is a:

- Highly, statistically significant relationship between a respondent's background (i.e. independent variable) and the respondent's ability to obtain at least 30 minutes of exercise/activity per day (i.e. dependent variable) as the p-value is less than the significance level of 9%, respectively.

Highly, statistically insignificant relationship between a respondent's background (i.e. independent variable) and the availability of a local cure facility for NCDs in one's area, the limitation of the amount of salt and sugar ingested, and the perceptions that a better lifestyle will help in preventing NCDs, that NCDs are becoming a major health risk, and that poverty is the main hindrance towards proper treatment of NCDs (i.e. dependent variables) as the p-

value exceeds the significance level of 9%

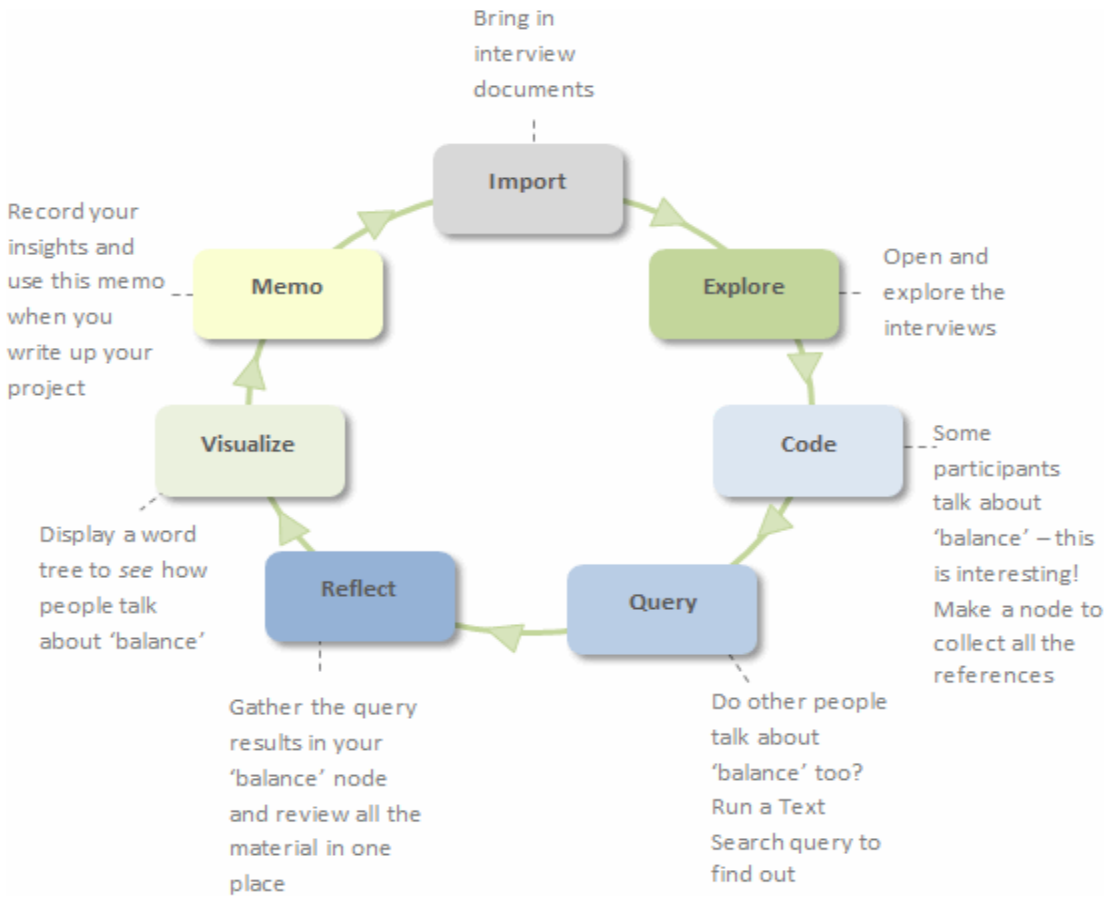
Qualitative Section:

The Executive Summary

Qualitative Research is predominantly exploratory research. For our qualitative part, we interviewed Doctors and some patients who are dealing with Non-communicable diseases. We focused specialized doctors in the field of cardiovascular diseases, Cancer, Diabetes and non-communicable respiratory diseases. We conducted interviews of Dr. M.Ayaz Mir (Hematologist/Oncologist) in The Shifa International Hospitals Ltd, Dr. Mehmood Zeb (Cardiologist) at The Shifa International Hospitals Ltd. Dr. Aziz Ul Qaqir (Skilled in Bronchoscopy and Invasive & Non-Invasive Ventilation), currently working at Pakistan Ordinance Factories Hospital, Wah Cantt, Dr. Muhammad Ismail, AP-CARDIOLOGIST in Pakistan ordinance factory Hospitals Ltd, Dr. Osama Ishtiq (Endocrinologist and Dialectologist) in Shifa International Hospitals Ltd., Dr. AAmir Iftikhar Malik(Intensivist/ Pulmonologist and Sleep medicine)in Shifa International Hospitals Ltd, Dr. Naushad Ali Khan, Chief Executive Valley Clinic, Brig (R) Dr. Muhammad Asif(Medical Specialist) in Maryam Memorial Hospital, Dr. Muhammad Sadiq (Urologist and Transplant Surgeon) in Saad Shaheed Hospital, Peshawar road, Rawalpindi and Brig Dr. Simeen Rahman, Skin Specialist in Skin and laser clinic, Peshawar road, Rawalpindi. Along with these, we interviewed four patients a diabetic patient: Anjum Khan, a Cancer patient: Rupeena, an Asthma patient: Salwat Saleem, a breast cancer patient: Nusrat Zaman.

2) Method of Analysis:

We analyzed interviews manually as well as using advanced software such as NVivo Pro 12. There are 7 main steps through which we analyze our data. These steps include (1) import- Bring in interview documents, (2) Explore, (3) Code-entering references in the nodes (4) Query- ask a query or question (5) Reflect- review all the material (6) Visualize and the final step is Memo. The image below describes the process in detail.



We analyzed NCDs with respect to its themes (Thematic/content Analysis)

1) Mortality Rate

2) Vulnerability

3) Risk factors
4) Management, cure and prevention
5) Medication
6) Treatment
7) Lifestyle
8) Government facilities
9) Its definitions according to doctors
10) Its occurrence in rural and urban areas

Results:

This segment discusses the analysis of these interviews by analyzing manually and also by using NVivo software. We used NVivo 12 Pro for analyzing our qualitative data. It has three editions, NVivo 12 Pro, NVivo 12Plus and Nvivo 12 Mac. We used Nvivo 12 Pro for our analysis. It is used to gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research. Qualitative Research is also used to uncover trends in thought and opinions, and dive deeper into the problem. Qualitative data collection methods differ using unstructured or semi-structured techniques. (DeFranzo, 2011). Nvivo does not favor one technique. It uses common techniques regardless of their nature or it can use multiple techniques.

The common things which we need to know about NVivo is Coding, Node, Case node (or cases), theme node which are used commonly in all analysis. Matrix node can also be used to determine relationship between cases and nodes

Coding

Coding is an essential task in most qualitative project. It includes gathering all the material about a particular theme or case into a node for further exploration. It is gathering all the references to a specific topic, theme, person or other entity into a single entity or node.

Node

A node is a collection of references about a specific theme, case or relationship. We gather the references by 'coding' sources to a node. By opening the node, we can find the references to that node.

Case Node or Cases

Cases are nodes that characterize ‘units of observation'. Cases differ from other nodes because they can have specific attributes such as age, gender or location. Using queries, you can compare cases based on these attributes.

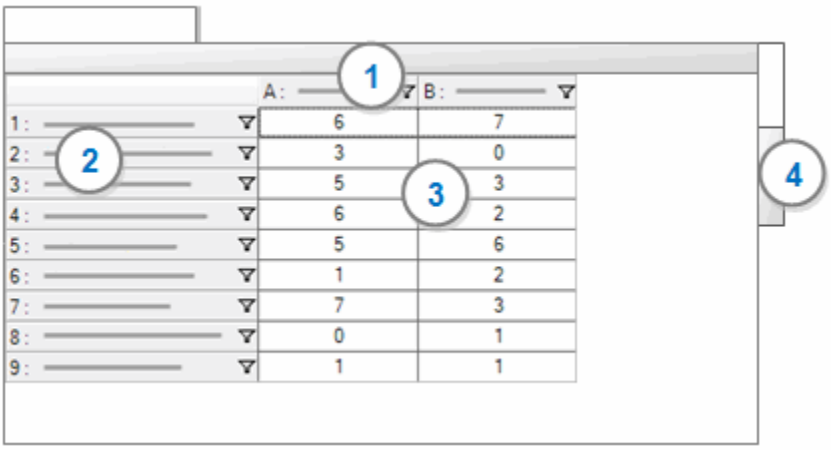
Theme nodes:

Theme nodes are the topics or themes from your source material. They could be descriptive or analytical.

Node matrices:

Node matrices provide a way to cross-tabulate the coded content in your project. It has columns, Rows and Cells. Columns contains the items we selected to display in columns. In most cases they are the node that we made. Rows contains the items you select to display in rows, mostly cases in NVivo. Cells can include the number of coding references at the intersection of a row and column.

Below is the sample of Node matrix.



Where 1 represents Columns, 2 represents rows and 3 represents cells. 4 represent charts, which can be created by filing data into this matrix but we did not use it in our analysis.

For our data analysis, we created both cases and nodes. In our nodes we created a node and we coded the relevant information into that node. For example, we made a node on cancer. We added all the information that we got from patients as well as doctors about cancer.

We also made cases for our data analysis. We made two main cases. One is of doctors and the other is of patients. The doctor case has further sub-cases in which we assign a different case for each doctor and we added the whole interview of that doctor and his/her profiling. Likewise, we did the same for patients and entered their specific interview in their case.

We also created matrix node where we compared cases with specific nodes.

Theme nodes:

We made 19 main nodes for our analysis in NVivo 12 pro. We first analyzed all the interviews and made nodes. Some of our nodes contains same references because it belongs to both nodes. Our theme nodes are:

1. Cancer
2. Cancer symptoms
    a. Respiratory diseases symptoms
    b. Cardiovascular diseases symptoms
    c. Diabetes symptoms
3. Cardiovascular
4. Facilities provided by government
5. Government Action plan (suggestions)
6. Hereditary
7. Lifestyle
8. Medicines
9. Mortality rate
10. NCDs management, cure and prevention
11. NCDs patients
12. NCDs rate
13. Non-communicable diseases
14. Respiratory diseases
15. Rural Vs. Urban

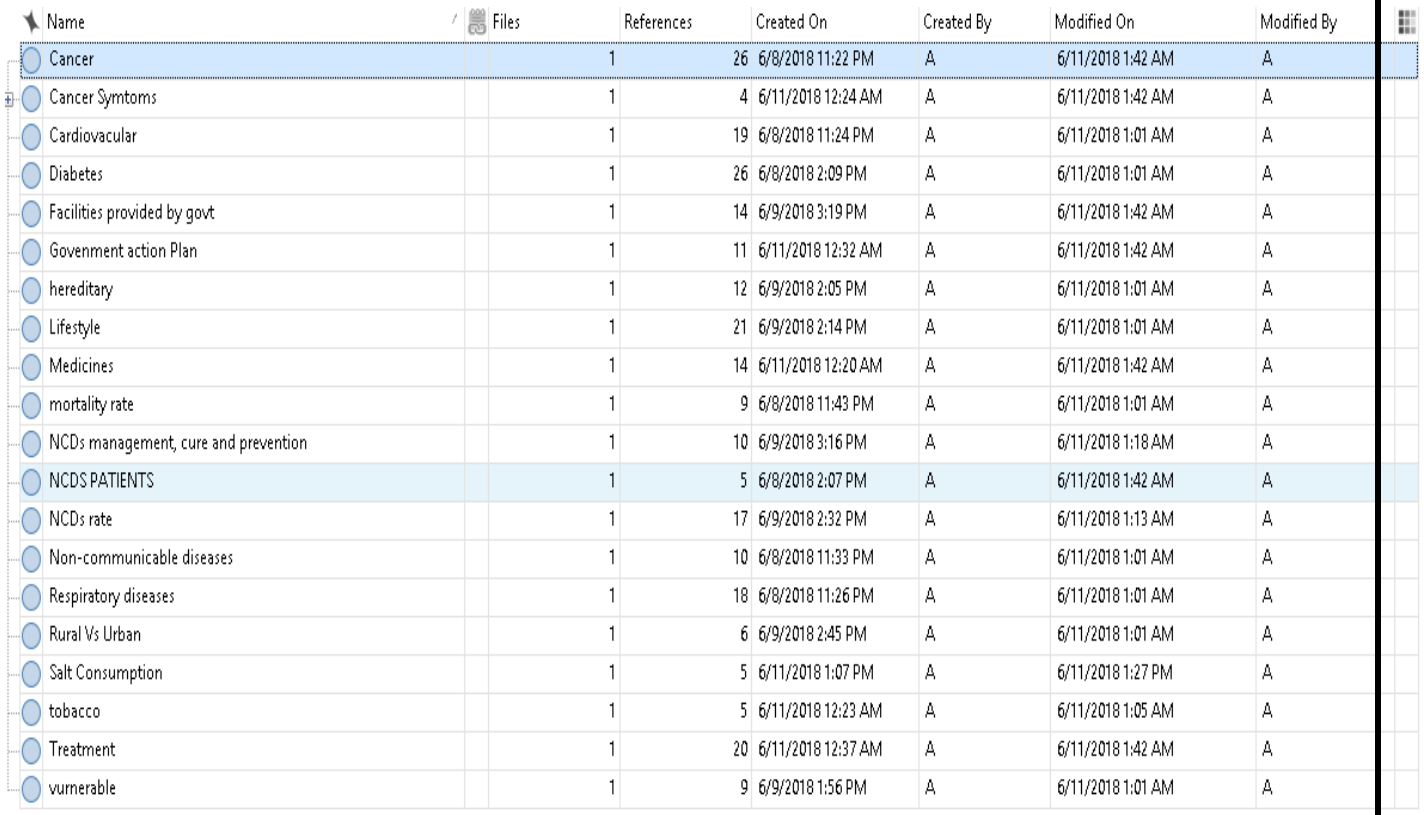
16. Salt consumption

17. Tobacco

18. Treatment

19. Vulnerable

The picture below shows our nodes.



Name	Files	References	Created On	Created By	Modified On	Modified By
Cancer	1	26	6/8/2018 11:22 PM	A	6/11/2018 1:42 AM	A
Cancer Symtoms	1	4	6/11/2018 12:24 AM	A	6/11/2018 1:42 AM	A
Cardiovacular	1	19	6/8/2018 11:24 PM	A	6/11/2018 1:01 AM	A
Diabetes	1	26	6/8/2018 2:09 PM	A	6/11/2018 1:01 AM	A
Facilities provided by govt	1	14	6/9/2018 3:19 PM	A	6/11/2018 1:42 AM	A
Govenment action Plan	1	11	6/11/2018 12:32 AM	A	6/11/2018 1:42 AM	A
hereditary	1	12	6/9/2018 2:05 PM	A	6/11/2018 1:01 AM	A
Lifestyle	1	21	6/9/2018 2:14 PM	A	6/11/2018 1:01 AM	A
Medicines	1	14	6/11/2018 12:20 AM	A	6/11/2018 1:42 AM	A
mortality rate	1	9	6/8/2018 11:43 PM	A	6/11/2018 1:01 AM	A
NCDs management, cure and prevention	1	10	6/9/2018 3:16 PM	A	6/11/2018 1:18 AM	A
NCDS PATIENTS	1	5	6/8/2018 2:07 PM	A	6/11/2018 1:42 AM	A
NCDs rate	1	17	6/9/2018 2:32 PM	A	6/11/2018 1:13 AM	A
Non-communicable diseases	1	10	6/8/2018 11:33 PM	A	6/11/2018 1:01 AM	A
Respiratory diseases	1	18	6/8/2018 11:26 PM	A	6/11/2018 1:01 AM	A
Rural Vs Urban	1	6	6/9/2018 2:45 PM	A	6/11/2018 1:01 AM	A
Salt Consumption	1	5	6/11/2018 1:07 PM	A	6/11/2018 1:27 PM	A
tobacco	1	5	6/11/2018 12:23 AM	A	6/11/2018 1:05 AM	A
Treatment	1	20	6/11/2018 12:37 AM	A	6/11/2018 1:42 AM	A
vurnerable	1	9	6/9/2018 1:56 PM	A	6/11/2018 1:01 AM	A

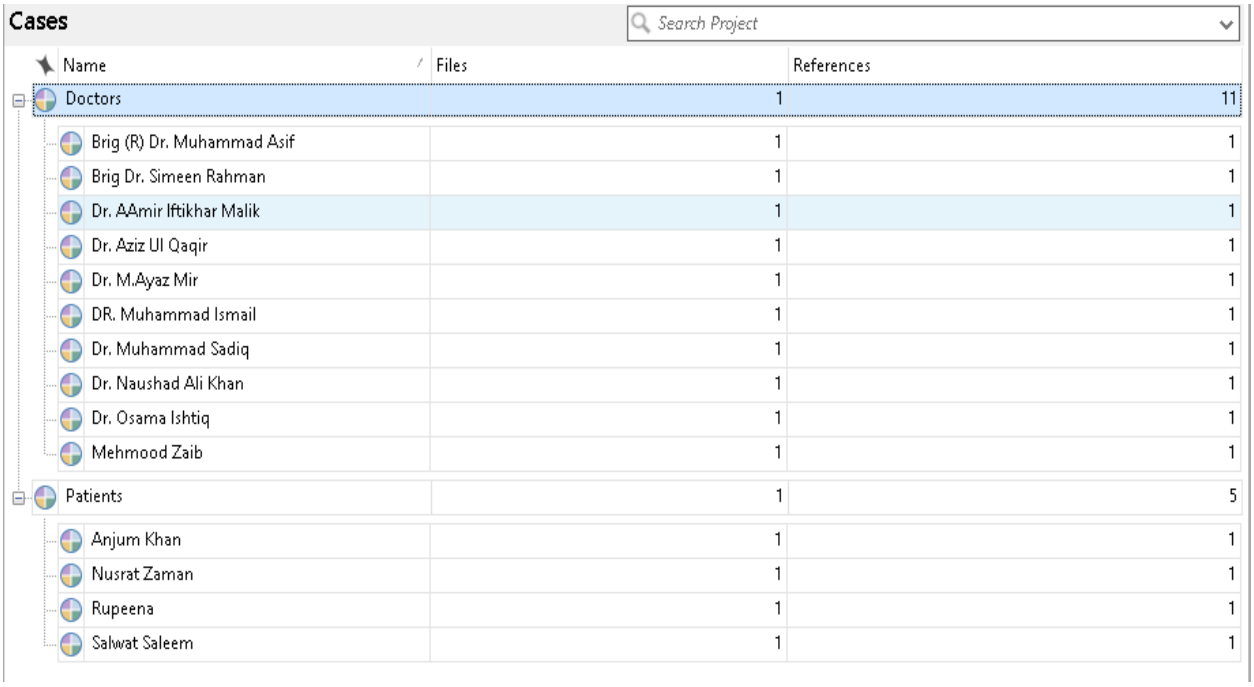
Queries

Queries provide a flexible way to gather and explore subsets of your data. In NVivo, we can create queries to:

- Find and analyze the words or phrases in your sources, annotations and nodes. You can find specific words or those that occur most frequently.
- Ask questions and find patterns based on your coding and check for coding consistency among team members.

