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**Illness Representations, Coping, and Quality of Life  
In Patients with Hepatitis C Undergoing Antiviral Therapy**

By

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**Background**

An individual's personal view of illness is determined by a variety of factors including the cause of the illness, its consequences, the chronicity of the illness, the symptoms experienced, and the potential for recovery. *Leventhal, Diefenbach, & Leventhal (1992)* refer to this personal view of illness as an "illness representation." These illness representations change over time and directly influence the coping strategies an individual uses to deal with the problems and emotions associated with the illness. Various emotional and physical outcomes result. One illness that is becoming prevalent is chronic hepatitis C, a virus that causes liver injury and eventually leads to the development of excessive fluid in the abdomen, changes in mental status, and high risk for bleeding. Individuals with hepatitis C often do not realize that they are infected with the virus until irreparable liver injury has occurred and a liver transplant is required.

**Hepatitis C**

Viral infections increasingly result in chronic disease. This is particularly true for hepatitis C, which results in chronic illness in over 80% of infected patients. The existence of a viral hepatitis other than hepatitis A and hepatitis B was first noted in 1974 when epidemiologic findings documented that most cases of post-transfusion hepatitis were related to a virus other than hepatitis A or hepatitis B. Originally, the disease was given the name "non-A, non-B hepatitis;" the name was changed to "hepatitis C" after identification of the virus in 1989 (*American Academy of Pediatrics, 1998; Coppola et al., 2004; Hoofnagle & Heller, 2003; Iosue, 2002*). Hepatitis C is the most common blood-borne infection in the United States. It is estimated that 7-10% of people who received transfusions in the mid-1980s became infected with the hepatitis C virus (*Greenberger, 1998*).

Because of mandatory testing of the nation's blood supply, the current risk of contracting transfusion-related hepatitis C is minimal. The

hepatitis C virus (HCV) affects close to three percent of the world's population, approximately 200 million people. It is the most common cause of chronic hepatitis and cirrhosis and is the most predominate indication for liver transplantation in the USA (*Rodriguez Rosado, Perez-Olmeda, Garcia-Samaniego, & Soriano, 2001; Vachhani & Bank, 2002*). Acute hepatitis C accounts for twelve to sixteen percent of the cases of acute viral hepatitis in the United States and has decreased significantly over the last fifteen years with the development of tests for HCV antibodies in donated blood and the decline in injection drug users from the high prevalence in the 1960s, 1970s, and 1980s. Chronic infection with the HCV affects 170 million people worldwide, including 2 to 3 million individuals in the United States (*Hoofnagle & Heller, 2003; Lee & Harrison, 2005*). In some parts of the world, more than 10% of the population is infected with chronic HCV (*Lapane, Jakiche, Sugano, Weng, & Carey, 1998*). Thirty thousand to thirty-six thousand new infections occur annually (*Chung, 2005; Coppola et al., 2004; Iosue, 2002; Lehman & Cheung, 2002*).

Although the incidence of acute hepatitis C is decreasing, largely due to better screening of the blood supply and the enactment of more stringent universal precautions, the recognition of patients with chronic hepatitis C infection continues to rise (*Lee & Harrison, 2005*). Because many of these persons are less than 50 years old, a significant future disease burden is expected and a high rate of newly discovered cases is likely to persist (*Hilsabeck, Castellon, & Hinkin, 2005; Iosue, 2002; Lee & Harrison, 2005*). Testing of blood donors reveals that 0.1 percent to 0.6 percent are positive for antibodies to HCV and approximately 70 percent of these also harbor HCV RNA, indicating chronic infection (*Hoofnagle & Heller, 2003*). Seventy-five percent of patients are not jaundiced and have only nonspecific symptoms. Five percent of people infected with HCV are completely unaware of their infection. In fact, hepatitis C infection is often asymptomatic until severe liver damage becomes apparent decades after the initial infection (*Dusheiko, 1996; Greenberger, 1998*). It is estimated that only 25-30% of patients infected with HCV are sufficiently symptomatic to seek medical attention (*Mendez et al., 2001*). Most patients discover their chronic HCV status by routine serologic testing during blood donation or insurance screening (*Iosue, 2002*).

**Transmission**

HCV is transmitted most efficiently through parenteral routes, such as blood product transfusion, intravenous drug abuse, accidental needle sticks, and prenatal infection. Other modes of transmission include intranasal cocaine use, sexual transmission, medical procedures, hemodialysis, household contacts, and perinatal spread (*Chapko et al., 2005; Hoofnagle & Heller, 2003; Hoshiyama, Kimura, Fujisawa, Kage, & Kato, 2000*). Prior to 1992, the most common mode of transmission was through infected blood product administration. Because of routine testing for antibodies to HCV in donated blood, transfusion-associated HCV infection now occurs in less than 1 per 100,000 transfusions and accounts for only four percent of acute HCV infections (*Iosue, 2002*). Currently, the most common risk factor for acquiring acute hepatitis C is through injection drug use due to the ongoing risk of exposure, accounting for 50-60 percent of cases (*Chung, 2005; Hoofnagle & Heller, 2003; Iosue, 2002*). Intravenous drug users have an average HCV prevalence rate of eighty percent. In fact, 80-90% of intravenous drug users test positive for HCV within months after beginning injection (*Iosue, 2002; Lapane et al., 1998; Renou & Halfon, 2005*).

Because of shared routes of transmission, co-infection with hepatitis C, hepatitis B, and HIV is common and has been estimated to be between sixteen and twenty-five percent (*Lee & Harrison, 2005; Sterling, 2003*). Because of the risk of exposure to infected blood, certain groups experience a higher prevalence of HCV infection than is present in the rest of society. These groups include patients on hemodialysis, institutionalized or incarcerated individuals, and veterans. The spread of HCV infection in hemodialysis units is mainly due to nosocomial transmission from patient to patient (*Barril & Traver, 2003*). HCV prevalence rates may be seven to nine percent in veterans due to prior and current injectable drug use; this prevalence is approximately four-fold the national average (*Hauser et al., 2002*).

**Pathology of HCV**

Hepatitis C is a single-stranded ribonucleic acid (RNA) virus belonging to the family *Flaviviridae* (*Hoofnagle & Heller, 2003; Rodriguez-Rosado et al., 2001*). A distinctive feature of HCV is the diversity of its RNA sequence. When RNA sequences differ by greater than 30% between samples, a different genotype is said to exist; currently there are six identified HCV genotypes (*Novick et al., 1997*). Within genotypes, a 10 to 30% variation in RNA sequencing is identified as a

subtype. In the United States, genotype 1a comprises fifty-seven percent of the cases of hepatitis C; genotype 1b accounts for seventeen percent. Genotype 2a accounts for four percent; genotype 2b accounts for an additional eleven percent. Genotype 3 accounts for seven percent, and genotypes 4, 5, and 6 account for the remaining four percent. Clinically, the identification of HCV genotype is important in determining likelihood of response to treatment, with genotypes 1 and 4 more likely to be resistant (*Apolinario et al., 2002; Hoofnagle & Heller, 2003*).

HCV replication occurs primarily in the liver after binding to a cell-surface receptor followed by entry of the virus into the hepatocytes and uncoating of the viral genome (*Fanning et al., 2001; Hoofnagle & Heller, 2003; Shaffer, 2000*). Liver histology of chronic HCV is characterized by hepatocellular injury, necrosis, portal and parenchymal inflammation, and variable degrees of fibrosis. Approximately thirty percent of patients with chronic hepatitis C will have persistently normal liver enzymes (*Lee & Harrison, 2005*). Patients with normal enzymes and no symptoms may have significant inflammation, and patients with normal physical findings and hepatic synthetic function may have considerable fibrosis (*Romagnuolo, Jhangri, Jewell, & Bain, 2001; Shehab et al., 2003*). A liver biopsy can be useful in determining the likelihood of progression of liver injury in chronic hepatitis C. Liver biopsies are not, however, without risk. A liver biopsy is associated with pain in 30% of patients, severe complications in 0.3%, and death in 0.03% (*Garcia & Keefe, 2001; Imbert-Bismut et al., 2001*). Liver biopsy results are reported as a “grade” and a “stage.” “Grading” refers to the assessment of the activity of the liver disease and the amount of hepatocellular injury and inflammation. “Staging” refers to assessment of the degree of fibrosis or permanent architectural liver damage (*Hoofnagle & Heller, 2003; Romagnuolo et al., 2001*). The histological hallmark of chronic hepatitis C is an infiltration of lymphoid cells in the portal tracts that disrupts the limiting plate, invading the surrounding parenchyma and leading to periportal or “piecemeal” necrosis (*Apolinario et al., 2002*). Chronic HCV progresses to the development of fibrosis, and fibrosis leads to the irreversible scarring and nodule formation that characterizes cirrhosis (*Iosue, 2002*). Moderate or severe inflammation and fibrosis have been associated with a more rapid progression to cirrhosis (*Garcia & Keefe, 2001*). Cirrhosis caused by hepatitis C occurs more frequently in men, in those infected after age 50, in those individuals with a high hepatic iron content, and in patients who consume more than six ounces

per day of alcohol. HCV genotype also plays a role in the development of cirrhosis (*Iosue, 2002; Ramalho, 2003*). The height of serum aminotransferase levels, duration of known infection, history of acute hepatitis, source of infection, and body weight generally do not correlate with the stage of fibrosis (*Hoofnagle & Heller, 2003*).

### **Acute versus Chronic Infection**

Acute HCV infection produces a wide range of clinical presentations, from asymptomatic to icteric illness. Fulminant hepatic failure attributable to acute HCV infection is rarely observed. Acute HCV infection can be separated into four phases: incubation, preicteric, icteric, and convalescence. The incubation period for acute hepatitis C lasts an average of 50 days (range of 15 to 75 days), during which HCV RNA becomes detectable in serum and levels of the virus gradually rise. Patients at this time are not symptomatic and antibodies to HCV (anti-HCV) are usually not detectable. The preicteric phase of the illness usually begins within 2 to 4 weeks of appearance of HCV RNA and is identified by a rise in serum aminotransferase levels. During this time, patients may experience malaise, weakness, poor appetite, nausea, low-grade fever, muscle aches, and right upper quadrant pain. Rash, hives, and arthralgias may also be present. During this time there are sharp increases in serum alanine aminotransferase and HCV specific T cells can be detected (*Chung, 2005*). The icteric phase of HCV begins with the appearance of dark urine and may be followed by jaundice that lasts four to six weeks. Symptoms typically worsen and it is at this time that the patient is likely to seek medical care. During the icteric phase, most patients are positive for HCV RNA, but only fifty to seventy percent have developed HCV antibodies. The convalescent phase begins with resolution of symptoms and return of appetite and stamina. Serum aminotransferases usually normalize within a few weeks of HCV RNA becoming detectable and titers of HCV antibodies rise (*Hoofnagle & Heller, 2003*).

An average of fifty-five to eighty-five percent of patients with acute HCV infection progress to chronic HCV infection (*Chapko et al., 2005; Chung, 2005; Coppola et al., 2004; Gerlach et al., 2003; Glacken, Coates, Kernohan, & Hegarty, 2003; Iosue, 2002*). Chronic hepatitis C is defined as the presence of antibody to HCV with intermittent or persistently abnormal liver function tests for more than 6 months or the presence of viremia for those with persistently normal liver function tests

(*Hoofnagle & Heller, 2003; Lehman & Cheung, 2002*). After chronic HCV infection is established, spontaneous resolution is uncommon. More than 98 percent of patients with chronic HCV test positive for anti-HCV. The remaining patients usually have some form of immunodeficiency preventing development of the HCV antibody, such as hypo- or agammaglobulinemia, HIV infection, renal failure, or treatment with immunosuppressive agents. Titers of anti-HCV rise later during acute hepatitis C and achieve higher and more sustained levels in patients who develop chronic infection than in those with acute hepatitis C that eventually resolves. The course of chronic hepatitis C may be milder in younger individuals and in women. Severe complications related to chronic hepatitis C are rare during the first two decades of infection (*Hoofnagle & Heller, 2003*). Patients with HCV do not die as a result of the viremia; they become ill and die because of the complications of cirrhosis and the associated pathology, including portal hypertension, ascites, GI bleeding, and hepatocellular carcinoma (*Lieber, 2001*). Twenty-five to thirty-five percent of patients with chronic HCV progress to cirrhosis, with an estimated 8,000-10,000 deaths occurring every year (*Lehman & Cheung, 2002; Ramalho, 2003*). Five to ten percent of those with chronic HCV infection develop cirrhosis within ten years and up to twenty percent develop cirrhosis within twenty years of onset (*Coppola et al., 2004; Cotler et al., 2000; Hoofnagle & Heller, 2003; Lee & Harrison, 2005*). Cirrhosis renders liver tissue dense and impermeable and impairs the organ's ability to filter blood and metabolize nutrients (*Shaffer, 2000*).

Chronic HCV infection is strongly associated with hepatocellular carcinoma, occurring in five percent of patients with HCV (*Lin & Keeffe, 2001; Moussalli, Opolon, & Poynard, 1998; Rodriguez-Rosado et al., 2001*). In patients with hepatitis C who drink even moderate amounts of alcohol, hepatocellular carcinoma develops in as many as fifty percent (*Lieber, 2001*). In immunocompetent persons, hepatocellular carcinoma typically develops 29 years after infection (*Koziel, 2005*). Serum alpha-fetoprotein (AFP) levels and hepatic imaging are widely used to screen for hepatocellular carcinoma in patients with chronic hepatitis C (*Gonzalez & Jacobson, 2005*).

### **Quality of Life in Patients with Hepatitis C**

Quality of life is a subjective concept with many dimensions. The term refers to objective life conditions (such as current functioning, living

conditions, and access to resources) or to subjective indicators of well-being, such as satisfaction with specific areas of life and with one's life in general (*Test, Greenberg, Long, Brekke, & Burke, 2005*). It includes health, personal accomplishments and resources, life situation, spirituality, activity level, and social support. Previously authors have defined quality of life as a multidimensional, subjective, personal evaluation of and satisfaction with the physical, social, psychological, and vocational aspects of one's life (*Baas, Beery, Fontana, & Wagoner, 1999*). Most measures of quality of life include an evaluation of the impact of health on several dimensions of life including psychological, social, occupational, and physical domains (*Burgess, Carretero, Elkington, Pasqual-Marsettin, Lobaccaro, et al., 2000*). Global quality of life includes a broad and general evaluation of one's life. Quality of life, however, can be affected by general health status and by a specific disease. Measures of health-related quality of life are frequently used to evaluate how a health problem changes the quality of life in a variety of dimensions. Health-related quality of life focuses on self-assessment measures that are related solely to health status. Health-related quality of life is a multidimensional construct that consists of biological and physiological domains, symptom status, functional status, and health perceptions (*Bennett, Perkins, Lane, Deer, Brater, et al., 2001*). Physical health influences psychological well-being and an individual's psychological state influences the perception of physical wellbeing (*Burgess et al., 2000*). Infection with HCV impairs health-related quality of life even in the absence of severe liver pathology (*Iosue, 2002; Thein, Krahn, Kaldor, & Dore, 2005*). Multiple studies have demonstrated that patients with chronic HCV infection score worse than matched controls on health-related quality of life indices (*Barkhuizen et al., 1999; Cotler et al., 2001; Forton et al., 2001; Forton, Taylor-Robinson, & Thomas, 2003*). In hepatitis C patients on antiviral therapy, health related quality of life decreases with treatment then returns to the pretreatment level within 24 weeks after discontinuance of therapy. Components of health related quality of life most often affected by antiviral therapy were: role-physical, vitality, social functioning and role-emotional (*Ware, Bayliss, Mannocchia, Davis, and the International Hepatitis Interventional Therapy Group, 1999*). Quality of life may be related to the individual's cognitive representations of illness and treatment (*Covic et al., 2004*). Those who are hepatitis C positive also suffer from poor mental health with depression, anxiety, stress, and a sense of hopelessness

commonly being reported (*Copeland, 2004; Forton et al., 2003; Hilsabeck et al., 2005*). These psychological difficulties may impair health-related quality of life in patients with HCV (*Lehman & Cheung, 2002*). The most common psychiatric disorder in persons infected with HCV is depression, with approximately twenty-eight percent of patients meeting diagnostic criteria for major depressive disorder, dysthymia, or other depressive disorders. Anxiety disorders are the second most common psychiatric disorder, with rates ranging from eighteen to twenty-six percent. Bipolar disorder, psychotic disorders, and personality disorders have even higher prevalence rates of six percent, seventeen percent, and thirty percent, respectively in veterans with hepatitis C (*Hilsabeck et al., 2005*). Other neurocognitive difficulties include problems with concentration and slowed information processing speeds. The pattern of neurocognitive deficits in HCV-infected persons is suggestive of frontal-subcortical dysfunction, with complex attention, concentration, information processing, and psychomotor speed being impaired. High levels of neuropsychiatric symptomatology are associated with decreased health-related quality of life (*Hilsabeck et al., 2005*). Many extra-hepatic manifestations of HCV infection are possible with rheumatic symptoms being among the most common (*Barkhuizen et al., 1999; Iosue, 2002*). *Barkhuizen et al.* found musculoskeletal pain to be present in over seventy-five percent and fatigue was present in over fifty percent of all patients in a university-based hepatology clinic. In fact, fatigue is the cardinal symptom of hepatitis C infection, reported by thirty-nine to one-hundred percent of HCV-infected persons (*Forton et al., 2003; Glacken et al., 2003; Hilsabeck et al., 2005*). It is multidimensional in nature and is both acute and chronic (*Glacken et al., 2003*). These symptoms are unrelated to the severity of liver disease, route of infection, or antiviral therapy. Other extra-hepatic manifestations of hepatitis C occur in thirty to forty percent of patients. These include hematologic disorders (mixed cryoglobulinemia, monoclonal gammopathies, lymphoma), autoimmune disorders (hypothyroidism, sialoadenitis, idiopathic thrombocytopenic purpura), ophthalmologic disorders (corneal ulcers, uveitis, scleritis, siccasynndrome), renal disorders (membranoproliferative glomerulonephritis, membranous nephropathy), and dermatologic disorders (porphyria cutanea tarda, leukocytoclastic vaculitis, lichen planus) (*Lee & Harrison, 2005; Mendez et al., 2001*). Hepatitis C is largely a disease of injectable drug users, a marginalized and unpopular group in society (*Copeland, 2004*).

