An-Najah National University
Faculty of Graduate Studies

Major Risk Factors that lead to Onset End-Stage Renal Disease In Northern West Bank

By
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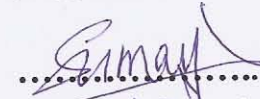
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Dedication

I dedicate this thesis to my parents, my wife and my friends, without their patience, understanding, support and most of all love, this work would not have been possible.

Acknowledgement

I am very much thankful to my supervisor, Dr. Haleama Al Sabbah, whose encouragement, guidance and support from the initial to the final level enabled me to develop and understanding the subject. My thanks and appreciation goes to my thesis committee members for their encouragement, support, interest and valuable hints. I acknowledge An-Najah National University for supporting this work, and I wish to pay my great appreciation to all respected teachers and staff of public health department. Lastly, I offer my regards and blessings to all of those who supported me in any respect during the completion of this thesis.

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<u>إقـــرار</u>

أنا الموقع أدناه مقدم الرسالة التي تحمل العنوان:

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Major Risk Factors that lead to Onset End-Stage Renal Disease In Northern West Bank

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اقر بأن ما اشتملت عليه هذه الرسالة إنما هي نتاج جهدي الخاص، باستثناء ما تمـــت الإشـــارة إليه حيثما ورد، وأن هذه الرسالة ككل، أو أي جزء منها لم يقدم من قبل لنيل أية درجة علمية أو بحث علمي أو بحثي لدى أية مؤسسة تعليمية أو بحثية أخرى.

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<u>Declaration</u>

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student's name: **اسم الطالب:**

Signature: **التوقيع:**

Date: **التاريخ:**

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List of Abbreviations

AVC: Arteriovenous Catheter

AVF: Arteriovenous Fistula

BMI: Body Mass Index

BUN: Blood Urea Nitrogen

C T scan : Computerized Tomography scan

CAT scan: Computed Axial Tomography scan

CHF: Congestive Heart Failure

CKD: Chronic Kidney Disease

CRF: Chronic Renal Failure

CVD: Cardiovascular Disease

ESRD: End Stage Renal Disease

FMF: Familial Mediterranean Fever

GFR: Glomerular Filtration Rate

IVP: Intravenous Pyelography

 MRI : Magnetic Resonance Imaging

NSAID: Non Steroidal Anti Inflammatory Drugs

RRT: Renal Replacement Therapy

SPSS: Social Package of Statistical Sciences

USA: United States of America

USRDS: United States Renal Data System

Study Terminology

The following term definition(Ehrlich A, et al., 2000).

Alport disease: Hereditary condition characterized by kidney disease, deafness and sometimes eye defects.

Atherosclerosis: Condition in which an artery wall thickens as the result of a build-up of fatty materials such as cholesterol.

Blood urea nitrogen: Measures the amount of urea nitrogen, a waste product of protein metabolism, in the blood. Urea is formed by the liver and carried by the blood to the kidneys for excretion.

Calcitriol: The active form of vitamin D, formed in the kidneys or made in the laboratory.

Cardiovascular disease: This term refers to various medical conditions that affect the heart and the blood vessels (arteries).

Creatinine: A chemical waste molecule that is generated from muscle metabolism.

Diabetes mellitus: Metabolic diseases in which a person has high blood sugar.

Diabetic nephropathy: A complication of diabetes as a result of high glucose levels which affects the kidneys.

Diverticular disease: Condition in which small pockets occur in the bowel. These pockets can remain trouble-free or become inflamed or infected and cause symptoms.

Electrolytes: Substances that become ions in solution and acquire the capacity to conduct electricity.

Erythropoietin: Substance produced by the kidney that leads to the formation of red blood cells in the bone marrow.

Familial Mediterranean fever : a hereditary inflammatory disorder characterized by recurrent fever.

Glomerulonephritis: Inflammation of the glomeruli of the kidney.

Gluconeogenesis: the synthesis of glucose from noncarbohydrate sources.

Hyperlipidemia: An excess quantity of lipid in the blood.

Hypertension : Chronic medical condition in which the systemic arterial blood pressure is elevated.

Hypertriglyceridemia: A form of hyperlipidemia in which there is an excess of triglycerides in the blood.

Incidence: New cases of disease or injury occurring in a specified population in a given time period.

Neurogenic bladder: Dysfunction of the urinary bladder due to disease of the central nervous system or peripheral nerves involved in the control of micturition .

Nonsteroidal anti-inflammatory drugs: Medicines that relieve pain, swelling, stiffness, and inflammation

Obstructive uropathy: is a structural or functional hindrance of normal urine flow.

Polycystic kidney disease: One of the genetic disorders characterized by the development of innumerable cysts in the kidneys.

Preclampsia: Abnormal state of pregnancy characterized by hypertension and fluid retention and albuminuria.

Prevalence: total number of cases of the disease in the population at a given time, divided by the number of individuals in the population.

Proteinuria: the presence of excessive protein (albumin) in the urine.

Uremia: toxic condition resulting from kidney disease in   which there is retention in the bloodstream of waste products normally excreted in the urine.

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Abstract

Background: The incidence of chronic renal disease (ESRD) is rapidly increasing among Palestinian population in the last few years, therefore it is important to study the factors that influence this increase.

Objective: This study aimed to determine the major risk factors that lead to increase the onset of ESRD that requires haemodialysis in Northern West Bank .

Methods: A cross sectional study was conducted at four dialysis centers in governmental hospitals in North West Bank, by using questionnaire and direct interviewing with End Stage Renal Disease patients, in addition to using medical record. All haemodialysis patients in Northern West Bank hospitals(Al-Waitany, Jenin, Tulkarem, Qalqylia); at the time of the study resulting in (n=293) patients.

Result: **The sample consisted of (58.70%) males, and (41.30%) females . The mean age for males was (55.6 years), while the mean age for females was (54.13). The major risk factors that significantly associated with the onset of ESRD in this study were diabetes mellitus, hypertension, cardiovascular disease, recurrent taken analgesic drug and infection of urinary tract. While there were no significant effect for job, gender, smoking, and BMI on onset of ESRD. About 15.5% of all cases developed ESRD because of genetic disease. Polycystic kidney disease cause (11.2%) of ESRD in Northern**

West Bank ,bladder cancer and prostate cancer causes (4.7%),and accidental can be causes (2%) of ESRD.

Conclusion: Diabetes mellitus, hypertension, cardiovascular disease, recurrent taken non steroidal anti-inflammatory drug and urinary tract infection were associated significantly with onset of ESRD.

Recommendations:

There should be more attention to Improve the quality of renal replacement therapy and facilities, this could be achieved through Increasing the number of qualified staff and improve the dialysis machines and increasing their numbers.

Chapter One

Introduction

Chapter One

Introduction

1.1 Introduction

This thesis focuses on one of the most common health problem in both developed and developing countries, namely End Stage Renal Disease (ESRD) which is a term used when kidney reaches a complete, or almost complete failure to function; kidneys can no longer remove wastes, regulate and concentrate urine(Usami T, et al., 2000).

ESRD is the irreversible loss of kidney function. At the point where kidneys fail to sustain life, renal replacement therapy is required. Dialysis is the process of cleaning the blood and removing excess fluids artificially with a special equipment called the dialysis unit (Gregorio T, et al., 1999).

Palestinian Ministry of Health is the main health care provider for the ESRD management program in Palestine. The different treatment modalities of ESRD are free of charge. Patients with ESRD belong to group of Patients with "Special Diseases" and are eligible for a government health insurance.

In northern West Bank there are 8 dialysis centers serving 585 patients. In each city there is one dialysis center. In North of West Bank there are four dialysis centers distributed in (Jenin, Nablus, Tulkarem and Qalqylia), while there are no dialysis centers in Salfeet and Tubas. Therefore, patients from Tubas have to go to Jenin government's hospital while Salfeet patients receive dialysis services in Al-Waitany hospital in Nablus city.

ESRD may result from many different causes and it is often asymptomatic until severe renal damage develop (Gopa G, et al., 2001). Moreover, there are many risk factors that lead to the onset of ESRD. This study aims at identifying the main risk factors that lead to the onset of ESRD in Northern West Bank.

1.2 Problem statement:

ESRD is a common health problem in Palestine. It is rapidly increasing among Palestinians. Moreover, ESRD is considered to be a burden on the health system in Palestine, there are rare studies that aim at identifying the main risk factors that lead to the onset of ESRD in Palestine. Since the researcher is a medical health worker, he saw the necessity of conducting a study that could give a vivid idea of the main risk factors that lead to the onset of ESRD in Northern West Bank.

1.3 Significance Of The Study

Northern West Bank is undergoing transition state characterized by rapid urbanization and life style changes, as well as an epidemiological transition characterized by resisted burden of infectious diseases, raises in chronic disease such as chronic renal failure.

Although ESRD is one of the leading causes of morbidity and mortality worldwide, there are limited studies reported in Palestine. Chronic diseases are responsible for 81% of the total deaths in Palestine, and the ESRD is responsible for 4% (Husseini A, et al., 2009).

Furthermore, ESRD is a growing problem in northern West Bank and renal replacement therapy is exerting an increasing pressure on health systems. No studies or research investigated the risk factors of the ESRD in Palestine. Similar to other developing countries these types of studies are nearly neglected. Therefore, the early intervention for patients with diabetes, hypertension and other risk factor is necessary to prevent kidney damage.

Patients of ESRD require ongoing dialysis or kidney transplantation to survive. Underdeveloped organ donor and transplant programmers, health system and financing issues, the cost of pharmaceuticals commonly pose additional barriers to the delivery of efficient and cost-effective renal replacement therapy.

1.4 Study Objectives:

This study aims to achieve the following objectives:

1. To identify the major risk factors of ESRD that lead to the onset of ESRD in Northern West Bank. Data may help in developing effective programs to decrease the risk factors that lead to the onset of ESRD in Northern West Bank.

2. To identify the relationship between socio-demographic variables (e.g.: age, sex, location, occupation,…ect), smoking, and BMI on the onset of the ESRD.

3. To assess the association between chronic diseases such as diabetes mellitus type I and II, hypertension, kidney diseases, urinary tract infection, kidney stone, cardiovascular, on the onset of the ESRD.

4. To assess the association between family members history from chronic diseases (diabetes, hypertension, cardiovascular disease, kidney disease, ESRD) on the onset ESRD.

5. To assess the association between congenital abnormality and the onset of the ESRD.

6. To assess the association between recurrent taking analgesic medication and the onset of the ESRD.

7. To determine the contribution of genetic disease (e.g. Nurogenic Bladder, Alport Disease, Polycystic Kidney Disease) with the onset of ESRD.

1.5 Study Hypothesis:

This study aims at examining the validly of the following null hypothesis:

• **H0:** There is no association between demographic variables, BMI , and smoking in the onset of ESRD.

• **H0**: There is no association between family members medical history of chronic diseases (diabetes, hypertension, cardiovascular disease, kidney disease, ESRD) and the onset ESRD.

• **H0**: There is no significant association between patient's medical history (Diabetes(I&II) , Hypertension, Cardiovascular, Congenital abnormality, Kidney stone, Urinary tract infection, and Analgesic drug) and the onset ESRD.

1.6 Summary:

This chapter aims at giving a vivid definition of ESRD. And defining the problem statement of this study and to clearly define its objectives.