Cases:

Below is the image of cases that we have I our qualitative analysis on NVivo.



Cases

Search Project

Name	Files	References
Doctors	1	11
Brig (R) Dr. Muhammad Asif	1	1
Brig Dr. Simeen Rahman	1	1
Dr. AAmir Iftikhar Malik	1	1
Dr. Aziz Ul Qaqir	1	1
Dr. M.Ayaz Mir	1	1
DR. Muhammad Ismail	1	1
Dr. Muhammad Sadiq	1	1
Dr. Naushad Ali Khan	1	1
Dr. Osama Ishtiq	1	1
Mehmood Zaib	1	1
Patients	1	5
Anjum Khan	1	1
Nusrat Zaman	1	1
Rupeena	1	1
Salwat Saleem	1	1

Node matrices:

We made matrix of cases of all doctors with some of the nodes. Due to technical problems the whole image cannot appear on the screen so we had to show just the matrix we made without entering data into the cells. Below is the image of our matrix.

	A : Cancer	B : Cardio vacular	C : Diabetes	D : Facilities provided by gov t	E : Goven ment acti on Plan	F : Life style	G : Medici nes	H : mortality rate	I : NCDs mana gement, cure and preventio n	J : NCDs rate	K : Non-communi c able dis eases	L : Respir atory dise ases	M : Rural Vs Urban	N : Salt Consum pti on	O : tobacco	P : Treat ment	Q : vurnera ble
1 : Brig (R) Dr. Muhammad..																	
2 : Brig Dr. Simeen Rahman																	
3 : Dr. AAmir Iftikhar Malik																	
4 : Dr. Aziz Ul Qaqir																	
5 : Dr. M.Ayaz Mir																	
6 : DR. Muhammad Ismail																	
7 : Dr. Muhammad Sadiq																	
8 : Dr. Naushad Ali Khan																	
9 : Dr. Osama Ishtiq																	
10 : Mehmood Zaib																	

Word Frequency Query:

It finds the most frequently occurring words or concepts in a node, file or theme.

The word frequency query yields up to four result tabs which are **Summary, Word Cloud, Tree Map** and **Cluster Analysis.**

Summary:

It tells us about the length, count and weightage of these frequent words in that theme or topic.

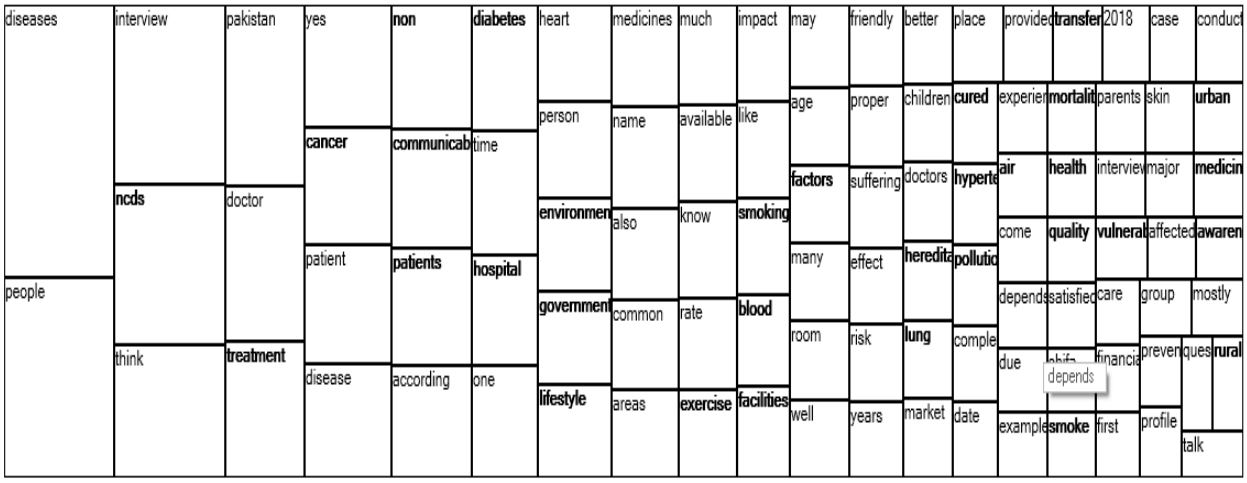
Word cloud

This shows the picture of words used. The size of word indicates its frequency. Larger the size, larger the frequency.

The above image is word cloud of the word frequency query result in our transcribed interviews.

Tree Map

It is also one of the result of frequency query. Unlike word cloud, the most frequent word is determined by the size of box in which the word is. Larger rectangles show high frequency.



Cluster analysis:

The cluster analysis helps the researchers understand the intersection points where the most frequent ideas, concepts and words co-occur.

Relationship Types:

A relationship is a special type of node that defines the connection between two project items. We can create relationships in our project and then gather evidence about the relationship from our source material. The relationship shows the relevance of two nodes with each other.

They are made up of three types: "from", "to" and the "type" of relationship. We can create relationship using sources, nodes, cases etc.

There are three kinds of relationships 1) Associative 2) Symmetrical and 3) One-Way

Associative relationship can be used to determine that there is some association between the two nodes or items. It must hold both ways.

Symmetrical relationship shows a two-way activity between items. This relationship shows that they hold both ways.

One-way relationship between two items which has definite direction i.e. an agent and the recipient.

- One way (*Anna 'employs' Ken*)
- Associative (*Anna 'knows' Ken*)
- Symmetrical (*Anna 'works with' Ken*)

Keeping in mind the above mentioned relationship kinds, we develop some relationships between out nodes.

- Respiratory Disease and Lifestyle

One-way relationship because use of tobacco and environmental issue of smog is causing a lot of problems among the people and causing extreme cases of lung cancer that is why lifestyle has a one-way relationship with respiratory diseases. Here environment is also considered to be a part of lifestyle as pollution and air pollution is the main cause of asthma.

- Cancer and lifestyle:

Cancer and lifestyle has a symmetric relationship because lifestyle like smoking on regular basis is causing problems of cancer and also there is lack of awareness among the people due to which they go to doctor at the last stage and end up losing their lives so in this way cancer is affecting lifestyle as well.

- Diabetes and lifestyle:

Diabetes and lifestyle have one-way relationship because people lifestyle, like bad eating habits, smoking, lack of exercise and sedentary lifestyle is causing extreme cases of diabetes and also the environmental pollution is playing a major role in causing diabetes among the people. According to British study the people with healthy lifestyle have less chances of diabetes.

- Cardiovascular diseases and lifestyle:

Cardiovascular diseases are a byproduct of diabetes so cardiovascular diseases and lifestyle have a one-way relationship. Lifestyle of people like smoking, lack of exercise, bad eating habits have a great impact on the cardiovascular diseases.

- Tobacco and rural vs. urban

One-way relationship as rural vs. Urban are both affected by tobacco but tobacco is not affected by rural vs. Urban

- Medicine and cancer

Symmetrical relationship as medicine can affect cancer. And due to increases and decrease in the levels of cancer can also increase or decrease the intake of medicines.

- Medicine and respiratory diseases have symmetrical relationship.
- Medicines and Diabetes have symmetrical relationship
- Medicine and cardiovascular diseases have symmetric relationship.

- NCD management, cure, prevention Vs. Government action plans

Symmetrical relationship. As the government takes action and have a total control by making a proper database to take preventive actions. Due to these government action plans there will be have certain effects on the management of NCDs.

- NCD rates with cancer

An associative relationship. As there is increase in the no. of breast cancer in rural areas there will be increase in the rates of NCDs. But with the increase of NCD rates it is less likely that it is due to the increase in the rates of cancer.

- NCD rates and diabetics

A symmetrical relationship. The increase in the diabetic patients will effects the rates of the NCDs. With the increase of NCD rates there are high chances that the rates of diabetes might increase because diabetes account 30% of the NCD diseases.

- NCD and respiratory diseases

An associative relationship. With the increase of respiratory diseases there will be the increase in the rates of the NCDs. But the increase of NCD rates it is less likely that it is due to the increase in the rates of respiratory diseases.

- NCDs rates with cardiovascular diseases

Symmetrical relationship. The increase in the respiratory patients will effects the rates of the NCDs. With the increase of NCD rates there are high chances that the rates of respiratory might increase. Because these diseases are more vulnerable towards the bad environment.

- Vulnerability and Diabetes

Associative relationship. At the certain age, above 40, patients are found diabetic and are more vulnerable at this age group.

- Vulnerability and Cancer

An associative relationship. In cancer, patients are more vulnerable but at a certain level of cancer and certain age of a patient.

- Vulnerability and cardiovascular diseases

Symmetrical relationship as cardiovascular diseases are metabolic diseases, which includes high blood sugar, high blood cholesterol and hypertension. These diseases are highly common in at any age group.

- Hereditary and lifestyle

One-Way relationship. Sedentary lifestyles for generations may indicates hereditary diseases like diabetes.

- Mortality rate with the cancer

One-way relationship. As mortality rate of cancer is not that high as in comparison with diabetes and cardiologist.

- Mortality rate and diabetes

Associative relationship. As there are high death rates of Diabetes and Hepatitis.

- Cardiologist and mortality rate

Symmetrical relationship. Heart diseases have high mortality in Pakistan because of the complex nature of the world, tension among the people is increasing day by day which is causing different heart diseases including heart attacks.

- Mortality rate and Respiratory diseases

One-way relationship as there are less mortality rate of lungs diseases.

- Vulnerability and NCDs rate

Symmetrical relationship because they have a strong relationship between each other. Vulnerability increases NCDs rate and in affect, it increases vulnerability.

- Vulnerability and lifestyle

Symmetrical relationship because they both associate with each other in a strong way. Lifestyle of people can affect their vulnerability to the disease and the vulnerability to these diseases changes the lifestyle of people.

- Vulnerability and mortality

One-way relationship because vulnerability increases mortality rate but mortality rate has not an effect on vulnerability

- NCDs rate and lifestyle

Highly symmetrical relationship because NCDs rate is increasing due changes in lifestyle nowadays. Likewise, NCDs rate can change lifestyle because patients' routine changes which changes their lifestyle. They might start living a healthy life.

- Treatment and cancer

An associative relationship because the type of treatment patients receive and the cost of treatment depends on the type of cancer they have. The treatment can have an effect on cancer because it can reduce cancer but it depends on social strata of the patient.

- Treatment and respiratory diseases

An associative relationship because the type of treatment patients receives and the cost of treatment depends on the type of disease they have. The treatment can have an effect on these diseases because it can reduce these diseases but it depends on social strata of the patient and financial condition of the patient.

- Treatment and cardiovascular

An associative relationship because the type of treatment patients receives and the cost of treatment depends on the type of disease they have. The treatment can have an effect on these diseases because it can reduce these diseases but it depends on social strata of the patient and financial condition of the patient.

- Treatment and diabetes

An associative relationship because the type of treatment patients receives and the cost of treatment depends on the type of disease they have. The treatment can have an effect on these diseases because it can reduce these diseases but it depends on social strata of the patient and financial condition of the patient.

- NCDs management, cure and prevention vs. lifestyle

Symmetrical relationship because lifestyle has a very big role in NCDs prevention and control.

- Salt consumption and cardiovascular diseases

An associative relationship because it increases blood pressure which, in effect, increases cardiovascular diseases. As a result of this NCDs rate can also increase.

- Mortality rate and lifestyle

Associated relationship because bad lifestyle such ass bad eating habits can increase vulnerability of the people to NCDs which further results in mortality.

- Tobacco and lifestyle

Symmetrical relationships.as birth of them are directly related to each other. Lifestyle is highly affected by Tobacco.

- Tobacco and cancer

Symmetrical relationship. As the use of tobacco will result in lung cancer. It can also cause oral cancer. 80% of the people who smoke have to suffer from lungs cancer.

- Tobacco and cardiovascular diseases

One-way relationship. Or it is better to say an indirect relationship. As tobacco is one of the contributors to pollute environment and environment pollution may lead to the diseases related to cardiovascular.

Tobacco with respiratory diseases

Highly symmetrical relationship. Tobacco causes lungs diseases. Most dangerous diseases is the lung cancer which 80% of the people face, who smokes.

Relationships

Search Project

From Name	From Folder	Type	To Name	To Folder	Direction	Files	References	Created On	Created By	Modified On	Modified B
Cancer	Nodes	symmetrical	Lifestyle	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
Cancer	Nodes	Associated	Treatment	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
Cardiovacular	Nodes	one way	Diabetes	Nodes	→	0	0	12/06/2018	F	12/06/2018 3:	F
Cardiovacular	Nodes	symmetrical	Medicines	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
Cardiovacular	Nodes	symmetrical	NCDs rate	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 4:	F
Cardiovacular	Nodes	symmetrical	mortality rate	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 4:	F
Cardiovacular	Nodes	Associated	Treatment	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
Cardiovacular	Nodes	one way	tobacco	Nodes	→	0	0	12/06/2018	F	12/06/2018 4:	F
Diabetes	Nodes	one way	Lifestyle	Nodes	→	0	0	12/06/2018	F	12/06/2018 3:	F
Diabetes	Nodes	Associated	vurnerable	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
Diabetes	Nodes	Associated	Treatment	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
Govenment action	Nodes	symmetrical	NCDs manageme	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
hereditary	Nodes	one way	Lifestyle	Nodes	→	0	0	12/06/2018	F	12/06/2018 4:	F
Lifestyle	Nodes	one way	Respiratory disea	Nodes	→	0	0	12/06/2018	F	12/06/2018 3:	F
Lifestyle	Nodes	symmetrical	tobacco	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 4:	F
Medicines	Nodes	symmetrical	Cancer	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
Medicines	Nodes	symmetrical	Respiratory disea	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
Medicines	Nodes	symmetrical	Diabetes	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
mortality rate	Nodes	one way	Cancer	Nodes	→	0	0	12/06/2018	F	12/06/2018 4:	F
mortality rate	Nodes	Associated	Diabetes	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
mortality rate	Nodes	one way	Respiratory disea	Nodes	→	0	0	12/06/2018	F	12/06/2018 4:	F

Relationships

Search Project

From Name	From Folder	Type	To Name	To Folder	Direction	Files	References	Created On	Created By	Modified On	Modified B
mortality rate	Nodes	one way	Cancer	Nodes	→	0	0	12/06/2018	F	12/06/2018 4:	F
mortality rate	Nodes	Associated	Diabetes	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
mortality rate	Nodes	one way	Respiratory disea	Nodes	→	0	0	12/06/2018	F	12/06/2018 4:	F
mortality rate	Nodes	Associated	Lifestyle	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
NCDs management	Nodes	symmetrical	Lifestyle	Nodes	↔	0	0	12/06/2018	F	12/06/2018 4:	F
NCDs rate	Nodes	Associated	Cancer	Nodes	—	0	0	12/06/2018	F	12/06/2018 3:	F
NCDs rate	Nodes	symmetrical	Diabetes	Nodes	↔	0	0	12/06/2018	F	12/06/2018 3:	F
NCDs rate	Nodes	symmetrical	Respiratory disea	Nodes	↔	0	0	12/06/2018	F	12/06/2018 4:	F
NCDs rate	Nodes	symmetrical	Lifestyle	Nodes	↔	0	0	12/06/2018	F	12/06/2018 4:	F
tobacco	Nodes	one way	Rural Vs Urban	Nodes	→	0	0	12/06/2018	F	12/06/2018 3:	F
tobacco	Nodes	symmetrical	Cancer	Nodes	↔	0	0	12/06/2018	F	12/06/2018 4:	F
tobacco	Nodes	symmetrical	Respiratory disea	Nodes	↔	0	0	12/06/2018	F	12/06/2018 4:	F
Treatment	Nodes	Associated	Respiratory disea	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
vurnerable	Nodes	Associated	Cancer	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
vurnerable	Nodes	Associated	Respiratory disea	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
vurnerable	Nodes	symmetrical	Cardiovacular	Nodes	↔	0	0	12/06/2018	F	12/06/2018 4:	F
vurnerable	Nodes	symmetrical	NCDs rate	Nodes	↔	0	0	12/06/2018	F	12/06/2018 4:	F
vurnerable	Nodes	symmetrical	Lifestyle	Nodes	↔	0	0	12/06/2018	F	12/06/2018 4:	F
vurnerable	Nodes	one way	mortality rate	Nodes	→	0	0	12/06/2018	F	12/06/2018 4:	F

Finding, Discussion and Analysis:

Non Communicable diseases are causing a lot of death in Pakistan. Pakistan has a population of 150 million and per capita health expenditure of US $18. NCDs and injuries are among the top 10 reasons for increase in mobility and mortality rate in Pakistan. It is estimated that there are 25% deaths which are due to NCDs. In most cases, there are the productive workforce which are bearing the brunt of these diseases. In Pakistan it shows that every one out of three adults over the age of 45 years are suffering from high blood pressure. There are 10% people who are facing the problem of diabetes while 40% men and 12.5% women are active smokers. It is spotted that Karachi is one of those city which has most cases of breast cancer for any Asian population. Through proper public health strategies aimed at disease prevention, risk factor control and health promotion NCD mortality and mobility can be limited.