In their study, *Zickmund, Ho, Masuda, Ippolito, and LaBrecque (2003)* found that fifty-seven percent of hepatitis C patients experience stigmatization attributable to HCV infection. The researchers defined stigmatization as “attitudes expressed by a dominant group which views a collection of others as socially unacceptable.” This stigmatization was associated with an increase in emotional problems. Stigmatization can affect the self-esteem and quality of life of the affected individuals. Three themes developed to explain why participants felt stigmatized: 1) society’s association of hepatitis C with HIV/AIDS, 2) society’s association of hepatitis C with promiscuity, and 3) society’s association of hepatitis C with substance abuse. Stigmatization in the workplace and by healthcare workers was also present in addition to hardships within the participants’ own families.

### **Treatment of Chronic HCV Infection**

Therapy for HCV infection is aimed at eliminating active viral replication and clearance of the virus, with the benefits of inhibition of fibrosis progression, prevention of hepatic failure, and prevention of hepatocellular carcinoma. According to *the National Institutes of Health Consensus Development Conference on Management of Hepatitis C (2002)*, current indications for treatment include individuals 18-60 years of age who have HCV RNA in serum, elevated serum aminotransferase levels, a liver biopsy showing fibrosis or moderate-to-severe necroinflammatory activity, and no contraindications to treatment. All patients with chronic hepatitis C are potential candidates for treatment, especially those at risk for ultimately developing cirrhosis. Factors predictive of a good response to therapy include infection with genotypes 2 or 3, female gender, age less than 40, HCV RNA titer less than  $2 \times 10^6$  copies/ml, and minimal liver fibrosis (*Romagnuolo et al., 2001*). Relative contraindications to therapy are decompensated liver disease, coronary or cerebrovascular disease, renal insufficiency, solid organ transplantation, severe neuropsychiatric disease, anemia or bone marrow insufficiency, active substance abuse, and active autoimmune disease. Absolute contraindications to treatment include pregnancy, breast-feeding, and the inability to practice birth control (*Lee & Harrison, 2005; Lin & Keeffe, 2001*). Clearance of hepatitis C virus is more likely in those treated with alpha interferon than in untreated patients (*Koff, 2000*). Alpha interferon was first shown to improve serum aminotransferase levels and liver histology in chronic hepatitis C in 1986 when the disease was still known as non-A, non-B hepatitis. It was approved by the Food and Drug

Administration in 1991 for the treatment of chronic hepatitis C (*Lin & Keeffe, 2001*). Interferons are naturally occurring cellular proteins with a variety of actions, including induction of an antiviral state in their target cells, cytokine secretion, recruitment of immune cells, and induction of cell differentiation (*Pawlotsky, 2003*). They are produced predominantly by leukocytes in response to viral infection and they inhibit replication of many viruses (*Lin & Keeffe, 2001; Moussalli et al., 1998*). Synthetic interferon reduces serum alanine aminotransferase levels, improves histological activity, and eliminates HCV RNA. It has been associated with a decreased incidence of hepatocellular carcinoma (*Kainuma et al., 2002*). Pegylated forms of alpha interferon are slow-release, long-acting formulations of interferon that have been developed and have improved response rates even further with an overall sustained virologic response rate of fifty-four to fifty-six percent. With pegylated forms of interferon, the rate of absorption following subcutaneous injection as well as renal and cellular clearance of the drug is reduced, allowing the steady state concentration of drug in plasma to be prolonged (*Lee & Harrison, 2005; Lin & Keeffe, 2001; Pawlotsky, 2003*). The usual dose of interferon depends on the formulation and product. Standard alpha interferon is given three times weekly by subcutaneous injection; the pegylated forms of alpha interferon are given once weekly. Ribavirin is a drug used in addition to interferon. The drug exerts broad-spectrum antiviral activity against viruses and leads to intracellular virus stasis (*Moussalli et al., 1998*). Ribavirin's effects are related to its capacity to modulate the immune response and possibly to enhance the action of interferon alpha by accelerating the clearance of infected cells (*Pawlotsky, 2003*). Ribavirin is usually administered orally twice daily. Initially, the rate of response for a 24-week course of alpha interferon was only five to fifteen percent. Extending therapy to 48 weeks increased the sustained response rate to twelve to twenty percent. The addition of ribavirin to alpha interferon increased the rate of sustained virologic response to 35 to 45 percent (*Coppola et al., 2004; Cotler et al., 2001; Lee & Harrison, 2005*). A 24- or 48-week course of interferon plus ribavirin is now standard therapy for patients with chronic hepatitis C (*Hoofnagle & Heller, 2003; Koff, 2000; Nilda & Alvaro, 2000; Soffredini et al., 2004*). Patients with genotype 1 require a 48-week course of therapy (*Hoofnagle & Heller, 2003; Iosue, 2002*). A 24-week course of therapy was found to be similar in efficacy to a 48-week course of therapy in patients with genotypes 2 or 3 regardless of initial viral level. Overall the sustained

virologic response is now approaching 60 percent. When divided into specific genotypes, the sustained virologic response rate for genotype 1 is 42 percent to 56 percent and the sustained virologic response for genotypes 2 and 3 is 76 percent to 82 percent (*Lee and Harrison, 2005; Sacks et al., 2004*).

### **Side Effects of Combination Therapy**

Health-related quality of life scores improve with successful antiviral treatment (*Forton et al., 2001; Iosue, 2002*). However, side effects of antiviral therapy are severe enough to require discontinuation in ten to twenty percent of patients and dose reduction of interferon and/or ribavirin in forty to forty-two percent of patients (*Iosue, 2002; Lin & Keeffe, 2001*). An influenza-like syndrome after the initial injection of alpha interferon is common. Symptoms usually begin six to eight hours after the first injection and persist for eight to sixteen hours. The symptoms may be delayed and persist longer with the pegylated forms of interferon. Most often these symptoms include fever, chills, malaise, muscle aches, headaches, nausea, diarrhea, fatigue, mental disorders, alopecia, hematological changes, thyroid dysfunction, and poor appetite (*Iosue, 2002; Lin & Keeffe, 2001*).

Other side effects include nausea, myalgia, abdominal discomfort, pruritis, skin disorders, pruritis, diarrhea, headaches, throat congestion with chronic rhinitis, sinusitis, throat irritation, earache, hyperuricemia, cough, depression, and nervousness (*Moussalli et al., 1998*). These side effects are usually mild and tolerable but can be unpredictable in severity and timing and result in a reduced quality of life. Alpha interferon is myelosuppressive, resulting in decreases in red blood cell, white blood cell, and platelet counts. Ribavirin causes hemolysis of red blood cells and a mild leukopenia. Neutropenia is another common side effect (*Lee & Harrison, 2005*). This myelosuppression and hemolysis results in anemia commonly being seen in patients treated with combination pegylated interferon and ribavirin. More than fifty percent of patients will experience at least a 3g/dL drop in hemoglobin during therapy, usually within the first two to six weeks of therapy. Additionally, alpha interferon can induce autoantibodies. One to three percent of patients develop an autoimmune disorder while on therapy with thyroiditis being the most common autoimmune disorder (*Lin & Keeffe, 2001*). Psychological side effects of antiviral therapy are also common (*Cheung & Ahmed, 2001; Hoofnagle & Heller, 2003*). A study by *Howes & McKenzie (2000)*

found that sixty-three percent of patients experienced neuropsychiatric side effects after starting interferon therapy.

Seventeen to thirty-five percent of patients develop some degree or worsening of depression, irritability, anxiety, post-traumatic stress disorder, or moodiness. Depression is the most common psychological problem and is often accompanied by fatigue, lethargy, and lack of interest in usual activities. It usually develops within the first twelve weeks of therapy. Other common neuropsychiatric side effects include irritability, emotionality, anxiety, sleeplessness, encephalopathy, confusion, coma, and acute psychosis. Patients may present with apathy, mood disturbances, anhedonia, insomnia, sexual dysfunction, or cognitive impairment. Suicides have also been reported (*Lee & Harrison, 2005; Lehman & Cheung, 2002*). These side effects negatively impact quality of life. The reported incidence rates of interferon-induced Major Depressive Disorder (MDD) range from 0-70% for all diseases and from 0-44% for those receiving treatment for chronic HCV infection (*Hauser et al., 2002*). Adjunctive antidepressant treatment can reverse interferon-induced depression and thus allow continuation of antiviral therapy. However, interferon-induced depression may become sufficiently serious to result in dose reduction or even premature discontinuation of therapy, negatively impacting the patient's quality of life (*Kainuma et al., 2004*). Symptoms generally resolve rapidly, within 2 weeks of stopping interferon alpha (*Howes & McKenzie, 2000*).

Clearly, individuals infected with chronic hepatitis C experience difficulties not only because of the hepatic and extra-hepatic signs and symptoms related to their infection, but also because of the difficulties inherent in antiviral therapy. The difficulties faced include both physical and psychological manifestations of the disease and its treatment as well as stigmatization from members of society. This can impact both health-related quality of life and one's overall sense of well-being.

### **The Common-Sense Model of Illness Representation**

In the late 1960s and early 1970s studies of the result of fear communications on health related behaviors demonstrated that the development and implementation of an action plan were related not only to fear itself, but to some changed way of the individual's thinking in regards to the health threat. This finding led to the development of the Theory of Self-Regulation, which is currently referred to as the Common-Sense Model of Illness Representation (*Diefenbach & Leventhal, 1996*).

The Common-Sense Model (CSM) provides an overall framework that integrates social and contextual factors with an individual's cognition and affect and was formulated to explain illness-related behavior, including adherence to treatment recommendations within the context of chronic illness (*Horne & Weinman, 2002; Leventhal et al., 1992*). The model depicts a self-regulative system that integrates both cognitive and emotional illness representations, coping procedures used to manage the illness representation, and criteria used by the individual to evaluate the outcomes of the coping processes (*Hagger & Orbell, 2005; Leventhal et al., 1992*). Its developers propose that individuals construct schematic representations of illness and health threatening conditions according to the concrete and abstract sources of information available to them. Illness representations are multidimensional and have a common content across illnesses.

Multiple cultural, social, and psychological factors influence the development of illness representations, the perceived availability of treatment and prevention, the subsequent behaviors, and the criteria used for evaluating outcomes of treatment. Personal and environmental factors include prior illnesses, an individual's somatic self, depression, activity level, and personality traits such as optimism or attributional styles. Social and cultural factors include the ease with which the sick role is implemented, the consistency of the individual's beliefs with the main cultural environment, and the consistency of the individual's beliefs with the beliefs of the health care provider (*Diefenbach & Leventhal, 1996; Leventhal et al., 1992*). Irrelevant past experiences and social myths can predominate in the interpretation of the stimuli and generate illness representations and self-regulative systems which are false. From the perspective of the CSM, successful treatment requires the replacement of a self-regulative system that is false with one that is coherent and valid (*Leventhal et al., 1992*).

### **Illness Representations**

According to the CSM, illness representations guide coping behaviors and influence both psychological and physical outcomes. An individual determines the nature of a threat, appraises the resources to deal with the situation, and then engages in cognitive and/or behavioral actions to cope and lessen the impact of the perceived stressful situation and functional limitations (*Livneh & Wilson, 2003; Puhl & Brownell, 2003*). Appraisal of the situation is highly dependent upon one's own personal construction

of what a particular illness is, how it occurred, and the likely outcomes. The ways individuals perceive and respond to a health threat depend on the ways the health threat is represented in their own minds. These illness representations are derived from prior experiences and guide the processing of information in a fashion consistent with prior knowledge. Patients have their own beliefs about their illness and plan their actions to confront the problems at hand on the basis of these beliefs. Leventhal suggests that individuals will exhibit a characteristic illness representation profile for each illness according to its symptomatic features and chronicity (*Hagger & Orbell, 2005*). Illness representations serve as the goals or targets for coping, and coping is appraised or evaluated against these representations (*Fortune, Richards, Griffith, et al., 2002; Helder et al., 2002*). Three sources of information are used to construct illness representations: 1) the generalized pool of illness information currently in the culture; 2) informal social communication or information obtained more formally in direct contact with health care practitioners; and 3) the individual's personal illness experience (*Shaw, 1999*). Five components make up the cognitive illness representation: 1) cause; 2) consequences; 3) controllability/cure; 4) identity; and 5) timeline. These dimensions of the overall illness representations are interrelated and function as groups of beliefs instead of as single cognitions (*Covic et al., 2004*). The *cause* component defines the patient's beliefs regarding what caused the illness (i.e. genetics, poor lifestyle choices, bacteria, etc.). The *consequences* component includes the individual's beliefs about the impact of the illness in terms of personal experiences, economic hardships, emotional stress, social role, etc. The *controllability/cure* component includes the individual's beliefs regarding the responsiveness of the stimulus to interventions implemented both by the individual and by health care providers. The *identity* component includes the disease label and the individual's ideas about the somatic representations of that disease. It is an essential component of the illness representation and emphasizes the importance of somatic sensations as a trigger for cognitive and emotional processing. The *timeline* component includes the individual's beliefs about whether the illness is acute, chronic, or cyclical in nature (*Diefenbach & Leventhal, 1996; Leventhal et al., 1992*). Emotions are an integral component of the CSM. Simultaneous with the development of the cognitive illness representation, an emotional representation develops that is more subjectively experienced by the individual, creating feeling states such as depression, annoyance, anger, and anxiety. Emotion

can function in one of two ways. If the emotion is accompanied by an action plan, it can motivate the individual to engage in health care activities. If the emotion is overwhelming, however, little or no action will be taken (*Diefenbach & Leventhal, 1996*). Emotional representations are related to the cognitive representations and can influence cognitive illness representations in multiple ways including affecting the onset and progression of existing disease, increasing the difficulty of self-diagnosis and the decision to seek further care, altering attention to and the interpretation and elaboration of representations of somatic states, and affecting behavioral decisions in response to somatic changes (*Leventhal et al., 1992*). Emotional representations lead to specific coping strategies and appraisal processes and are likely associated with emotion-related outcomes (*Diefenbach & Leventhal, 1996; Leventhal et al., 1992*). Because of the simultaneous processing of both cognitive and emotional illness representations, the model is referred to as a “parallel processing model” (*Hagger & Orbell, 2005*).