Chapter Two

Theoretical framework and Literature Review

Chapter Two

Theoretical framework and Literature Review

2.1 Function Of Normal Kidney:

In the human body there are two kidneys, each about the size of a fist, located on each side of the spine at the lowest level of the rib cage. Each kidney contains up to a million functioning units called nephrons. A nephron consists of a filtering unit of tiny blood vessels called a glomerulus attached to a tubule. When blood enters the glomerulus, it is filtered and the remaining fluid then passes along the tubule. In the tubule, chemicals and water are either added to or removed from this filtered fluid according to our body needs (Hasslacher C, et al., 1999).
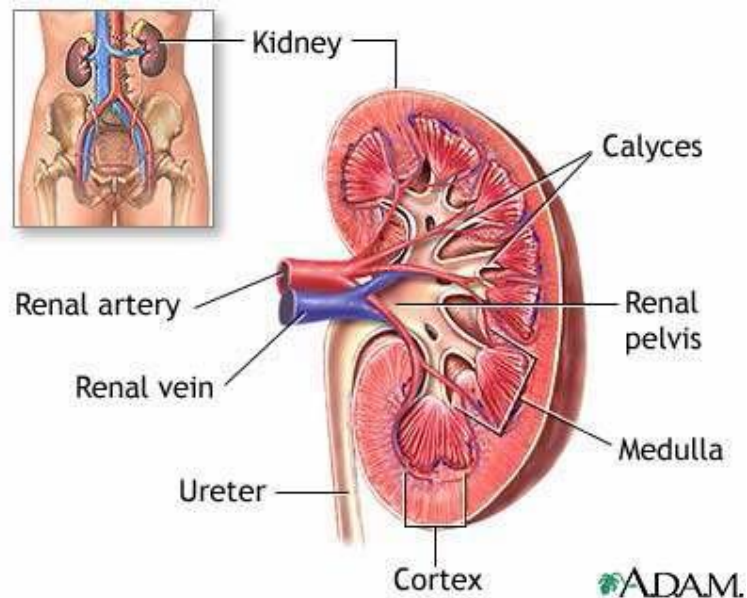
Figure 1: Anatomy of the kidney

The kidney is primarily responsible for the removal of metabolic waste from the body; in addition the kidneys do the following functions:

1: Regulation of water and electrolyte balance.

2: excretion of bioactive substances (hormones and many foreign substances, specifically drugs) .

3: Regulation of arterial blood pressure.

4: Regulation of red blood cells production.

5: Regulation of vitamin D production.

6: Gluconeogenesis.

2.2 Chronic Kidney Disease (CKD):

2.2.1 The Glomerular filtration rate (GFR)

The Glomerular filtration rate (GFR) is considered the best measure to assess the kidney function. Normal GFR varies according to patient's age, sex, and body size. In young adults, the normal GFR is approximately 120 ml per minute per 1.73 m^2 to 130 ml per minute per 1.73 m^2 and declines slightly with age **(**Parera P, et al. ,2005).

Older age and female sex were independent predictors of lower GFR, presumably reflecting the well-known relations of age and sex to muscle. Lower muscle mass, as observed in older persons and in women. Lower

muscle mass, causes lower urine creatinine excretion and, therefore, lowers serum creatinine concentration at any GFR(Jungers P, et al., 1996).

The kidneys perform their life-sustaining job of filtering and returning to the blood stream about 200 liters\24 hrs. Of these, about 198 liters are recovered in the body while two liters are removed from the body by the excreted urine that could be stored in the bladder in one to eight hours (Douglas C, 2006).

2.2.2 Classification of CKD

According to the GFR, chronic kidney disease has been classified into 5 stages:

Stage one*: kidney damage with normal or increased Glomerular filtration rate (120 ≥90 ml/minute/1.73 m^2).

Stage two*: kidney damage with mildly decreased Glomerular filtration rate (60-89 mL/minute/1.73 m^2).

Stage three*: moderately decreased Glomerular filtration rate (30-59 mL/minute/1.73 m^2).

Stage four*: severely reduced Glomerular filtration rate (15-29 mL/minute/1.73 m^2).

Stage five*: kidney failure or End Stage kidney failure (established renal failure), Glomerular filtration rate<15 mL/minute/1.73 m^2.

2.3 Diagnosis of ESRD

Diagnosis of ESRD typically requires the physician's review of the patient's medical history as well as a physical examination. A patient with a history of chronic kidney disease that has progressed may be suspected of having ESRD. The physical examination includes tests to determine the advancement of the kidney disease and will likely include a measurement of a patient's blood pressure. Additional tests that may be performed include the following (Goldsmith D, et al., 2007).

- **Blood tests:** for serum creatinine, blood urea nitrogen (BUN) and other waste products indicate the filtration capacity and health of the kidneys.

- **Glomerular filtration rate (GFR):** An indirect measurement of kidney filtering function. GFR traditionally requires an injection of a substance into the patient's body, followed by analysis of a 24-hour urine sample. However, GFR may now be estimated based on the results of a blood test. ESRD is indicated by GFR of less than 15 milliliters per minute.

- **Microalbuminuria test:** Urine test that detects small amounts of protein. This test is used to detect early kidney disease.

- **Urinalysis:** Standard test that will detect larger amount of protein in the urine (proteinuria), an indicator of severe kidney disease.

- **Imaging tests :** such as ultrasound, C T scan ,CAT scan (computed axial tomography), MRI (magnetic resonance imaging) or a type of x-ray

called intravenous Pyelography (IVP) may be performed. This testing may be helpful to identify any possible blockages in the urinary tract.

- **Kidney biopsy:** performed sometimes to examine the health of the kidney tissue.

2.4 Causes of ESRD:

ESRD has many causes that varies from one patient to another. The key risk factors for chronic kidney disease are the increasing age of the population, diabetes mellitus II and hypertension. The most common causes include the following (Myrray I, 2007).

- Uncontrolled hypertension can damage the kidneys over time.

- Glomerulonephritis is the inflammation and damage of the filtration system of the kidney and can cause kidney failure.

- Polycystic kidney disease is an example of a hereditary cause of chronic kidney disease where both kidneys have multiple cysts.

- Medications such as the use of some analgesics regularly over long durations of time can cause analgesic nephropathy and kidney damage.

- Atherosclerosis leading to ischemic nephropathy, can cause kidney damage.

- Obstruction of the urinary tract by stones or cancer can lead to the enlargement of the prostate and then strictures that may cause kidney damage.

- Diabetes mellitus type I and type II cause diabetic nephropathy, that leads to kidney failure. Diabetes is the largest single cause of ESRD in the United Kingdom, accounting for 30– 40% of all cases(Sandra W ,2005).

- Obese American people have up to a seven times greater risk of kidney failure than non obese people, suggesting that obesity should be considered a risk factor for ESRD (Hyman C , 2006)

2.5 ESRD Treatment:

The treatment alternatives for ESRD include hemodialysis, peritoneal dialysis, and kidney transplantation.

2.5.1 Kidney Transplantation:

Is the surgical procedure of placing a fully functioning kidney into a person with ESRD. This procedure is usually an elective one, performed in patients who have undergone careful preoperative assessment and preparation The transplanted kidney may originate from a deceased donor or from a related or unrelated person (Cueto-Manzano AM,2003).

2.5.2 Dialysis

Dialysis is the most common treatment for End Stage kidney failure, replacing the impaired filtering ability of the kidneys. Eventually, most patients with End Stage kidney failure require a kidney transplant. Dialysis is a procedure that is performed routinely on persons who suffer from acute or chronic renal failure, or who have ESRD(Goldsmith D , et al., 2007).

The process involves removing waste substances and fluid from the blood that are normally eliminated by the kidneys. Dialysis may also be used for individuals who have been exposed to or ingested toxic substances to prevent renal failure from occurring(James N, Philip M .End Stage Renal Disease . ICON Health Publications ;2004.7-8 P). There are two ways to perform dialysis (Goldsmith D, et al ., 2007).

2.5.2.1 Peritoneal dialysis:

Peritoneal dialysis is performed by surgically placing a special, soft, hollow tube into the lower abdomen near the navel. After the tube is placed, a special solution called dialysis is instilled into the peritoneal cavity. The peritoneal cavity is the space in the abdomen that houses the organs and is lined by two special membrane layers called the peritoneum. The dialysis is left in the abdomen for a designated period of time which will be determined by physician. The dialysis fluid absorbs the waste products and toxins through the peritoneum.

2.5.2.2 Hemodialysis:

Hemodialysis can be performed at home or in a dialysis center or hospital by trained healthcare professionals. A special type of access, called an Arteriovenous **(**AV) fistula, is placed surgically, usually, in the patients' arm. This involves joining an artery and a vein together. An external, central, intravenous (IV) catheter may also be used. A dialysis machine pumps small amounts of blood out of the body and through a filter called an artificial kidney or dialyzer. This kidney filters extra fluid and wastes from the blood. The blood is then pumped back into the body and special medication will be given to patient to prevent blood from clotting.

2.6 Complications of ESRD:

As kidney function deteriorates, loss of excretory, regulatory, and endocrine functions takes place, and complications develop in virtually every organ system**(**Parera P. et al., 2005).

2.6.1 Systemic Complications:

The onset of uremia is slow and dangerous, starting with rather nonspecific symptoms such as malaise, weakness, insomnia, and a general feeling of being unwell. Patients may lose their appetite and complain of morning nausea and vomiting (Hasslacher C, 1999). Systematic complications encompass the following:

- **Gastrointestinal complications**: is a common problem in ESRD patients, and nutritional support is important (Gastrointestinal disturbances include anorexia, nausea, vomiting, and hiccups). Peptic ulcer disease and symptomatic diverticular disease are common in patients with chronic renal failure. These symptoms usually developed with dialysis(Etimad B, 1998).

- **Cardiovascular complications**: The most common cause of death in patients with ESRD is cardiovascular disease. Volume overload may cause CHF and pulmonary edema. Hypertension contributes to cardiovascular disease. Dyslipidemia is a primary risk factor for cardiovascular disease and a common complication of ESRD (Preston RA, et al., 1996).

- **Hematological complications**: Anemia is inevitable in CRF because of loss of Erythropoietin production. Abnormalities in white cell and platelet

functions lead to increased susceptibility to infection and easy bruising. It occurs mainly because of erythropoietin deficiency and, to a lesser degree from hemolysis, presence of uremic inhibitors, blood loss, and deficiency in iron, folate, or vitamin B12(Cohen G , et al., 1997).

• **Dermatologic signs**: Pruritus is a common dermatologic complication assumed to be secondary to accumulation of toxic pigments in the dermis(Cohen G , et al., 1997).

• **Bone disease**: Metabolism of calcium and phosphorus is abnormal in patients with ESRD and is associated with the development of bone disease. Phosphate retention occurs as GFR declines. Both hyperphosphatemia and reduction in the active form of vitamin D lead to hypocalcaemia(Hruska KA , et al., 1995).

• **Neuralgic complications**: Both the central and peripheral nervous systems are affected by ESRD. Early symptoms that affect the central nervous system include decreased ability to concentrate or think abstractly. Later symptoms include apathy, lethargy, and insomnia. Severe symptoms include increased deep tendon reflexes, decreased coordination, coma and death may follow when the BUN level rises to 150 to 200 mg/dL. Psychological features that may follow during the course of ESRD include delusions, depression, mania, and euphoria. The cause of the central nervous system symptoms are not clear but may be due to a toxic increase in parathyroid hormone or a decrease in brain metabolism secondary to impaired neurotransmission and inhibition of various enzymes(Evans N, et al. , 2004)

- **Vascular signs:** Vascular access complications are similar to those seen in any patient with a vascular surgical procedure (e.g.: bleeding, intravascular infections, vessel occlusion) (Hasslacher C, et al. , 1999).