NCDs in Pakistan can be prevented by taking two actions

- Politicization for appropriate investments and policies to assist their inclusion in the development and health agenda.
- Developing scientifically valid, culturally appropriate and resource sensitive models combining and mixing the multidisciplinary range of actions relevant for NCD prevention.

In Pakistan Heart file, Ministry of health and WHO Pakistan released a National Action Plan for Non Communicable Diseases Prevention, Control and Health promotion in Pakistan to prevent and control NCDs in the country. The NAP-NCD outlines a rigorous and comprehensive approach; one that includes both policies and actions. It calls for a long term change by changing the level of institutions, communities and public policy. There are six levels which are explained in this National Action Plan which are as follows:

- Grouping NCDs so that they can be targeted with different set of actions
- Harmonizing actions
- Integrating actions with the health systems which are already being existed.
- Taking into account the evidence based concepts.
- Health promotion and the prevention of these diseases should be combined
- Harnessing the potential within partnerships

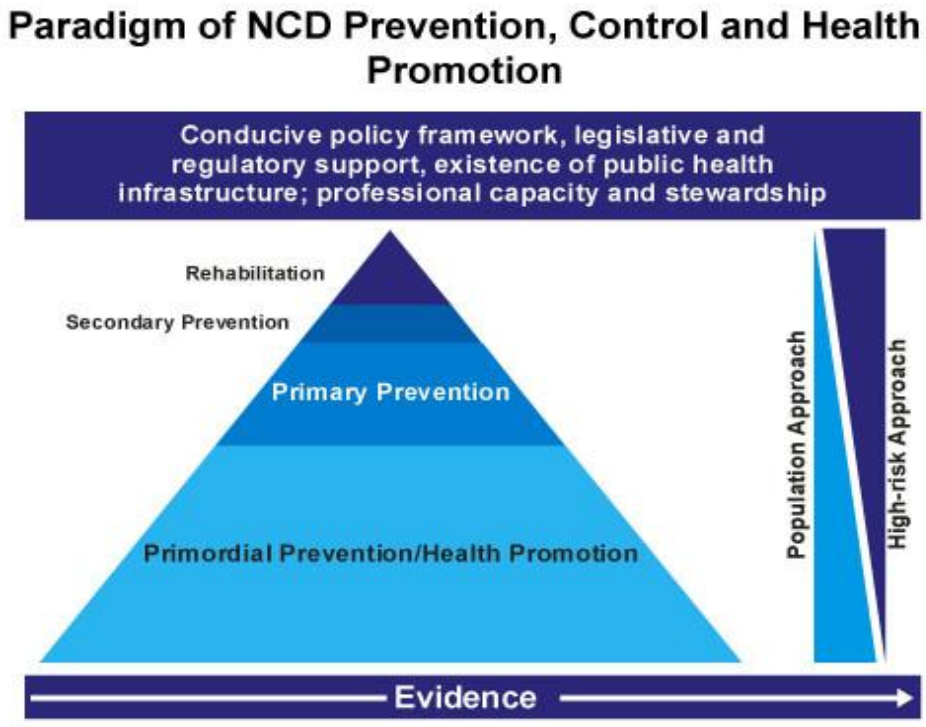
The NAP-NCD includes an Integrated Framework for Action (IFA). This framework includes two strategies:

- Behavior change communication strategy, reorientation of health services strategy and surveillance.

- Legislative and regulatory matters

The IFA includes a population surveillance mechanism for all diseases of NCDs except cancer. The mechanism is used for identifying the risk factors and combines a unit of injuries and mental health. This mechanism is also used for program evaluation.

The National Action Plan forced the Ministry of Health to include the prevention NCDs in their policies. The Federal Government also plays an important role in implementing this plan. Awareness is provided through the media and also there is a training program to train the lady health workers (LHW) within the country.



The National Action Plan forced the Ministry of Health to include the prevention NCDs in their policies. The Federal Government also plays an important role in implementing this plan. Awareness is provided through the media and also there is a training program to train the lady health workers (LHW) within the country.

Heart file has been playing an ample role in the prevention of the NCDs and they are doing a national media campaigns and community based projects for cardiovascular diseases in order to prevent them.

To fully implement this plan within the country, firstly it should be supported by the Political authorities and secondly it should be implemented properly by setting up proper infrastructure and public health workforce with adequate capacity for core public health function.

The result of this plan includes a positive change in population health behaviors but it ultimate changes can be judged by changes in population outcomes which can be assessed overtime and also IFA is an innovative tool which is creating a positive change in the prevention of NCDs within the country.

There are many policies suggested in National action Plan for NCDs. "The National Action Plan for Non-Communicable Disease Prevention, Control and Health Promotion in Pakistan (NAP-NCD) has suggested different policies approaches for the prevention and control of NCDs. Firstly, Disease domain integration. NAP-NCD included injuries and mental health within the framework of NCDs because they think that it's our country's requirement to address these within a combined strategic framework through coordinated public health measures. Secondly, Action level integration, NAP-NCD delivers an Integrated Framework for Action (IFA) modelled to impact a set of indicators through the combination of actions across the range of NCDs with demanding

formative research. Within this framework, it encompasses two sets of strategies; (1) those that are common across the entire range of NCDs. It includes a behavioral change communication strategy, reorientation of health services strategy and surveillance and (2) others that are specific to each NCD domain. It relates to legislative and regulatory matters. Thirdly, Systems level integration, this approach adopted horizontally integrates NCD prevention with existing public health and social welfare infrastructure. Fourthly, Integration of concepts, it packages several current and innovative approaches. The population approach includes a behavioral research and social marketing-guided communication strategy and active role of local opinion leaders and educational institutions. Reorientation of health services includes scaling up of professional capacity and basic infrastructure in health care facilities and ensuring availability of, and access to, essential drugs at all levels of health care. The IFA packages a common population surveillance mechanism for all NCD's (with the exception of cancer). The model includes population surveillance of common risk factors and combines a module on population surveillance of injuries and mental health. The model has also been adapted for program evaluation. The fifth policy approach is combining prevention and health promotion; an approach NAP-NCD has capitalized on. Both of these approaches are intersecting and admiring each other. The public health approach to NCDs offers one of the best opportunities to combine prevention and health promotion to improve multiple positive outcomes. The last policy approach is Public-private partnership, it is involvement and participation of relevant ministries, educational institutions, NGOs and leadership foci at a national consultation level and created avenues for their participation in the process that led to its development. In addition, all the key elements and advantages that stand to be gained from comprehensive grouping and maximizing on partnerships have been built upon: integration with the existing health system, inter-sectoral and intra-health-sector collaborations, linkage with the national health policy and

partnerships with the private sector. NAP-NCD recognizes the scope of partnerships in public health activities and outlines a scope of interventions that are built on shared responsibility, allowing for agencies to participate according to their own missions, mandates, interests and resources. NAP-NCD fosters partnerships and interface arrangements between the public and private sectors so that the federal government is not solely responsible for getting these programs out to the communities, but can rely on groups and national organizations that have complementary mandates. These partnerships are in harmony with national health priorities, complement state initiatives and are optimally integrated with national health systems." (Nishtar, 2004)

The Pharmacy Act was promulgated some 51 years back in 1967. There were few pharmacy graduate at that time. Only University of the Punjab, Lahore and University of Karachi, Karachi were giving degree in Pharmacy. Now more than 30 institutions are awarding pharmacy degree courses (GOP, 2013). "The present Pharmacy Act provides for registration of persons other than those holding a qualification in Pharmacy E.g. Dispensers, compounders, apprentice etc. The Rules made under the present Act also allow the issuance of Drug Sale License to non-professionals and those holding no training or qualification in Pharmacy. Due to gaps and weaknesses of the present Act more than 80,000 medical stores are present in Pakistan, which are very difficult to be efficiently controlled and regulated by Drugs Control Authorities, as very limited number of regulatory officers are there to regulate the said business. This huge number of medical stores which remain un-checked, is a rich source of spurious, counterfeited, substandard and un-registered drugs in Pakistan. This huge number is unprecedented, which is not seen in any other part of the world." (GOP, 2013)

"The Federal Investigation Agency had busted group involved in the sale of spurious and counterfeit medicines from warehouses located at Gaziyani Plaza and Central Mall and a special

team was formed to investigate the matter in 2017. They also raided warehouses in the two buildings and seized a large quantity of smuggled and counterfeit drugs worth millions of rupees and suspects were taken into custody. During interrogation, the culprits revealed that they received these medicines from various wholesalers, brokers and shopkeepers, who smuggled medicines from the UAE, Turkey, Germany and Saudi Arabia and were facilitated by Customs officers at the Karachi airport.

The chief justice of Pakistan had taken cognizance of this serious situation. The Ministry of Health had started issuing warnings to manufacturers of spurious and counterfeit products and threatening them with strict action in 2017." (The Nation, 2017). Recently, the government of Punjab has started taken action against these people but unable to deal with this issue properly due the political interference and its wide range.

Through analysis we conclude that lifestyle have an effect on the reduction of NCDs and lifestyle can be changed through behavior modification so it has a role in reducing the rate of NCDs. There has been a noticeable change in the lifestyle of people over the last few years. People are moving towards more sedentary lifestyle. They have unhealthy eating habits. One of the reason for this is that our young generation is more prone towards fast food and carbonated drinks. Due to which the rate of NCDs in Pakistan is increasing.

Usage of tobacco have dramatically increased over the last few years as compared to developed countries where it has deceased. Therefore, the usage of tobacco has a strong symmetrical relationship with respiratory and cancer. The tree map from NVIVO analysis, indicates that these diseases are more common in urban areas however the rural NCD indicator is slightly less than Urban Areas.

It can be deduced from the NVIVO analysis and Interviews of specialists that through behavior modification we can change lifestyle of people. Behavior modification can be in the form of loss aversion, framing, Availability Heuristic, choice architecture, price-based regulations and education. For example daily exercise and through intake of healthy food. If there is a change of lifestyle in a positive way, the rates of NCDs can be reduced. As there is a strong role of lifestyle in increasing or decreasing the rates of NCDs.

From qualitative analysis we found out that there is no or less variation in how doctors define NCDs. They say that NCDs are those diseases which cannot be transmitted from one person to another through physical interaction and they are non-infectious diseases. Others finding were that cardiovascular diseases and Diabetes have highest mortality rate in Pakistan, according to the perception of doctors, and People of age group of 40+ are more vulnerable to these diseases. Some of the diseases such as diabetes and cancer are transferable from parents to their children. We found that the major risk factors of NCDs are hypertension, dyslipidemia, pesticides (in case of cancer), alcohol consumption, smoking, Environmental pollution, food mixed with chemicals (food pollution), high sugar and cholesterol level, Obesity and sedentary life style are the major risk factors of NCDs in Pakistan. Our findings from qualitative analysis shows that there are no or very few (in case of cancer) facilities are provided by the government which shows the lack of interest of government regarding this matter. We have some findings on the effect of tobacco on the human health which specifies that major chunk of respiratory diseases is because of tobacco. Lung cancer occurs in 80-85% of those who smoke. It affect in a way that 14-15 type of cancers are due to cigarette smoking. Other than that Asthma is also due to cigarette smoke in Children whose parents smoke. We also found out that, according to perception of doctors, NCDs are prevalent in both rural and urban areas but the overall population in urban areas is more than rural

areas which can increase the number of people with NCDs in rural areas. We also found out that NCDs can be managed and prevented by making some changes in lifestyle and providing awareness on these diseases. The results of interview analysis demonstrate that the average annual and monthly expenses of treatment and medication varies a lot. It depends more on the type and severity of disease of the disease. We also analyzed that the NCDs has relevance with both medical sciences and environmental sciences. According to the doctors, lifestyle has a big role-play in the increasing rate of NCDs and the external environment also has an influence on increasing rate of NCDs. Hence, our health policy that we want to make on Non-communicable diseases also interact with the environmental policy, urban policy and other policies as well because they all are interconnected.

Taking in account the significant values generated through the ANOVA analysis in relation to the independent and dependent variables suggest that the majority of the respondents are quite aware in regard to the concept of NCDs, its dangers, causes and are working actively in order to change their life styles, improve quality of life and work towards the minimization of the concept of NCDs which currently is the leading cause of morbidity and mortality in this country. However, these results contradict the actual reality of the state of this country because in reality the incidences of NCDs according to statistical data is increasing especially amongst the poor and middle class, mostly because of sedentary life styles, unhealthy diets, lack of education and awareness and ultimately ignorance by both the citizens and the government. The reason for this contradictory result may be because of the majority of the targeted audience for this questionnaire which was mostly the upper middle class and elite class educated youth situated in Punjab. Out of all the provinces WHO has up till now acknowledged the efforts of Punjab for their work and efforts towards health reforms which may attribute to increased awareness and knowledge of the matter

amongst the educated youth. Henceforth, taking in account, the results generated from the respective respondents, our hypothesis does get accepted.

Limitations of the study:

In every study there will always be some limitations. Disclosing these limitations is the part of the research ethics. The main problem faced during the collection of data was the lack of availability of doctors and policy makers for the interviews. Taking an appointment for interview session was quite difficult task.

The second limitation of this research was due inefficiency of the hospital research departments. As taking an approval from the hospitals was taking too much time. Because of the time limit it was difficult to get permission within time limit. Whatever the limitation in access of information there was, had been received from the help of personal contacts.

Third limitation was the lack of support of some doctors during the interviews. And found some of them resistant in sharing information of their patients during the interview session

There were also some complications faced by the group members during the analyzing the data due to technical difficulties by running it through refined soft wares like NVIVO and SPSS. Nevertheless, this issue was overcome by the guidance of the supervisor but there is always room for the improvements.

Finally, due to the limited statistics and lack of updated data, we faced difficulty in accessing the information updated information. Although, we were able to collect some statistics through primary research data but still it was based on the experiences of the interviewees.

Recommendations:

Based on the analysis of the data, we have some policy recommendations for the issues we face with respect to Non-communicable diseases. First of all, we need to have a national database in which we should have information about the patients like the number of patients come to the hospitals, their demographics and the diseases they have. This will help government to make better policies based on the evidence. Secondly, government should start e-health system to make data, including the condition and history of patient, available online so that patients and doctors as well as policy makers and analyst can access to this data. This will help in better treatment and making of health policies by analyzing and forecasting. Thirdly, government should make action plan based on specific targets and objectives and it should also include the implementation plan that are they going to implement it, which type of issues will they face and how will they overcome it (risk mitigation plan). Fourthly, they should make public aware of these diseases through mass education in schools, hospitals, social media, print media and television in which they should mention the symptoms, its risk factors and how to avoid or overcome it. As we already discussed, sedentary lifestyle is one of the factors in increasing NCD rate so to overcome it government should encourage public to do exercise. They should make parks and maintain it properly. They should plan such recreational activities in the park which will attract public to go to the park and motivate them to do exercise. And make a friendly environment which also plays a big role in attracting people. Most of people do not go to parks due to the environment of the park. Other thing through which it can encourage people to exercise is through urban planning and architecture. The government should do urban planning in such a way that forces people to exercise for example making them to use stairs than lifts by increasing the walking distance to the lift. This way if they

are still taking lift they can walk and exercise. They can plan car parking in this way as well which will work through cost reduction technique.