### **Coping**

The categorization of the stimulus and the development of the cognitive and emotional illness representations lead to the selection and implementation of coping strategies directed toward management of the illness representations (*Diefenbach & Leventhal, 1996; Leventhal, Leventhal, & Robitaille, 1998*). Illness representations are directly related to coping and, via coping, are related to outcomes. Thus, coping is assumed to play a mediating role between illness perceptions and outcomes (*Heijmans, 1998; Helder et al. 2002*). A prerequisite for any mediation relationship is to establish that the independent variable (illness representations) is related to the dependent variable (health outcomes) (*Hagger & Orbell, 2005*). Adherence to treatment is often viewed as one of the behaviors that the patient can adopt in an attempt to cope with their illness. It was proposed by *Horne & Weinman (2002)* that adherence decisions are influenced by an interaction of personal beliefs about the necessity of the treatment for maintaining or improving health and concerns about the potential adverse effects of adherence. In deciding whether to adhere to a treatment regimen, the patient must decide whether the illness warrants treatment and whether the treatment is appropriate for their illness. Health care providers must understand the factors that influence an individual’s adherence to a treatment regimen or health

behavior for the management of illness and to identify appropriate targets for intervention (*Hagger & Orbell, 2005*).

### **Appraisal**

The final stage of the CSM involves appraisal of the outcomes of the coping interventions. The components of the cognitive and emotional illness representations establish questions and play a critical role in the appraisal of the effectiveness of these coping procedures (*Diefenbach & Leventhal, 1996; Leventhal et al., 1992*). The appraisal process includes determining barriers and facilitators to the successful performance of coping procedures, gains and losses experienced during the performance of coping procedures, and judgments regarding the efficiency and the effectiveness of the coping procedures (*Leventhal et al., 1998*). During the appraisal process, the progress of the coping actions is evaluated and compared with the anticipated and actual outcomes. Questions such as “Did the treatment have the desired effects?” are asked (*Diefenbach & Leventhal, 1996; Leventhal et al., 1998*). The appraisal of the coping strategies and their outcomes functions as a feedback loop and provides further stimuli, influencing and possibly altering the cognitive and emotional illness representations and leading to the implementation of new coping strategies (*Diefenbach & Leventhal, 1996; Hagger & Orbell, 2005*). This feedback loop promotes the cyclical nature of the self-regulatory model.

### **Implications for Nursing Practice**

- It is clear that illness representations impact the chronically ill individuals coping strategies and overall physical and mental health.
- Personal control was a dimension of illness representation that was significantly important in predicting each of the dependent variables.
- Any intervention that alters the components of the illness representation may, in fact, alter the choice of coping strategies and the individual’s quality of life. This is particularly important for the patient’s perceived control over a variety of factors.
- Nursing practice should include a holistic assessment of the individual patient’s overall illness representation and the concepts that make up that illness representation. Nursing interventions to alter the overall perception of illness should be

developed and tested as they may be effective in improving the outcomes of those with chronic illness.

- Also, nurses should assess preferred coping strategies to determine if they are the most effective coping strategies for the patient's situation. Some individuals do not have the resources available to use the most effective coping strategies; it is important for nurses to be aware of this deficit in encouraging and evaluating the effectiveness of patient coping.
- It is also important to remember that different stages of illness and different illness representations require different coping strategies to maintain positive outcomes such as quality of life. Individuals in this study that had undergone antiviral therapy before had significantly higher scores in life satisfaction and in perceived effectiveness of coping. Perhaps interactions with other individuals who have experienced the illness or treatment before would improve the quality of life of those experiencing the illness or treatment for the first time.

### **Implications for Nursing Education**

- Understanding individual beliefs about chronic illness are an important part in the understanding of the actions of the patient.
- Nursing education programs should include educational components that discuss illness representations, coping strategies, and quality of life.
- The models presented in this study are fairly easy to comprehend and provide a holistic view of illness.
- Undergraduate nursing education should focus on differences in illness representations, coping strategies, and quality of life that are associated with specific diseases and responsive to nursing interventions.
- Graduate nursing education should focus on the assessment of illness representations and coping strategies and the development of theoretically-derived nursing interventions aimed at improving outcomes.
- The goal of education at the Master's level should be to prepare individuals qualified to provide advanced nursing care to individuals with acute, chronic, and life-threatening illnesses.
- The goal of education at the doctoral level should be to prepare nurse scientists capable of developing models capable of predicting

responses to nursing interventions aimed at specific points in the theoretical framework.

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## **Effect of Preventive Regimens on the Rate of Recurrence Urinary Tract Infections among Elderly Women in Dwelling Community**

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### **Abstract**

Urinary Tract Infections (UTIs) are the most common bacterial infections encountered in elderly women than men and most of them who have had one UTI have occasional recurrences. A quarter to a half of these elderly women expect another infection within a year of the previous one. This study was designed to evaluate the effect of preventive regimens on the incidence of recurrence urinary tract infection among elderly women in dwelling community. This study was conducted at four villages namely: Sobrobus, Betabs, Kafer Tambedy and El-Batanon that follow Shebin El-Kom district in Menoufiya Governorate. A cross-sectional designed was used where elderly women were chosen according to the following inclusion criteria: elderly women aged > 60 years and having the clinical signs and symptoms of lower urinary tract infections which are" recent onset of urinary incontinence , new or increased burning pain on urination , increased frequency of urination , new low back pain , suprapubic tenderness or pain , changes in character of urine and worsening mental function such as confusion , lethargy , delirium and agitation ; in addition to other co-morbidities such as change appetite , anorexia nausea or vomiting , abdominal pain or cough and shortness of breath . Subjects were excluded if they had a course of antibiotic recently (within the last 3 weeks). A convenient sample of five hundred elderly women was selected during home visits. Out of these women, two hundred and twenty-eight were accounted for having the symptomatic criteria, while two hundred and seventy-two women were accounted asymptomatic criteria. Urine analysis was done for the elderly women with symptomatic & asymptomatic criteria to accounted the positive cases that having bacteriuria , the positive cases out of elderly women with symptomatic were one hundred and thirty –four and chosen three groups by using a systematic random sample , where each group equal twenty –five elderly women . Group1 was received standard antibiotic as prescribed by physician according to in–vitro sensitivity test and nursing intervention “preventive regimens , Group 2 was received standard antibiotic only as prescribed by physician , and Group 3 " Control group" not received anything either medication or nursing intervention . All of

three groups were followed up for one year to determine rate of recurrence. The findings revealed that the incidence rate of second and third episodes of recurrence UTIs were higher among all the third group (control group that not received any intervention) compared to 16.0 % & 28.0% for the first group and 52.0 % & 72.0% for the second group.

Key words: Incidence, recurrence, urinary tract infection elderly women, preventive regimens

## **Introduction**

In the elderly, urinary tract infection is the most frequently documented bacterial infection in the lower urinary tract (LUTIs), as well as the most frequent cause of septicemia where one or more structures in the urinary tract become infected after bacteria overcome its strong natural defenses. It accounts for the second most common bacterial disease after respiratory infection in all aged groups. The elderly women are the ones most common affected and more than half of all women have at least one such infection during their lifetime (*Bently, Bradley, High; 2001*) & (*Nygaard & Johnson (1996)*).

The prevalence of UTI increases in both sexes with age; the female: male ratio is 2:1 in the elderly and in non- hospitalized elderly women is 30-40% and increased to 50 % especially among hospitalized elderly women (*Ronald & Pattullo, 1991*). The incidence of LUTIs increases with age and various dramatically with age and gender where LUTI is 30 times more common among women than men (*Nicolle, 2002 & Eberle, Winsemius & Garibaldi, 1993*). The biologic changes due to aging process put older women at particular risk for primary and recurring LUTIs : with estrogen loss the walls of urinary tract thin out , weakening the mucous membrane and reducing its ability to resist bacteria , the bladder may lose elasticity and fail to empty completely , urinary incontinence , estrogen loss has also associated with reduction in certain immune factors in the vagina that help block E.coli from adhering to vaginal cells , and levels of lacto-bacilli ( protective bacteria) decline after menopause due to drops in estrogen (*Gammack , 2002 ; Nicolle , 2002*) . In addition, many neurological diseases or disorders such as diabetes mellitus, cerebrovascular disease, Alzheimer's, and parkinson's disease lead to increase the risk of LUTIs ( *Hooton , Scholes & Hughes ;1996*) . Also there are many medical conditions that increase the risk of LUTIs such as kidney disorders, AIDs, immuno-suppressed patients, sickle- cell anemia and massive use of antibiotics. Elderly women who

have skin allergies to ingredients in soaps, vaginal creams, bubble baths, or other chemicals that are used in the genital area at high risk for LUTIs .While sexual activity plays a lesser role in occurrence of LUTIs (*Nicolle, 2001*). Another risk factors that were found unrelated to the development of LUTI include diet and personal hygiene (*Beyer ; Mergam , Benoit , et al. , 2001 & Kamel , 2004*) .

Classifications of LUTIs based on the symptoms and levels of infection. Many patients are asymptomatic. Asymptomatic bacteriuria is called when bacteria are present but there is no symptoms and should not be treated unless accompanied by symptoms that suggest a UTI ( *Kamel , 2004 ; Norman , Yamanura , & Yoshikawa , 1986*) .The diagnosis of symptomatic UTIs in older women can be defined by the classic presentation of lower UTIs symptoms : incontinence of recent onset , new dysuria, new or increased frequency of urination , new flank pain , and new suprapubic tenderness or pain . Even severe infection of UTI may not be associated with fever , in additional to other comorbidities such as mental change or confusion, lethargy, agitation, and anorexia nausea or vomiting , abdominal pain or cough and shortness of breath in association with UTI often cause a missed diagnosis or delay in diagnosis Urinary tract infection under these circumstances may lead to increased morbidity and mortality (*Nicolle, Mayhew & Bryan, 1987*).

About 80% of recurring UTIs are reinfections. A reinfection occurs several weeks after antibiotic treatment has cleared up the initial episode and caused by a different organism from the one that caused the original episode but relapse is the less common form of recurrent urinary tract infection and recurs within two weeks of treatment of the first episode and is caused by the same organism, it accounts in about 20% of recurrent UTIs (*Baldassarre & Kaye, 1991*).

The risk for UTIs, both symptomatic and asymptomatic, is highest in elderly women. Recurrent UTIs may cause scarring in the kidneys, which over time can lead to hypertension and eventually kidney failure, also recurrent UTIs may increase the risk for urge incontinence among elderly women. In additional to, kidney stones can be caused by urinary tract infection. Those known as struvite stones are almost always caused by urinary tract infections due to bacteria that secret certain enzymes. These enzymes raise urine concentrations of ammonia, which composes the crystals forming struvite stones. The stone-promoting bacterium is usually *Proteus*, but others include *Klebsiella*, and *Staphylococci*

(*Baldassarre & Kaye, 1991*). In addition acute symptomatic urinary infection can cause urinary incontinence, abscess formation, and obstructive uropathy.

Urinary discomfort and emotional distress are the primary concerns in most elderly women with recurrent UTIs. In addition to, significant impairment of a women's quality of life during symptoms periods which affected social function, vitality and emotional well-being. The community health nurse plays an important role in recognizing the risk groups with higher incidence of UTIs; prevent recurrence of infection by early detection of infected women and teaching elderly women to identify symptoms and self-treatment (*Lewis & Collier, 1999*).

### **Aim of the Study:**

This study was designed to evaluate the effect of preventive regimens on the incidence of recurrence UTIs among elderly women in dwelling community.

### **Material and Methods:**

#### **Design:**

##### **(A). Cross- Sectional design**

It was used to determine the prevalence of LUTIs and the risk factors accompanied with it by interviewing five hundred elderly women.

##### **(B). Interventional design**

It was used to instruct the elderly women about preventive regimens "how to administrate the described continuous preventive low-dose antibiotics for six months to a year and what are the hygienic measures that help them to modify risk factors that were found related to the development of LUTI and lead to the recurrence of LUTIs.

**(C). Follow up study** Was carried out for one year on the study sample of elderly women who having episode of LUTIs during the year to determine rate of recurrence .While the elderly women who were free of the symptoms and no complaints through this year, the follow-up urine analysis was carried out after six months to ascertain freeing of infection. Follow up was carried out at their home visits.

#### **Setting:**

The study was conducted at four villages; Shobrabus, Betebes, Kafer Tambedy and El-Batanon that located at Shebin El-Kom district in

Menoufiya Governorate. The researcher was selected these villages because of they were the clinical areas for students practice in Community Health Nursing.

### **Subjects:**

Elderly women aged > 60 years and having the clinical signs and symptoms of lower urinary tract infections : recent onset of urinary incontinence , new or increased burning pain on urination , increased frequency of urination , new low back pain , suprapubic tenderness or pain , changes in character of urine and worsening mental function such as confusion , lethargy , delirium and agitation ; in addition to other co-morbidities such as change appetite , anorexia nausea or vomiting , abdominal pain or cough and shortness of breath. Subjects were excluded if they had a course of antibiotic recently (within the last 3 weeks).

### **Tools:**

A questionnaire sheet was developed by the researcher based on the review of relevant literature. It comprised four parts:

**First Part:** included information related to socio-demographic data such as age, marital status, level of education, and socioeconomic status as the risk factors that help the development of LUTI s.

**Second Part:** included information related to the other risk factors that help the development of LUTIs : (I) medical illness such as kidney disorders, or massive use of antibiotics; neurological diseases including diabetes mellitus, cerebrovascular disease, Alzheimer's, and Parkinson's disease; immobilization , catheterization or dehydration; (II)Obstetric problems such as skin allergies to ingredients in soaps or vaginal creams, vaginal dryness or itching ; (III) Lifestyle factors such as diet & fluids intake ; personal hygiene and sexual activity.

**Third Part:** included information related to classifications of studied sample having LUTIs according to presence of the symptoms and bacteriuria.

**Forth Part:** information related to types of recurrence UTIs & its interval recurrence UTIs.

### **Methods:**

Each woman included in this study was informed about the aim of the study and all of them gave a informed consent before engaging in the

study. Data was collected from May 2006 till May 2007. The assessment sheet was developed by the researcher and validated by four Community Health Nursing and Maternal and New Natal Nursing experts. A pilot study was conducted on 15 elderly women, not included in the study, to test feasibility of the tool. Necessary modifications were done. A convenient sample of five hundred elderly women was selected during home visits. Out of these women, two hundred and twenty-eight were accounted for having the symptomatic criteria, while two hundred and seventy-two women were accounted asymptomatic criteria. Urine analysis was done for both the elderly women with symptomatic & asymptomatic criteria, the positive cases out of symptomatic criteria were one hundred and thirty –four and chosen from them three groups by using a systematic random sample, where each group equal twenty –five elderly women . Group1 was received standard antibiotic as prescribed by physician according to in–vitro sensitivity test and nursing intervention “preventive regimens, Group 2 was received standard antibiotic only as prescribed by physician, and Group 3 (control group) not received anything either medication or nursing intervention. All of three groups were followed up for one year to determine rate of recurrence. All the family caregivers were carefully instructed at the beginning of the study on the methodology and assess the elderly if needed. The subjects interviewed individually, the time of each interview was approximately 20 minutes. During the interview the researcher can detect if the elderly women have LUTIs symptoms or not through present history taking. The researcher completes the work by collecting the urine specimen for urine analysis by using "Clean – Catch Sample" that depends on a sample free of contaminants normally present at the opening of the urethra. To obtain an untainted urine sample , the researcher was required from each elderly woman was participated to follow these steps: First wash their hands thoroughly , then wash the vulva and surrounding area four times , with front-to-back strokes , using a new soapy sponge each time , then position the container to catch the middle portion of the stream , then urinate the reminder into the toilet , finally securely screws the container cap in place without touching the inside of the rim (*Graven & Hirne, 2000*). The urine sample was collected early in the morning because it is more concentrated than specimen collected later, this sample was sent within 1-2 hours of collection and not refrigerated for urine analysis where to the urine is spun in a centrifuge to allow sediments containing blood cells, bacteria, and other particles to collect (*Bannister, Begg, & Gillespi ,*

2000) & (Sleigh & Timbur , 1998). Urine analysis, then offers a number of valuable clues for an accurate diagnosis: simply observing the urine for color and cloudiness, acidity is measured, white blood cells are counted. A high a count of white blood cells (leukocytes) in the urine is referred to pyuria which is very accurate in identifying the disease when it is present. Pyuria is usually sufficient for a diagnosis of UTIs in elderly women if other standard symptoms are also present .Treatment can be started without the need for further testes. The researcher was performed a urine analysis for elderly woman who has episode of recurrence during the period of study.