- **Dialysis catheters:** A peritoneal dialysis catheter subjects patients to the risks of peritonitis and local infection. The catheter acts as a foreign body and provides a portal of entry for pathogens from the external environment*(*Parera P, et al., 2005).

- **Infection/immunologic**: Patients who have received renal transplants may experience recurrent renal failure due to rejection or other graft complications. In addition, chronic immunosuppressant makes them prone to infection*(*Parera P, et al. , 2005).

2.6.2 Electrolytes Disturbances:

ESRD prompts a variety of disturbances in electrolytes (sodium and potassium), water balance and metabolic acidosis(Hasslacher C, et al., 1999).Electrolyte disturbances contain the following:

Metabolic acidosis: Most patients with chronic kidney disease develop metabolic acidosis because of their reduced ability to excrete hydrogen ions generated mainly from the metabolism of sulfur containing amino acids. As patient condition approaches ESRD, serum bicarbonate concentration often falls to between 12-20 mEq/L and the anion gap increases(Michael J, 1996).

Sodium balance: Sodium balance remains virtually normal until very late in the course of ESRD, because the kidney can markedly increase the amount of sodium excreted per nephron by reducing tubular sodium reabsorption. Although sodium balance maintained, the kidney loses its ability to adapt to large variations in salt intake. Indeed, intake of large amounts of sodium can easily overwhelm the excretory capacity of the failing kidney and result in fluid retention, edema, and hypertension(Michael J, et al., 1996).

Potassium balance: Hyperkalemia may occur in association with dietary indiscretion, use of potassium containing salt substitutes, increased catabolism, or metabolic acidosis. Hypokalemia may occasionally occur in patients with ESRD, and it is usually due to gastrointestinal losses or excessive use of the action exchange resin sodium polystyrene sulfonate (Michael J, et al., 1996).

Water balance: The ability to concentrate or dilute urine is impaired in patients with chronic kidney, which makes them more susceptible to hypernatremia. Hypernatremia may occur if water consumption is not sufficient to replace fluid loss(Hasslacher C, et al., 1999).

2.7 Economic Costs of ESRD:

Dialysis treatment takes up 0.7 to 1.8% of the health care budget in European countries(Vecchi F, et al., 1999). Consequently, economic costs of ESRD are high; in 1999, more than 400,000 Americans required dialysis

therapy and/or transplantation for kidney failure, and Medicare medical expenditure for ESRD care was more than $11 billion(United States Renal Data System, 2001). With the current rate of population growth, there will be 172,667 incident and 661,330 prevalent patients by the year 2010. The Medicare costs for care of ESRD will increase from $ 12 billion to 28 billion over this time period (United States Renal Data System, 2001). The costs of medication and patient care are also growing. Between 1994 and 1999 spending on recombinant human erythropoietin treatment increased by 100% in the USA, the cost of intravenous iron supplementation increased by 50% and cost for Calcitriol or other vitamin supplements increased by 200% USRDS(United States Renal Data System, 2001).

Perspective study was conducted in Canada to estimate direct health-care costs and productivity losses from short- and long-term ESRD disability (Zelmer L , 2007) .The study showed less than 0.1% of Canadians have ESRD; however, the disease generated direct health-care costs of $1.3 billion in the year 2000. The amount of direct spending per person with ESRD is much more than the average spending per person for all health-care conditions. Adding indirect morbidity and mortality cost brings the total burden associated with ESRD to $1.9 billion. This economic impact is higher than that for skin or infectious diseases, about the same as for genitourinary or endocrine diseases, but lower than that for conditions such as cancer or a stroke(Zelmer L, 2007)

The typical annual direct dialysis cost per capita is basically the same between countries(Erek E , et al., 2002) . It is noteworthy that peritoneal

dialysis is the more expensive modality in countries that still import the dialysis solutions. For example, costs of dialysis modalities are approximately $ 22,644 million for Hemodialysis and 22,350$ for peritoneal dialysis in Turkey (Erek E , et al., 2002). The estimated total annual cost of Hemodialysis in Jordan was US$ US$ 29 715 553. Hemodialysis sessions accounted for about three-quarters of the total cost while medications and investigations accounted for an additional 20% (Abdullah S , et al ., 2007).

2.9 Incidence and Prevalence Of ESRD:

2.9.1 Incidence and Prevalence Of ESRD worldwide:

ESRD (ESRD) is increasing worldwide. Renal replacement therapy and kidney transplantation are increasing burden on health systems. This condition is particularly serious in developing countries where health resources are inadequate(Stengel B .2003). Worldwide, the number of patients receiving renal replacement therapy (RRT)is estimated at more than (1.4) million ,with an annual incident rate growing to 8%(chieppati A, et al., 2005).

The average of incidence of new patients treated due to ESRD in EU during years (1995) was (120) persons per million populations, ranging (68) in Finland, (163) in Germany. These figures are higher in USA with (262) person per million population, Japan (210) person per million population, but lower in Canada (140) person per million population during the same year (Berthouv F, et al 1999). In 1998, the incidence of treated

ESRD in Europe ranged (110) person per million population, Netherlands (192) person per million population. higher incidence rates were recorded in the same year in countries outside Europe, such as the USA (>300) person per million population), Japan (200) person per million population (Arıkan H, et al., 2005).

The reported annual incidence of patients with ESRD varies widely, from as low as (4) person per million population in Bolivia. Higher numbers (254) person per million population in Puerto Rico. Incidence rates of (52) person per million populations and (200) persons per million population were reported in Turkey and Egypt, respectively (Arıkan H, et al ., 2005). In India, an estimated incidence of ESRD of (100) person per million population. Approximately (100,000) patients develop ESRD each year(Arıkan H, et al., 2005).

2.9.2 Incidence and Prevalence Of ESRD in the Middle East:

The population of the Arab countries is (350) million, with a growth rate of (3%) (range 2.3-4.7), this considered as one of the highest growing rates in the world. Compared to world growth estimates with an average of (1.7%) (Jammal A.2009).

Table 2 shows the incidence of ESRD in the Arab world(Abboud O. 2006)

The incidence of ESRD ranged from (64) patients per million populations in Yemen, (212) patients per million populations, Qatar, (93) patients per million populations (Abboud O. 2006)

In the light of these estimates it is expected to have nearly (20.000) new cases of ESRD every year (Abboud O. 2006).

Table (1)
Incidence of ESRD in the Arab world 2006

Country	ESRD Incidence (per million population)
Egypt	200
Qatar	212
Saudi Arabia	120
Jordan	70
Lebanon	120
Kuwait	72
Yemen	64

The prevalence of ESRD is increasing at an alarming rate. Higher prevalence rates are reported in Japan (1149.9) person per million population) and the United States of America (975) person per million population). In Europe, the prevalence rate varies from one country to another, with an average of (283) person per million population) (Afifi A , et al 1999).

A cross-sectional, descriptive study conducted in France in 2003 showed that the prevalence of dialysis patients was (513.1) person per million populations, and total of number of patients treated with renal dialysis is 30,882(Michel V , et al., 2005).

Table (3) shows the prevalence of ESRD in the Arab world(Abboud O. 2006).

The prevalence rate in Egypt in 1996 was (225) person per million population.

Table (2)
Prevalence of ESRD in the Arab world 2006

Country	ESRD Prevalence (per million population)
Egypt	235
Qatar	262
Saudi Arabia	462
Jordan	120
Lebanon	243
Kuwait	80
Yemen	320
Average	352

2.9.3 ESRD In West Bank:

Palestinian Ministry of Health is the main health care provider for the ESRD management program in Palestine. And the different treatment modalities of ESRD are free of charge. Patients with ESRD belong to group of Patients with "Special Diseases" and are eligible for a government health insurance.

In northern West Bank there are 8 dialysis centers serving 565 patients (at present). In each city there is one dialysis center. In the north West Bank there are four dialysis centers distributed in Jenin, Nablus, Tulkarem and Qalqylia, while there are no dialysis centers in Salfeet and Tubas towns. Therefore, patients from Tubas have to go to Jenin governmental hospital while Salfeet patients have to go to do dialysis in Al-Watany hospital in Nablus city.

Patients usually do three dialysis sessions/week, each dialysis session last between 3–4 hours. Dialysis machines are old and not enough to cover for the increasing numbers of patients. And this situation keeps technicians

working under pressure. In addition, some centers lack nephrologists doctor and in general the nurse patient ratio is 1:5, while the international standard recommends 1:3(Rahman M, et al., 2007) (table 1), dialysis unites are crowded with patients and most of unites have small working areas.

Table (3)
Number of cases of ESRD, nurses in kidney
unit ,nephrologists doctor and dialysis machine in West Bank, 2006

City	No. of patients	No. of nurses in kidney unit	No. of nephrologists doctor	No. of dialysis machines
Jenin	81	9	1	11
Rammalh	75	8	1	12
Nablus	136	12	2	22
Tulkarem	43	6	0	9
Qalqylia	34	6	0	9
Jericho	23	5	0	6
Bethlehem	31	6	0	7
Hebron	142	12	2	24
Total	565	64	6	100

Source: Hospital kidney unit in west bank.2010

2.10 Morbidity and Mortality in ESRD:

ESRD causes a high rates of morbidity, mortality. Moreover, is responsible of many social and financial implications. This in fact lead to major public health problem. These problems could be seen clearly not only on different modalities of treatment like dialysis (hemodialysis and peritoneal dialysis),but also on existing co-morbidities, age, duration on dialysis, supportive therapies and infection control strategies (Vupputuri S, et al., 2003)

The mortality rate in USA due to ESRD is 24% per year. Other leading causes of death in patients with ESRD are cardiac related which accounts for (43%) of all deaths in this population(Al Wakeel JS, et al., 2002)

A study conducted in Turkey showed that Mortality ratio of ESRD patients was (14.1%). While the mean age of patients was 60 years. The most common cause of mortality was cardiovascular diseases, and the most common cause of co-morbidity was infections, older age, anemia, absence of residual renal function, hypoalbuminemia, inflammation, and metabolism(Kayabasi H, et al., 2008).

Another study conducted in Saudi Arabia showed that Diabetes Mellitus (40%), hypertension (39.2%), cardiovascular diseases (32.8%), hepatitis C (18.4%), and hepatitis B (8.8%) were the major co-morbidity causes of ESRD. The main reasons for patient with ESRD hospitalization were the vascular access problems (33.6%), infections (31.2%), cardiovascular disease (18.4%) and bleeding (6.4%)(40). The case fatality rate who started hemodialysis during the first year is (20%) in Jordan(Batieha A, et al., 2007).

2.11 Risk Factors of ESRD in literature

2.11.1 Diabetes Mellitus and Hypertension:

A study was conducted in Canada to determine the prevalence of ESRD showed that the increases prevalence and incidence were estimated, particularly among people with diabetes mellitus. In 1996, there were (17,807) patients receiving renal replacement therapy in Canada. This number jumped to (32,952) by 2005, for a relative increase of (85%) and a mean annual increase of (5.8%)(Schaube DE, et al., 1999)

over (90,000) of Americans developed ESRD with diabetes II. Current population of patients on dialysis therapy is (300,000). More than (80,000) patients are living with transplanted kidneys. Both prevalence and incidence of ESRD are approximately twice that were 10 years ago (Parsons DA. 2007)

A study was conducted in UK showed that ESRD is common. The main risk factor for impaired kidney function is diabetes mellitus. About (30%) of patients with diabetes II develop some degree of diabetic nephropathy. In addition, a follow-up study conducted in South Africa showed that diabetes mellitus is a major risk factor of ESRD(Keeton GR , et al., 2004).