Primary prevention program with least cost and most benefit should be prioritized in both national and provincial resource allocation

Other than this government should make it mandatory for all the restaurants to have food inspectors like the ones in Dubai so that they can check whether food is healthy or not. The food authority personnel should be competent enough and should have enough power to take actions against the people who does not comply with the quality standards of food.

Another recommendation is about regulation of medicines. Government should regulate supply of medicines because there are a lot of fake medicines in the market. Some important medicines such as that of cancer are not available in market. They come into economy through black market. Government should regulate these medicines. Instead of importing these medicines drug authority should make medicines in Pakistan through development in pharmaceutical industry like India did and they are making medicines in India from herbs.

“Activate Drug Courts which will enforce the Drug Laws and punish those who violate these laws with heavy fines and even imprisonment. Manufacturers, distributors, whole-sellers and retailers should employ properly qualified pharmacists on a permanent basis and have proper storage area for medicines. Medical stores should not be allowed to sell any lifesaving or sensitive drugs without a prescription from a qualified doctor. They should keep a record of the purchase and sale of such medicines in a register, as per international law. The records should be regularly checked by Drug Inspectors and signed/verified by them. Unsealed and loose medicines should not be allowed to be marketed. People involved in the manufacturing, distributing, whole-selling or

retailing of counterfeit (a drug, the label or outer packing of which is an imitation of the original, so as to deceive the consumer) and sub-standard medicines should be arrested and punished with heavy penalties and imprisonment. Their stores and property should be confiscated. The same punishments should be given to fake and unqualified doctors. Advertisements of fake medicines, medical equipment, supporting appliances and quacks, should be declared illegal and heavily punishable under the law. A committee should be formed to monitor the above recommendations. An awareness campaign should be launched, advising consumers to buy from reputed and well-established medical stores, to always check seals, date of manufacture and expiry and always demand a cash memo. Anti-Counterfeit labels should be printed on the boxes of all lifesaving drugs." (The Nation, 2017)

There is a policy gap in Pakistan due to which the experienced doctors are leaving Pakistan and going abroad to serve. So, to reduce this gap the Government should make a suitable policy in order to retain those experienced doctors.

The Government should also provide incentives to these experienced doctors in order to make them stay in the country. This will increase the standard of health care in the country and will reduce the effect of NCDs.

Conclusion:

Proposing a huge problem to developed and non-developed countries alike, non-communicable diseases include respiratory diseases, hypertension, cancers, diabetes, and mental disorders and according to some definitions, accidental injuries as well. NCDs contribute greatly to the mortality rate. It has been observed that the proportion of mortalities caused by NCDs in developing countries is quite significantly higher than that in developed countries. Roughly 70% of total deaths

in developing countries are owed to NCDs. The burden of NCDs has multiple implications ranging from social to economical. Loss of quality and quantity of human capital is one of the key negative economic burden of NCDs. Currently developed compound to aid with the symptoms of NCDs are globally available however factors such as pricing and availability differ greatly across the developed and the developing countries.

Research into the case of Pakistan has enhanced the insight of this study's understanding of NCDs in Pakistan. Contemporary studies into the matter have come up with several explanations of the scenario, however, applicability of the findings are questionable since factors differ greatly across countries. The dynamics of a country are a key player in effectiveness of health related policies. Although NCDs cannot be contracted, several aspects of lifestyles have been identified as enhancing the risk of NCDs, that is to say, the chances of diseases are increased due to certain choices such as being inactive. Smoking tobacco puts a person at risk for respiratory diseases. Similarly, several other factors that increase the risk of diseases are also an explicit choice that an individual has freedom and discretion to change. Some studies suggest behavioral modification as the right approach to curtail NCDs, this means that instead of focusing on diagnosis and treatment, policy-making should take a proactive approach towards the issue and promote healthier choices, reducing the vulnerability of the population at risk. A few studies suggest that increasing access to currently available medication is a better approach than developing new treatments, this assumes that the supply chain of NCD medication is flawed, more in developing countries as compared to developed countries, henceforth, to reduce the burden of NCDs, access to medication is essential.

Much like other developing countries, Pakistan is also facing the dire consequences of the burden of non-communicable diseases. The quality of life is threatened by the worsening implications of NCDs. Although medications are somewhat affordable, due to infrastructural inequality between

urban and rural areas, conditions and issues are completely different. Urban areas have availability of medication and treatment but the quality is essentially questionable. Rural areas on the other hand lack basic necessities of a health system care provision is weak and combined with non-existent mechanisms of supply chain pertaining NCD medication, many of the diagnosed do not have access to medicines. There is also a huge difference between the private and the public healthcare system, public health units face issues of staff, lack of medical equipment, lack of experts, procurement issues etc. the usual problems of a developing country such as corruption, nepotism, and bureaucratic inefficiency also hinder the functionality of the pubic system. Private health entities, however, provide quality services and medication. Pakistan has a poverty problem and this means that much of the 'at risk' population is denied of proper health provision due to incapacity of the public system and unaffordability of the private system.

Every sovereign has the rights to tax and levy custom duties, in context of non-communicable diseases, it is observed that such taxes and duties worsen the scenario. Developing countries usually have weak currencies, this means that medicaments that have to imported will cost higher that locally manufactured alternatives. In most developing countries, locally manufactured pharmaceuticals are of low quality and weak efficacy, developing countries do not even possess the capacity to make some compounds which leaves them with the only option of importing. In presence of taxes and duties, such imported medicaments end up being unaffordable and too expensive. In the manufacturing realm, markups placed by manufacturers, taxes and markups levied by the government and other unnecessary expenses drive up the costs.

Pakistan had adopted the National Action Plan for NCDs, essentially it proposed an integrated framework approach to address the issue of NCDs. It proposed a health surveillance system to monitor progress. Most if the plan's invaluable recommendations and suggestions were not implemented. It is observed that the plan provided a comprehensive framework with several mechanisms for improvement of the condition and yet none were implemented in their true essence. During the course of this study, it was observed that the shoddier conditions pertaining to NCDs in Pakistan are not owed to weak legislative framework but to the weak political will, bureaucratic inefficiencies, lack of inter-departmental coordination and several other issues of incompetence and inefficiencies of public officials. As functional arms of the government, ministries and other bureaucratic institutions should make a coordinated approach to issues. Use of subject matter experts is weak and sometimes non-existent.

Appendix:

Non Verbal Cues	Verbal Cues
Interview # 1	
Welcoming	**Willing to give Interview**
Friendly	**Interested in what we are saying**
Maintained eye contact	
Posture:	
Sitting on the chair, relaxed, in the cafeteria	
Face Expression:	
Smiling face	

Dress:	
Shalwar Kameez	

Non Verbal Cues	**Verbal Cues**
Interview # 2	
Welcoming	**Discussing everything openly**
Friendly	
Posture:	
Sitting in his office chair talking to the interns	
Face Expression:	
Serious face	

Dress:	
Dress pant and shirt	

Non Verbal Cues	**Verbal Cues**
Interview # 3	
Peaceful Environment	**Willing to give interview**
Friendly	**Interested in the questions**
Posture:	
Sitting in his office chair	
Face Expression:	
Smiling face	

Dress:	
Dress pant and shirt	
Non Verbal Cues	**Verbal Cues**
Interview # 4	
Disturbance	
Lack of interest	
Posture:	
Sitting in his office chair, checking patients	
Face Expression:	
Serious Expression	

Dress:	
Dress pant and shirt	

Non Verbal Cues	**Verbal Cues**
Interview # 5	
Friendly	**Hesitant in the start**
Cooperative	
Posture:	
She was sitting on bed	
Face Expression:	
Scared Expression	

Dress:	
Shalwar Kameez	

Non Verbal Cues	**Verbal Cues**
Interview # 6	
Interested but answering quickly	**Patient was also contributing**
friendly	
Posture:	
He was sitting in his office chair	
Face Expression:	
Tense Expression	

Dress:	
Pant and Shirt	

Non Verbal Cues	**Verbal Cues**
Interview # 7	
Unfriendly	**Not answering properly**
Not interested	
Posture:	
He was sitting in his office chair, doing something on his computer	

Face Expression:	
Annoyed expression	
Dress:	
Shalwar Kameez	

Non Verbal Cues	**Verbal Cues**
Interview # 8	
Friendly	**Suggested some changes in the questions**
Interested	**Tell us about an app which is used to check air quality**
Posture:	
He was sitting in his office chair	

Face Expression:	
Friendly Expression	
Dress:	
Pant and shirt	

Non Verbal Cues	**Verbal Cues**
Interview # 9	
Friendly	**Willing to give interview**
Approachable	
Posture:	
She was sitting on her sofa, relaxed	

Face Expression:	
Smiling Expression	
Dress:	
Shalwar Kameez	
Non Verbal Cues	**Verbal Cues**
Interview # 10	
Friendly	**Ask us if we have are facing any problem regarding our thesis**
Interested	
Easily approachable	
Posture:	

He was sitting in his chair, quite relaxed	
Face Expression:	
Smiling face expression	
Dress:	
Pant and shirt	

Non Verbal Cues	**Verbal Cues**
Interview # 11	
Friendly	**Appreciated our work**
Highly Interested	
Posture:	

Sitting in his office chair, relaxed	
Face Expression:	
Happy expression	
Dress:	
Pant and shirt	

Non Verbal Cues	**Verbal Cues**
Interview # 12	
Unfriendly	**In the end of every question said, search it by yourself on the internet**
Gave time himself but get annoyed in the interview	

Posture:	
Sitting in his office chair	
Face Expression:	
Annoyed Expression	
Dress:	
Pant and Shirt	

Non Verbal Cues	**Verbal Cues**
Interview # 13	
Unfriendly	**Wanted to have a Performa for the interview**
Aggressive	

Less interested	
Posture:	
Sitting in his office chair	
Face Expression:	
Angry Face Expression	
Dress:	
Shalwar Kameez	

Non Verbal Cues	**Verbal Cues**
Interview # 14	
Friendly	**Appreciated the work**

Interested	
Posture:	
Sitting on her bed	
Face Expression:	
Smiling Face	
Dress:	
Shalwar Kameez	

NOUNS		Adjectives	Action Verbs
Almas Karim	salt	Friendly	Saying
Fareeha Mehmood	Nuclear dump	happy	provided
Anjum Khan	pesticides	Beautiful	Feeling
Shifa International Hospital	Trainees	Young	receiving
Islamabad	America	Aggressive	Reviewing
Patient	Bone marrow	Budget	presenting
Daughter	Melatonin	Peaceful	discussing
Diabetes	Melanin	Doing	transmitted
NCDs	Protiscin	Expensive	Think
Family	Carcinogen	Swelling	transferable
mother	Smog	headaches	interview
hospital	Lahore	Hesitating	suffering

doctor	**Cigarette**	**Survival**	**Willing**
People	**Air**		**satisfied**
Pakistan	**Water**		**Smoking**
medicines	**Shaukat Khanum**		**Cured**
Government	**Lung Cancer**		**Affected**
School	**Breast Cancer**		**Eating**
Television	**Punjab**		**getting**
M Ayaz Mir	**Parks**		**Testing**
Interviewer's	**Hepatitis B and C**		**Walking**
female	**Tobacco**		**Funding**
Hematologist	**Oral Cancer**		**Wavering**
Cardiovascular	**Market**		**do**
diseases	**Mehmood Zeb**		**Breathing**
Hypertensive	**UK**		**Drinking**

Dyslipidemia	**Protozoa**		**Causing**
Sedentary lifestyle	**Body**		**Prevention**
pollution	**Vector**		**Cooperative**
children	**Sugar**		**Facilitate**
Diabetic genetic disposition	**Cholesterol**		**Working**
British	**Hyperlipidemia**		**Feeling**
Cancer	**Alcohol**		**Talk**
Respiratory diseases	**Chronic**		**Say**
Citizen	**Chart**		**Living**
National	**Lipid**		**Displaying**
country	**Ischemic heart diseases**		**Running**

NOUNS	**Action Verbs**

Food	**Economy**		**Addiction**
Rural areas	**Environmental**		**Controlled**
Urban areas	**Oxygen**		**Using**
Media	**Heart**		**Taking**
Corruption	**Milk**		**Trying**
Aziz ul Qadir	**Room**		**Making**
Pakistan Ordinance Factories	**Nusrat Zaman**		**Checking**
Wah Cantt	**House**		**Working**
Breast Cancer	**Vegetables**		**Consulting**
skin	**Sun**		**Going**
clinic	**Fruits**		**Coming**
Actinic keratosis	**Acne**		**burning**
blisters	**Hives**		**exposed**

Simeen Rehman	**Skin and Laser Clinic**		**managed**
Peshawar Road	**Rawalpindi**		**Passing**
Dialysis	**Poverty**		**Functioning**
Radiations	**Nutrition**		**belonging**
mediation	**Blood pressure**		**Cope**
kidney	**Middle aged**		**Seeing**
Old aged	**Muhammad Sadiq**		**Indulging**
Heart Attacks	**Muhammad Asif**		**Leading**
Medical Specialist	**Saad Shaheed Hospital**		**finding**
Maryam Memorial Hospital	**Valley Clinic**		**Asking**
Naushad Ali Khan	**Uric Acid**		**Guiding**
Sodium	**Salwat Saleem**		**Improved**

Tazeen Seemab	**TV Lounge**		**Recovered**
House	**Asthma**		**Paying**
Chief Executive	**Pollen**		**Discussing**
India	**Allergy**		**Worried**
Organic	**Pollution**		**Answering**
Denmark	**Green**		**focusing**
Vaccination	**Baby**		**Shocked**
Bronchitis	**Pocomania**		**operated**
Virus	**Aamir Iftikhar Malik**		**Convinced**
Pulmonology care specialist	**Insulin**		**Clustering**
Weight loss	**Poly urea**		**Consulting**
obesity	**Endocrinologist**		
Osama Ishtiaq	**Institution**		

Hooka	**Heart Failure**		
Muhammad Ismael	**Village**		
Eye cancer	**Chemo therapy**		
Rupeena	**sister**		
TB	**Aziz Ul Qadir**		

S. No	KEY	
1	Noun	Highlighted in purple
2	Adjectives	Highlighted in Yellow
3	Verbs	Highlighted in Blue
4	Action Verbs	Highlighted in Green

TRANSCRIBED INTERVIEWS:

Interview no. 1

Interviewers' name: Almas Karim and Fareeha Mehmood

Patient's name: Anjum Khan

Place of interview: cafeteria of The Shifa International Hospital, Islamabad

Date of Interview: 11th of May, 2018

Time of interview: 3pm

Environment in which interview is conducted: Patient was with her daughter and there was a friendly environment. She was willing to give us interview and was very interested in what we are saying. She was friendly and she had a very good conversation with us.

I: Which disease are you suffering from?

P: Diabetes

I: How did you come to know that you are suffering from NCDs?

P: It was in my family. My mother had diabetes, I used to take her to the hospital and I know about it. The doctor usual do sugar test of me along with my mother. She used to be very happy when my tests come negative. When I came to know about it that I have diabetes, at the age of 70, I did not tell my mother. She did not know about it in her lifetime.

I: Are you satisfied with the care of this hospital?

P: Yes, I am satisfied with it.

I: Are you satisfied with the treatment provided by your specialist doctors?

P: Yes, they have good doctors.

I: Are you feeling better after using your prescribed medication?

P: Yes I am but the quality of medicine vary. The medicines which are imported are good. I know some people who use imported medicines and they had better as compared to the ones we use in Pakistan.

I: Is the hospital staff friendly with you?

P: Yes

I: Are you receiving any type of funds from the government for the treatment?

P: No.

I: How do you think that people can be aware of NCDs?

P: Through advertisements on Television and awareness sessions in Schools.

I: How do you rate the overall care you receive from your provider at the scale of 1-10?

P: Nine

Interview no. 2

Interviewers' name: Almas Karim and Fareeha Mehmood

Doctor's profile: Dr. M.Ayaz Mir, MBBS,FACP, Diplomate American Board of Internal Medicine, Diplomate American Board of Hematology, Consultant Hematologist/Oncologist in Shifa International Hospitals Ltd

Place of interview: Consultation room of doctor in Shifa International Hospitals Ltd, Islamabad

Date of Interview: 22nd of May, 2018

Time of interview: 12:20pm

Environment in which interview is conducted: Doctor was reviewing some documents. There were two female doctors in the room as well. The environment overall was friendly. Doctors is also discussing the facts that he was presenting to us with those female doctors as well. It seems to us that they were interns and they were there to practice medicine.

I: Can you please introduce yourself?

D: My name is Dr. Ayaz Mir and I am a Hematologist.

I: How many years of experience do you have in this particular field?

D: in this particular field I have 10 years of experience.

I: How would you define Non-communicable diseases?

D: Non-communicable diseases are those diseases with cannot be transmitted, for example Cancer, hypertension, Diabetes. Noninfectious diseases comes under non-communicable diseases.

I: According to you which Non-communicable disease has the highest mortality in Pakistan?

D: In case of Pakistan, one-quarter population is diabetic.

I: What about Cardiovascular diseases?

D: It's the byproduct of same disease. Most people are diabetic, hypertensive, dyslipidemia, they are all major risk factors of these diseases.

I: Which age group is most vulnerable and why?

D: I would say people in their forties because of sedentary lifestyle and pollution, physical factors environmental factors, not taking proper diet.

I: Can NCDs be transferable from parents to their children (hereditary)?

D: Some of these diseases are genetic for example, diabetes genetic disposition.