Diagnostic criteria for LUTIs: Presence in urine at least 100,000 bacteria milliliter of any single type of bacterium per milliliter of urine usually provides conclusive evidence of infection in elderly women with symptoms. Diagnostic criteria for recurrent infection: when a positive current laboratory report and elderly women who have experience two or more symptomatic UTIs within six months or three or more over the course of a year. Recurring UTIs are reinfections or relapse (*Hunt & Waller, 1992*).

Relapse UTI: it is the less common form of recurrent urinary tract infection and recurs within two weeks of treatment of the first episode and is caused by the same organism (*Baldassarre & Kaye, 1991*). Reinfection UTI: it occurs several weeks after antibiotic treatment has cleared up the initial episode and caused by a different organism from the one that caused the original episode (*Baldassarre & Kaye, 1991*).

In-vitro antibiotic sensitivity test: Sensitivity is performed on all potentially significant isolated organisms (*Bannister et al., 2000*). Antibiotics sensitivity is identified 24 to 48 hour after the specimen is collected (*Roach, 2001*). Bacteria are grown on a culture medium and tested against different antibiotics to see which drug best destroys the bacteria (*Kunin, 1997*). Once bacteria are detected, it becomes more important to determine antibiotic sensitivities than to identify the bacterium itself (*Brumfitt & Hamilton- Miller, 1990*). This achieved by simple plating techniques and each laboratory uses routine screens based on local resistance (*Cardozo, 1997*)

Socioeconomic status : it was classified according to the equation of Al-Shakhs (1995); where socioeconomic status = [ 2.359+ ( X1 x 1.016) + ( X2 x 0.88) + ( X3 x 0.622 ) ] x 10 . Where X1=score of monthly per capita; X2=degree of family head job and X3= degree of family head

education. Socioeconomic level calculated by the given equation and the degree classified into (3) categories as follow: low, moderate, and high socioeconomic level. Socioeconomic level calculated by the given equation and the yielded degree classified into (7) categories as follow: very low, low, sub-moderate, moderate, up moderate, high, and very high. In this study the researcher modified these categories into 3 categories which are high, moderate, and low socioeconomic level. Socioeconomic Classes and its equation degree were classified as the following: Low = From 73 to < 96 degree; Moderate = from 121 to <144 degree; High = from 169 to < 192 degree.

#### Management of recurrent infections

The management of recurrent symptomatic urinary tract infections in elderly patients depends largely on the frequency of recurrence. All women with an initial episode of UTI should use preventive regimens instructions about how to administrate of antibiotics with hygienic measures "to prevent recurrences (*Nicolle, 2002; Beyer, Mergam & Benoit, 2001*); *Bently, Bradley and High, 2001*).

#### *(A) Regarding to administration of antibiotics (as physician order):*

Administration of antibiotics may vary depending on the circumstances:

**(i)** If recurrent UTIs and episodes recur more than three times per year describe continuous preventive low-dose antibiotics for six months to a year. Typical regimens include one dose of Nitrofurantoin (50 µg), one-half tablet of TMP- SMX [Sulfamethoxazole / Trimethoprim], or one dose of Cephalexin (250 µg) daily. Taking the antibiotics at the bedtime may be most effective. Taking TMP-SMX for as long as five years has been reported to be effective and well tolerated.

**(ii)** If the infection is related to sexual activity and episodes recur more than three times per year, a single preventive dose taken immediately after intercourse has proven to be very effective in many cases (Hooton, Johnson & Winter, 1991). Effective antibiotics in such cases include TMP-SMX, Nitrofurantion, Cephalexin, or a Fluoroquinolone (such as Ciprofloxacin) (Iravani A, Tice AD, McCarty J et al., 1995)

*(B) Antibiotic Treatment and Prevention of Reinfections*

**(i)** Long-term of antibiotic: was taken in the case of frequent or incapacitating symptoms. As a therapy by six weeks, the rate of reinfection is 18 % among those taking TMP-SMX

**(ii)** Short-term of antibiotics: was taken in the case of infrequent or each new episode. The rate of reinfection may be up to 40% in patients of other types.

*(C) Self Treatment:*

Elderly women with recurrent UTIs can accurately self-diagnose an infection and self-treat recurrent UTIs without going to a physician:

**(i)** As soon as the patient develops symptoms, she takes the antibiotic. Infections that occur less than twice a year are usually treated as if they were an initial attack, with single-dose or three-day antibiotic regimens.

**(ii)** At that time, she also performs a clean-catch urine test and sends it to the physician for culturing to confirm the infection.

After the researcher had assured that the elderly women received antibiotics therapy and became free of infection based on the negative results of urine analysis during follow-up period, the researcher taught the elderly woman about these preventive regimens:

*(A) Dietary intake:*

**(i)** Cranberries, Blueberries, and Ligonberries Cranberries, blueberries, and Ligonberry, a relative of the cranberry, are three fruits that may have protective properties. Encourage the elderly women that the red pigments in these closely related fruits to prevent E. coli bacteria from adhering to cells in the urinary tract, thereby inhibiting infection. Fructose, which is commonly used to sweeten fruit juices, may also interfere with bacterial adhesion. Cranberry juice offers well-known protection against infections. Its effects were stronger in helping the body rid itself of infections than in preventing them first place, but it showed benefits in both situations. It is necessary to drink at least one to two cups of 30% cranberry juice daily.

**(ii)** Probiotics, Lactobacilli, and Fermented Milk Products Probiotics (essentially friendly organisms), which may protect against infections in the genital and urinary tracts. The most well-known probiotics are the lactobacilli strains, such as acidophilus, which is found in yoghurt and other fermented milk products (e.g., kefir). Other probiotics include the lactobacilli rhamnosus, casei, planetarium. Lactobacilli have the potential

to help protect women from UTI In a number of ways: Maintain a low pH environment hinder E-coli growth. Produce hydrogen Peroxide, which produces an environment hostile for bacteria.

**(iii) Vitamin C:**

Taking vitamin C regularly may make urine more acidic that it prevents UTIs. Vitamin C rich in the orange and lemon juice.

**(B)\* Fluids intake:**

- Instruct the elderly women to empty the bladder frequently that will help prevent bladder irritation. Drinking 7-8 glasses plenty of water daily. Alcohol and coffee should be avoided.

**(C)\* Sexual Precautions**

The following recommendations may reduce the risks from sexual activity:

- \*Keep the genital and anal areas clean before and after sex.
- \*Urinate before and after intercourse to empty the bladder and cleanse the urethra of bacteria.
- \*Avoid usage of lubricant or oil with difficult intercourse. This can cause many psychological and health problems, including sexually transmitted diseases and UTIs.

**(F)Personal hygiene:**

All women with an initial episode of UTI should use hygienic measures to prevent recurrences.

- Avoid caffeine, alcohol, and spicy foods that can further irritate the bladder.
- Use several capsules of a probiotic (*Lactobacillus acidophilus*) regularly.
- Drink 8-10 glasses of water or other fluids each day to dilute bacteria in the urine.
- Eat plain yogurt to help control development of a yeast infection after taking antibiotics for a UTI.
- Cleanse well with soap and water before and after sexual activity. Your partner should do the same.
- Take showers instead of baths.
- Wear cotton underwear and loose-fitting clothes.

- After elderly women using the toilet, always wipe from front to back.

### **Statistical analysis:**

Data collected was coded, analyzed, tabulated and presented in descriptive and associated forms by the researcher and using SPSS statistical software.

### **Results:**

Table 1 shows that the prevalence of asymptomatic criteria was more higher 54.4 % than symptomatic criteria 45.6 % among all studied sample. Also the prevalence of positive urine bacterial count (> 100,000 organism /ml of urine) was represented 58.8% among elderly women having symptoms and 61.8% in asymptomatic cases.

Table 2 shows that socio-demographic data as the risk factors for developing UTIs among elderly women. The majority of symptomatic cases (58.8%) were found among group aged 74- years, while the majority among asymptomatic cases (54.4%) were found among group aged 60- years. Regarding to level of education and socioeconomic status, the majority of symptomatic cases (77.2% & 56.1 %) were found among illiterate and low socioeconomic respectively. While the majority of symptomatic cases (83.3 %) was married.

Table 3 shows that the most of symptomatic cases (53.5% & 49.1 % ) were had constipation and common cold respectively, while the previous insertion of catheter and neurological disease such as cerebrovascular disease and Alzheimer's were represented 17.5% 23.2 %, 8.8%, respectively). The majority among asymptomatic cases (50.7 %, 61.8 % & 68.4 %) were had diabetes mellitus, constipation and common cold respectively.

Table 4 illustrates obstetric history as a modifiable risk factor that help to develop UTIs among elderly women, above half of symptomatic cases (54.8% & 55.3 % respectively) showed that they had vaginal itching due to vaginal dryness or discharge and skin allergy of ingredients used for the genital area.

Table 5 concerning to the lifestyle factors of the studied sample that contribute to develop UTIs among elderly women. The majority of both symptomatic and asymptomatic of elderly women (93.9% & 80.1%) respectively were follow the wipe from back to front , while (63.2% &

80.9% respectively) among symptomatic and asymptomatic cases didn't assumed dryness of perineal area after urination or defection . Also 75.4 % from symptomatic cases & 68.4 % asymptomatic elderly women change perineal pad or underwear one time per day. Most of symptomatic cases (58.8%) were assumed to use tub bath during bathing compared to (47.1%) among asymptomatic cases. The higher percent of symptomatic & asymptomatic cases (71.1% & 52.9 % respectively) didn't clean genital area before and after sex. Regarding to dietary intake the most of symptomatic cases (61.4%) didn't eat yoghurt or other fermented milk while 85.3 % from asymptomatic cases can be yoghurt and other fermented milk products. All symptomatic & asymptomatic cases (73.7 % & 70.6% respectively) didn't eat or drink Cranberries juice daily , while 40% only from asymptomatic cases were maintain to drink about 7-8 glasses of water daily .

Table 6 clarifies that the main causative organisms in the first , second & third episodes for recurrent LUTIs among elderly women was E-coli that represented ( 85.3 % , 32.0% & 38.6% respectively ) , while Klebsiella was represented (13.3%, 24% and 14.6% respectively) and Staphylococci was represented (2.7%, 0.0% and 13.3% respectively).

Table 7 shows the main type of recurrence with each type of management in both second & third episodes. The main type of recurrence LUTIs among elderly women was re-infection that represented 16.0% & 24.0 % respectively among first group ; 40.0% & 64.0 % among second group and 72.0% & 80.0 % among third group, while the relapse in both second & third episodes was represented 0.00% & 4.0 % respectively among first group ; 12.0% & 8.0 % among second group and 28.0% & 20.0 % among third group .

Table 8 illustrates the interval of infections in both second & third episodes and in each elderly woman group. Regarding to interval of the second episode among group 1 who received preventive regimens , 4% of the elderly woman was infected after 14 to 26 weeks and 12% of them was infected after 27 to 52 weeks ; while 52% among second group who (received antibiotics only ) was infected after 14 to 26 weeks and all of the third group was infected after 1 to 13 weeks. In the third episode for recurrence UTIs, 8% of the elderly woman was infected

after 14 to 26 weeks and 20% of them was infected after 27 to 52 weeks ; while 72% among second group who (received antibiotics only )

was infected after 1 to 13 weeks and all of the third group was infected after 1 to 13 weeks.

Table 9 shows the incidence rate of second and third episodes of recurrence UTIs were higher among all the third group (control group that not received any intervention) compare to 16.0 % & 28.0% for the first group and 52.0 % & 72.0% for the second group.

### **Discussion:**

Urinary Tract Infections (UTIs) are the most common bacterial infections encountered in elderly women than men and most of them who have had one UTI have occasional recurrences. A quarter to a half of these elderly women expect another infection within a year of the previous one (*Hooton, 2001*). Because UTIs can be the result of more serious medical conditions, it is important to seek prompt medical advice for proper diagnosis and treatment. Diagnosis, prevention, and treatment can often be complex because clinical manifestations can be atypical and host defenses diminish with age. In addition to the symptoms such as lethargy , confusion , and anorexia in association with UTIs often cause a missed diagnosis or delay in diagnosis , UTIs under these circumstances may lead to increased morbidity and mortality (*Nicolle , Mayhew & Bryan, 1987 ; Foxman , 1990 ; Foxman , Barlow , D'Arcy , Gillespie & Sobel 2000*). Therefore the study aimed to assess the effect of preventive regimens on the rate of recurrence urinary tract infection among elderly women in dwelling community , as well as identify the factors that help to develop UTI among elderly women .The findings of this study showed that the prevalence of asymptomatic bacteriuria was more higher 54.4 % than symptomatic bacteriuria 45.6% among studied . This is consistent with (*Norman, Yamamura, &Yoshikawa, 1986; Kamel 2004*) who reported that the majority of elderly persons with UTI often are reported to have asymptomatic bacteriuria and symptoms of UTI in the elderly may be few and indefinite, even severe infection of the urinary tract may not be associated with fever. On the other hand, Asymptomatic bacteriuria is a common finding in the elderly, especially in women; the estimated cumulative prevalence is 30% in women and 10% in men (*Boscia &Kaye , 1987; Kamel 2004*).The present study also revealed that, the prevalence of positive urine bacterial count was higher with asymptomatic bacteriuria than symptomatic bacteriuria. This percent was supported by (*Nicolle, 1993*) who stated that, positive urine bacterial count was found that indicate elderly women has a UTI or asymptomatic

bacteriuria (positive urine bacterial count without dysuria, urinary frequency, incontinence of recent onset, flank pain, fever, or other signs of infection). Also this result is agree with (*Kamel 2004 ; Nicolle , Bjornson , Harding, & MacDonnell , 1983 ; Nicolle , Mayhew , Bryan, 1987* ) who found that asymptomatic bacteriuria is not a UTI and should not be treated unless accompanied by symptoms that suggest a UTI . The prevalence of asymptomatic bacteriuria among elderly women is estimated to be 10-50 %. Many prospective studies have shown that untreated asymptomatic bacteriuria did not result in increase morbidity or mortality.

Regarding to the socio-demographic data as the risk factors that related to the development of LUTI in elderly women. The current study revealed that, prevalence of LUTIs bacteriuria increase with age, less educated and low socioeconomic. This was in agreement with (*Nicolle , 2001*) who reported that the prevalence of UTIs increases with advancing age in both women and men. With advancing age, the female/ male ratio of UTI incidence narrows, approaching 2:1 in older. This change is attributed to the increased incidence of UTI among elderly men that accompanies the increased prevalence of the bladder outlet obstruction due to prostatic enlargement, as well as to the relative reduction in UTI incidence among elderly women due to decreased sexual activity. In relation to level of education, there was a relationship between prevalence of LUTIs bacteriuria and low level of education increase with, generally in rural Egypt country, education showed significant accompanied with morbidity conditions. In addition to, rural dwellers often delay in seeking health care until they gravely ill or incapacitated. This delay in seeking health care is consistent with their function-based definition of health (*Lee, 1989; Russo, Stapleton & Wenderoth, 1995*). Also the study revealed that, there was a relationship between prevalence of LUTIs bacteriuria and low socioeconomic status. This result supported by (*Stanhope & Lancaster, 2000*) who reported that social and economic factors predispose people to vulnerability, poverty is a primary cause of vulnerability. Also (*Graven & Hirnel, 2000*) stated that, lack of access to facilities or proper resources for self-care may affect a person's ability to provide for adequate self-care.