Across sectional study conducted in Egypt in order to determine the prevalence of diabetic nephropathy as a cause of ESRD showed that the prevalence of diabetic nephropathy increased gradually from (8.9%) in 1996, to (14.5%) in 2001. average age of patients with diabetic nephropathy was significantly higher than other causes of patients with ESRD. Mortality was also significantly higher in diabetic patients with ESRD(Afifi A, et al., 2004)

A retrospective analysis study conducted in Saudi Arabia to determine Risk Factors for Developing ESRD. Results showed that diabetes II is the main risk factor(Al-Jiffri A, et al., 2003) .

in Jordan, Another study about epidemiology of dialysis patient showed that prevalence of hemodialysis was (312) person per million population. ESRD incidence in 2002 was (111) person per million population. diabetes mellitus was leading cause of hemodialysis (29.2%) of cases(Batieha A, et al., 2007)

Hypertension is a main risk factor for increasing incidence of ESRD in men in USA. A Follow-up study showed that Elevation of blood pressure is a strong independent risk factor of ESRD (Michael J, et al., 1996)

Hypertension is considered one of main risk factors of ESRD in Kuwait especially in old age(El-Reshaid K, et al., 1999).

Both hypertension and diabetes mellitus were main risk factors for increasing incidence of ESRD in black men in USA. Studies showed that (30- 40%) of all patients with diabetes develop nephropathy, ESRD, and necessitating dialysis or kidney transplantation(Chi-yuan H, et al., 2009)

Another study demonstrated that the high prevalence (13%) of ESRD among adult American population is due to the rise in the number of people with diabetes and hypertension(Moeller. S, et al, 2002).

A cross-sectional study carried out to determine the causes of chronic renal failure among Iranian hemodialysis patients showed that hypertension (20.8%) and diabetes mellitus (36.6%) were the most common causes of ESRD in Iran. Main causes of ESRD did not differ significantly between men and women (Leila M, et al, 2009).

In Palestine, a study conducted in 2008 at An-Najah National University to determine Prevalence of Reduced Renal Function among Diabetic Hypertensive Patients showed that hypertension and diabetes mellitus were the most common causes of ESRD(Sweileh WM, et al, 2009).

A Case control study conducted in USA confirmed that kidney stones increased the risk of chronic kidney disease especially interstitial nephritis, diabetic nephropathy, and hypertension. Chronic kidney disease is frequently seen among patients with kidney stones, an estimated percent of (10% - 15%) of patients eventually develop chronic kidney failure(Vupputuri S, et al, 2004)

cross sectional study conducted in Caribbean showed that Hypertension, chronic Glomerulonephritis and diabetes mellitus were the common causes of ESRD (Soyibo AK, et al, 2007).

Cross sectional study conducted in Saudi Arabia to determine epidemiology and causes of ESRD. Results showed that dialysis patients increase in the (KSA). Patients' average age was (55) years. Main causes of (ESRD) include diabetic nephropathy(28%), hypertension(24%), unknown(23%) and obstructive uropathy (8%)(Shaheen F, et al, 2005).

study conducted in Egypt showed that hypertension was responsible for (28%) of the cases of renal failure in Egypt. Other significant causes were: chronic Glomerulonephritis (16.6%), ESRD of unknown etiology (16.2%), obstructive uropathy (9.3%), and diabetic nephropathy (8.9%) (Afifi A , et al, 1999).

Another study conducted in Jordan confirmed that Diabetes mellitus is the major leading cause of Hemodialysis. Other risk factors like hypertension and Glomerulonephritis are second and third risk factor, respectively(Abdullah S, 2007)

2.11.2 Demographic factors: Gender, Age, smoking, and BMI:

A descriptive study conducted in Iran showed that the prevalence of chronic renal failure(CRF) is high in Iran. The age group with high risk of ESRD is (61-75) years old which constitute 38.5% (Reza A, et al , 2007).

 A cross-sectional study was conducted in Korea. showed that the prevalence of chronic renal failure (CRF) increases with ageing. Particularly after (50) years in both genders(Yu M, et al, 2010)

Another cross-sectional surveys conducted in Japan showed that the prevalence of chronic kidney disease increased significantly in men not in women (Nagata M, et al, 2010)

A Prospective study conducted in French urban area showed incidence of ESRD in males and a dramatic increase of incidence with age in both genders(Jungers P, et al, 1996).

follow up study in USA evaluated the prognostic value of several potential risk factors for ESRD confirmed that the two most common risk factors were proteinuria and obesity (Friedman E. 2001)

Another study in the USA determined that Obesity is a risk factor for kidney failure, whereas hyperlipidemia and smoking were not significant risk factors for ESRD(Chi-yuan H, 2009)

Cross-sectional study conducted in Singapore showed that higher BMI levels were positively associated with chronic kidney failure among men but not in women (Shankar A, et al, 2008) . A cohort study conducted in USA showed that overweight and obesity are important independent risk factors for chronic kidney failure and ESRD(Hsu CY, et al, 2009)

Another cohort study conducted in USA to determine the association between increased (BMI) and risk for ESRD showed that higher baseline BMI remained an independent predictor for ESRD. After additional adjustments for baseline blood pressure level and presence or absence of diabetes mellitus(Charles E ,et al ,.2006)

In addition, cross-sectional health survey conducted in Norway showed that obesity, smoking, and physical inactivity were significantly associated with ESRD (Stein H, et al, 2006).

retrospective multicenter matched case-control study conducted in nine centers in Germany, Italy and Austria to assess whether tobacco consumption increases the risk of ESRD showed that in men with inflammatory or non-inflammatory renal disease cigarette smoking significantly increases the odds ratios to ESRD. Adverse effect of smoking on renal failure prognosis in the women were found to positive(Kreusser W, et al, 1998)

2.11.3 Analgesic Drugs:

survey study conducted in USA confirmed that frequently taken analgesic drug (acetaminophen or None steroidal Anti-inflammatory Drugs) have an increased risk of ESRD, aspirin is excluded. (Thomas V, et al, 1994)

2.11.4 Polycystic Kidney Disease and Cardiovascular Disease:

Study conducted in Egypt showed that adult with polycystic disease of the kidney responsible for (4.3%) of the cases of ESRD (Afifi A , et al, 1999).

cohort study conducted in USA showed that Atherosclerosis is independently associated with an increased risk for incident chronic kidney failure in non diabetic adults (Kurella M, et al, 2005).

2.11.5 Other Risk Factors

A community-based medical screening program conducted in Taiwan showed that Hypertriglyceridemia is an independent risk factor for chronic kidney failure in adults(Pei-Hsien L, et al ,2009) A cohort study conducted in Norway to determine the association between Preeclampsia in one or more pregnancies and the subsequent development of ESRD showed that preeclampsia is factor of an increased risk of subsequent ESRD(Vikse BE, et al, 2008)

Another study conducted in USA to determine association between family history and incidence of ESRD showed that large proportion of incident ESRD cases have close relatives with ESRD in whom preventive actions might be directed. Genetic analyses in multiply affected families may identify the inherited factors contributing to progressive renal failure(Freedman BI, et al 2008).

A case control study conducted in Israel showed that Amyloidosis is the most significant complication of familial Mediterranean fever (FMF), leading to ESRD. Recently, (MEFV) gene responsible of this disease was cloned and more than 18 Mutations have been identified(Ben-Chetrit E et al, 2001).

2.12 Summary:

This chapter aimed at discussing the study concepts on the light of previous literature .the researcher stated forward the functions of the a normal kidney ,GFR as a measure of kidney function. Also ,the stage of kidney disease were stated according to the current medical studies in the filed of the study .In addition, the researcher in this chapter highlighted the main risk factors that lead to ESRD according to related to scientific researches.

Chapter Three

Methodology

Chapter Three

Methodology

This chapter is devoted to specify the steps and the methodology taken in carrying out the research endeavor. In this chapter the researcher presents research design, study population, sample, instrument, data collection procedures, ethical issues and the statistical analysis.

3.1 Study Design:

A cross sectional study was conducted at four dialysis centers in governmental hospitals in North West Bank, by using questionnaire and direct interviewing with ESRD patients, in addition to using medical records.

3.2 Population and sample of the study:

There are four dialysis centers in the North West Bank (Tulkarm, Nablus, Qalqylia, Jenin) serve 293 ESRD patients. All ESRD patients who aged less than14 years were excluded from this study because they receive their renal replacement therapy in Israel. Also the study excluded all patient who do not live in the Northern West Bank and patients having kidney transplantation. The response rate was 100%.

Table (4) shows that about one third (43.5%) of the ESRD patients were from Nablus district, (26.8%) were from Jenin district, (12.8%) were from Tulkarem district and less than one fifth (16.7%) of ESRD patients were from Qalqylia.

Table (4)
Distribution of ESRD patients by district

City	N	%
Jenin	81	26.8
Nablus	126	43.5
Tulkarm	37	12.8
Qalqylia	49	16.9
Total	293	100

*N=number of patients   %= percent

3.3 Instrumentation

After conducting an extensive literature review on major risk factors of ESRD, data were collected via complementary questionnaire developed in native language of respondents (Arabic) that consist of 22 items organized into four parts.

-The first part of the questionnaire included the objectives and the importance of the study.

-The second part included background information (Gender, Age, Place of living, Smoking, Weight and Height). Body Mass Index (BMI) was calculated by person's weight in kilograms divided by height in meters squared (BMI=kg/m^2).

-The third part was devised to collect information about the patient's family history, (diabetes, hypertension, cardiovascular disease, kidney disease, ESRD).

- The fourth part collected information about patients medical history (Diabetes, Hypertension, Cardiovascular, Congenital abnormality, Kidney stone, Urinary tract infection, and Analgesic drug).

3.4 Field Work:

Face to face interviews using a structured questionnaire have been conducted to patients at the haemodialysis units. The questionnaire collected comprehensive data on a wide range of issues related to risk factor of ESRD.

3.5 Pilot Study:

A pilot study was carried out in a haemodialysis unit of Rammalh Hospital (this hospital was not included in the actual study) in order to identify potential problems and to revise the methods and logistics of data collection before starting the actual filed work. Twenty patients have been selected randomly from kidney unit of Rammalh hospital, of which 58.2 % males and 41.8% females with mean age of (55.6 years for males and 56.4 years for females.

After the pilot study, the questionnaire and interview proposed time have been revised as it was found that more time is needed. In addition, some questions in the questionnaire have been revised to make it more easy and understandable by participants while preserving same objectives of the questions (e.g.: the question about analgesic drug and the chronic diseases history of family member's). Some questions have been added to the questionnaire such as (suffering from other diseases like cancers and genetic diseases) and focus more on accidental causes like (accidental work, road traffic accident, etc.), which lead to damage kidneys totally or partially.