I: How do you think lifestyle of people affects NCDs?

D: what does that mean? Please elaborate this question?

I: it means does lifestyle has an impact on NCDs or not?

D: Yes, absolutely it does. According to one of the recent British study, people with active lifestyle have less diabetes. We have gastric bypasses due to which diabetes can be cured because their oral and caloric intake decreases. Same ways disorders related to lipids can be cured if people stop eating 'parathas'. Hypertension, more use of salt smoking with increases the risk of getting cardiovascular diseases so lifestyle does have an impact on NCDs.

I: According to you, what percentage of people are affected by NCDs in Pakistan?

D: 50%

I: According to you which factors are responsible for the increasing rate of NCDs in Pakistan?

D: one of the reason is that now a days we detection increased which is one of the factor. Testing is more frequent. Then, as I said there is pollution, sedentary lifestyle. People sit in front of computers all the time instead of walking or exercise. So, less activity, less exercise, increase in processed food. My children ask for KFC every day.

I: According to you, are these diseases common in urban areas or they are also common in rural areas as well?

D: I think they are common in both. At one time, people thought that they are less common in rural areas because they have healthy lifestyle, it's robust, they go to fields every day and do exercise but pesticides had corrupted these things. Pesticides are known risk factors for cancer. I was in rural vain. I was wavering. It is very beautiful place like heaven, and it's amazing, beautiful farmland but I was shocked because they have high rate of cancer in young people. I was thinking why they have cancer despite of having clean environment and streams. It's a pristine place. The reason is pesticides and there is nuclear dump as well.

I: Do you have treatment facilities provided by government with respect to NCDs?

D: In non-communicable diseases I treat cancer patients. Some funding is available to selective people for bone marrow transplant. In Pakistan, many cancer medicines are available free of cost as government subsidy. Three to four medicines such as melatonin, matenin, proticsin etc. are available so it somehow helps us but….

I: In your point of view, which facilities should be provided by government to reduce the rate of NCDs?

D: First of all, we should have a database on national level. We don't have a database and history in our country that how many people are diabetic, cancer patients, and hypertensive. Whatever is your national vision, if one some good person comes and says that we have to make a national plan, health plan, the first thing you need is statistics. If we don't know how many cancer patients, health facilities, centers, doctors, trainees will we need so, we don't have these statistics. I think first of all we have to work on this. Other than that healthcare…. It's from both sides. Healthcare is not priority of Government. Its priorities are defense due to our strategic location. It is not the priority of citizens as well. They do not pay taxes and wants the facilities same as in America.

I: According to you why the rate of cancer is increasing?

D: One reason is detection and awareness than carcinogens, cancer causing substances, are more in our environment.

I: For example?

D: For example, this lotion (pointing to one present besides the door) is carcinogen and cigarette, Smog…right?? ..We read about it that there is smog in Lahore. Smog has the same effect as that of cigarette. You become very happy and say that I never smoked in my life but then you come to know that you got lung cancer… how did this happen? ….due to breathing in smog. This is one of the factor which is beyond your control. You are supposed to live in that same city so we have pollutes water and air to the extent that….we grew up drinking tap water but now we are afraid to drink tap water so…

I: In case of Pakistan which cancer has highest rate?

D: In Pakistan's case, breast cancer is most common, according to limited data present in Shaukat Khanum registry and Punjab government's registry. 35-40% of all the cancers. It is present in young people and is aggressive…..why is it??... We don't know.

I: According to you can NCDs be managed, cured or prevented?

D: Yes, absolutely. Prevention is a major part. In this education comes first. Educate citizens that do not eat KFC, 'samosa and pakora' in iftari. I, myself like these. What to do??..... Other than that exercise… parks. We have big cities. Karachi, which is a metro city. It has no parks or trees. It only has hot temperature. Lahore is better than that. Islamabad is very good in this sense. So, parks, recreational and physical activity should increase. Entertain children. Smoking should be finished. Hepatitis B and C treatment should be there and food regulation should be stricter.

I: How tobacco impacts our health?

D: Tobacco… it causes many cancers, lung diseases and oral cancer.

I: What in your opinion are the common symptoms of these diseases?

D: Most of the time I get blood cancer patients. The common symptoms of blood cancer are bleeding, infection and formation of gnarl.

I: Do patients complete their treatment?

D: Mostly complete it. Some people partially complete it due to finances but most people try to complete it.

I: The medicines that you prescribe, are they available in the market?

D: Some are available. Some comes from black market.

I: In your point of view, is there any quality difference between the imported medicines and the medicines made in Pakistan?

D: In Pakistan we don't make medicine. We have to import most them. There is no issue of quality but these medicines come from black market or other channels which costs a lot. We are far behind India in this matter. They make most of the medicines locally.

I: You talked about blood cancer. According to you, on average, how much financial budget a patients require on yearly basis for his/her treatment?

D: Blood Cancer has hundred types. Complete treatment takes about two lac to 50 lac. On average 25-30 lac. So, per year it takes 20 lac.

Interview no.3

Interviewers' name: Almas Karim and Fareeha Mehmood

Doctor's profile: Dr. Mehmood Zeb, MBBS, MRCP(UK),PhD Cardiology (UK), CCT-GIM-(UK), CCT cardiology (UK), Consultant Cardiologist at Shifa

Place of interview: Consultation room of doctor in Shifa International Hospitals Ltd, Islamabad

Date of Interview: 22nd of May, 2018

Time of interview: 12:40pm

Environment in which interview is conducted: It was a peaceful environment. It has the same setup as all consultant offices have. There was no any kind of disturbance in the room.

The doctor was very cooperative with us. He was willing to facilitate us and give us as much information as possible in this regard.

I: Can you please introduce yourself?

D: My name is Dr. Mehmood Zeb. I am consultant international fellow. I have done my MBBS from Khyber Medical College. PhD from University of South in UK and PNRCP other various exemplary titles but the moment I am working at Shifa International Hospital as International Cardiologist.

I: Okay so how many years of experience do you have in this particular field?

D: In medicine… I have started off as medical student in 1995 so from 1995 till now.

I: More specifically in Cardiology how much years of experience do you have?

D: From 2004 until now (till 2018 so 14 years).

I: How would you define Non-communicable diseases?

D: Non-communicable diseases obviously as you ask me definition so… but you know the meaning of that is those diseases which cannot be transferred from one person to other through vector, which could be viral or bacterial or Protozoa or other kind of infectious disease which spread from one person to another so these are diseases which are most probably related to our body makeup which is the most important factor or genetics then it is further

I: According to you which Non-communicable disease has the highest mortality in Pakistan?

D: I think Diabetes on the top along with hypertension. Unfortunately in Pakistan we don't have any statistic data. If one talks about it would be its own feeling ad can be biased. If we

talk about these things in UK or other countries, they collect data on original case by case basis. Whatever they quote is usually correct. Whatever we quote in Pakistan is usually assumptions so whatever we say is usually assumption but you know all these…you can call it metabolic diseases, which includes high blood sugar , high blood cholesterol and hypertension . These three things in Pakistan is rapidly increasing. In my experience till now, the tests I run on cholesterol, most of them have abnormal lipid profile. If we screen out the whole population you might find out that abnormal lipid profile is on the top of the chart, which is a major risk factor for ischemic heart diseases.

I: Okay so in case of Pakistan which age group is most vulnerable to these diseases and why?

D: in Pakistan even the younger population is suffering from these diseases. I think environment is playing a major role in that.

I: do you think that NCDs are transferable from parents to their children (hereditary)?

D: Yes through genetics some of them are. For example you know diabetes, hypertension, hyperlipidemia and tendency towards hypertension I would say and ischemic heart diseases itself. You know, all them gets transmitted from parents to their children.

I: Do you think lifestyle of people has an impact on NCDs? How?

D: It's obvious, in lifestyle diet, exercise and rest of living style for example alcohol, smoking all these risk factors play a major role in the early on setup these conditions at premature chronic disease.

I: According to you, based on your experience, on average what percentage of people are affected by NCDS in Pakistan?

D: I don't know the exact figure and I don't think anyone does. It's all made-up because you don't have a database but I think it's going to be huge health burden in the next 4-5 years. That the most of you even younger population will be suffering with ischemic heart diseases.

I: We read that 50% of our population is suffering from these diseases. Do you think it's possible?

D: I think it's impossible. It is a …I think, fabricated figure unless you do the study no one knows for sure. I myself is not aware of this.

I: What are the risk factors that has increased the chances of NCDs?

D: It's due to your pollution, your diets. The milk you get is mixed with chemicals. These all things they are chemicals. They are dangerous for your health. The world precipitate early onset hypertension, diabetes, lipidium ischemic heart disease, you know, cancers are the problems. You have environmental pollution, food pollution and lack of regulated economy. The food industry is totally unregulated. They can put as much salt in it as they want. They can give people to eat anything they want.

I: According to you, people from urban areas are suffering more or the people from rural areas? Why?

D: Urban areas, I think because of the lack of inappropriate diet and people in urban areas take more processed food.

I: Do you have any facilities provided by government to cure these?

D: None.

I: In your point of view, which treatment facilities should be provided by government to cure or reduce these?

D: I think you need to have a national campaign on television, media and everywhere to make people aware of these problems. They need to take doctors on board. They…even in UK which is very advanced country, they have these very large display boards, displaying picture of people suffering with heart attack and also instructions on what to do if someone suffers problems like that. Also make people aware of their health about ischemic heart disease, diabetes and hypertension, hyperlipidemia. All these things so they are running continuous campaign on these things. It seems like in Pakistan, people decided that we have become the cleverest nation on earth so let's stop doing any of those things. There are people like these, there are such patients like we have such low education level that they come here with proper heart attack and they have learned one thing "mujay gas ki bimari hai". "Gas ki bimari" so everyone is suffering "gas ki bimari" and in fact they are suffering ischemic heart disease and heart attack. They are blaming for gas which is even nonexistent. It does not exist anywhere in the books in the wake of all. It's our national disease.

I: What do you think, how can an individual decrease salt consumption?

D: It's a self-controlled and self-motivation.

I: If we talk particularly about heart diseases, which factors do you think which are responsible for increasing rate of these diseases?

D: Hypertension, Diabetes and hyperlipidemia. And I am sure environmental pollution and all these things will be playing its role as well.

I: Environmental pollution too have an impact on heart diseases?

D: I am sure that would have major role in this. Not as in studies in Pakistan but if you look at it, what your heart thrives on is oxygen. If you don't have oxygen in the air and you are taking in all these chemicals into your body. They are circulating in your blood. So it's going to affect your heart. We can know very well from the research work on smoking that it has harmful effect coronary arteries and which is a smoke. If you are doing it all the time so it plays a major role.

I: what do you think that how can these be cured or prevented?

D: Mass education.

I: From education you mean television advertisements or school education?

D: Everywhere. Starting from school to every level. I think we are already too late for that.

I: I don't think that TV ads on smoking has any impact on people. We always see on television that "smoking is injurious to health" but it does not affect the minds of people.

D: If we talk about smoking, its addiction. You can't stop addiction just like that. Advertisements alone does not play any role. In UK, they have controlled it because they have made laws for it that we can't smoke in public places, at bus stop or in the bus, on train stations. They have their restaurants where you can't smoke, it's prohibited. They will fine 1000 pound and can be sentenced. If there is any smoker there s/he cannot smoke as well. This is one thing. Most of the people are in their offices or somewhere else so till the end of the day they cannot smoke. If s/he will smoke they will do it away from public places. Then they had other thing for the smokers who want to quit. They do support them as well. It's not like they are only using coercion to make them quit no matter they die. They provide medicines so that the effect of addiction is controlled. They have made community centers

for that. People go and get help there and take their medications and support. They do not only talk about it they also take steps as well. They proper doctors in the community of people who can work there. There should be a check and balance system to audit that whether they have done it and the 3rd step would be whether there is any effect of that. And change your plan of action on the basis of the effects.

I: So what are the common symptoms of heart related diseases?

D: they have pain in chest while walking or doing exercise.

I: Do patients complete their treatment?

D: It varies. It depends from patient to patient. There is no primary healthcare system. There is no one to support patient if there is any question or anything. There is huge gap in the health system in Pakistan. Where patients do their best but …

I: Why do you think patient dropouts?

D: lack of education. They even don't know what they are taking why they are taking in most of the cases.

I: On average, what is the financial budget that a patients require on monthly basis for his/her treatment?

D: It depends on the medication and heart problems. There are hundreds of heart problems. But in case of Pakistan, if someone is suffering heart disease, most probably, more than half of their saving will be going there which is a false economy in a sense people do not pay taxes, government does not provide services. Everyone is trying to save their money but when they

suffer from these diseases, all money that they have saved is taken from them by the hospital all at once.

I: The medicines that you prescribe, are they available in the market?

D: There is problem with medications in Pakistan. Some of the basic kinds of medications are not available. And the reason behind that is the people financial view. They do not have humanitarian interest in making things available for people.

I: Do you think there is difference in quality of medicines in Pakistan as compared to imported ones/

D: The people in laboratory can answer this question after checking. But looking at the corruption in our country, one would be skeptical of that as well. If they can mix chemicals in milk so chemically made medicines is not an exception.

Interview no. 4

Interviewers' name: Almas Karim and Fareeha Mehmood

Doctor's profile: Dr. Aziz Ul Qaqir, MBBS, MCPS(Pulmonology), OJT (Med), vast experience in Internal Medicine, Respiratory and Intensive Care Set-ups. Skilled in Bronchoscopy and Invasive & Non-Invasive Ventilation, currently working at Pakistan Ordinance Factories Hospital, Wah Cantt

Place of interview: Consultation room of doctor in Pakistan Ordinance Factories Hospital, Wah Cantt

Date of Interview: 14th of May, 2018

Time of interview: 12:00pm

Environment in which interview is conducted: There was a lot of disturbance because there are four to five other people in the room. People were coming in and going out of the room. Some of them were consulting doctor about some issues. There was some kind of noise in the room which made it difficult for us

I: Can you please introduce yourself?

D: My name is Dr. Aziz Ul Qadir.

I: How many years of experience do you have in this specific field?

D: In this specific field ….three years.

I: How would you define Non-communicable diseases?

D: Non-communicable diseases are those diseases which do not spread between persons, either by droplet infection, Droplet infection is when we talk or when we cough the droplets, they do not spread Or by any other contact. May be physical contact, blood contact. Blood contact means if you use the same syringe for two persons. The diseases which do communicate through any type of contact.

I: According to you which Non-communicable disease has the highest mortality in Pakistan?

D: Cardiovascular, ischemic heart disease.

I: Which age group is most vulnerable in Pakistan?

D: In Cardiovascular above 50.

I: How much time does a person takes to get back to normal from chronic condition?

D: This is much generalized question. You can ask about the survival rate or treatment of the person. You are talking about Non-communicable diseases which is much generalized question.

Some diseases recover quickly others do not, like cancer. Some diseases, according to our specialty, like lung diseases, they linger on.

I: Are you suggesting that they cannot be cured?

D: If they can be cured, they linger on. If you ask me about specific disease I can answer that. For example, lung cancer. Here, (In Pakistan) lung cancer is the last stage. Patients come to us at their final stage so they cannot survive more than a year or a year and a half. If there is existential lung disease such as Non-communicable disease, you can say that their average is high with respective survival time.

I: Can NCDs be transferable from parents to their children (hereditary)?

D: Some of them are hereditary. There is preventive clustering. For example some lung, in some family there are more incidences. There are some diseases where family clustering occurs. But as such they are not transferable except some diseases like, cystic fibrosis. You can say that that are transferable or you can say they repeat in next generation but usually family clustering occurs but they are not transferred.

I: If some of them do get these diseases then how can these be cured?

D: If you are talking about hereditary diseases then you cannot cure them. You can control them. You can improve their morbidity and mortality and can prolong their life.

I: Do you think lifestyle of people has an impact on NCDs? How?

D: It has a very big impact. The most dangerous disease according to my specialty is lung cancer. It occurs 80-85% in those people who smoke. Other than that the environmental pollutants or industrial pollutants play a role as well. Let's say we have 100 cases are related to lung, of which 90 are preventable. If 80-85% people do not smoke so they will not get these diseases. So, the major chunk is of preventable disease. Other than that existential lung diseases have some association with environment but usually they are not preventable. Some existential diseases are smoking related diseases which are like 5% which are preventable by life modification.

I: According to you, what percentage of people are affected by NCDs Overall?

D: Are you talking about lung diseases?

I: For now, we are asking about overall NCDs. First tell us about overall NCDs.

D: Well see, we don't have these studies so … whenever there is a study, it is about the prevalence of cancer or TB (Tuberculosis).

I: Okay, then please tell us about your field.

D: I am talking about my specialty as well. So, overall if I tell you about respiratory diseases which are non-communicable then I think, it's about 4-5% of the population. In case of Non-communicable lung diseases.

I: Do you have treatment facilities provided to you with respect to NCDs to treat patients?

D: It varies from hospital to hospital. Some hospitals have many facilities.

I: What about this hospital (POF)?

D: In this hospital …. All 100% facilities are not available. We have to refer some cases. To some extent we get those facilities…. we get them to enough extent but there are some cases which we have to refer.

I: Can you please give us some examples?

D: For example, lung cancer. Some tests are conducted here. For some tests they have to go to Pindi (Rawalpindi). We do not have cancer specialists so they have to go to Pindi. For Cancer surgery they have to go to Pindi.