The current study revealed that medical history as contribute risk factors to develop of LUTI among elderly women. There was a association between the prevalence of LUTIs bacteriuria and diabetes

mellitus. This is consistent with (*Zhanel, Harding, Nicolle, 1991*) who reported that women with diabetes mellitus are three times more likely to have bacteriuria than are nondiabetic women. Several factors may place diabetic patients at a high risk for bacteriuria including poor control of blood glucose levels, diabetic neuropathy with neurogenic bladder, impairment of leukocyte function secondary to hyperglycemia, and diabetic microangiopathy. Diabetic often have a glomerulopathy with impaired urine concentrating ability, resulting in a compromised concentrating capability of antimicrobial agents. In addition, one of the more common predisposing factors for UTIs is diabetes mellitus: spillage of glucose into the urine as well as other factors provide a good culture medium for bacteria. Furthermore, diabetic patients appear to have an increased risk of papillary necrosis either primary or secondary to urinary infections. Also in these results there were many neurological diseases including cerebrovascular disease and Alzheimer's have an associated with the prevalence of LUTIs bacteriuria. This is consistent with (*Zhanel, Harding, Nicolle, 1991*) who stated that neurogenic bladder with impaired voiding reflux, and increased residual urine eventually leading to bacteriuria. Furthermore, neurological disorders secondary to traumatic or congenital lesions of the central nervous system or drug effects, and peripheral neuropathy secondary to diabetes mellitus, alcoholism, and infectious diseases may for various reasons predispose the host to recurrent infections of the urinary tract.

Concerning to obstetric history in the current study revealed that abnormal vaginal discharge and vaginal itching or dryness have a relationship with prevalence of LUTI. This was in agreement with (*Nicolle, 2002; Beyer, Mergam & Benoit ,2001*) who stated that, anatomically short female urethra facilitates the ascend of organisms from the introitus into the bladder, where women with recurrent urinary tract infection have more adhesion receptors on their genito-urinary mucosa and therefore have more binding sites for pathogens. In addition to, elderly women who have skin allergies to ingredients in soaps, vaginal creams, bubble baths, or other chemicals that are used in the genital area at high risk for LUTIs. In such cases, the allergies may cause small injuries or trauma that can introduce bacteria.

The results in the present study also revealed that the lifestyle factors were considered as risk factors for developing UTI among elderly women. This result was consistent with (*Scholes, Hooton, Roberts, Stapleton, Gupta & Stamm, 2000*) where they stated that one of most

contributing factors of developing UTI is incorrect post-voiding wiping technique (back to front instead of front to back). Furthermore, they added, wiping the bowel movement toward the urethra increases the chance of infection from bacteria present in the feces. In addition to, *(Nicolle , 2002 ; Beyer, Mergam & Benoit ,2001)* were reported that the helpful for women at risk for UTIs "Cleanse the genital and urinary areas from back to front with Soap and water after each bowel movement, wearing tight – fitting pants hose , use of concentrated detergents for washing underwear, take tub baths rather than shower , use of bath oils , feminine hygiene sprays, douches, and powders that lead to increase bacterial growth and also causes irritation in genital and urinary areas such nylon underwear. While *(Strom, Collins, West, Kreisberg &Weller, 1987 ; Scholes , Hooton , Roberts , Stapleton , Gupta & Stamm , 2000 )* were they indicate that post coital voiding does not prevent cystitis. There is also no evidence that poor urinary hygiene predisposes women to recurrent infections, and there is no rationale for giving women specific instructions regarding the frequency of urination, the timing of voiding, wiping patterns, douching, the use of hot tubs, or the wearing of pantyhose. Also *(Beyer; Mergam, Benoit, et al., 2001 & Kamel, 2004)* were found that diet and personal hygiene unrelated to the development of LUTI.

The current study revealed that dietary intake is a contribute risk factor to develop of LUTI among elderly women. There was a association between the prevalence of LUTIs bacteriuria and dietary intake. This is consistent with *(Kontiokari, Sundqvist, Nuutinen, Pokka, Koskela & Uhari, 2001; Stothers, 2002)* were they found that cranberry juice contains proanthocyanidins that appear to inhibit the attachment of pathogens to uroepithelium. Randomized trials suggest that 200 to 750 ml daily of cranberry (or lingonberry) juice or cranberry-concentrate tablets reduces the risk of symptomatic, recurrent infection by 12 to 20 percent. The amount of actual cranberry in products marketed as cranberry juice ranges from 5 to 100 percent .In addition to, *(Nicolle, 2002; Beyer, Mergam & Benoit ,2001)* were reported that Cranberries and, blueberries, a relative of the cranberry, are fruits that may have protective properties. Encourage the elderly women that the red pigments in these closely related fruits to prevent E. coli bacteria from adhering to cells in the urinary tract, thereby inhibiting infection. Fructose, which is commonly used to sweeten fruit juices, may also interfere with bacterial adhesion. Cranberry juice offers well-known protection against infections. Its

effects were stronger in helping the body rid itself of infections than in preventing them first place, but it showed benefits in both situations. It is necessary to drink at least one to two cups of 30% cranberry juice daily. Also they found that Probiotics (essentially friendly organisms), which may protect against infections in the genital and urinary tracts. The most well-known probiotics are the lactobacilli strains, such as acidophilus, which is found in yoghurt and other fermented milk products (e.g., kefir). Other probiotics include the lactobacilli rhamnosus, casei, and planetarium. Lactobacilli have the potential to help protect women from UTI In a number of ways: Maintain a low pH environment Hinder E. coli growth. Produce hydrogen Peroxide, which produces an environment hostile for bacteria.

The current study revealed that there was a relationship between prevalence of LUTI and presence of causative organisms " Escherichia coli , Klebsiella , Staphylococci". This is consistent with ( *Ronald , 2002 ; Bent , Nallamothu , Simel, Fihn & Saint ,2002*) were they found that Escherichia coli causes 75 to 90 percent of episodes of acute uncomplicated cystitis, and Staphylococcus saprophyticus accounts for 5 to 15 percent, In addition to , Escherichia coli (E. coli), a bacterium normally found in the digestive tract and present on the skin around the rectal area, is the organism most often responsible for UTIs. Other bacteria can also be involved, but E. coli is by far the most prevalent cause of UTIs (over 80%).

The results in the present study also revealed that the rate of recurrence UTIs in both second and third episodes among infected elderly women during the year of follow-up. This is consistent with ( Ronald , 2002 ; Bent , Nallamothu , Simel, Fihn & Saint ,2002) were reported that after an initial infection, most elderly women have sporadic recurrences, and a quarter to half have another infection within one year. Three to five percent have recurrent urinary tract infections — that is, symptomatic infections that follow the clinical resolution of a previous episode

### **Conclusions and Recommendations:**

Based on the findings of the study, it is concluded that, in most settings, bacteriuria is more common in the elderly women and is often a symptomatic. A symptomatic bacteriuria is a benign condition and is not an indication for antibiotic therapy. While symptomatic bacteriuria can be

safely treated on the basis of the clinical history during home visits. Community health nurses would teach infected elderly women with recurrent UTIs such preventive regimens to prevent recurrence. Therefore , there is a need for in-service education for community health nurses about UTI and its management , also community health nurses should be aware of and be able to empower themselves about elderly health problems. Encourage elderly women to do periodical checkup, replication of this research in the future on both genders to identify differences in their responses to the preventive regimens.

**Table (1): Distribution of Studied Sample Having Lower Urinary Tract Infections According to Symptoms and Presence of Bacteria**

Urine analysis Bacterial (count)	Classifications of Studied Sample (N=500)						
	Symptomatic Criteria (N=228)		Prevalence of Symptomatic Bacteriuria	Asymptomatic Criteria (N=272)		Prevalence of Asymptomatic Bacteriuria	P-value
	No	%		No	%		
Having symptoms	228	45.6	58.8	272	54.4	61.8	X <sup>2</sup> =20.97 P= .000*
Urine analysis (Positive cases)	134	58.8		168	61.8		
Urine analysis (Negative cases)	94	41.2		104	38.2		

**Table (2): Socio-demographic Data of Studied Sample as the Risk Factors for Development of Lower Urinary Tract Infections**

Socio-demographic Data	Classifications of Studied Sample (N=500)				P-value of difference
	Symptomatic (N=228)		Asymptomatic (N=272)		
	No.	%	No.	%	
<b>Age( in year)</b>					
60-	70	30.7	148	54.4	X <sup>2</sup> = 4.20 P = .099*
74-	134	58.8	78	28.7	
85+	24	10.5	46	16.9	
<b>Level of education</b>					X <sup>2</sup> = 28.22 P= .000*
Illiterate	176	77.2	248	91.2	
Read &write	52	22.8	24	8.8	
<b>Socioeconomic Status</b>					X <sup>2</sup> = 6.99 P = .009*
Low	128	56.1	184	67.6	
Moderate	100	43.9	88	32.4	
<b>Marital Status:</b>					X <sup>2</sup> =65.97 P = .000*
Married	190	83.3	204	75.0	
Widow	38	16.7	68	25.0	

**Table (3): Medical History of Studied Sample as the Risk Factors for Development of Lower Urinary Tract Infections**

Medical History	Classifications of Studied Sample (N=500)				P-value of difference
	Symptomatic (N=228)		Asymptomatic (N=272)		
	No.	%	No.	%	
<b>Neurological disease :</b>					
-Diabetes mellitus					
Yes	90	39.5	138	50.7	X <sup>2</sup> = 4.80 P = .030*
No	138	60.5	134	49.3	
-Cerebrovascular disease					
Yes	53	23.2	23	8.5	X <sup>2</sup> = 28.20 P = .000*
No	175	76.8	249	91.5	
-Alzheimer's disease					
Yes	20	8.8	0	0.0	X <sup>2</sup> = 35.80 P = .000*
No	208	91.2	272	100.0	
-Parkinson's disease					
Yes	0	0.0	0	0.0	-
No	228	100.0	272	100.0	
Immobilization					
Yes	0	0.0	24	4.8	X <sup>2</sup> = 21.13 P = .000*
No	228	100.0	248	91.2	
Previous catheterization					
Yes	40	17.5	0	0.0	X <sup>2</sup> = 4.45 P = .031*
No	188	82.5	272	100.0	
Presence of dehydration					
Yes	0	0.0	0	0.0	-
No	228	100.0	272	100.0	
Kidney disorders or stones					
Yes	4	1.8	52	19.1	X <sup>2</sup> = 37.59 P = .000*
No	224	98.2	220	80.9	
Sickle cell anemia					
Yes	0	0.0	0	0.0	-
No	228	100.0	272	100.0	
Presence of constipation					
Yes	122	53.5	168	61.8	X <sup>2</sup> = 3.47 P = .069*
No	106	46.5	104	38.2	
Massive use of antibiotics					
Yes	0	0.0	0	0.0	-
No	228	100.0	272	100.0	
After the common cold & upper respiratory tract infection					
Yes	112	49.1	186	68.4	X <sup>2</sup> = 19.10 P = .000*
No	116	50.9	86	31.6	
Previous urology surgery					
Yes	20	8.8	50	18.4	X <sup>2</sup> = 9.51 P = .003*
No	208	91.2	222	81.6	

\* = Significant P &lt; 0.05

**Table (4): Obstetric History of Studied Sample as the Risk Factors for  
Development of Lower Urinary Tract Infections**

Obstetric History	Classifications of Studied Sample(N=500)				P-value of difference
	Symptomatic (N=228)		Asymptomatic (N=272)		
	No.	%	No.	%	
Abnormal vaginal discharge					
Yes	96	42.1	58	21.3	X <sup>2</sup> = 5.65 P= .020*
No	132	57.9	214	78.7	
Vaginal itching due to dryness or vaginal discharge					
Yes	125	54.8	62	22.8	X <sup>2</sup> = 21.22 P =.000*
No	103	45.2	210	77.2	
Previous operation on the genital area					
Yes	42	18.4	8	2.9	X <sup>2</sup> = 19.62 P= .000*
No	186	81.6	264	96.1	
Engaging in sexual intercourse/ month					
-No frequency					
Yes	62	27.2	66	24.3	X <sup>2</sup> = 7.51 P = .023*
No	0	0.00	0	0.00	
-Less than four times					
Yes	156	68.4	176	64.7	
No	0	0.00	0.00	0.00	
-Four times a month					
Yes	10	4.4	30	11.0	
No	0	0.00	0.00	0.00	
Skin allergy of ingredients used for the genital area					
Yes					X <sup>2</sup> = 21.25 P =.000*
No	126	55.3	60	22.1	
	102	44.7	212	77.9	
Vaccine or Estrogen Cream for treatment of UTI					
Yes	0	0.0	0	0.0	-
No	228	100.0	272	100.0	

\* = Significant P &lt; 0.05

Table (5): Lifestyle of Studied Sample as the Risk Factors for Development of Lower Urinary Tract Infections

Lifestyle	Classifications of Studied Sample (N=500)				P-value of difference
	Symptomatic (N=228)		Asymptomatic (N=272)		
	No.	%	No.	%	
<b>I. Perineal Care</b>					
<b>Post voiding wiping pattern</b>					
Front to back	14	6.1	54	19.9	X <sup>2</sup> = 19.84 P= .000*
Back to Front	214	93.9	218	80.1	
<b>-Dryness of perineal area</b>					
Yes	84	36.8	52	19.1	X <sup>2</sup> = 19.67 P =.000*
No	144	63.2	220	80.9	
<b>-Types of perineal pads used</b>					
Cotton pads	172	75.4	186	68.4	X <sup>2</sup> = 3.03 P= .000*
Disposable pads	56	24.6	86	31.6	
<b>-Frequency of changing perineal Pads or underwear / day</b>					
One time	172	75.4	166	68.4	X <sup>2</sup> = 4.84 P = .089*
2 time	46	20.2	62	22.8	
3 time & more	10	4.4	24	8.8	
<b>-Vaginal douching</b>					
Yes	80	35.1	76	27.9	X <sup>2</sup> = 2.95 P =.099*
No	148	64.9	196	72.1	
<b>II. Personal Hygiene</b>					
<b>- Type of personal bathing</b>					
Shower	94	41.2	144	52.9	X <sup>2</sup> = 6.82 P =.009*
Tub methods	134	58.8	128	47.1	
<b>-Type of bathroom</b>					
Traditional	154	67.5	174	64.0	X <sup>2</sup> = .702 P =.450
Modern	74	32.5	98	36.0	
<b>-Disinfection of clothes</b>					
Yes	160	70.2	120	44.1	X <sup>2</sup> = 34.18 P =.000*
No	68	29.8	152	55.9	

<b>III. Sexual Precautions</b>					
-Clean the genital and anal areas before and after sex.					
Yes	66	28.9	128	47.1	X 2 = 17.13 P = .000*
No	162	71.1	144	52.9	
-Urinate before and after intercourse to empty the bladder and cleanse the urethra of bacteria.	76	33.3	108	39.7	X 2 = 2.16 P = .163
Yes	152	66.7	164	60.3	
No					
-Avoid usage of lubricant or oil with difficult intercourse.					
Yes	72	31.6	96	35.3	X 2 = 7.51 P = .023*
No	156	68.4	176	64.7	
<b>IV. Dietary intake</b>					
-Eat Cranberries (red pigments fruits)	60	26.3	80	29.4	X 2 = .59 P = .484
Yes	168	73.7	192	70.6	
No					
-Eat yoghurt and other fermented milk products (e.g., kefir)					
Yes	88	38.6	232	85.3	X 2 = .11 P = .000*
No	140	61.4	40	14.7	
-Taking vitamin C (e.g., lemon juice).					
Yes	176	77.2	148	54.4	X 2 = 28.2 P = .000*
No	52	22.2	124	45.6	
<b>V. Fluids intake</b>					
-Drink at least one to two cups cranberry juice daily.	0	0.00	0	0.00	X 2 = 36.4 P = .000*
Yes	228	100.0	272	100.0	
No					
-Drinking 7-8 glasses plenty of water daily.	0	0.00	40	14.7	
Yes	228	100.0	232	85.3	
No					

\* = Significant  $P < 0.05$

Table (6): Distribution of Infected Elderly Women According to Number of Episodes for Lower Urinary Tract Infections and Types Causative Organism