Results of the pilot study showed that 14 patients out of 20 were suffering from diabetes, 12 were suffer from hypertension,11were suffer from Ischemic heart disease.,8patients have positive history of glumulernephraits and other kidney infection like nephritis, 5 patients have history of kidney stone, 6 patients have history of taken Non-steroidal Anti- inflammatory, 14 patients did not take medication and only 2 patients have congenital deformity.

More than half (60%) of patients having positive family history of chronic disease (diabetes mellitus, hypertension, cardiovascular disease, kidney disease, and ESRD) and 40% of the patients reported that there is no family history of chronic disease.

3.6 The Study Fieldwork Procedure:

1- **AL-Watani hospital in Nablus***: 3 visits /week, in each visit doing interviews to (10 -15) patients, each interview took 30-40 minutes. The field work in this hospital finished within (45) days resulted in interviewing 125 patients.

2- **Jenin hospital***: 3visits /week, in each visit doing interviews to 5-10 patients , each interview took 30-40 minutes. The field work in Jenin hospital took 25 days resulted in interviewing 81 patients.

3- **Tulkarem hospital**: 2 visits /week, in each visit doing interviews to 10 - 14 patients , each interview took 30-40 minutes. The field work in Tulkarem took 12 days resulted in interviewing 37 patients .

4- **Qalqylia hospital:** 2 visits /week, in each visit doing interviews to 8-12 patients, each interview took 30-40 minutes resulted in interviewing 49 patients . The fieldwork in Qalqylia hospital took 12 days.

3.7 Statistical Analysis:

All data collected from 293 participants were entered in the computer. Statistical Packages for Social Science (SPSS 17) was used to analyze the data obtained from the questionnaires. Various statistical analysis were used including means, frequencies, odds ratio and linear logistic regression. P-value of less than or equal to 0.05 was used to test the significance in the study hypothesis.

3.8 Ethical issues:

Permission to do this study was obtained from the Palestinian ministry of health in Nablus. In addition, Patients were informed about the purpose of the study before conducting the interview and were told that their participation will be voluntary.

3.9 Study limitations:

On the light of the study findings, the researcher managed to present the following recommendations:

- Dialysis centers (e.g. Qalqylia and Tulkarem) basic medical files of patients available only at the AL Watani Hospital due to the lack of nephrologists doctors so that need visit two hospital to take data for this patients .

- Shortage in the number of dialysis machines lead to interviewed patients till late-night.

- The inability of the researcher to collect data from patients aged less than 14 years due to that they receive dialysis in centers in Israeli hospitals.

- This type of study is a cross sectional study cannot show us clearly the major risk factors that lead to ESRD (couldn't know which comes first the cause or the effect).

3.10 Summary :

This chapter is devoted to specify the steps and the methodology taken in carrying out the research endeavor. In this chapter the researcher presents research design, study population, sample, instrument, data collection procedures, ethical issues and the statistical analysis.

Chapter Four

Results

Chapter Four

Results

The purpose of this study is to identify the major risk factors that lead to the onset of ESRD among patients in the North West Bank. This chapter consists of three parts: part (1) deals with the analysis of various demographic and background information variables, part (2) deals with the analysis of the medical history of the family of the patients and part (3) deals with the analysis of the patients' medical history.

4.1 Part (1): Analysis of demographic and background information variables:

• **H0:** There is no association between demographic and background information variables (age, gender, BMI , smoking, and profession) and the onset of ESRD.

The study sample (n=293 patients) consisted of 58.70% males, and 41.30% females. The mean age for males was 55.6 years old, with a standard deviation of 15.2 while the females mean of age was 54.1years old , with a standard deviation of 18.17. The following table (5) shows the distribution of ESRD patients according to age group and gender.

Table(5)

The distribution of ESRD patients according to age group and gender

Age groups	Males		Females		Total	
	N	**%**	**N**	**%**	**N**	**%**
<40	17	5.8	39	13.3	56	19.1
40-49	19	6.48	18	6.1	37	12.58
50-59	51	17.4	22	7.5	73	24.9
60-69	52	17.7	29	9.8	81	27.5
$\geq$ 70	33	11.2	13	4.4	46	15.6
Total	172	58.58	121	41.42	293	100

N=number of patients   %= percent

More than half (59.4%) of ESRD patients were living in villages. While about one third (32.4%) of ESRD patients were living in cities, and only

(8.2%) were living in refugee camps. Table (6) shows the frequency and percentages of ESRD patients distribution according to place of residence.

Table (6)
Percentages of ESRD patients distribution according to
place of residence

Locations	N	%
City	95	32.4
Village	174	59.4
Refugee Camp	24	8.2
Total	293	100

N=number of patients   %= percent

about half (49.8%) of ESRD patients are unemployed, while 16.05% were working in public sector, and 13.3% were working in private sector.

Table (7)
The percentages of ESRD patients in sample according to profession

Jobs	N	%
Public sector jobs	47	16.05
Private sector jobs	39	13.3
Laborers	48	16.4
Students	13	4.5
Unemployed	146	49.8
Total	293	100

N=number of patients   %= percent

More than half (58.4%) of the ESRD males patients were smokers while only one female was smoking. Table (8) shows the percentages of ESRD patients according to gender and smoking statutes.

Table (8)
Percentages of ESRD patients according smoking statutes and gender

Smoking	Male		Female		Total	
	N	%	N	%	N	%
Yes	171	58.36	1	0.34	172	58.7
No	5	1.7	116	39.59	121	41.3
Total	176	60.07	117	39.93	293	100

The majority of ESRD patients (89%) started smoking at the age between 15-30 years old. The mean age and SD when ESRD patients started smoking was 23.2 years old with stander deviation of 6.0 years (Table 9).

Table(9)
Distributions of patients in sample according smoking age

Smoking age	N	%
15-30	117	89
≥31	14	11
Total	131	100

The study results show that 75% of ESRD smoking patients smoke 10-30 cigarettes per day, 17%smoke 31-40cigarettes per day, and 8% smoke 41-50 cigarettes per day (Table 10).

Table (10)
Distributions of ESRD patients in sample according No. of cigarettes smoked per day

No. cigarettes per day	N	%
10-20	54	41
21-30	45	34
31-40	22	17
41-50	10	8
Total	131	100

This study showed that 45.4% of ESRD patients had normal weight, while 45.1% were overweighed (Table 11).

Table(11)
Distributions of ESRD patients in sample according Body Mass Index level (BMI)

*BMI	N	%
< 18.5	4	1.4
18.5-24.9	133	45.4
25-29.9	132	45.1
30-34.9	21	7.2
35-39.9	3	1
Total	293	100

*(<18.5 =low weight, 18.5-24.9=normal, 25-29.9=overweight, 30-34.9=obese I, 35-39.9=obese II, <40 = obese III)

Table (12) shows the results of the logistic linear regression analysis of the effect of gender, smoking, BMI, and work statues, we could see that none of the factors had any significant relation to the onset of ESRD at P-value <0.05.

Table(12)
Logistic linear regression results of the effect of (gender, smoking, BMI, and work statues) on the onset of ESRD

Factor	S.E.	df	Sig.
Gender	.977	1	.078
Smoking	.959	1	.212
BMI	.250	1	.760
Work statues	.392	1	.882

S.E= standard error, df= degree of freedom

4.2 Part (2): Analysis of the medical history of family member of the patients

• **H0**: There is no association between family member's medical history of chronic diseases (diabetes, hypertension, cardiovascular disease, kidney disease, ESRD) and the onset ESRD.

The study results show that 74.4% of ESRD patients had a relative who suffer from diabetes mellitus, 68.6% had a relative who suffer from hypertension, 38.9% had a relative who suffer from cardiovascular disease, 18.1% had a relative who suffer from ESRD, and 7.2% had a relative who suffer from renal disease (Table 13).

Is there a significant relationship between family member who suffer from (diabetes, hypertension, cardiovascular disease, kidney disease, ESRD) on the onset of ESRD?

From our data we found the odds ratio of family history members with diabetes reached 1.7, that means the patients has positive family history members with diabetes 1.7 times more likely to have ESRD than those who had no diabetes. The odds ratio of family history members with hypertension was 0.95, that means there is no effect of family history with hypertension on onset of ESRD. The odds ratio of family history members with cardiovascular disease was 1.4, this means that cardiovascular disease exerts positive significant effect on onset of ESRD in patients. The odds ratio of family history members with ESRD was 2.5, this means that ESRD patients who have family members with ESRD exerts positive significant effect on onset of ESRD in patients. The family history members with Renal disease has a high odds ratio 3.45, which means that patients who had family history members with Renal disease are 3.5 times more likely to have ESRD than those without (Table 13).

Table (13)
Frequency and percentages of family members who suffer from diabetes, hypertension, cardiovascular disease, renal disease and ESRD

Disease	Yes		No			
	N	%	N	%	OR	95%CI
Diabetes	218	74.4	75	25.6	1.71	(0.69,4.17)
Hypertension	201	68.6	92	31.4	0.96	(0.38,2.43)
Cardiovascular	114	38.9	179	61.1	1.40	(0.62,3.19)
Renal Disease	21	7.2	272	92.8	3.45	(0.72,6.48)
ESRD	53	18.1	240	81.9	2.53	(0.42,5.64)

4.3 Part (3): Analysis of the patients' medical history.

• **H0**: There is no association between patient's medical history (Diabetes(I&II) , Hypertension, Cardiovascular, Congenital abnormality,

Kidney stone, Urinary tract infection, and Analgesic drug) and the onset ESRD.

Table (14) shows that 46.4% of ESRD patients had diabetes mellitus, 50.8% had hypertension, 31% had cardiovascular disease, 16.7 % had kidney stone, 11.9% had Congenital abnormality and 25.6% had Urinary Tract Infection.

Table (14)
Frequency and percentage of ESRD patients with chronic disease

Disease	Yes	%	No	%	Total	%
Diabetes mellitus	136	46.4	157	53.6	293	100.0
Hypertension	149	50.8	144	49.2	293	100.0
Cardiovascular disease	91	31.0	202	69.0	293	100.0
kidney stone	49	16.7	244	83.3	293	100.0
Congenital abnormality	35	11.9	258	88.1	293	100.0
Urinary tract infection	75	25.6	218	74.4	293	100.0

Table (15) shows that a 5.9% of ESRD patients suffered from diabetes mellitus type one, and 94.1% of ESRD patients suffer from diabetes mellitus type two.

Table (15)
Distribution of sample according to gender and type of diabetes mellitus

Diabetes mellitus types			Gender			
			males		females	
type	N	%	N	%	N	%
Type one	8	5.88	5	62.5	3	37.5
Type two	128	94.12	74	57.81	54	42.19
Total	136	100	79		57	

The researcher also examined the effect of diabetes mellitus types on onset ESRD; there is no association between the type of diabetes mellitus and the onset of ESRD ($P > 0.05$); the value of adjusted R square for males was (0.012), and for females was (0.010), that means type of diabetes mellitus

can predict (1.2%) of variances of onset ESRD at males and (1%) at females, although the relation between type of diabetes and the onset of ESRD was positive which means that diabetes mellitus type one correlated positively with short period of time to have ESRD, also diabetes mellitus type two correlated positively with long period of time on the onset of ESRD (Table 16 & 17).