I: Okay so, what do you suggest that which facilities should be provided to you?

D: We should have cancer specialists.

I: What is the tobacco's effect on our health?

D: The major chunk of respiratory diseases is because of tobacco. For example lung cancer occurs in 80-85% of those who smoke. It affect in a way that 14-15 type of cancers are due to cigarette smoking. Other than that Asthma is also due to cigarette smoke in Children whose parents smoke. Some existential diseases are due to cigarette smoke.

I: What in your opinion are the common symptoms of these diseases?

D: One of the most common symptom is cough. Second common is shortness of breath in walking and chest pain, blood cough.

I: How can these diseases be managed, cure or prevented?

D: Prevention comes first. First, If you control smoke sensation and second, environmental pollutants. Third, there should be protective gears in industrial area for the people who are working there. There should be proper masks and gloves to handle chemicals. Maintain

greenhouse factor. Hand washing even in non-communicable. It overall improves your health.

I: Do you think exercise has any effect?

D: Yes, absolutely. Weight loss is due to exercise. There is a disease in lungs which is called Obesity hypoventilation syndrome. This occurs in obese people. If you control obesity, it will not occur at all.

I: The medicines that you prescribe, are they available in the market?

D: 90% are available in market.

I: On average, what should be the financial budget of a patient monthly basis for his/her treatment?

D: It depends on disease. If a person has cancer than per month at least 50,000-100,000 minimum for his/her treatment. If it's existential lung disease then 10,000-50,000. If a patient need oxygen then the oxygen machine itself costs 80,000. If s/he has a problem due to obesity than the machine will cost 200,000 depends on patient to patient. Average per patient will be 40,000-50,000.

Interview no 5:

Interviewers' name: Almas Karim and Fareeha Mehmood

Patient's name: Rupeena

Place of interview: Oncology department, The Shifa International Hospital, Islamabad

Date of Interview: 21th of May, 2018

Time of interview: 2:30 pm

Environment in which interview was conducted: Patient was with her Sister and there was a friendly environment. At first she was hesitating, later she was convinced to give us an interview and we found her very interested throughout the interview. She was friendly and she had a very good conversation with us. There was some language barrier as she was talking Punjabi. There were some words which was difficult to understand.

Q: What disease are you suffering from?

A: I had eye cancer. It's been two years. My one eye is removed because of this cancer. And I'm still coming to for the Chemotherapy.

Q: How did you come to know that you had eye cancer?

A: I had this swelling around my eye before. I did go for the checkup, I though it's just a swelling. It will be alright if I apply ice. But it didn't. It kept on swelling and I started faced headaches and this pressure around my eye. I was losing my focusing power. I was really worried. When I go for the check-up, Doctor gave me some test. I was not expecting this huge diseases. I was shocked on the results. And very upset.

Q: Are you satisfied with the care of this (Shifa) Hospital?

A: OH yes, I'm Satisfied. They tried to control it by medicines. But it kept spreading. These doctors were afraid that if it is not operated then it will eventually affect my brain cells. And

that will not end well. So they told me about the situation. Because of this my one eye was removed. And no there is nothing there. I'm sad but it's okay as long as I'm alive.

Q: Are you feeling better after the treatment?

A: Yes, I'm much better. Better than before. It's been two years since my eye was removed but I have to come here for the therapy so that cancer does not row back.

Q: Are you receiving any types of funds for government?

A: No. we took loan from different relatives for this treatment. It was very hard for us to continue my treatment. As we are also facing financial issues.

Q: How do you think people can become aware of the NCDs?

A: I think through TV advertisements, as I belong to village so there should be campaigns about the awareness. What should we do to avoid these type of disease? As these disease cost so much money. It is better to prevent it and have awareness about it.

Interview No 6:

Interviewers' name: Almas Karim and Fareeha Mehmood

Doctor's profile: DR. Muhammad Ismail, AP-CARDIOLOGIST in Pakistan ordinance factory Hospitals Ltd

Place of interview: Consultation room of doctor POF Hospitals Ltd, Wah Cantt

Date of Interview: 14nd of May, 2018

Time of interview: 10 am

Environment in which interview is conducted: Doctor was waiting for patients and was continuously asking a (specific) patient, who was in a test room. There was young male doctor with us during the interview. He was also interested and also made contribution in discussing some facts. He was there to show some reports to the doctor. The whole environment was friendly but doctor was quickly answering our question because he was worried about his patients.

Q: First question is introductory, so briefly introduce yourself and how many years of experience in this particular field?

A: My name is Ismail. And I'm an only cardiologist of this (POF) hospital. It's been almost twenty, twenty-Five years with training. Without training Eighteen years.

Q: how would you define Non-communicable diseases?

A: From my point of view which are not transmitted from one person to another person.

Q: According to you Which Non communicable diseases has the heist mortality rate in Pakistan's case? Or which are most common diseases of NCDs?

A: Well, heart disease are mostly common in Pakistan. Ischemic heart disease. IHB.

Q: Which age group is most vulnerable in Pakistan? Why?

A: Nearly thirty-Five. In our country Pakistan Thirty-five and above. But when we talk about other countries their age group is Sixty and above.

Q: Why do you think it is like that?

A: There are many common reasons.

Q: Is there any specific reason for that?

A: Emm, there is no such specific reason about that. It is mostly due to sedentary lifestyle. Then there comes diet. There are also genetic causes. But it is better in comparison of west.

Q: How much time does a person takes to fully recover from this disease?

A: It actually varies for patient to patient. Some take less time and some take more. But if we talk about critical situation, it mostly takes Seven-eight days. It's not the actual recovery. Sickness and problem is still there. In these days a critical patient can only recover from acute from. Patient will become more stable than before. But there are always different cases which take more time than usual.

Q: Can they be transferable from parents to their children (heredity)?

A: Only few. Only few. Some of them are. It's partially hereditary but not all.

Q: Do you think lifestyle of people has an impact on NCDs? How?

A: Defiantly. It has a large amount of impact. There is sedentary lifestyle. Living habits. Diets. If a person has sugar, and blood pressure, they are mostly prone to these diseases. And yes, smoking. It's a very huge risk factor. When a person has diabetes and he is also a smoker then it is clear that, that person has an accidently lifestyle. In Pakistan there is large percentage of people who are smokers. I have seen Twenty-five year old boy who had lungs cancer. Why though, Just because of smoking.

Q: What do you think How many people are affected by NCDs?

A: I don't know the exact figure but I think 20%. I don't think k there is a huge percentage, Make it fifteen percent. (15%).

Q: What are the factors leading to increased burden of non-communicable diseases?

A: Blood pressure, Sugar, and Smoking and High level of Cholesterol, Sedentary lifestyle.

Q: According to you whether people from rural areas or people from urban areas are more prone to these diseases?

A: I think both.

Q: When we talk about smoking. Many people say that there is high rate of smoking in rural areas Then in Urban areas. What you think about that?

A: hahaha. In rural areas people are more into Hooka. According to them drinking Hooka is counted as a good deed.

Q: Do you have specific policies for NCDs? Are they initiated by government or your own institution?

A: I don't think Government is doing anything nor I think it has any policies. We have our own protocols. They are beyond your scope.

Q: Now coming towards specific question about your field. Is salt or sodium consumption unhealthy? If yes? Then what are the impacts of salt or sodium consumption?

A: Sodium don't have its direct effect. But it usually increases blood pressure. Blood pressure is a risk factor so that's why it has indirect effect. We mostly restrict patients form Sodium who have the risk of heart failure. This is because sodium limits water in body and usually because of this patient face high blood pressure. And blood pressure is not good for heart diseases. So you see it has an indirect effect.

Q: Can NCDs be managed, cured or prevented?

A: Which one? Eh no. It can't be fully cured. But it can be prevented by proper diet, Exercise, Avoid smoking, and control sugar and Cholesterol level. In short you can say control of all the risk factors.

Q: Do patients complete their proper treatment?

A: Yes, people who are not smart. Young people usually complete their treatment as they are more complained. But it varies patient to patient. People who usually don't have enough money for paying fees. There are some patients who trust Hakeem more than doctors.

Q: Medicines you prescribe to patients, are they easily available in market?

A: Yes, they are easily available. Their prices varies from brand to brand. There are many brands and there is also high cost variability. One medicine of a brand is of Rs.50 but same medicine of brand B may be of 70rs.

Interview No 7

Interviewers' name: Almas Karim and Fareeha Mehmood

Doctor's profile: Dr. Osama Ishtiq MBBS, MCPS, FCPS (Pak) Face (US)

Fellowship in Endocrinology and Diabetes (AKUH)

Consultant Endocrinologist and Dialectologist in Shifa International Hospitals

Assistant Professor of medicine, SCM

Place of interview: Consultation room of doctor in Shifa International Hospitals Ltd, Islamabad

Date of Interview: 21nd of May, 2018

Time of interview: 1:20pm

Environment in which interview is conducted: Doctor was reviewing something on computer. The doctor was little bit annoyed, may be due to overload of work and also due to Ramadan. The environment overall was not that friendly. It was the shortest interview. It seems that doctor was not taking interest in the interview.

Q: First question is introductory, so briefly introduce yourself and how many years of experience in this particular field?

A: I'm consultant endocrinologist in Shifa hospital. And have 10 years of experience.

Q: How would you define Non-communicable diseases?

A: Non communicable are those who don't communicate from person to person.

Q: According to you Which Non communicable diseases has the heist mortality rate in Pakistan's case?

A: cardiovascular disease.

Q: Which age group is most vulnerable in Pakistan? Why?

A: Forty one. There are multiple reasons for that. Age itself is a risk factor. Like at this age people become diabetic. And face blood pressure. And issues related to cholesterol are usually detected at this age. These are the reasons. And secondly we have this genetic makeup. In other countries this vulnerability age is 50 but in Pakistan its 40.

Q: What according to you are the reasons?

A: genetic. It's mostly genetic. Diabetes.

Q: How much time does a person takes to recover from the critical situation?

A: There is no normality of NCS. All cases are critical. We can say it as controlled time. It varies from patient to patient. It depends on patient. There is no exact time.

Q: Can they be transferable from parents to their children (heredity)?

A: We cannot say it's hereditary. If parents has some diseases then there is more risk of having disease in the family. There are more chance. It's not compulsory every family member have to face this particular diseases.

Q: Do you think lifestyle of people has an impact on NCDs? How?

A: It has a very major impact. Diabetes has a major impact on the lifestyle. Form lifestyle diabetes can be controlled and improved. Through exercise Cholesterol and blood pressure

can be improved. Diet also play a role in improvement of blood pressure. Through there cardiovascular disease can be improved. Through exercise there is much less risk of heart diseases.

Q: What do you think How many people are affected by NCDs?

A: I don't know the exact amount but diabetes itself has 20%. It's only for diabetes but for IHD it may be 30%.

Q: What are the factors leading to increased burden of non-communicable diseases?

A: Obesity is a major factor. Then there is smoking. Then family history. Sedentary lifestyle. Also poor food habits.

Q: Most of your patients belong to rural areas or urban areas? According to you which of them are more prone to these diseases?

A: both

Q: Is government is providing any facility regarding NCD to you or this hospital?

A: No they don't. It's a private sector. We are not supported by any facility by government.

Q: What facilities government should provide to reduce the rate of NCDs?

A: First of all there should be awareness. People need to be more educated towards so that there is more towards prevention. That how to prevent these diseases.

Q: What type of advertisements there should be?

A: There should be advertisement for healthy lifestyle. For weight control.

Q: There is a lot of advertisement in movies for the awareness of smoking. Do you think it has an effect on people?

A: No, no. I don't think so.

Q: When we talk about diabetes. What are its risk factors?

A: There are mostly three- Risk factors. One is the family history. Second is obesity. Third its ----

Q: What are the common symptoms in diabetes in both type one and type two?

A: Type 1 have different symptoms, like weight loss, polyuria. But type 2 don't have any symptoms.

Q: Do patients complete their proper treatment?

A: mostly, mostly.

Q: Are there any dropout cases?

A: Yes, there are dropouts. It's mostly because of financial issues.

Q: According to you, how much a monthly budget a diabetic patient must have for his/her treatment?

A: It all depends on the situation and status of the patient. I can't tell because every patient has different expenses. On severe case it depends on what type of insulin a patient is taking.

Q: Medicines that you prescribe to patients, are they easily available in market?

A: Yes, in case for diabetes they are.

Q: Are they imported? Or they are Pakistani medicines? Do you think their quality differs?

A: Pakistani, they are not imported. There is a mild different in quality in case of diabetes.

Interview No 8

Interviewers' name: Almas Karim and Fareeha Mehmood

Doctor's profile: Dr. AAmir Iftikhar Malik, MD, Diplomate American Board of Internal Medicine.

Diplomate American Board of Pulmonary and Critical care medicine.

Diplomate American Board of Sleep Medicine

Consultant Intensivist/ Pulmonologist and Sleep medicine.

Director Critical care service.

Place of interview: Consultation room of doctor in Shifa International Hospitals Ltd, Islamabad

Date of Interview: 21nd of May, 2018

Time of interview: 1pm

Environment in which interview is conducted: Doctor was talking to some student, he was there for some advice for further studies. When we enter Doctor started asking about our project and seemed interested and he also asked some question about our project because he

also had written many research papers. And then asked us to wait for five minutes while he was guiding that student. It was a break time. Over all Environment was friendly and Doctor also suggest some changes in our questions to make the more specific. He told us about this app in his mobile that check Air quality on daily basis.

Q: First question is introductory, so briefly introduce yourself and how many years of experience in this particular field?

A: My name is AAmir Iftikhar Malik and work as a pulmonology care specialist in Shifa Hospital, Islamabad. I have about 18 years of experience in this particular field.

Q: How would you define Non-communicable diseases?

A: Which don't have an infectious component like bacteria, virus. Non-infectious means that they are non-transferable. In a diseases bacteria virus are only communicable. Here in Pakistan we have pneumonia and bronchitis are the most common communicable diseases. Non communicable don't have infected virus for example clot in lungs.

Q: According to you Which Non communicable diseases has the heist mortality rate in Pakistan's case?

A: Emm I'm not sure but I think it should be asthma related. If we talk about all NCDs then there is cardiovascular disease.

Q: Which age group is most vulnerable in Pakistan? Why?

A: middle age. 40-50. Em because of their dietary pattern. Sedentary lifestyle.

Q: How much time does a person takes to recover from the critical situation?

A: It depends on the diseases. It's a very broad question. If the patient is in hospital then it may take minimum five days.

Q: Can they be transferable from parents to their children (heredity)?

A: Some of them. Not all.

Q: Do you think lifestyle of people has an impact on NCDs? How?

A: Lack of exercise….

Q: Do lack of exercise have an effect on respiratory diseases?

A: Yes, It has a lot of effect. It may leads to asthma….

Q: What do you think How many people are affected by NCDs?

A: I don't know. I don't think there is proper research done on that.

Q: What are the factors leading to increased burden of non-communicable diseases?

A: lifestyle matters a lot. It also include daily routine, work stress. In work stress, there is finding job. Unhealthy diet. Processed food.

Q: Most of your patients belong to rural areas or urban areas? According to you which of them are more prone to these diseases?

A: When we compare it with the population here. To urban has larger population, so we can say patients mostly belong to urban areas.

Q: Is government is providing any facility regarding NCD to you or this hospital?

A: No.

Q: What facilities government should provide to reduce the rate of NCDs?

A: Government should have certain interventions. They can be in a sense that they can educate people and remain in contact with doctors and can arrange heath meetings. In that they can discuss the facilities which are requested at the point. They can also person certain tests on patients, free test that very person would be encourage to do so like test for cancers. When a baby is born in other countries they run certain tests which is compulsory for that baby. There should be proper vaccinations. In Pakistan there is no proper vaccination system.

Q: I think there are some vaccination process.

A: Yeah but it's not made compulsory for all. If you can afford, you do.

Q: What are the most common risk factors in respiratory diseases?

A: Pollution, Air pollution. It's the main cause of asthma. There is this app name "Air Visually". It tells us about how much air is cleaner in daily basis. You can see here it's all red in color that means there is a lot of pollution. It tell us about the air quality index. Green means it is better. As you can see air visually of Denmark, see it's much cleaner, most of them are green in color. In our country there is a lot of pollution.

Q: From your point of view how it can be managed? Or prevented?

A: yes, simply by reducing pollution, especially air pollution. Environment should be improved. Improve lifestyle which include exercises. Dust here in atmosphere is very dangerous. Also there should be improvement in law standards of cars. They are very unhygienic. There should be a lot of improvement needed in the national standards of Pakistan.

Q: I've read an article over people are suffering more from pollen then form air pollution in Islamabad.

A: Pollen is another thing. It's a pollen allergy it's seasonal. If we talk about the components in air. And study an organic compound then we will realized that in Pakistan there is a lot of air pollution. Quality of air is very poor.

Q: what is the role of tobacco in it?

A: It has the major impact. It has the direct effect. It has been approved since 1953. As it is the main cause of the lungs cancer, Asthma, COPD and other respiratory diseases. These all come under the smoking category.

Q: What is the approx. time limit in indulging in these diseases if person who just started smoking?

A: There is approximate time. It depends on person to person. It's variable personally and genetically.

Q: Do patients complete their proper treatment?