Causative organisms	1st episode								P-value of difference
	Group 1 (n=25)		Group 2 (n=25)		Group 3 (n=25)		Total (n=75)		
	Received Preventive Regimens		Received Antibiotics only		Not Received Any intervention				
	No.	%	No.	%	No.	%	No.	%	
<b>E-coli</b>	20	80.0	21	84.0	23	92.0	64	85.3	X <sup>2</sup> = 41.51 P = .000 *
<b>Klebsiella,</b>	3	12.0	4	16.0	2	8.0	9	13.3	
<b>Staphylococci</b>	2	8.00	0	0.00	0	0.00	2	2.7	
<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>25</b>	<b>100.0</b>	<b>25</b>	<b>100.0</b>	<b>75</b>	<b>100.0</b>	
	2nd episode						Total (n=75)		X <sup>2</sup> = 7.21 P= .016 *
	No.	%	No.	%	No.	%	No.	%	
<b>E-coli</b>	4	16.0	7	28.0	13	52.0	24	32.0	
<b>Klebsiella,</b>	0	0.00	6	24.0	12	48.0	18	24.0	
<b>Staphylococci</b>	0	0.00	0	0.00	0	0.00	0.00	0.00	
<b>Total</b>	<b>4</b>	<b>16.0</b>	<b>13</b>	<b>52.0</b>	<b>25</b>	<b>100.0</b>	<b>42</b>	<b>56</b>	
	3rd episode		3rd episode		3rd episode		Total(n=75)		X <sup>2</sup> = 9.68 P= .004 *
	No.	%	No.	%	No.	%	No.	%	
<b>E-coli</b>	6	24.0	12	48.0	11	44.0	29	38.66	
<b>Klebsiella,</b>	1	4.00	4	16.00	6	24.0	11	14.66	
<b>Staphylococci</b>	0	0.00	2	8.00	8	32.0	10	13.33	
<b>Total</b>	<b>7</b>	<b>28.0</b>	<b>18</b>	<b>72.0</b>	<b>25</b>	<b>100.0</b>	<b>50</b>	<b>66.7</b>	

**Table (7): The Types of Recurrence in each Episode of Lower Urinary Tract Infections among Infected Elderly Women and Types of Management**

Types of Recurrence / Episode	Types of Management						P-value of difference
	Group 1 (n=25) Received Preventive Regimens		Group 2 (n=25) Received Antibiotics only		Group 3 (n=25) Not Received Any intervention		
(2nd Episode)	No.	%	No.	%	No.	%	X <sup>2</sup> = 16.76 P= .000 *
Re-infection	4	16.0	10	40.0	18	72.0	
Relapse	0	0.00	3	12.0	7	28.0	
(3rd Episode)	No.	%	No.	%	No.	%	X <sup>2</sup> =29.88 P=.000 *
Re-infection	6	24.0	16	64.0	20	80.0	
Relapse	1	4.0	2	8.00	5	20.0	

\*= Significant  $P < 0.05$

**Table (8): Distribution of Infected Elderly Women According to Number of Episodes for Lower Urinary Tract Infections and its Interval**

No. of Episode / Interval By Week	Group 1 (n=25) Received Preventive Regimens		Group 2 (n=25) Received Antibiotics only		Group 3 (n=25) Not Received Any intervention		P-value of difference
	No.	%	No.	%	No.	%	
(2nd Episode)	No.	%	No.	%	No.	%	X <sup>2</sup> = 29.00 P= .000
1- 13	0	0.00	0	0.00	25	100.0	
14 - 26	1	4.00	13	52.00	0	0.00	
27- 52	3	12.0	0	0.00	0	0.00	
(3rd Episode)	No.	%	No.	%	No.	%	X <sup>2</sup> = 9.68 P= .004 *
1- 13	0	0.00	18	72.0	25	100.0	
14- 26	2	8.00	0	0.00	0	0.00	
27 - 52	5	20.0	0	0.00	0	0.00	

\*= Significant  $P < 0.05$

**Table (9): Effect of Preventive Regimens on the Incidence of Recurrence Urinary Tract Infections among Elderly women**

No. of Recurrent Cases / Episode	Group 1 (n=25) Received Preventive Regimens		Group 2 (n=25) Received Antibiotics only		Group 3 (n=25) Not Received Any intervention		P-value of difference
	No.	%	No.	%	No.	%	
No. of Recurrent Cases / 2nd Episode	4	16.0	13	52.0	25	100.0	X <sup>2</sup> = 16.76 P= .000 *
No. of Recurrent Cases / 3d Episode	7	28.0	18	72.0	25	100.0	X <sup>2</sup> =29.88 P=.000 *

\*= Significant  $P < 0.05$

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## الملخص العربي

### تأثير النظم المناعية على تكرار حدوث التهاب مجرى البول في السيدات المسنات

#### مقدمة :

يعتبر تكرار التهاب مجرى البول من أهم المشاكل الصحية التي تواجه السيدات المسنات وتلعب الممرضة دورا هاما في هذا المجال من خلال قياس معدل إنتشار هذا المرض وحدوث تكراره والمحافظة على الحالة الصحية للمرضى مع تطبيق هذه النظم المناعية .

#### الهدف من البحث :

- \* تقييم مدى إنتشار التهاب مجرى البول في السيدات المسنات
- \* تقييم العوامل التي تساهم في تكرار حدوث التهاب مجرى البول في السيدات المسنات
- \* فحص العلاقة بين هذه العوامل وانتشار المرض
- \* تقييم معدل تكرار حدوث التهاب مجرى البول في السيدات المسنات بعد تطبيق هذه النظم المناعية

#### مكان الدراسة :-

أجريت هذه الدراسة في أربعة قرى مختلفة في محافظة المنوفية هي (كفر طنبيدي/ بيتبس / شبرا باص/ البتانون)

#### العينة :-

تكونت عينة البحث من السيدات المسنات اللاتي يعشن في بيوتهن وعددهن (٥٠٠) سيدة لدراسة مدى إنتشار التهاب مجرى البول لديهن وقد تبين أن عدد (٢٢٨) سيدة لديهن أعراض لهذا المرض وبالتحليل البولي لهن أظهرت النتائج أن عدد (١٣٤) منهن لديهن بكتيريا وتم اختيار عدد (٧٥) سيدة بطريقة عشوائية منتظمة وقد تم تقسيمهن الى ثلاث مجموعات متساوية بحيث تكون كل مجموعة من (٢٥) سيدة .

\* المجموعة الاولى : قد طبقت عليها النظم المناعية (مضاد حيوى / تعليمات تمريرية ) لمنع تكرار حدوث العدوى.

\* المجموعة الثانية : أخذت المضاد الحيوى فقط بوصف الطبيب.

\* المجموعة الثالثة : لم تأخذ رعاية علاجية أو تمريرية.

#### أدوات البحث :-

- \* أستمارة أستبيان لتقسيم العينة البحثية بناء على وجود الاعراض والبكتيريا معا .
- \* أستمارة أستبيان لمعرفة العوامل الديموجرافية كعامل من العوامل المساعدة لحدوث التهاب مجرى البول .
- \* أستمارة أستبيان لمعرفة العوامل الاخرى التي تساعد على حدوث العدوى وهي (أ) الحالة المرضية (ب) مشاكل أمراض النساء (ج) نمط الحياة المتبع
- \* أستمارة أستبيان لمعرفة أى نوع من التكرار قد حدث بين هؤلاء السيدات / والفترة بين حدوث هذا التكرار / معدل حدوث العدوى في فترة الدراسة ( وكانت فترة الدراسة سنة )

### النتائج :-

أسفرت نتائج الدراسة عما يلي :-

- وجود علاقة ذات دلالة إحصائية بين تكرار حدوث التهاب والعوامل الديموجرافية / والحالة المرضية / مشاكل أمراض النساء / ونمط الحياة المتبع .
- وجود علاقة ذات دلالة إحصائية بين تكرار حدوث التهاب مجرى البول وتطبيق النظم المناعية .

### التوصيات :-

- بناء على نتائج الدراسة يوصى بإعداد الممرضات بتفعل دورهم في تثقيف السيدات المسنات عند الزيارات المنزلية تجاه هذا المرض .
- توجيه السيدات المسنات بأهمية المتابعة الدورية لتجنب مضاعفات هذا المرض .
- إعادة البحث على كل من الجنسين .

## Screening Pregnant Women In Zagazig University Hospital For Chlamydial and Gonococcal Infections: Prevalence and Nursing Implications

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### Abstract

**Study design:** A cross-sectional analytical design **Aims of the study were:**

1. To determine the prevalence of chlamydial and gonococcal infections among third trimester pregnant women.
2. To find out the association between various social and obstetric factors and the prevalence of C.T. and N.G. Infections.
3. To propose a nursing model for the management of the infected cases.

**Women subjects:** A random sample of 150 pregnant women, at their third trimester attending the antenatal care clinic of Zagazig University Hospital were selected, during their routine antenatal visits.

**Methods:** A structured interview sheet was used to collect data about personal, obstetrical, medical data, as well as risk factors associated with C.T. and N.G., in addition to the patient knowledge assessment sheet about C.T. And N.G. Urine samples were taken from participants to isolate C.T. And N.G.

**Results and conclusion:** More than one tenth (10.7%) of the study sample were positive. Of these 9.3% had chlamydia and 1.4% had gonorrhoea. Affected women had higher age, preterm premature rupture of membranes, male infection, history of STDs, abnormal signs and symptoms of infections and more likely to use contraceptive pills, gestational diabetes mellitus was strongly associated with C.T. and N.G. infections, overall, poor antenatal care and poor patient knowledge related to C.T. and N.G. were positively associated with the risk of acquiring chlamydial and gonococcal infections. It is recommended that screening pregnant women particularly for C.T. and N.G. infections should be linked to antenatal care services. Moreover, pregnant women's awareness about the disease, the causes, risk factors, signs and symptoms, management needs to be increased through educational sessions and simple pamphlets.

### Introduction

Chlamydia are small non motile gram-negative, intracellular organisms, they replicate within the cytoplasm of the cells, forming characteristic intercellular inclusions (*Nash and Krenz, 1991*). Neisseria gonorrhoea is a

gram-negative, intracellular diplococcus that grows best in the laboratory in an environment rich in carbon dioxide. *Neisseria gonorrhoea* has a predilection for the columnar mucosal cells (*Grella, 2001*). About 10% of pregnant women have C.T. infection at delivery and have of their children show laboratory evidence of infection , while 1.2 % of pregnant women *have* N.G. infection at delivery (*Campos and Ryan, 1995*). Pregnancy is an important risk, which helps the acquisition of infections. Additional bio-social characteristics associated with a high prevalence of the disease include history of prior STDs, new or multiple sex partners, age under 25, inconsistent use of barrier contraceptives, low socioeconomic standard, cervical ectopy and sexually active women (*Maguire, Jordan, Ehya, 1990*). Chlamydia and gonorrhoeae may be symptomatic and asymptomatic, only approximately 30 % of women have symptoms due to C.T. Those type of infections have been linked to urethritis, proctitis, bartholinitis, valvovaginitis of children, cervicitis, endometritis, salpingitis, perihepatitis, and septicemia with other organs infection (*EL-Sherbiny ,1995*). The diagnosis of C.T and N.G. depend on examination of cervical or urethral discharge, new urine test is acceptable and feasible to most women (*Mertz, Schwebke, Gaydos, 2002*). In pregnancy, N.G. and C.T. are associated with prematurity, intrauterine growth retardation, stillbirth and pelvic inflammatory diseases (*Goldenberg, et al, 1997*). Sequelae of these untreated STDs, include; PID, infertility, ectopic pregnancy, chronic pelvic pain, death in mothers and perinatal death, ophthalmia neonatorum and birth defects in babies (*Sutton, et al, 1999*).

The nurse has an important role in the assessment and evaluation of women with N.G. and C.T. This gains a special importance during pregnancy for two reasons: Pregnancy itself is a risk for development of this disorder .The opportunity the nurse has to meet with those women, where there are frequent encounters during ante-natal care visits.

The nurse should also have a role in counseling women about prevention and management. As well as the follow-up of treatment and monitoring for recurrence. This necessitates that the nurse has sufficient knowledge about the disease etiology, risk factors, clinical picture, diagnosis, and management.

### **Aims of the study**

This study aims to determine the prevalence of chlamydial and gonococcal infections among third trimester pregnant women attending

antenatal care clinic in Zagazig University Hospital. To find out the association between various social and obstetric factors and the prevalence of those 2 types of infections among pregnant women. To propose a nursing model for the management of the infected cases.

## Subjects and methods

### **Research design**

Cross-sectional analytical design.

### **Setting**

Antenatal care clinic of Zagazig University Hospital.

### **Subjects**

The study population consists of all third trimester pregnant women attending the aforementioned study setting. An estimated sample size of 150 pregnant women were chosen randomly, from different ages, and with no exclusion criteria.

### **Tools of data collection**

#### **Structured interview form:**

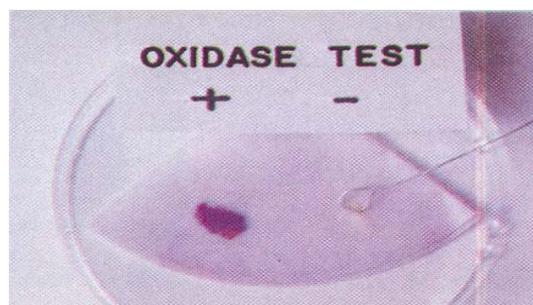
To collect the following information: Demographic data, obstetric data, present medical conditions, antenatal care for current pregnancy, gynecological history, present pregnancy symptoms of infection.

#### **Observation sheet:**

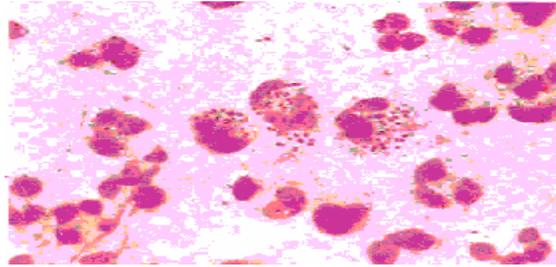
It consists of: general examination for pregnant women, local perineal inspection by the help of the doctor, and laboratory investigations.

#### **Laboratory investigations:**

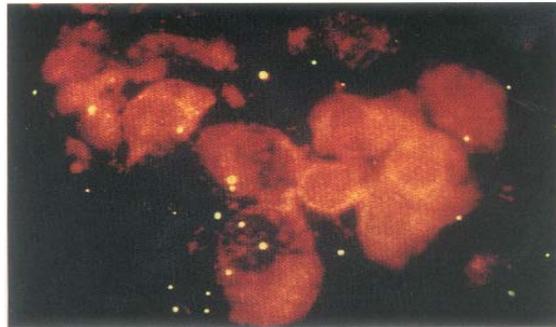
Cultures done on chocolate agars for N.G., and incubate immediately in a moist CO<sub>2</sub> – enriched aerobic atmosphere at 37 °C., and using oxidase test, if oxidase positive bacteria turn the contact area of the bud purple within 5-15 seconds. And 6–8 days developing chick embryos (egg test) for detection of C.T. Chlamydial and gonococcal infections among the infected group



A. Oxidase test



B. Gonococci in a smear of urethral discharge



C. Stained film to show chlamydial infection

## Results

**Figure1.** Illustrates the prevalence of chlamydial and gonococcal infections among pregnant women in the study sample. It indicates that more than one tenth 10.7% of the women were affected. Of these 9.3% had chlamydia and 1.4% had gonorrhoea.

**Figure2.** It is clear from this figure that, equal higher frequencies from infected women had male infection and history of sexually transmitted diseases (30.8%), ( $p < 0.05$ ). The same figure shows that, the infected mothers who use pills were significantly higher in frequency (19.6%) than those of the infected mothers who do not use pills (6.1%), ( $P < 0.05$ ).

**Table1.** Statistically significant difference was revealed as regards women age, the infected mothers of the age category  $>35$  years were the highest percentage (35.7%) than those of the mothers in either categories of  $<25$  years or 25-35 years ( $P < 0.05$ ). And the highest frequency of infected women were illiterate, working, with low and middle socio-economic status, the

crowding index was mostly 2-3 persons per room. However, the differences were not statistically significant.

**Table2.** Reveals that, a higher proportion of the infected women had preterm premature rupture of membranes (26.3%), the difference was statistically significant ( $p < 0.05$ ).