Table (16)
Result of simple regression test for diabetes mellitus type's
effect on the onset of ESRD

Gender	R	R Square	Adjusted R Square	Std. Error of the Estimate
Males	0. 2	0.040	0.0124	0.0184
Females	0.18	0.0324	0.0104	0.0024

Table (17)
The results of one way analysis of variance ANOVA of the onset of
ESRD on the variable of diabetes mellitus type

Gender	Variances Sources	Sum of Squares	df	Mean Square	F	Sig.
Males	Regression	0.071	1	0.071	2.01	0.241
	Residual	2.771	78	0.035		
	Total	2.842	79			
Females	Regression	0.006	1	0.006	0.12	0.740
	Residual	2.836	56	0.052		
	Total	2.842	57			

Insulin therapy was associated with the onset of ESRD ($P < 0.05$), but there was no associations with other types of drugs on the onset of ESRD($P > 0.05$), the results showed that there is a statistically significant relationship for patients who use insulin therapy and the onset of ESRD, which means

that patients who undergone Insulin therapy developed ESRD in a short period of time and the opposites is correct (Table 18 &19).

Table (18)
Result of simple regression test for the effect of diabetes mellitus medicine kinds on the onset of ESRD

medicine kinds	R	R Square	Adjusted R Square	Std. Error of the Estimate
Insulin	0.193	0.037	0.019	2,6462
Drugs	0.094	0.009	0.001	2,7735

Table (19)
The results of one way analysis of variance ANOVA of the ESRD on the variable of diabetes mellitus medicine kinds

medicine kinds	Variances Sources	Sum of Squares	df	Mean Square	F	Sig.
Insulin	Regression	14.632	1	14.632	2.51	0.03*
	Residual	378.207	54	7		
	Total	392.839	55			
Drugs	Regression	35.832	1	35.832	5.92	0.223
	Residual	357.642	59	6.05		
	Total	393.474	60			

Table (20) shows distribution of ESRD patients according to recurrent taken analgesic drugs.

Table (20)
Result of distribution of study sample according to ESRD patients who use analgesic drugs

Analgesic drugs	N	%
Yes	212	72.3
No	81	27.7
Total	293	100.0

Table (21), the value of adjusted R square was (0.128) that means diabetes mellitus can predict (12.8%) of variances on the onset of ESRD, (P-value <0.05).

Table (21)
Results of simple linear regression between patients with
diabetes mellitus and onset of ESRD

R	R Square	Adjusted R Square	Std. Error of the Estimate
.362	.131	.128	.31771

The results of the One Way ANOVA test shows that there is a significant relationship between patients with diabetes mellitus and the onset of ESRD on the level α= 0.05 , which means we can have 95% confidence of that regression model can predict (12.8%) of all patients with diabetes mellitus are on the risk of having ESRD.

Table (22)
The results of one way analysis of variance ANOVA of
the ESRD on the variable of diabetes mellitus

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	4.435	1	4.435	43.942	.000*
Residual	29.393	292	101		
Total	33.809	293			

In the table (23), the value of adjusted R square is (0.026) that means hypertension can predict 2.6% of variances on the onset of ESRD, (P-value <0.05).

Table (23)
Result of simple regression test for patients with hypertension on
the onset of ESRD

R	R Square	Adjusted R Square	Std. Error of the Estimate
.172	.030	.026	.39497

In the results of the One Way ANOVA test shows that there is a significant relationship between patients with hypertension and the onset of ESRD on the level α= 0.05 , which means we can have 95% confidence of that regression model can predict 2.6% of all patients with hypertension are at risk of having ESRD.

Table(24)

The results of one way analysis of variance ANOVA of
the ESRD on the variable of hypertension

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	1.276	1	1.276	8.183	.005*
Residual	41.963	292	.156		
Total	43.240	293			

In the table (25), the value of adjusted R square was (0.001) that means cardiovascular can predict (0.1%) of variances of the onset of ESRD on P-value <0.05 .

Table (25)

Result of simple regression test for patients with cardiovascular
disease   on the onset of ESRD

R	R Square	Adjusted R Square	Std. Error of the Estimate
.080	.006	.001	.40072

The results of the One Way ANOVA test that there is a significant relationship between patients with cardiovascular disease and the onset of ESRD on the level α= 0.05 , which means we can have 95% confidence of that regression model can predict that 0.1% of all patients with hypertension are on the risk of having ESRD.

Table (26)

The results of one way analysis of variance ANOVA of
the ESRD on the variable of cardiovascular disease

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	.002	1	.002	.013	.011*
Residual	43.238	292	.161		
Total	43.240	293			

In table (27) , the value of adjusted R square was 0.002 that means Congenital abnormality can predict 0.2% of variances of the onset of ESRD (P<0.05) **.**

Table (27)
Result of simple regression test for patients with Congenital
abnormality   on the onset of ESRD

R	R Square	Adjusted R Square	Std. Error of the Estimate
.048	.002	.002	.39229

The results of the One Way ANOVA test that there is no significant relationship between patients with Congenital abnormality and the onset of ESRD on the level α= 0.05 , which means we can have 95% confidence of that regression model cannot   predict all patients with Congenital abnormality   are on the risk of having ESRD.

Table(28)
The results of one way analysis of variance ANOVA of the ESRD on the
variable of Congenital abnormality

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	.092	1	.092	.596	.441
Residual	40.474	292	.154		
Total	40.566	293			

As we can see from table (29), there was no value for the adjusted R square

(0.00) which means that kidney stone can not predict the onset of ESRD.

Table (29)
Result of simple regression test for patients with kidney stone on
the onset of ESRD

R	R Square	Adjusted R Square	Std. Error of the Estimate
.060	.004	.000	.40019

Table (30)shows the results of the One Way ANOVA test that there is no significant relationship between patients with kidney stone and the onset of ESRD on the level α= 0.05 , which means we can have 95% confidence of that regression model can not predict all patients with kidney stone   are on the risk of having ESRD.

Table(30)

The results of one way analysis of variance ANOVA of
the ESRD on the variable of kidney stone

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	.158	1	.158	.987	.321
Residual	43.082	292	.160		
Total	43.240	293			

In table (31), the value of adjusted R square was (0.025) that means patient with Urinary tract infection can predict (2.5%) of variances of the onset of ESRD on P-value <0.05 .

Table (31)

Result of simple regression test for patients with Urinary
tract infection on the onset of ESRD

R	R Square	Adjusted R Square	Std. Error of the Estimate
.169	.029	.025	.39514

In the table below shows, the results of the One Way ANOVA test that there is a significant relationship between patients with Urinary tract infection and the onset of ESRD on the level $\alpha= 0.05$, which means we can have 95% confidence of that regression model can predict 2.5% of all patients with kidney stone are on the risk of having ESRD.

Table (32)

The results of one way analysis of variance ANOVA of
the on the variable of Urinary tract infection

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.239	1	1.239	7.936	.005[*]
Residual	42.001	292	.156		
Total	43.240	293			

In table (33), the value of adjusted R square was (0.132) that means patient who use analgesic drugs can predict 13.2% of variances of the onset of ESRD on P-value < 0.05 .

Table (33)
Result of simple regression test for patients who use analgesic
drugs on the onset of ESRD

R	R Square	Adjusted R Square	Std. Error of the Estimate
.368	.135	.132	.32762

Table (34) shows the results of the One Way ANOVA test that there is a significant relationship between patients who use analgesic drugs and the onset of ESRD on the level α= 0.05 , which means we can have 95% confidence of that regression model can predict 13.2% of all patients who use analgesic drugs are at risk of having ESRD.

Table(34)
The results of one way analysis of variance ANOVA of the
on the variable of use analgesic drugs

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	4.514	1	4.514	42.058	.000*
Residual	28.873	292	107		
Total	387. 33	293			

- What is the descriptive characteristics of (accidents, chronic diseases, genetic disease (Neurogenic Bladder, Alport Disease, Polycystic Kidney Disease) in relation to the onset ESRD?

Table (35) below shows that 2% of all cases developed ESRD due to accidents. While (98%) of the remaining cases developed ESRD due to other factors.

Table (35)
Frequency and percentage of cases with ESRD because of accidents

ESRD occurred due to accident		
answer	N	%
yes	6	2
no	287	98
Total	293	100.0

The below table show that (18.7%) of all cases developed ESRD due to diseases. While 81.3% of the rest of cases mentioned other causes.

Table (36)
Frequency and percentage of cases with ESRD because of other diseases

Other chronic diseases that caused ESRD		
Answer	N	%
Yes	55	18.7
No	238	81.3
Total	293	100.0

In the table below shows that variant disease causes about (22.6%) of onset ESRD. the main disease that cause ESRD is prostate cancer and bladder cancer which causes obstructive urobathy causes (4.7%).

Table (37)
This table shows disease that cause ESRD

The disease that caused ESRD					
Disease	N	%	Disease	N	%
Brain Cancer	1	.43	Osteoporosis	1	.43
cerebrovascular Accident	1	.43	Uterus Cancer	1	.43
Gouty Nephritis	1	.43	Bronchial Asthma	2	0.6
Hematuria	1	.43	DeepVainThrombosis	2	0.6
Hepatitis B	1	.43	Liver Chirosis	2	0.6
Hyperaxoylate Urea	1	.43	Pre Clampsia	2	0.6
Hyperlipdemia	1	.43	Amalydoses	3	1.0
Intestinal Obstruction	1	.43	Anemia	5	1.7
Liver Cancer	1	.43	Bladder Cancer	6	2.0
Lung Cancer	1	.43	Prostate Cancer	8	2.7
No Other Disease	227	77.4			
Total				293	100

The below table show (14.4%) of all cases developed ESRD due to genetic disease. We can see that (85.6%) of cases mentioned other causes than genetic disease in developing ESRD.

Table (38)
Frequency and percentage of cases with ESRD due
to genetic diseases

ESRD occurred due to genetic disease		
Answer	N	%
Yes	42	14.4
No	251	85.6
Total	293	100.0

We can see that (85.6%) of all patients who had ESRD mentioned other causes in developing ESRD while (14.4 %) reported that ESRD occurred due to genetic factors (11.2%) due to Polycystic Kidney Disease, while (1.1%) from Alport Disease, and the remaining (2.1%) due to Nurogenic Bladder.

Table (39)
This table shows genetic disease that caused ESRD

genetic disease that caused ESRD	N	%
Neurogenic Bladder	6	2.1
Alport Disease	3	1.1
Polycystic Kidney Disease	33	11.2
ESRD not caused by genetic diseases	251	85.6
Total	293	100.0

4.4 Summary:

The purpose of this chapter is to highlight the main results of the study that aim to identify the major risk factors that lead to the onset of ESRD among patients in the North West Bank. This chapter consists of three parts: part (1) deals with the analysis of various demographic and background

information variables, part (2) deals with the analysis of the medical history of the family of the patients and part (3) deals with the analysis of the patients' medical history.

The main results found in this chapter shows that total sample, 58.70% were males and 41.30% were females . The mean age of males was 55.62 y, while the mean age of females was 54.13y.46.7 % of the sample were overweight (BMI =25-29.9) and 7.7% were obese.8.2% of the of the participants were living in refugee camps while more than half (59.4%) of them were living in villages. There is no association between the onset of the ESRD and gender, smoking and patients BMI (P>0.05).

Patients who have family members with history of Renal disease, ESRD, Diabetes and Cardiovascular disease are more likely to have ESRD than other patients who don't have family members with Renal disease, ESRD Diabetes and Cardiovascular disease. There is significant association between patients who have diabetes mellitus, hypertension and cardiovascular disease with onset of ESRD at (P > 0.05). Glomerulonephritis and other urinary tract infection have significant association on the onset of ESRD. There were highly significantly effects of recurrently taking analgesic medication (Non Steroidal Anti-inflammatory Drug) on onset ESRD in Northern West Bank.