A: Most of them do but not all of them because of cost issues and family issues.

Q: can to tell us in percent how much dropout cases you faced?

A: 20-30% I don't know the exact figures. And this is just an assumption.

Q: Medicines that you prescribe to patients, are they easily available in market?

A: Not all of them. But most of them are easily available in market.

Q: is there a quality difference in Pakistani and other countries medicines?

A: yes, yes, Of Course. Pakistani quality is not good. India is much better in the quality medication.

Q: According to you, how much a monthly budget a respiratory patient must have for his/her treatment?

A: It actually depends on patient to patient and its cases. If a patient has asthma he must have 3000-3500 per month. Lung cancer patients should have approximate 1-2 lac for proper treatment because therapies are very expensive.

Interview no. 9

Interviewers' name: Tazeen Seemab

Patient's name: Salwat Saleem

Place of interview: TV lounge of her house

Date of Interview: 21st of May, 2018

Time of interview: 8:30 pm

Environment in which interview is conducted: Patient was with her family and there was a friendly atmosphere. She was willing to give interview by herself and she was very friendly with me.

I: Which disease are you suffering from?

P: Asthma

I: How did you come to know that you are suffering from NCDs?

P: Asthma is related to allergy so I started facing allergy and then when I went to the doctor and he diagnosed me with Asthma.

I: Are you satisfied with the care of this hospital?

P: Yes, I am satisfied with it.

I: Are you satisfied with the treatment provided by your specialist doctors?

P: Yes, they have good doctors.

I: Are you feeling better after using your prescribed medication?

P: Yes I am feeling better.

I: Is the hospital staff friendly with you?

P: Yes

I: Are you receiving any type of funds from the government for the treatment?

P: No.

I: How do you think that people can be aware of NCDs?

P: Through advertisement on Television and Social Media

I: How do you rate the overall care you receive from your provider at the scale of 1-10?

P: Ten

I: It is easy for you to schedule an appointment from your doctor?

P: Yes

I: After seeing the doctor, were you able to cope with your problem?

P: Yes, I am feeling much better with the medication and I am satisfied with the Doctor.

Interview no. 10

Interviewers' name: Tazeen Seemab

Doctor's profile: Dr. Naushad Ali Khan, Chief Executive Valley Clinic

Place of interview: Consultation room of doctor in Valley Clinic hospital, Peshawar road, Rawalpindi

Date of Interview: 21nd of May, 2018

Time of interview: 11:30pm

Environment in which interview is conducted: Doctor was in his consultation room with one more doctor as well. He was giving instructions to the doctor about some patient medication. The nature of the interview was very friendly and the doctor himself was very friendly.

I: Can you please introduce yourself?

D: My name is Dr. Naushad Ali Khan. I am the chief executive of this hospital and I am a medical specialist.

I: How would you define Non-communicable diseases?

D: Non-communicable diseases are those diseases which cannot be transmitted from one person to another, for example Cancer, hypertension, Diabetes. Noninfectious diseases and hepatitis comes under non-communicable diseases.

I: According to you which Non-communicable disease has the highest mortality in Pakistan?

D: The diseases which have highest mortality rate in Pakistan are Diabetes and Hepatitis.

I: Which age group is most vulnerable and why?

D: People in the old age are most vulnerable because they are attacked by every single disease as they are internally weak.

I: Can NCDs be transferable from parents to their children (hereditary)?

D: Some of the diseases are transferable but some are not.

I: Can you please tell which diseases can be transferable?

D: Diabetes and Cancer are transferable while others are sometimes hereditary and sometimes not.

I: Do you think lifestyle of people has an impact on NCDS?

D: Yes, it definitely affects NCDs in a way that people's bad eating habit and no exercise affect their health badly.

I: According to you, what percentage of people are affected by NCDs in Pakistan?

D: There is a ratio of 60% to 40%. 60% are affected by NCDs and 40% are not

I: According to you which factors are responsible for the increasing rate of NCDs in Pakistan?

D: The main factors which are responsible for NCDs are bad eating habits, lack of exercise and lifestyle of people.

I: According to you, are these diseases common in urban areas or they are also common in rural areas as well?

D: I think they are common in both but they are more in urban areas because the people in urban areas do not pay proper attention to their diseases.

I: Do you have treatment facilities provided by government with respect to NCDs?

D: No Government is only impacting in a negative way and is increasing the burden of NCDs.

I: In your point of view, which facilities should be provided by government to reduce the rate of NCDs?

D: The Government should provide awareness to the people and should taught them about different ways in which they can reduce the impact of NCDs.

I: According to you why the rate of diabetes is increasing?

D: The most common reason for increase in diabetes is the bad eating habits of the people. Junk food has a lot of sugar particles in it and people are eating junk food on regular basis in order to achieve satisfaction.

I: According to you can NCDs be managed, cured or prevented?

D: NCDs can be managed, cured but cannot be prevented because of the increasing complexities in the real world.

I: How sodium consumption impacts our health?

D: it increases the uric acid of the person and it can increase hypertension in the person

I: How many diabetic patients comes here daily?

D: There is a ratio of 60 to 40% in which 40% patients are diabetic patients.

I: Do patients complete their treatment?

D: Some complete it but some do not because of their financial conditions because the treatment of NCDs is very costly.

I: The medicines that you prescribe, are they available in the market?

D: Yes, they are easily available in the market.

Interview no.11

Interviewers' name: Tazeen Seemab

Doctor's profile: Brig (R) Dr. Muhammad Asif, MBBS, FCPS (Med), MSC (Med Admin), Medical Specialist in Maryam Memorial Hospital

Place of interview: Consultation room of doctor in Maryam Memorial Hospital, Peshawar Road, Rawalpindi

Date of Interview: 21st of May, 2018

Time of interview: 12:10 pm

Environment in which interview is conducted: It was a peaceful environment and the doctor was very friendly but before giving interview he asked the administration department that if it is okay to give the interview or not.

I: Can you please introduce yourself?

D: My name is Dr. Muhammad Asif. I am a medical specialist and usually deal with those patients which have heart diseases.

I: How would you define Non-communicable diseases?

D: Anything that is noninfectious and cannot be transmitted from one person to another.

I: According to you which Non-communicable disease has the highest mortality in Pakistan?

D: Heart diseases have high mortality in Pakistan because of the complex nature of the world, tension among the people is increasing day by day which is causing different heart diseases including heart attacks.

I: Okay so in case of Pakistan which age group is most vulnerable to these diseases and why?

D: In Pakistan NCDs can occur at any stage but after 40 aged people are more vulnerable to these diseases because they resistance to fight against these diseases is reduced.

I: do you think that NCDs are transferable from parents to their children (hereditary)?

D: Yes, it is hereditary and can be transferred from parent to children.

I: Do you think lifestyle of people has an impact on NCDs? How?

D: Yes, as smoking and bad eating habits has great impact on NCDs.

I: According to you, based on your experience, on average what percentage of people are affected by NCDS in Pakistan?

D: There is a 60 to 40% ratio in which 60% are prone to these diseases and 40% are not.

I: We read that 50% of our population is suffering from these diseases. Do you think it's possible?

D: Yes, it is possible because I have already mentioned that there are 60% people that are affected with these diseases.

I: What are the risk factors that has increased the chances of NCDs?

D: There is lack of checkup, lifestyle, bad eating habits, and lack of exercise and smoking which can increase the chances of NCDs.

I: According to you, people from urban areas are suffering more or the people from rural areas? Why?

D: People living in rural areas because of lack of education and awareness.

I: Do you have any facilities provided by government to cure these?

D: Not at all.

I: In your point of view, which treatment facilities should be provided by government to cure or reduce these?

D: Awareness and proper campaigns should be provided.

I: What do you think, how can an individual decrease salt consumption?

D: Through awareness.

I: If we talk particularly about heart diseases, which factors do you think which are responsible for increasing rate of these diseases?

D: Hypertension, Diabetes and hyperlipidemia and also the tension they are facing in their everyday lives, either they are facing financial problems or some family problems.

I: what do you think that how can these be cured or prevented?

D: They can be cured but cannot be prevented. They can be cured through awareness and social campaigns.

I: So what are the common symptoms of heart related diseases?

D: they have pain in chest while walking or doing exercise.

I: Do patients complete their treatment?

D: There is a 50/50 ratio, some complete their treatment, but some do not.

I: Why do you think patient dropouts?

D: Because of their financial conditions and lack of awareness.

I: On average, what is the financial budget that a patients require on monthly basis for his/her treatment?

D: It depends upon the severity of the disease.

I: The medicines that you prescribe, are they available in the market?

D: Yes, they are easily available in the market.

I: Do you think there is difference in quality of medicines in Pakistan as compared to imported ones?

D: Yes, the medicines of Pakistan have less curing effect as compared to the imported ones.

Interview no. 12

Interviewers' name: Tazeen Seemab

Doctor's profile: Dr. Muhammad Sadiq, Urologist and Transplant Surgeon in Saad Shaheed Hospital, Peshawar road, Rawalpindi.

Place of interview: Consultation room of doctor in Saad Shaheed Hospital

Date of Interview: 21st of May, 2018

Time of interview: 2:00pm

Environment in which interview is conducted: There was disturbance in the room because the doctor was not only giving me interview but also checking the patients as well.

I: Can you please introduce yourself?

D: My name is Dr. Muhammad Sadiq and I mostly deal with diabetic patients.

I: How would you define Non-communicable diseases?

D: NCDs are not transmitted from one person to another. NCDs includes Diabetes, bacterial infection and hypertension.

I: According to you which Non-communicable disease has the highest mortality in Pakistan?

D: Diabetic kidney (nephropathies), hypertension and end stage kidney have high mortality rate.

I: Which age group is most vulnerable in Pakistan?

D: Middle aged and old aged group is more vulnerable.

I: How much time does a person takes to get back to normal from chronic condition?

D: It is very difficult to get back to normal condition but if the patient takes his/ her problem seriously only then they can be cured. Also through preventive measures, appropriate treatment and palliative treatment can facilitate the longevity of patients with NCDs.

I: Can NCDs be transferable from parents to their children (hereditary)?

D: Yes, can be a big factor in transfer of diseases for example Cancer, Diabetes and blood pressure.

I: Do you think lifestyle of people has an impact on NCDs? How?

D: Yes, definitely because when people are poor they have more diseases belonging to poverty and when they are rich have different problems so mediation is the best as lifestyle and environments effects individual health and treatment.

I: According to you, what percentage of people are affected by NCDs Overall?

D: 50% people are affected by NCDs, every 1/3^{rd,} after 40 age are facing diseases like diabetes, tensions, and Nutrition issues in poverty, no fans and direct contact to sun radiations.

I: Do you have treatment facilities provided to you by Government with respect to NCDs to treat patients?

D: to some extent like diabetes clinic, hypertension clinics and dialysis.

I: What in your opinion are the common symptoms of Diabetic diseases?

D: pain while passing urine, continuous pain in the lower back.

I: How can these diseases be managed, cure or prevented?

D: there should be more and more lectures, conferences, society talks, social media usage for sake of prevention of diseases, providing education like TV discussions, Seminars and Newspapers.

I: Do you think exercise has any effect?

D: Yes, definitely as regular exercise can reduce the effect of diseases and the body will start functioning in a proper way.

I: The medicines that you prescribe, are they available in the market?

D: Yes, most of them are available.

I: On average, what should be the financial budget of a patient monthly basis for his/her treatment?

D: It depends upon the disease whether the disease is long term or short term.

Interview no. 14

Interviewers' name: Tazeen Seemab

Patient's name: Nusrat Zaman

Place of interview: Room of her house

Date of Interview: 24rth of May, 2018

Time of interview: 8:30pm

Environment in which interview is conducted: Patient was very friendly and she was a very strong woman.

I: Which disease are you suffering from?

P: Breast Cancer

I: How did you come to know that you are suffering from NCDs?

P: Uneven growth in the breast

I: Are you satisfied with the care of this hospital?

P: Yes, I am satisfied with it.

I: Are you satisfied with the treatment provided by your specialist doctors?

P: Yes, they have good doctors.

I: Are you feeling better after using your prescribed medication?

P: Yes, I am feeling better.

I: Is the hospital staff friendly with you?

P: Yes

I: Are you receiving any type of funds from the government for the treatment?

P: No.

I: How do you think that people can be aware of NCDs?

P: Through advertisement on Television and Social Media and through word of mouth

I: How do you rate the overall care you receive from your provider at the scale of 1-10?

P: Ten

I: It is easy for you to schedule an appointment from your doctor?

P: No, it is difficult because the doctor is usually busy.

I: After seeing the doctor, were you able to cope with your problem?

P: Yes, I am feeling much better with the medication and I am satisfied with the Doctor.

Interview no. 13

Interviewers' name: Tazeen Seemab

Doctor's profile: Brig Dr. Simeen Rahman, Skin Specialist in Skin and laser clinic, Peshawar road, Rawalpindi.

Place of interview: Consultation room of doctor in Skin and laser clinic

Date of Interview: 21st of May, 2018

Time of interview: 1:00pm

Environment in which interview is conducted: There is tension in the environment as the doctor was not very friendly and did not want to give much time to the interview.

I: Can you please introduce yourself?

D: My name is Dr. Simeen Rehman, I am a skin specialist.

I: How would you define Non-communicable diseases?

D: NCDs are non-transferable diseases. The skin diseases such as skin cancer, actinic keratosis, acne, blisters, hives etc.

I: According to you which Non-communicable disease has the highest mortality in Pakistan?

D: Skin diseases because people are more exposed to the sun rays now days and the sun rays have become more severe.

I: Which age group is most vulnerable in Pakistan?

D: It can occur at any stage.

I: How much time does a person takes to get back to normal from chronic condition?

D: Through proper treatment he can come back to normal condition.

I: Can NCDs be transferable from parents to their children (hereditary)?

D: Skin diseases are somewhat not hereditary because more of the diseases occurs when the person body is exposed to the sun.

I: Do you think lifestyle of people has an impact on NCDs? How?

D: Yes, it does impact on NCDs because if the people do not take proper remedies while going in the sun or taking care of sun then they can face a lot of skin diseases.

I: Do you have treatment facilities provided to you by the Government with respect to NCDs to treat patients?

D: Not at all, this is my private clinic.

I: What in your opinion are the common symptoms of these skin diseases?

D: the most common symptom is the burning of skin or different types of abnormal spots on the skin.

I: How can these diseases be managed, cure or prevented?

D: Through proper treatment and regular checkup.

I: Do you think exercise and taking of healthy diet has any effect?

D: Yes, exercise like yoga in the morning and taking of vegetables and fruits regularly will make the skin fresh and will resist all the diseases to attack the skin.

I: The medicines that you prescribe, are they available in the market?

D: I myself prepare the medicines and give those medicines to the patients.

I: On average, what should be the financial budget of a patient monthly basis for his/her treatment?

D: It depends upon the severity of the diseases.