**Table3.** Shows that, half (50.0 %) of the infected women had diabetes mellitus, ( $p < 0.01$ ).

**Table4.** Shows that the lowest frequency (6.3%) from the infected women was among those having 9+ visits along the period of pregnancy. Similarly, the lowest frequency (7.7%) from the infected women were those having adequate prenatal care-index. The group didn't show any statistically significant differences as regards the number of visits and the prenatal care-index.

**Table5.** There were highly significant differences in the infected group as regards the symptoms of vaginal discharge, itching, and dysuria ( $p < 0.01$ , 0.001, 0.001 respectively).

**Table6.** There were highly significant differences in the infected group as regards the symptoms of dyspareunia, and lower abdominal pain ( $p < 0.001$ , 0.01 respectively).

**Table7.** Indicates a highly significant differences in the present signs of infection except proctitis, ( $p < 0.001$ , 0.001, 0.001, 0.01 respectively).

**Table 8.** It is clear from this table that, most of the infected women didn't recognize the definitions, incidence, methods of spread, symptoms, and the effects of chlamydia and gonorrhea on pregnancy respectively, ( $P > 0.05$ ).

## Discussion

The prevalence of chlamydial and gonococcal infections among pregnant women detected from urine specimens through this cross-sectional study design was high. This study result was nearly the same finding by *Ryan et al., (1995)*, who used urine specimens in low-income pregnant Mexican-American women. Also, *Sullivan et al., (2003)* discovered that, chlamydial infection was hyper-endemic among pregnant women in Vila, Australia. The researcher views that, this prevalence is in fact high

especially, it came from urine specimens not from cervical swabs, and this high prevalence may be due to ignorance about the concept of sexual health in the researcher's sample, in support with this explanations, the results of the present study have revealed a higher crowding index and the effect of socio-economic factors.

Findings revealed that, the infected mothers of the age category > 35 years represented the highest percentage compared with those of the infected mothers with either categories < 25 years or 25-35 years (table 1). This result disagreed with *Burstein et al., (2001)*, who found that age < 25 years yielded the highest risk of infection. Similarly, *Sullivan et al., (2004)*, found that, young pregnant women aged < 25 years were three times more likely to have chlamydial and gonococcal infections than older pregnant women. The researcher point of view is that, this contradiction was attributed to the relatively low income of a high percentage of the studied sample. In this category, the Egyptian mother devotes herself completely for her family, believing that, «she is the last one to have rights». Furthermore, being very busy and very tired as she looks after a big number of children, no time or effort is reserved for even visiting a health center. However, in Sullivan and Burstein societies, the prostitution and the single status in young aged women may play a major role in becoming at an age < 25 years yielded to the highest risk of infection.

In the present study, the infected mothers, who had preterm premature rupture of membranes showed significant higher percentage than the infected mothers who had no preterm premature rupture of membranes (table 2). This result agreed with *Andrews et al., (2000)*, who used urine samples collected at 24 weeks gestation from the pregnant women in a case control study. They found that, genitourinary chlamydia trachomatis infection, at 24 weeks gestation, was associated with a 2-fold to 3-fold increased risk of premature rupture of membranes and preterm labor. This result was also supported by *Marai (2001)*, who found that, untreated genital tract infections with chlamydia and gonorrhoea, in pregnant women, may result in fetal loss, preterm labor, premature rupture of membranes and low birth weight.

As regards the present medical condition among the study sample by chlamydial and gonococcal infections, the result of this study showed that, the infected mothers having diabetes mellitus were significantly

higher in frequency than the infected mothers who had no diabetes mellitus (table 3). This finding agreed with *Toplak et al., (1995)*, who reported that chlamydial infection of asymptomatic patients is more frequent in type II diabetic patients than in non diabetics.

Findings of this study revealed that, the lowest frequency from the infected mothers had the recommended number of visits along the period of pregnancy, and similarly the lowest frequency from the infected mothers were those having adequate prenatal care-index (table 4). This result agrees with *Marai (2001)*, who reported that antenatal visits and proper care during pregnancy constitute an opportunity for STDs management in women, and this may help to reduce infectivity, maternal fetal complications and give good opportunity to teach and reduce the risk behaviors for STDs.

The current study findings indicated that, higher frequency of infected women had history of sexually transmitted diseases (table 5). This result is supported by *Todd et al., (2001)*, who found that, history of sexually transmitted disease significantly increases the risk of chlamydial infection acquisition. On the same context, *Klausner et al., (1998)*, in a case-control study carried out among high-risk persons, they found that, having previous chlamydial infection was associated with repeated gonococcal infections.

Investigating the association between contraceptive pills use and chlamydial infection in this study, the infected mothers who used pills showed significantly higher frequency than that of the infected mothers who did not use pills (table 5). This finding agreed with *Herrmann et al., (1996)*, who found that, the only significant risk factors associated with chlamydial infection were the age, and the use of oral contraception.

There were highly significant differences in the infected mothers as regards the symptoms of vaginal discharge, itching, difficulty urination, dyspareunia, and lower abdominal pain (table 6&7). These results agreed with *Ryan et al., (1998)*, in a cohort study describing the frequency of genitourinary symptoms in chlamydial and gonococcal infections pregnant women, they reported that, high percentages of abnormal symptoms were found.

The current study findings recorded that, there were highly significant differences in the infected mothers as regards the signs of urethritis, vulvitis, discharge, and soreness (tables 9). These results disagreed with *Herrmann et al., (1996)*, who reported that, discharge was the clinical sign independently associated with chlamydial infection. The researcher observed in the present study sample that, although the infected mothers suffer from all these symptoms and signs, the mothers ignore them and can cope with them.

In this study, most of the infected women gave wrong answers and did not know about the definitions, incidence, methods of spread, symptoms, the effects of chlamydia and gonorrhoea on pregnancy and how to avoid getting those infections (tables 10&11). These findings are congruent with *MacMillan et al., (1999)*, and *Nockels and Oakeshott (1998)*, who found poor knowledge about chlamydia and its prevention among young pregnant women.

In the present study, the third aim verified by making nursing model, through which educating the patient for prevention, management, and avoidance of recurrence of the disease. Hence, infected pregnant women have to get enough and accurate information about prevention and treatment of chlamydial and gonococcal infections, because improper treatment might lead to complications in women, infections in newborns, and recurrent infections. Nevertheless, it is not only theoretical knowledge that is of important, but the nurse should be able to use sound knowledge in provision of appropriate patient education, and in counseling women about various aspects of the disease, which would help in prevention and management.

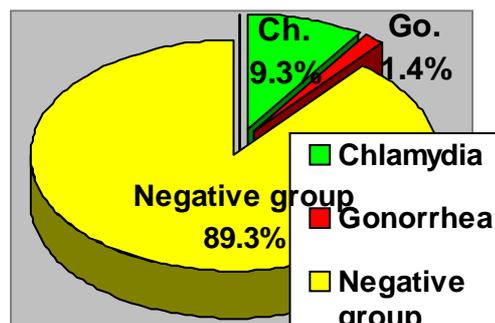
## **Conclusion**

Based on the main study findings, it is concluded that more than one tenth (10.7%) of the women were affected. Of these 9.3% had Chlamydia and 1.4% had gonorrhoea.

Affected women had higher age, preterm premature rupture of membranes, present history of diabetes mellitus, male infection, history of STDs, signs and symptoms, more likely to use contraceptive pills, and lower attendance to antenatal care, also low level of awareness about Chlamydia and gonorrhoea and their prevention.

## Recommendations

- In the light of the foregoing study results the following recommendations are proposed:
- Screening pregnant women for C.T. and N.G. infections, by using urine specimens is recommended and should be linked to ante-natal care services.
- Pregnant women should be screened during their first trimester or at their first prenatal visit. Those with risk factors should be re-screened during their third trimester.
- Nurses should improve the awareness of the pregnant women about the sexually transmitted diseases, and enforce good prenatal care with more emphasis on assessment of risk factors for infections with C.T. and N.G. in every routine follow up visit.
- Nurses need to be trained on counseling women, and future researches are needed on the factors related to recurrence of C.T. and N.G. infections, and the effect of implementation of nursing counseling programs on the rate of cure and recurrence.



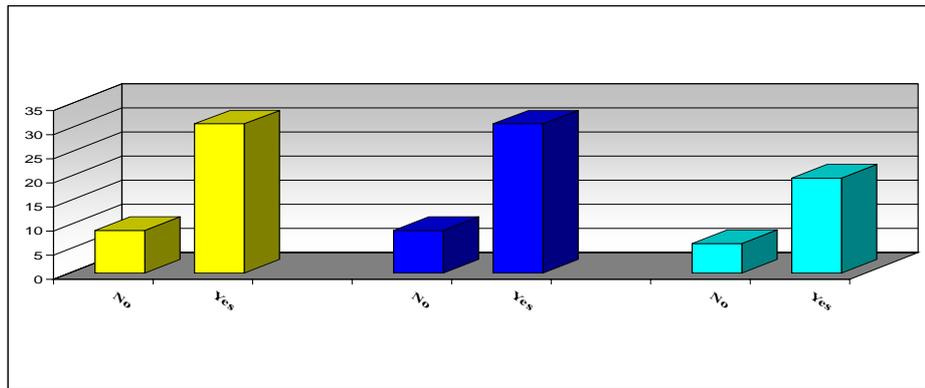


Figure (2) Gynecological history among the infected group

Table (1): Distribution of Demographic Characteristics among the Study Sample by Chlamydial and Gonococcal Infections.

Demographic Characteristics	Total	Positive G (n=16)		Negative G (n = 134)		Significant test	P- value
		No.	%	No.	%		
<b>Age ( years ):</b>						$X^2=10.237$	<0.05*
< 25	80	6	7.5	74	92.5		
25 – 35	56	5	8.9	51	91.1		
> 35	14	5	35.7	9	64.3		
<b>Education :</b>						$X^2=8.715$	>0.05
Illiterate	34	8	23.5	26	76.5		
Read and write	14	1	7.1	13	92.9		
Primary	2	0	0.0	2	100.0		
Preparatory	6	0	0.0	6	100.0		
Secondary	84	7	8.3	77	91.7		
University	10	0	0.0	10	100.0		
<b>Job Status</b>						Fisher	>0.05
Housewife	138	14	10.1	124	89.9		
Working	12	2	16.7	10	83.3		
<b>Crowding-Index</b>						Fisher	>0.05
< 2 persons/room	133	13	9.8	120	90.2		
2-3 persons/room	17	3	17.6	14	82.4		
<b>Socio-economic Status</b>						$X^2=4.942$	>0.05
High 19+	93	6	6.5	87	93.5		
Middle 15- < 19	42	8	19.0	34	81.0		
Low <15	15	2	13.3	13	86.7		

Table (2): Distribution of Obstetric Data among the Study Sample by Chlamydial and Gonococcal Infections.

Obstetric Data	Total	Positive G (n=16)		Negative G (n = 134)		Significant test	P- value
		No.	%	No.	%		
<b>Gravidity</b>							
Primi	46	3	6.5	43	93.5	Fisher	>0.05
Multi	104	13	12.5	91	87.5		
<b>Parity</b>						X <sup>2</sup> =2..280	>0.05
Nulli	49	3	6.1	46	93.9		
Primi	41	4	9.8	37	90.2		
Multi	60	9	15.0	51	85.0		
<b>Preterm Rupture of Membranes</b>						Fisher	<0.05*
No	131	11	8.4	120	91.6		
Yes	19	5	26.3	14	73.7		

Table (3): Distribution of Present Medical Condition among the Study Sample by Chlamydial and Gonococcal Infections.

Medical Condition	Total	Positive G (n=16)		Negative G (n = 134)		Significant test	P- value
		No.	%	No.	%		
<b>Diabetes Mellitus</b>						Fisher	<0.01*
No	142	12	8.5	130	91.5		
Yes	8	4	50.0	4	50.0		
<b>Hypertension</b>						Fisher	> 0.05
No	138	13	9.4	125	90.6		
yes	12	3	25.0	9	75.0		
<b>Anemia</b>						Fisher	> 0.05
No	128	14	10.9	114	89.1		
Yes	22	2	9.1	20	90.9		
<b>Pulmonary Disease</b>						Fisher	> 0.05
No	149	16	10.7	133	89.3		
Yes	1	0	0.0	1	100.0		

\*Statistically Significant.

Table (4): Protocol of Antenatal Care among the Study Sample by Chlamydial and Gonococcal Infections.

Protocol of Antenatal Care	Total	Positive G (n=16)		Negative G (n=134)		Significant test X <sup>2</sup>	P- value
		No.	%	No.	%		
<b>Initiation of Care</b>							
No visits	8	2	25.0	6	75.0		
First trimester	113	10	8.8	103	91.2		
Second trimester	18	2	11.1	16	88.9		
Third trimester	11	2	18.2	9	81.8	2.772	> 0.05
<b>Number of Visits</b>							
No visits	8	2	25.0	6	75.0		
1-2	19	4	21.1	15	78.9		
3-5	41	4	9.8	37	90.2		
6-8	50	4	8.0	46	92.0		
9+	32	2	6.3	30	93.8	4.940	> 0.05
<b>Care-Index</b>							
Inadequate	22	5	22.7	17	77.3		
Intermediate	50	5	10.0	45	90.0		
Adequate	78	6	7.7	72	92.3	4.106	> 0.05

Table (5): Distribution of Present Pregnancy Symptoms of Infection among the Study Sample by Chlamydial and Gonococcal Infections.

Present Pregnancy Symptoms of Infection	Total	Positive G (n=16)		Negative G (n=134)		Significant test	P- value
		No.	%	No.	%		
<b>Vaginal Discharge</b>							
No	76	3	3.9	73	96.1		
Yes	74	13	17.6	61	82.4	Fisher	<0.01 *
<b>Itching</b>							
No	83	2	2.4	81	97.6		
Yes	67	14	20.9	53	79.1	Fisher	<0.001 *
<b>Difficulty Urination</b>							
No	110	3	2.7	107	97.3		
Yes	40	13	32.5	27	67.5	Fisher	<0.001 *

Table (6): Distribution of Present Pregnancy Symptoms of Infection among the Study Sample by Chlamydial and Gonococcal Infections (Cont.).

Present Pregnancy Symptoms of Infection	Total	Positive G (n=16)		Negative G (n = 134)		Significant test	P- value
		No.	%	No.	%		
<b>Dyspareunia</b>							
No	99	4	4.0	95	96.0	Fisher	<0.001 *
Yes	51	12	23.5	39	76.5		
<b>Abnormal Vaginal Bleeding</b>							
No	136	14	10.3	122	89.7	Fisher	> 0.05
Yes	14	2	14.3	12	85.7		
<b>Lower Abdominal Pain</b>							
No	124	8	6.5	116	93.5	Fisher	<0.01 *
yes	26	8	30.8	18	69.2		

\*Statistically Significant.

Table (7): Distribution of Present Pregnancy Signs of Infection among the Study Sample by Chlamydial and Gonococcal Infections.

Present Pregnancy Signs of Infection	Total	Positive G (n=16)		Negative G (n = 134)		Significant test	P- value
		No.	%	No.	%		
<b>Urethritis</b>							
No	116	5	4.3	111	95.7	Fisher	<0.001 *
Yes	34	11	32.4	23	67.6		
<b>Proctitis</b>							
No	137	13	9.5	124	90.5	Fisher	> 0.05
Yes	13	3	23.1	10	76.9		
<b>Vulvitis</b>							
No	101	3	3.0	98	97.0	Fisher	<0.001 *
Yes	49	13	26.5	36	73.5		
<b>Discharge</b>							
No	94	2	2.1	92	97.9	Fisher	<0.001 *
Yes	56	14	25.0	42	75.0		
<b>Soreness</b>							
No	138	11	8.0	127	92.0	Fisher	<0.01 *
Yes	12	5	41.7	7	58.3		

\* Statistically Significant.