Genetic disease participate in (14.4%) of total patients with ESRD. Polycystic Kidney Disease is the main genetic disease that causes ESRD with a percent of (12.2%).

The accident causes (2%) of onset ESRD .These type of accident are considered to be directly damage the kidneys. This study showed that other disease are responsible of the onset of ESRD with a percent of (18.7%) . Moreover, prostate cancer and bladder cancer participate in (4.7%) the onset of ESRD. These disease causes obstructive urobathy.

Chapter Five

Discussion

Chapter five

Discussion

This chapter will discuss the study results and their implications. Moreover this study was an effort to highlight the main factors that lead to ESRD. Identifying major risk factors on the onset of ESRD is an important part in preventing complications of developing ESRD.

5. Discussion of main results:

5.1.1 Discussion Of Part One*:*

In this study, The sample consisted of 58.70% males, and 41.30% females . The mean age for males was 55.62 years, while the females mean age was 54.13. These results agree with several international studies that were conducted in   Japan, France, Iran, and Korean showed that ESRD dramatically increases with aging, particularly after the age of 50 in both genders and males develop ESRD more than females (Reza A, et al, 2007), (Jungers P, et al, 1996) (Nagata M, et al, 2010), (Yu M, Ryu S , et al, 2010).

 Less than half (46.7 %) of the sample reported a BMI of 25-29.9 which make them in the category of overweight and 7.7% were reported as being obese. This result indicates that the majority of the study participants were suffering from increasing weight. Studies conducted in USA showed that there is positive association between BMI and ESRD (Vupputuri S, et al, 2003).

Patients who have a regular habit of smoking composed (58.7%) of study sample, the percentage of male smokers was 58.36, while female smokers were only (0.34%). this results can be explained that smoking as a habit in Palestinian society is not accepted for females. Studies show that there is no association smoking on the onset of ESRD. Several other studies conducted in USA, Singapore, Norway, Germany, Italy and Austria showed that obesity and smoking are important independent risk factors for chronic kidney failure and ESRD. (Vupputuri S, et al, 2003) (Friedman. E. 2001) (Chi-yuan H, et al, 2009) (Stein H, et al , 2006) (Shankar A, et al, 2008) (Hsu CY, et al, 2009) (Charles E, et al, 2006)

Such differences between the current study and other studies on   the impact of variables of gender and age could be due to genetic or social differences between Palestine community and other communities.

The majority of participants are unemployed. This is a normal result since most of study sample were either old or (age mean = 55.5-54.4 years).

ESRD was less prevalent among refugee camps with a percentage of (8.2%), this can be explained that refugee camps represent a small section of the total Palestinian population, while ESRD was more common among village residents with a percent of (59.4%) this is due to the fact that Rural area explained that large section of total Palestinian population and most health center concentrated in cities. The results that there is no effect of gender, smoking, BMI, and work statues none of the factors had any significant relation to the onset of ESRD.

5.1.2 Discussion Of Part Two:

The study results indicates that ESRD patients who have a family members history of Renal disease has a highest probability of developing ESRD (odds ratio =3.45) this means that patients with positive family history members with Renal disease are more likely to have ESRD than other disease.

The study results indicates that ESRD patients who have a family members history with ESRD has a high probability of developing ESRD was (odds ratio =2.5) this means that ESRD patients who have family members with ESRD exerts positive significant effect on onset of ESRD in patients.

The study results indicates that ESRD patients who have a family members history with diabetes reached (odds ratio = 1.7), that means the patients has positive family history members with diabetes (1.7) times more likely to have ESRD as those who had no diabetes.

Study found that ESRD patients with family history members with cardiovascular disease reached an odds ratio of (1.4) this means that cardiovascular disease exerts positive significant effect on onset of ESRD in patients .

Study found that ESRD patients with family history members with hypertension history played no significant association with onset ESRD since odds ratio less than one (odds ratio= 0.96) .

We can see that family members with a medical history of positive renal disease and ESRD are more likely to develop ESRD, this can be explained on the light of genetic factors can play a role in progressive renal failure. Furthermore, this result agree with other studies conducted in the USA that indicates an association between family history and incidence of ESRD. (Freedman BI, et al, 2008)

5.1.3 Discussion Of The Part Three:

Study results indicate that The distribution of study sample according to chronic diseases such as (diabetes mellitus=46.4%), (Hypertension = 50.8%), (cardiovascular disease =31.0 %), (kidney stone =16.7 %), (Congenital abnormality =11.9%)and (urinary tract infection =25.6%).

This result agree with other studies in conducted in several countries of the world that show diabetes mellitus is the leading causes of ESRD this study confirms the fact there is highly significant effect of diabetes mellitus on onset ESRD at(P > 0.05) in Northern West Bank. While (5.88%) of patients suffered diabetes mellitus type one but (94.12%) of them suffered type two. from this result, we see that most patients with diabetic have type two this result may be due type one is rare and the age patients. At(P > 0.05)there no statically significant effect of type of diabetes milieus and onset of ESRD ,but the patients how have type one diabetes get the ESRD at short period of time than type two diabetes. (Parsons DA. 2007) (Batieha A, et al, 2007) (Schaube DE, et al, 1999) (Afifi A, et. al, 2004) (Al-Jiffri A, et.al, 2003) .

There are significantly effects of Insulin treatment on onset ESRD, which means the patients who used Insulin therapy have ESRD at short period of time.

Diabetes mellitus disease has complication effect on many organs of the body such as the kidney, patients who have diabetes mellitus neglect to do a good follow up and frequently laboratory test of kidney function.

This study shown that hypertension is significantly leading causes of ESRD (P > 0.05). several studies were conducted in the world show that Elevations of blood pressure are a strong independent risk factor for ESRD. (Michael J, et al, 1996) (El-Reshaid K, et al, 1999).

This study showed that cardiovascular disease significantly associated with the onset of ESRD at(P > 0.05) . In a study conducted in USA showed that Atherosclerosis is an independent risk factor of ESRD.

Other studies conducted USA ,Caribbean, Iran, Saudi Arabia, Egypt, Jordan, Palestine showed that hypertension and diabetes mellitus were the most common causes of ESRD. (Abdallah S, et al, 2007) (Afifi A , et al, 1999) (Chi-yuan H, et al, 2009) (Vupputuri S, et al, 2004) (Soyibo et.al, 2007) (Leila M, et.al, 2009) (Shaheen ,et al, 2005) (Sweileh , et. Al, 2009)

This study showed that there is significant association between patients who have diabetes mellitus and hypertensive with onset of ESRD. This can be explained on the light of rapid urbanization, transformation into sedentary life style, increase in prevalence and incidence in diabetes

mellitus and hypertension lead to the increase in number of cases of chronic kidney disease.

There were significant effects of diabetes mellitus, hypertension and cardiovascular diseases on onset ESRD. When a patients suffers from a total of Pathology chronic disease (diabetes mellitus, hypertension and cardiovascular diseases) are more likely to get kidney failure. Changes in the pattern of living, increase in incident chronic diseases lead to a high complication.

Several study conducted in different country confirm that there is a significant association between Glomerulonephritis and other urinary tract infection with incident of ESRD. (Abdallah S, et. al, 2007) (Afifi A , et al., 1999) (Vupputuri S, et al, 2004) (Soyibo AK, et. Al, 2007) (Shaheen F' .et al, 2005).

This study showed urinary tract infection have strong association on the onset of ESRD. This is due to several factors, notably lack of awareness among the people of the seriousness of kidney infections and urinary tract, as well as the recurrence of inflammatory. Some doctors do not order the necessary tests that is related to the of the kidney functions prior to prescribe the correct medication.

There were highly significantly effects of recurrently taking analgesic medication (Non Steroidal Anti-inflammatory Drug) on onset ESRD in Northern West Bank. A study In USA confirmed that frequently taken

analgesic drug (acetaminophen or None steroidal Anti-inflammatory Drugs) have an increased risk of ESRD. highly recurrent taking drugs may be due to there is no monitoring in pharmacy, and patients may take a drug without doctor prescription,   some patients visit many doctors or many clinic at the same time(Thomas V. et al., 1994).

Genetic disease participate in (14.4%) of total patients with   ESRD. Polycystic Kidney Disease is the main genetic disease that causes ESRD with a percent of (12.2%). A study in Egypt show that polycystic disease of the kidney is responsible for (4.3%) of the cases of ESRD(Gopa G,et al., 2001)

The accident causes (2%) of onset ESRD in northern west bank. These accident range from car accident, gunshots. These type of accident are considered to be directly damage the kidneys.

This study showed that other disease are responsible of the onset of ESRD with a percent of (18.7%) . prostate cancer disease is a disease that affects only males and participated with a percent of (2.7%) of other disease that lead to the onset of ESRD. Moreover, prostate cancer and bladder cancer participate in (4.7%) the onset of ESRD. These disease causes obstructive uropathy. obstructive uropathy in its turn lead to the increase of blood impurities which play a role in developing renal failure. A study conducted in Saudi Arabia   showed obstructive uropathy causes about (8%) of incident of ESRD(Shaheen F., 2005).

5.2. Summary:

This chapter will discuss the study results and their implications. Moreover this study was an effort to highlight the main factors that lead to onset ESRD. Identifying major risk factor on the onset of ESRD is an important t part in preventing complications of developing ESRD .furthermore, this chapter will try to pinpoint the study results on the light of previous studies conducted in the filed of ESRD risk factors.

Chapter six

Conclusion & Recommendations

Chapter six

Conclusion & Recommendations Conclusion

This study was an effort to highlight the main risk factors that lead to ESRD. Identifying major risk factors on the onset of ESRD is an important part in preventing complications of developing ESRD.

This study found that main risk factors that lead to ESRD in Palestine were family history, specially that is related to inherited disease including diabetes mellitus , CVD and renal disease and ESRD in family members.

Other major risk factor that lead to ESRD are chronic disease such as diabetes mellitus , hypertension, CVD, urinary tract infection.

Other major risk factors that lead to ESRD is associated with some wrong habits such as taking medication without prescription. Such drugs include non steroidal anti inflammatory drug.

Polycystic Kidney Disease is the major genetic disease that lead to ESRD in Northern West Bank. Moreover, certain types of cancer also played a role in leading to ESRD such as bladder cancer and prostate cancer. Accidental causes played a role in causing ESRD.

Recommendations

On the light of the study findings, the researcher managed to present the following recommendations:

1-   There should be more attention to Improve the quality of renal replacement therapy and facilities, this could be achieved through Increasing the number of qualified staff and improve the dialysis machines and increasing their numbers.

2-   The necessity of conducting and improving national programs of kidney transplantation in Palestine. And to increase community awareness about kidney donors.

3-   Since Renal replacement therapy is costly the necessity of initiating preventive health programs especially among high risk group such as patients with diabetes mellitus, hypertension, cardiovascular.

4-   The necessity of increasing public awareness of taking medications without doctor prescription. And highlight the importance of monitoring pharmacies.

5-   The necessity of conducting other researchers in the field of renal failure and ESRD risk factors.

6- Dialysis centers (e.g. Qalqylia and Tulkarem) basic medical file of patients available at the AL watain Hospital due to lack of nephrologists doctor.