NVIVO data:

Relationships

Search Project

From Name	From Folder	Type	To Name	To Folder	Direction	Files	References	Created On	Created By	Modified On	Modified B
Cancer	Nodes	symmetrical	Lifestyle	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
Cancer	Nodes	Associated	Treatment	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
Cardiovacular	Nodes	one way	Diabetes	Nodes	→	0	0	12/06/2018	F	12/06/2018 3:	F
Cardiovacular	Nodes	symmetrical	Medicines	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
Cardiovacular	Nodes	symmetrical	NCDs rate	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 4:	F
Cardiovacular	Nodes	symmetrical	mortality rate	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 4:	F
Cardiovacular	Nodes	Associated	Treatment	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
Cardiovacular	Nodes	one way	tobacco	Nodes	→	0	0	12/06/2018	F	12/06/2018 4:	F
Diabetes	Nodes	one way	Lifestyle	Nodes	→	0	0	12/06/2018	F	12/06/2018 3:	F
Diabetes	Nodes	Associated	vumerable	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
Diabetes	Nodes	Associated	Treatment	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
Government action	Nodes	symmetrical	NCDs manageme	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
hereditary	Nodes	one way	Lifestyle	Nodes	→	0	0	12/06/2018	F	12/06/2018 4:	F
Lifestyle	Nodes	one way	Respiratory disea	Nodes	→	0	0	12/06/2018	F	12/06/2018 3:	F
Lifestyle	Nodes	symmetrical	tobacco	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 4:	F
Medicines	Nodes	symmetrical	Cancer	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
Medicines	Nodes	symmetrical	Respiratory disea	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
Medicines	Nodes	symmetrical	Diabetes	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
mortality rate	Nodes	one way	Cancer	Nodes	→	0	0	12/06/2018	F	12/06/2018 4:	F
mortality rate	Nodes	Associated	Diabetes	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
mortality rate	Nodes	one way	Respiratory disea	Nodes	→	0	0	12/06/2018	F	12/06/2018 4:	F

Relationships

Search Project

From Name	From Folder	Type	To Name	To Folder	Direction	Files	References	Created On	Created By	Modified On	Modified B
Medicines	Nodes	symmetrical	Respiratory disea	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
Medicines	Nodes	symmetrical	Diabetes	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
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mortality rate	Nodes	Associated	Diabetes	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
mortality rate	Nodes	one way	Respiratory disea	Nodes	→	0	0	12/06/2018	F	12/06/2018 4:	F
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NCDs management	Nodes	symmetrical	Lifestyle	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 4:	F
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NCDs rate	Nodes	symmetrical	Diabetes	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 3:	F
NCDs rate	Nodes	symmetrical	Respiratory disea	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 4:	F
NCDs rate	Nodes	symmetrical	Lifestyle	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 4:	F
tobacco	Nodes	one way	Rural Vs Urban	Nodes	→	0	0	12/06/2018	F	12/06/2018 3:	F
tobacco	Nodes	symmetrical	Cancer	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 4:	F
tobacco	Nodes	symmetrical	Respiratory disea	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 4:	F
Treatment	Nodes	Associated	Respiratory disea	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
vumerable	Nodes	Associated	Cancer	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
vumerable	Nodes	Associated	Respiratory disea	Nodes	—	0	0	12/06/2018	F	12/06/2018 4:	F
vumerable	Nodes	symmetrical	Cardiovacular	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 4:	F
vumerable	Nodes	symmetrical	NCDs rate	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 4:	F
vumerable	Nodes	symmetrical	Lifestyle	Nodes	⟷	0	0	12/06/2018	F	12/06/2018 4:	F
vumerable	Nodes	one way	mortality rate	Nodes	→	0	0	12/06/2018	F	12/06/2018 4:	F

Nodes

Search Project

Name	Files	References	Created On	Created By	Modified On	Modified By
Cancer	1	26	08/06/2018 11:22 PM	A	11/06/2018 1:42 AM	A
Cancer Symtoms	1	4	11/06/2018 12:24 AM	A	11/06/2018 1:42 AM	A
Cardiovacular	1	19	08/06/2018 11:24 PM	A	11/06/2018 1:01 AM	A
Diabetes	1	26	08/06/2018 2:09 PM	A	11/06/2018 1:01 AM	A
Facilities provided by govt	1	14	09/06/2018 3:19 PM	A	11/06/2018 1:42 AM	A
Govenment action Plan	1	11	11/06/2018 12:32 AM	A	11/06/2018 1:42 AM	A
hereditary	1	12	09/06/2018 2:05 PM	A	11/06/2018 1:01 AM	A
Lifestyle	1	21	09/06/2018 2:14 PM	A	11/06/2018 1:01 AM	A
Medicines	1	14	11/06/2018 12:20 AM	A	11/06/2018 1:42 AM	A
mortality rate	1	9	08/06/2018 11:43 PM	A	11/06/2018 1:01 AM	A
NCDs management, cure and prevention	1	10	09/06/2018 3:16 PM	A	11/06/2018 1:18 AM	A
NCDS PATIENTS	1	5	08/06/2018 2:07 PM	A	11/06/2018 1:42 AM	A
NCDs rate	1	17	09/06/2018 2:32 PM	A	11/06/2018 1:13 AM	A
Non-communicable diseases	1	10	08/06/2018 11:33 PM	A	11/06/2018 1:01 AM	A
Respiratory diseases	1	18	08/06/2018 11:26 PM	A	11/06/2018 1:01 AM	A
Rural Vs Urban	1	6	09/06/2018 2:45 PM	A	11/06/2018 1:01 AM	A
tobacco	1	5	11/06/2018 12:23 AM	A	11/06/2018 1:05 AM	A
Treatment	1	20	11/06/2018 12:37 AM	A	11/06/2018 1:42 AM	A
vumerable	1	9	09/06/2018 1:56 PM	A	11/06/2018 1:01 AM	A

14/06/2018 3:32 AM

Project Summary

THESIS INTERVIEWS

14/06/2018 3:32 AM

Hierarchical Name	Item Type	Created By Username	Created On	Modified By Username	Modified On
F:\all about thesis					

Created By: **INTERVIEWS OF DOCTORS AND PATIENTS RELATED TO NCDS**

Created On:

Last Modified By:

Case Classifications

	Node Classification	**Fareeha**	**11/06/2018 4:07 PM**	**Fareeha**	**11/06/2018 4:07 PM**

Cases

Externals

Extracts

Extracts\\Case Classification Summary Extract	**Extract**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**

Extracts\\Code Summary Extract	**Extract**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**
Extracts\\Coding Structure Extract	**Extract**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**
Extracts\\Coding Summary By Code Extract	**Extract**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**
Extracts\\Coding Summary By File Extract	**Extract**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**
Extracts\\File Classification Summary Extract	**Extract**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**
Extracts\\File Summary Extract	**Extract**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**
Extracts\\Project Summary Extract	**Extract**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**

File Classifications

Reports\\Project Summary Report **Page 1 of 5**

14/06/2018 3:32 AM

Hierarchical Name	Item Type	Created By Username	Created On	Modified By Username	Modified On
Files					
Files\\Thesis interviews	**Document**	**ALMAS**	**08/06/2018 2:00 PM**	**ALMAS**	**11/06/2018 1:42 AM**

Framework Matrices

Maps

Memos

Node Matrices

Nodes

Nodes\\Cancer	**Node**	**ALMAS**	**08/06/2018 11:22 PM**	**ALMAS**	**11/06/2018 1:42 AM**

Nodes\\Cancer Symptoms	**Node**	**ALMAS**	**11/06/2018 12:24 AM**	**ALMAS**	**11/06/2018 1:42 AM**
Nodes\\Cancer Symptoms\cardiovascular diseases symptoms	**Node**	**ALMAS**	**11/06/2018 12:25 AM**	**ALMAS**	**11/06/2018 1:14 AM**
Nodes\\Cancer Symptoms\Diabetes Symptoms	**Node**	**ALMAS**	**11/06/2018 12:29 AM**	**ALMAS**	**11/06/2018 1:16 AM**
Nodes\\Cancer Symptoms\respiratory diseases symptoms	**Node**	**ALMAS**	**11/06/2018 12:26 AM**	**ALMAS**	**11/06/2018 12:45 AM**
Nodes\\Cardiovascular	**Node**	**ALMAS**	**08/06/2018 11:24 PM**	**ALMAS**	**11/06/2018 1:01 AM**
Nodes\\Diabetes	**Node**	**ALMAS**	**08/06/2018 2:09 PM**	**ALMAS**	**11/06/2018 1:01 AM**
Nodes\\Facilities provided by govt	**Node**	**ALMAS**	**09/06/2018 3:19 PM**	**ALMAS**	**11/06/2018 1:42 AM**

Nodes\\Government action Plan	**Node**	**ALMAS**	**11/06/2018 12:32 AM**	**ALMAS**	**11/06/2018 1:42 AM**
Nodes\\hereditary	**Node**	**ALMAS**	**09/06/2018 2:05 PM**	**ALMAS**	**11/06/2018 1:01 AM**
Nodes\\Lifestyle	**Node**	**ALMAS**	**09/06/2018 2:14 PM**	**ALMAS**	**11/06/2018 1:01 AM**
Nodes\\Medicines	**Node**	**ALMAS**	**11/06/2018 12:20 AM**	**ALMAS**	**11/06/2018 1:42 AM**
Nodes\\mortality rate	**Node**	**ALMAS**	**08/06/2018 11:43 PM**	**ALMAS**	**11/06/2018 1:01 AM**
Nodes\\NCDs management, cure and prevention	**Node**	**ALMAS**	**09/06/2018 3:16 PM**	**ALMAS**	**11/06/2018 1:18 AM**
Nodes\\NCDS PATIENTS	**Node**	**ALMAS**	**08/06/2018 2:07 PM**	**ALMAS**	**11/06/2018 1:42 AM**
Nodes\\NCDs rate	**Node**	**ALMAS**	**09/06/2018 2:32 PM**	**ALMAS**	**11/06/2018 1:13 AM**

Nodes\\Non-communicable diseases	**Node**	**ALMAS**	**08/06/2018 11:33 PM**	**ALMAS**	**11/06/2018 1:01 AM**
Nodes\\Respiratory diseases	**Node**	**ALMAS**	**08/06/2018 11:26 PM**	**ALMAS**	**11/06/2018 1:01 AM**
Nodes\\Rural Vs. Urban	**Node**	**ALMAS**	**09/06/2018 2:45 PM**	**ALMAS**	**11/06/2018 1:01 AM**
Nodes\\tobacco	**Node**	**ALMAS**	**11/06/2018 12:23 AM**	**ALMAS**	**11/06/2018 1:05 AM**

Hierarchical Name	Item Type	Created By Username	Created On	Modified By Username	Modified On
Nodes\\Treatment	**Node**	**ALMAS**	**11/06/2018 12:37 AM**	**ALMAS**	**11/06/2018 1:42 AM**

Nodes\\vulnerable	**Node**	**ALMAS**	**09/06/2018 1:56 PM**	**ALMAS**	**11/06/2018 1:01 AM**

Queries

Queries\\Rural and Urban	**Query**	**ALMAS**	**11/06/2018 1:23 AM**	**ALMAS**	**11/06/2018 1:25 AM**

Query Results

Relationship Types

Relationship Types\\Associated	**Relationship Type**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**
Relationship Types\\one way	**Relationship Type**	**Fareeha**	**12/06/2018 3:47 PM**	**Fareeha**	**12/06/2018 3:47 PM**

Relationship Types\\Respiratory Disease and Lifestyle	**Relationship Type**	**Fareeha**	**12/06/2018 3:46 PM**	**Fareeha**	**12/06/2018 3:46 PM**
Relationship Types\\symmetrical	**Relationship Type**	**Fareeha**	**12/06/2018 3:51 PM**	**Fareeha**	**12/06/2018 3:51 PM**

Relationships

Relationships\\Cancer (Associated) Treatment	**Relationship**	**Fareeha**	**12/06/2018 4:09 PM**	**Fareeha**	**12/06/2018 4:09 PM**
Relationships\\Cancer (symmetrical) Lifestyle	**Relationship**	**Fareeha**	**12/06/2018 3:51 PM**	**Fareeha**	**12/06/2018 3:51 PM**
Relationships\\Cardiovascular (Associated) Treatment	**Relationship**	**Fareeha**	**12/06/2018 4:11 PM**	**Fareeha**	**12/06/2018 4:11 PM**
Relationships\\Cardiovascular (one way) Diabetes	**Relationship**	**Fareeha**	**12/06/2018 3:52 PM**	**Fareeha**	**12/06/2018 3:52 PM**

Relationships\\Cardiovascular (one way) tobacco	**Relationship**	**Fareeha**	**12/06/2018 4:14 PM**	**Fareeha**	**12/06/2018 4:14 PM**
Relationships\\Cardiovascular (symmetrical) Medicines	**Relationship**	**Fareeha**	**12/06/2018 3:57 PM**	**Fareeha**	**12/06/2018 3:57 PM**
Relationships\\Cardiovascular (symmetrical) mortality rate	**Relationship**	**Fareeha**	**12/06/2018 4:05 PM**	**Fareeha**	**12/06/2018 4:05 PM**
Relationships\\Cardiovascular (symmetrical) NCDs rate	**Relationship**	**Fareeha**	**12/06/2018 4:00 PM**	**Fareeha**	**12/06/2018 4:00 PM**
Relationships\\Diabetes (Associated) Treatment	**Relationship**	**Fareeha**	**12/06/2018 4:11 PM**	**Fareeha**	**12/06/2018 4:11 PM**
Relationships\\Diabetes (Associated) vulnerable	**Relationship**	**Fareeha**	**12/06/2018 4:01 PM**	**Fareeha**	**12/06/2018 4:01 PM**

Relationships\\Diabetes (one way) Lifestyle	**Relationship**	**Fareeha**	**12/06/2018 3:51 PM**	**Fareeha**	**12/06/2018 3:51 PM**
Relationships\\Government action Plan (symmetrical) NCDs management, cure and prevention	**Relationship**	**Fareeha**	**12/06/2018 3:58 PM**	**Fareeha**	**12/06/2018 3:58 PM**
Relationships\\hereditary (one way) Lifestyle	**Relationship**	**Fareeha**	**12/06/2018 4:04 PM**	**Fareeha**	**12/06/2018 4:04 PM**
Relationships\\Lifestyle (one way) Respiratory diseases	**Relationship**	**Fareeha**	**12/06/2018 3:47 PM**	**Fareeha**	**12/06/2018 3:47 PM**
Relationships\\Lifestyle (symmetrical) tobacco	**Relationship**	**Fareeha**	**12/06/2018 4:13 PM**	**Fareeha**	**12/06/2018 4:13 PM**
Relationships\\Medicines (symmetrical) Cancer	**Relationship**	**Fareeha**	**12/06/2018 3:55 PM**	**Fareeha**	**12/06/2018 3:55 PM**

Hierarchical Name	Item Type	Created By Username	Created On	Modified By Username	Modified On
Relationships\\Medicines (symmetrical) Diabetes	Relationship	Fareeha	12/06/2018 3:56 PM	Fareeha	12/06/2018 3:56 PM
Relationships\\Medicines (symmetrical) Respiratory diseases	Relationship	Fareeha	12/06/2018 3:55 PM	Fareeha	12/06/2018 3:55 PM
Relationships\\mortality rate (Associated) Diabetes	Relationship	Fareeha	12/06/2018 4:05 PM	Fareeha	12/06/2018 4:05 PM

Relationships\\mortality rate (Associated) Lifestyle	**Relationship**	**Fareeha**	**12/06/2018 4:13 PM**	**Fareeha**	**12/06/2018 4:13 PM**
Relationships\\mortality rate (one way) Cancer	**Relationship**	**Fareeha**	**12/06/2018 4:04 PM**	**Fareeha**	**12/06/2018 4:04 PM**
Relationships\\mortality rate (one way) Respiratory diseases	**Relationship**	**Fareeha**	**12/06/2018 4:06 PM**	**Fareeha**	**12/06/2018 4:06 PM**
Relationships\\NCDs management, cure and prevention (symmetrical) Lifestyle	**Relationship**	**Fareeha**	**12/06/2018 4:12 PM**	**Fareeha**	**12/06/2018 4:12 PM**
Relationships\\NCDs rate (Associated) Cancer	**Relationship**	**Fareeha**	**12/06/2018 3:58 PM**	**Fareeha**	**12/06/2018 3:58 PM**
Relationships\\NCDs rate (symmetrical) Diabetes	**Relationship**	**Fareeha**	**12/06/2018 3:59 PM**	**Fareeha**	**12/06/2018 3:59 PM**

Relationships\\NCDs rate (symmetrical) Lifestyle	**Relationship**	**Fareeha**	**12/06/2018 4:09 PM**	**Fareeha**	**12/06/2018 4:09 PM**
Relationships\\NCDs rate (symmetrical) Respiratory diseases	**Relationship**	**Fareeha**	**12/06/2018 4:00 PM**	**Fareeha**	**12/06/2018 4:00 PM**
Relationships\\tobacco (one way) Rural Vs. Urban	**Relationship**	**Fareeha**	**12/06/2018 3:54 PM**	**Fareeha**	**12/06/2018 3:54 PM**
Relationships\\tobacco (symmetrical) Cancer	**Relationship**	**Fareeha**	**12/06/2018 4:14 PM**	**Fareeha**	**12/06/2018 4:14 PM**
Relationships\\tobacco (symmetrical) Respiratory diseases	**Relationship**	**Fareeha**	**12/06/2018 4:15 PM**	**Fareeha**	**12/06/2018 4:15 PM**
Relationships\\Treatment (Associated) Respiratory diseases	**Relationship**	**Fareeha**	**12/06/2018 4:10 PM**	**Fareeha**	**12/06/2018 4:10 PM**

Relationships\\vulnerable (Associated) Cancer	**Relationship**	**Fareeha**	**12/06/2018 4:02 PM**	**Fareeha**	**12/06/2018 4:02 PM**
Relationships\\vulnerable (Associated) Respiratory diseases	**Relationship**	**Fareeha**	**12/06/2018 4:03 PM**	**Fareeha**	**12/06/2018 4:03 PM**
Relationships\\vulnerable (one way) mortality rate	**Relationship**	**Fareeha**	**12/06/2018 4:08 PM**	**Fareeha**	**12/06/2018 4:08 PM**
Relationships\\vulnerable (symmetrical) Cardiovascular	**Relationship**	**Fareeha**	**12/06/2018 4:03 PM**	**Fareeha**	**12/06/2018 4:03 PM**
Relationships\\vulnerable (symmetrical) Lifestyle	**Relationship**	**Fareeha**	**12/06/2018 4:07 PM**	**Fareeha**	**12/06/2018 4:07 PM**
Relationships\\vulnerable (symmetrical) NCDs rate	**Relationship**	**Fareeha**	**12/06/2018 4:07 PM**	**Fareeha**	**12/06/2018 4:07 PM**

Reports

Reports\\Case Classification Summary Report	**Report**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**
Reports\\Code Summary Report	**Report**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**
Reports\\Coding Structure Report	**Report**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**
Reports\\Coding Summary By Code Report	**Report**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**
Reports\\Coding Summary By File Report	**Report**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**
Reports\\File Classification Summary Report	**Report**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**

Reports\\File Summary Report	**Report**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**

Hierarchical Name	Item Type	Created By Username	Created On	Modified By Username	Modified On
Reports\\Project Summary Report	**Report**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**

Search Folders

Search Folders\\All Codes	**Search Folder**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**

Search Folders\\All Files, Externals & Memos	**Search Folder**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**
Search Folders\\All Media Files Not Embedded	**Search Folder**	**ALMAS**	**08/06/2018 1:59 PM**	**ALMAS**	**08/06/2018 1:59 PM**

Sentiment

Sets

Summaries

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