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Appendixes

Appendix (A)

Study questionnaire

An-Najah National University
Faculty of Graduate Studies
Public Health Program

A questionnaire on the risk factor which lead to onset the End Stage Renal Disease

_____

This study was designed to determine the risk factor which lead to the development of kidney disease and access to the final stage that require dialysis, with the knowledge that this information will be used for the purposes of scientific research and will be treated strictly confidential, so your cooperation with us in completing this questionnaire will be appreciated.

Serial number ----------------------------Date---------------------

Date start dialysis----------------------- The patient's medical file

The duration of dialysis (months)-----------------------------------

Dear dialysis patient:

Please tick (√) inside the box, which is consistent and your situation:

Personal data:

1- Sex: Male   Female

2- Date of Birth: Day ----------- Month ------------ Year ---------

3- work:----------------------------------

4-Preservation: Jenin   Nablus

                                   Tulkarem   Qulqlia

5 - Place of residence: -----------------

6 - Are you a smoker?

No   Yes   * If the answer is yes

-at any age started smoking: -----------------

-How many cigarette smoke per day: -----------------

7 - the patient's weight at the start of dialysis: ---------   patient's medical file

8 - The length of the patient at the start of dialysis: -------- - patient's medical file

Family medical history

9 - Is one of your family (father, mother, brother, sister) suffers from a disease?

* diabetes mellitus: No   Yes

*hypertension: No   Yes

*cardiovascular disease: No   Yes

* Kidney disease: No   Yes

* End Stage Renal failure: No   Yes

16 - Do you got the End Stage Renal Disease suddenly ?

No   Yes

17 - Do you got the End Stage Renal Disease gradually ?

No   Yes

18 - Do you got a rise in blood impurities gradually?

No   Yes

19 - Do you take analgesic drug frequently?

No   Yes   * If the answer is yes

- type of medication intake   (   )   the patient's medical file
-The length of time the drug intake (   )

20 - Did End Stage Renal Disease occur due to a hereditary disease?

No   Yes   * If the answer is yes

- type of disease (   ) the patient's medical file

21 - Did End Stage Renal Disease as a result of other diseases?

No   Yes   * If the answer is yes

- type of disease (   ) the patient's medical file

22 - Did End Stage Renal Disease as a result of an incident involving a patient?

 No   Yes

Student name: kazem nazme

Thank you for your cooperation

Appendix (B)

كليه الدراسات العليا

ماجستير صحة عامه

استبيان عن الأسباب التي تودي إلى حدوث الفشل الكلوي النهائي في شمال الضفة الغربية

صممت هذه الدراسة لتحديد الأسباب التي تودي إلى تطور مرض الكلى ووصوله لمرحلته

النهائية التي تستلزم إجراء الغسيل الكلوي, مع العلم أن هذه المعلومات ستستخدم لأغراض

البحث العلمي و ستعامل بالسرية التامة, لذا يرجى التعاون معنا في تعبئة هذه الاستبيان

الرقم المتسلسل: ------------------------ التاريخ ------------

تاريخ البدء بغسيل الكلى:-------------- الملف الطبي للمريض

المدة الزمنية لغسيل الكلى(بالأشهر): ------------------

عزيزي مريض الكلى :

الرجاء وضع إشارة (√) بداخل المربع الذي يتفق وحالتك :

بيانات شخصية:

1- الجنس :   ذكر   أنثى

2- تاريخ الميلاد: اليوم-----------الشهر-----------السنة--------

3- العمل   :   ------------------

4- المحافظة: جنين   نابلس

طولكرم   قلقيلية

5- مكان السكن: ----------------

6- هل أنت مدخن ؟

نعم   لا   * إذا كانت الإجابة نعم أكمل السؤال ؟

- في أي عمر بدأت التدخين: -----------------

- كم سيجاره تدخن في اليوم تقريبا: --------------------

7- وزن المريض عند بدء الغسيل : ---------   الملف الطبي للمريض

8- طول المريض عند بدء الغسيل : ---------   الملف الطبي للمريض

التاريخ المرضي العائلي

9- هل احد من أفراد أسرتك(أب ,أم ,أخ ,أخت) يعاني من مرض ؟

* السكري :   نعم   لا

*الضغط :   نعم   لا

* شرايين القلب: نعم   لا

*أمراض الكلى :   نعم   لا

*الفشل الكلوي النهائي: نعم   لا

التاريخ المرضي للمريض:

10- هل كنت تعاني من مرض السكري قبل حدوث الفشل الكلوي النهائي؟

نعم   لا   * إذا كانت الإجابة نعم أكمل السؤال ؟

*نوع السكري الذي يعاني منه المريض: ----------------

* تاريخ حدوث مرض السكري: -----------------

* نوع العلاج الذي كنت تستخدمه: -----------------

11- هل كنت تعاني من مرض ارتفاع ضغط الدم قبل حدوث الفشل الكلوي النهائي؟

نعم   * إذا كانت الإجابة نعم أكمل السؤال ؟   لا

تاريخ حدوث مرض الضغط: -----------------

12- هل كنت تعاني من مرض القلب والشرايين قبل حدوث الفشل الكلوي النهائي؟

نعم   * إذا كانت الإجابة نعم أكمل السؤال ؟   لا

– تاريخ حدوث مرض شرايين القلب: -----------------

13- هل كنت تعاني من عيوب خلقيه في الكلى والمسالك البولية؟

نعم   لا

*إذا كانت الإجابة نعم نوع المشكلة   (   )   الملف الطبي للمريض

14- هل كنت تعاني من حصى في الكلى والمسالك البولية؟

نعم   لا

15- هل كنت تعاني من التهابات متكررة في الكلى و المسالك البولية؟

نعم   لا

*إذا كانت الإجابة نعم نوع الالتهاب (   )   الملف الطبي للمريض

16- هل حصل الفشل الكلي بشكل مفاجئ؟   الملف الطبي للمريض

نعم   لا

17- هل حصل الفشل الكلوي بشكل متدرج؟   الملف الطبي للمريض

نعم   لا

18- هل حصل ارتفاع في نسبه شوائب الدم بشكل متدرج؟   الملف الطبي للمريض

نعم   لا

19- هل كنت تتناول الادؤية المسكنة بشكل متكرر؟

نعم   لا

*إذا كانت الإجابة نعم نوع الدواء المتناول   (   )   الملف الطبي للمريض

* طول الفترة الزمنية للدواء المتناول   (   )

20- هل حصل الفشل الكلوي بسب مرض وراثي؟

نعم   لا

*إذا كانت الإجابة نعم نوع المرض   (   )   الملف الطبي للمريض

21- هل حصل الفشل الكلوي نتيجة أمراض أخرى؟

نعم   لا

*إذا كانت الإجابة نعم نوع المرض   (   )   الملف الطبي للمريض

22- هل حصل الفشل الكلوي نتيجة لحادث تعرض له المريض ؟

نعم   لا

شكرا لحسن تعاونكم

الطالب : كاظم نظمي

Appendix (C)

Permission from ministry of health to conduct the study

Palestinian National Authority
Ministry of Health
General Hospital Directorate

السلطة الوطنية الفلسطينية
وزارة الصحة
الإدارة العامة للمستشفيات /المحافظات الشمالية

Nablus
TelFax : 09-384740
384773-384774-385956
P.O : 14

شاكس : 385956-09
384773-384774-384740
ص. ب : 14

الرقم : م. و/8/٦٢٣٦/٩-٢
التاريخ : ٢٧/١٢/٩--٢

الأخ مدير مستشفى   المحترم

تحية فلسطينية وبعد ،،

الموضوع : الطالب كاظم علي بشير غزالة

يرجى العلم بالموافقه على السماح لطالب الماجستير المذكور اعلاه /تخصص الصحة
العامة في كلية الدراسات العليا لجمع المعلومات وتوزيع استبيان على مرضى الفشل
الكلوي في المستشفى لاعداد الاطروحة الخاصة به

(الاسباب التى تؤدي الى الفشل الكلوي النهائي في شمال الضفة الغربية)
Major Risk Factors of End-Stage Renal Disease in Northern West Bank

مع الاحترام ،،

المقدير/علم الإدارة العامة المستشفيات
Capital of Arab Culture
د. نعيم صبرة
al - QUDS
2 0 0 9

نسخة   / الأخ مدير عام التعليم الصحي المحترم
2009/12/24

تم إعلام المعنى

جامعة النجاح الوطنية

كلية الدراسات العليا

الأسباب الرئيسية التي تودي الى الحدوث الفشل الكلوي النهائي في شمال الضفة الغربية

إعداد

كاظم نظمي بشير

إشراف

د . حليمة الصباح

2011

الأسباب الرئيسية التي تودي الى الحدوث الفشل الكلوي النهائي في شمال الضفة الغربية

إعداد

كاظم نظمي بشير

إشراف

د . حليمة الصباح

الملخص

إن انتشار مرض الفشل الكلوي النهائي يزداد بسرعة بين السكان الفلسطينيين في السنوات القليلة الماضية ، ولذلك فمن المهم لدراسة العوامل التي تؤثر على هذه الزيادة.

الهدف من الدراسة:تهدف هذه الدراسة لتحديد الأسباب التي تودي إلى تطور مرض الكلى ووصوله لمرحلته النهائية التي تستلزم إجراء الغسيل الكلوي .

طريقه إجراء البحث: أجريت دراسة مقطعية في أربعة مراكز لغسيل الكلى في المستشفيات الحكومية في شمال الضفة الغربية ، وذلك باستخدام الاستبيان والمقابلات المباشرة مع مرضى الفشل الكلوي النهائي ، بالإضافة إلى استخدام السجلات الطبية للمريض.

عينه الدر اسه: جميع المرضى الذين يقومون بالغسيل الكلوي في شمال فلسطين.كان عدد المرضى أثناء فتره إجراء الدراسة 293مريض.

نتائج الدراسة:تكونت عينة الدراسة من (58.70 ٪) من الذكور ، والإناث (41.30٪). وكان متوسط العمر للذكور (55.6 سنة) ، في حين أن متوسط العمر للإناث (54.13). وكانت عوامل الخطر الرئيسية التي ترتبط بشكل كبير مع بداية حدوث مرض الفشل الكلوي النهائي في هذه الدراسة (داء السكري ,ارتفاع ضغط الدم ,أمراض القلب والشرايين,تكرار تناول الادويه المسكنة بالاضافه إلى التهاب الكلى والمسالك البولية).

في حين لم يكن هناك تأثير (لنوع العمل ،مكــان الســكن، التــدخين، مؤشــر كتلــة الجســم) في حدوث مرض الفشل الكلوي النهائي.

نحو (15.5 %) من جميع الحالات مرض الفشل الكلــوي النهــائي تحــدث بســبب مــرض وراثي.كما يمكن أن يسبب مــرض الكلــى المتعــدد التكيســات (11.2 %) مــن مــرض الفشل الكلوي النهائي في شمال الضفة الغربية .

كما يمكن أن يسبب سرطان المثانة و ســرطان البروســتات (4.7 %) فــي حــدوث مــرض الفشل الكلوي النهائي. كما يمكن أن يسبب تعــرض المــريض لحــادث (2 %) مــن مــرض الفشل الكلوي النهائي.

الخلاصة: إن أمراض الســكري ,ارتفــاع ضــغط الــدم ومــرض تصــلب شــرايين القلــب والتكرار في تناول الادويه المسكنة والتهاب المســالك البوليــة ويــرتبط بشــكل مباشــر مــع حودث الفشل الكلوي النهائي.