**Table (8): Distribution of Level of Knowledge about Chlamydia and Gonorrhoea among the Study Sample** by  
**Chlamydial and Gonococcal Group.**

Level of Knowledge	Total	Positive G (n=16)		Negative G (n = 134)		Significant test	P- value
		No.	%	No.	%		
<b>Definition of chlamydia</b>							
Wrong or didn't know	127	15	11.8	112	88.2	Fisher	> 0.05
Correct and incomplete	23	1	4.3	22	95.7		
<b>Definition of gonorrhoea</b>							
Wrong or didn't know	127	15	11.8	112	88.2	Fisher	> 0.05
Correct and incomplete	23	1	4.3	22	95.7		
<b>Incidence</b>							
Wrong or didn't know	142	16	11.3	126	88.7	Fisher	> 0.05
Correct and incomplete	8	0	0.0	8	100.0		
<b>Methods of spread</b>							
Wrong or didn't know	90	10	11.1	80	88.9	$X^2 = 0.496$	> 0.05
Correct and incomplete	56	6	10.7	50	89.3		
Correct and complete	4	0	0.0	4	100.0		
<b>Symptoms of chlamydia and gonorrhoea</b>							
Wrong or didn't know	88	12	13.6	76	86.4	$X^2 = 2.157$	> 0.05
Correct and incomplete	58	4	6.9	54	93.1		
Correct and complete	4	0	0.0	4	100.0		

Table (8) *Cont.*: Distribution of Level of Knowledge about Chlamydia and Gonorrhoea among the Study Sample by Chlamydial and Gonococcal Group.

Level of Knowledge	Total	Positive G ( n=16 )		Negative G ( n = 134 )		Significant test	P- value
		No.	%	No.	%		
<b>Effect of chlamydia and gonorrhoea on pregnancy</b>							
Wrong or didn't know	40	6	15.0	34	85.0	$X^2 = 1.277$	> 0.05
Correct and incomplete	58	6	10.3	52	89.7		
Correct and complete	52	4	7.7	48	92.3		
<b>Effect of chlamydia and gonorrhoea on woman's health</b>							
Wrong or didn't know	85	9	10.6	76	89.4	$X^2 = 1.682$	> 0.05
Correct and incomplete	62	6	9.7	56	90.3		
Correct and complete	3	1	33.3	2	66.7		

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**Objectives of the model:**

- Infection is treated promptly with no or minimal squeal for mother and infant.
- Sepsis is prevented in neonates
- Early signs of sepsis are recognized, and appropriate therapy is instituted.
- If therapy is necessary, no harmful squeal results.
- Pathophysiologic squeal to septicemia are avoided.
- Parents are able to form attachment to newborn.
- Parents self-esteem is maintained.
- Establishing a good relationship between the nurse giving care model and the family members.

Antenatal	During labor	Postnatal
<ul style="list-style-type: none"> <li>• Use the prescribed antibiotics.</li> <li>• Avoid strong deodorant soaps, cream, and ointments</li> <li>• Wear 100% cotton underwear</li> <li>• Wash hands after using the toilet, and don't touch the face after genital contact</li> <li>• Keep the genital areas dry and clean</li> <li>• Avoid tight-fitting jeans</li> <li>• Boiling the underwear and not using the other's underwear</li> <li>• Avoid any sexual contact during the entire time of treatment.</li> </ul>	<ul style="list-style-type: none"> <li>• Coitus after rupture of the membranes is contraindicated</li> <li>• Hospital delivery is important, to maintain fluid and electrolytes balance, institute of antibiotic therapy and allow antiseptic technique.</li> <li>• Hygiene is essential as shaving hair, using warm water with betadine keeping the perineum clean and dry, with using sterile pads</li> </ul>	<ul style="list-style-type: none"> <li>• Note post symptoms of infection, as pelvic pain and tenderness, tachycardia, perineal discomfort or lower abdominal distress, foul and profuse lochia, anorexia.</li> <li>• Use douching procedure if prescribed</li> <li>• Retest as culture and sensitivity studies of exudates, blood, urine, and microscopic examination</li> <li>• Apply general care as adequate hydration, rest, adherence to the medical regimen, hygienic measures as washing with warm water including antiseptic solution, and frequently changing the pads and clothes</li> </ul>

<ul style="list-style-type: none"><li>• The male partner should be tested.</li><li>• Using condoms and spermicides.</li><li>• Educate your self about; the definitions of the Chlamydia and gonorrhea, their incidences, mode of transmission, the effect of disease on pregnancy, the effect on the women's health, clinical picture, risk factors, and ways of diagnosis and treatment.</li><li>• Express your feelings.</li><li>• Communicate with other infected parents.</li><li>• Visit the medical center from time to time for screening and education.</li><li>• Maintain your normal life in your program of life</li></ul>		<p><b>Neonatal problems</b></p> <ul style="list-style-type: none"><li>• Note the signs of prematurity, eye infection, and pneumonia.</li><li>• Testing the high risk neonate obtain cultures from neonate; and send specimen to laboratory.</li><li>• Communicate with pediatrician is very important for follow up and complete recovery of the infant</li></ul>
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## الملخص العربي

### مسح للسيدات الحوامل في مستشفيات جامعه الزقازيق لعدي الكلاميديا والسيلان: معدل الانتشار والمفهوم الضمني للتمريض

تعتبر عدوي الكلاميديا والسيلان من الامراض الاكثر شيوعا في كل انحاء العالم، وهي تنتقل عن طريق الاتصال الجنسي، وهذه العدوي غالبا تكون كامله الاعراض اي غير ظاهره الاعراض، ونتيجته لذلك تظل العدوي غير مكتشفه مما يؤدي الي تأخر السیده في العلاج ويحدث للسیده مضاعفات كثيره وكذلك انتقال العدوي للزوج. وينتج عن اصابه السیده بهذه العدوي حدوث التهابات في قناه مجري البول وعنق الرحم والحوض وفي مراحل متأخره من العدوي قد يحدث للسیده عقم ناتج من انسداد بقنوات فالوب او حدوث حمل خارج الرحم او الام مزمنه بالحوض، بينما قد ينتج عن هذه العدوي اثناء فترة الحمل اجهاض او موت الجنين او تمزق في الاغشيه المحاطه به وحدث الولاده المبكره او نزيف، وذلك بالاضافه الي انتقال العدوي للجنين اثناء مروره بقناه الولاده مما يؤدي الي حدوث التهابات في الجهاز التنفسي والعين.

#### الهدف من البحث: -

❖ تحديد معدل الانتشار لعدي الكلاميديا والسيلان بين السيدات الحوامل المترددات علي عياده متابعه الحمل بمستشفيات جامعه الزقازيق.

❖ توضيح مدي مصاحبه العوامل البيئيه والولاديه ومعدل انتشار هذه العدوي.

❖ وضع نموذج تمريضي ارشادي للعنايه بالسيدات الحوامل الحامله للعدوي.

اجريت هذه الدراسه في قسم عياده متابعه الحمل بمستشفى الزقازيق الجامعي علي عينه من السيدات الحوامل عددهن مائه وخمسون سيده في اعمار مختلفه، وفي الثلاث شهور الاخيريه من حملهن، وقد اخذت هذه العينه مقطعيه تحليليه.

#### الوسائل المستخدمه في جميع البيانات: -

لقد تم جمع البيانات الخاصه بالدرتسه باستخدام الادوات التاليه: -

١- استماره المقابله الشخصيه للام.

٢- استماره الملاحظه للحاله الصحيه للام والتحليل المعملية لها.

٣- استماره تقييم معلومات الام عن الكلاميديا والجونوريا.

ومن خلال هذه الدراسه تبين الاتي: -

❖ ان معدل انتشار العدوي في السيدات الحوامل اللاتي عمرهن اكبر من ٣٥ عام اعلي عنه في سن اقل من ٢٥ عام او من ٢٥-٣٥

- ❖ ان نسبه كبيره من السيدات الحاملات للعدوي كن يعانين من تمزق مبكر للاغشيه المحاطه بالجنين
- ❖ دلت النتائج علي ان نسبه مرتفعه جدا من السيدات الحاملات للعدوي مصابه بمرض السكر
- ❖ اسفرت هذه الدراسه علي ان نسبه قليله من السيدات الحاملات للعدوي يتابعن حملهن متابعه جيده
- ❖ ان عددا كبيرا جدا من السيدات الحاملات للعدوي لا تستخدمن المطهرات اثناء النظافه الشخصيه ولا الحفاضات ولا الملابس الداخليه القطنيه
- ❖ وتبين ان عدوي الرجل والتاريخ المرضي للزوجه بالامراض الجنسيه واستخدامها السابق لحبوب منع الحمل يكون مصاحبا بزياده في عدد السيدات الحاملات للعدوي بدلاله احصائيه ثابتة
- ❖ وبالنسبه لشكوي السيده، فهناك نسبه مرتفعه جدا من السيدات تشكوا من زياده غير طبيعيه في الافرازات المهيبليه، وحكه، وصعوبه اثناء التبول، والام اثناء الجماع مع الام في اسفل البطن
- ❖ بالنسبه للاعراض الملحوظه عن طريق الفحص بالنظر مع مساعده الطبيب: فيلاحظ ان نسبه الالتهابات الخارجيه للفرج وزياده الافرازات والقرح والهبا فتحة البول كانت عاليه بدلاله احصائيه ملحوظه
- ❖ واخبرت بلنسبه للوعي لدي هؤلاء السيدات الحوامل الحاملات للعدوي فإن اكثرهن لم يسمعن قط عن الكلاميديا والسيلان بالاضافه الي ان الغالبية العظمي من السيدات اجبن اجابه خاطئه او لم يعرفن اجابه عن اي من الاعراض، المضاعفات، طرق انتشار العدوي، وطرق الوقايه منها.

#### التوصيات: -

- 1- ان يكون اختبار البول للسيدات الحوامل لتشخيص عدوي الكلاميديا والسيلان اختبارا روتينيا يقدم للسيدة اثناء تقديم خدمه متابعه الحمل لها، علي ان يكون اجراء هذا الاختبار في زياده متابعه للسيدة او في الثلاثه شهور الاولى من الحمل.
- 2- يجب تدريب الممرضات علي الحوار وتقديم النصائح للسيدات واقناعهم بأهميه المطاوعه للعلاج والنظافه الشخصيه، كذلك نوصي بأن تهتم الممرضه بعمل ابحات اخري تشير الي العزامل التي تساعد حدوث العدوي مره اخري، ايضا تبحث في تأثير البرامج التمريضيه التثقيفيه علي معدل الشفاء وحدث العدوي مره اخري. كما نوصي بإعداد ندوات خاصه تثقيفيه علي الاقل مره كل اسبوع، تقوم فيها الممرضه بتوعيه السيدات دوي التي تنتقل عن طريق الاتصال الجنسي وتشجيع السيدات علي متابعه حملهن.

## **Effect of Social Support on Cognitive Status of the Elderly**

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### **Abstract:**

The aging population is rapidly growing the entire world and in Egypt as well. A cross- sectional descriptive study was used to investigate the effect of social support on cognitive status of the elderly. The study was carried out in comprehensive Health unit of rural village in Tanta governorate namely Sigen –Alkom during the the year 2004 from 1<sup>st</sup> of March to the end of October .A convenient sample (300 elderly) of both sexes were interviewed individually by using a questionnaire sheet to collect data and was composed of three parts, part one contained assessment sheet ,health history ,part two contained Mental status assessment questionnaire, while part three contained functional status scale by using Activities of daily living scale(ADL) and Instrumental Activities of daily living(IDAL).The results revealed a strong relation between the sex , occupation ,marital status, history of medical problems , sensory function , the need for medical care, and hospital admission of the elderly and their cognitive status. The study recommended that social support need to be reinforced in order to help in increasing the normal cognitive status of the elderly.

### **Introduction**

The aging population is rapidly growing all over the world. The reason for this is a sharp decline in mortality from infectious and chronic diseases, improvement in sanitation, housing condition, nutrition and medical advances in technology (*James, 2004*).

In Egypt, the percentage of elderly people aged 60years and over constituted 3.5% of the population in 2000, and is expected to increase to 7.1% of the population in the year 2006, 8.9%in the year 2016 and 10% in the year 2021(*Egypt Human Development Report, 2005., and The Central Bureau of Population and Statistics, 1990*) In USA, the number of persons

aged 60 years and over in 2000 constituted 12% of the total population, and they are expected to be 20% in 2050 (*Leonard and Bosman, 2004*)

Individuals of the same chronological age do not function at the same level. Many old people may remain physically fit, mentally active and productive members of the society, while others may be chronologically young, but physically and functionally old. Many factors contributed to this such as life style, medical and psychological conditions. More over, social support is considered as one of the main factors that have been thought to influence mental and cognitive abilities in the elderly. (*Haight, 2005*)

Cognition can be defined as the various thinking processes through which knowledge is gained, stored, manipulated and expressed. The cognitive function refers to the performance of intellectual tasks, such as thinking, remembering, perceiving communication, orientation, calculating and problem solving (*Rico, 2000, and Thomas, 2001*). Changes in cognitive function are included within the neuropsychiatry parameters of consciousness, attention, language, memory, constructional ability and higher cognitive functions (*Phil, 2003*).

Social support has been identified as information received from others that one is loved and cared for, estimated and valued. It gives the elderly a sense that he is part of network communication and mutual obligation from spouse, children, relatives, social and community contacts as religious activity, or clubs and friend's .Social support can assist individuals and groups in mobilizing resources and interact effectively with the environment at times of crisis and stressful life events (*Chaner, 2000*) Social support is considered an important aspect in daily activities for the elderly living in the community setting. It could inhibit cognitive decline in the elderly because many social activities provide the challenge of effective communication and participation in complex interpersonal exchanges (*United Nations, 2001*). Social support results in subjective feeling of belonging, being accepted, and needed for one self rather than for what one can do for others (*Dunning, 2005., and Fortnash and Patric, 1995*) However, the social network and social life of elderly might be affected by their physical health, particularly if the elderly has disease or disability that affect his ability and functional status to perform activities of daily living (ADS) (*Yeh and Liu, 2003*)

Elderly care presents a challenge to community health nurse because a significant number of the elderly suffer from varying degrees of cognitive deterioration. The careful nursing assessment of the cognitive status of the elderly and the identification of the related influencing factors will enable the nurse and the other care providers to intervene appropriately. The nurse can offer increased assistance to individuals within their current support network (*Stone, 2002*).

**Aim of the work:**

The aim of this study was: To investigate the effect of social support on cognitive status of the elderly.

**Materials and Methods:**

A cross- sectional descriptive study was conducted in the primary health care center of the rural village in Tanta governorate namely Sigin Elkom.

**Target population:**

Families with elderly aged 60years and over. They were 1745. A convenient sample of 300 elderly residing in the previous setting were included in the study (representing one six of the total sample).

The study was conducted from the 1<sup>st</sup> of March through October 2004. The following criteria were used for selecting the sample:-

- Elderly aged 60 years and over, both sexes
- Free from medical diseases that may affect cognition such as ischemic heart diseases, diabetic deterioration of cerebral blood vessels, severe anemia, psychiatric diseases, and uncontrolled hypertension.
- Not on medication that has an influence on the cognitive status such as hormone therapy, chemotherapy, antidepressant drugs, sedatives, major tranquilizers, antihistamines.
- Able to communicate clearly; agree to co-operate with the researcher.

**Data collection:**

A pilot study was conducted among (20) elderly initially to test the designed questionnaire to ensure that questions were clear and unambiguous and to

estimate the time needed to obtain the required information from each elderly.

**Tool I:**

1- An interview schedule was developed by the researcher and was used to obtain the necessary data, it included the following:

a- Socio demographic data: name, age, sex, religion, education, residence, previous occupation, job after retirement, smoking, pension.

b- Health history: This included history of medical or psychological disease, sensory impairment (vision or hearing), previous hospitalization in the last six months and medication used number of visits to doctor in the last six months and their perception about the availability of needed health care services. It included as well items about supportive devices and prostheses used and needed.

c- Social support data: was collected through the use of the multidimensional functional assessment questionnaire developed by *Eric Pfeiffer (1975)*.

Four measures of social support that reflect objective and subjective dimensions were examined .These are:-

1- Marital status, economic status and living status, 2- Perceived positive support from relatives and friends, 3- Subjective feeling of loneliness.

Social support consisted of 16 items with a total score of 32.

The total score was divided as follows: 5-<15 weak, 15-<25 moderate, and 25-32 strong.

**Tool II:**

**Mental status assessment questionnaire:**

The cognitive status of elderly was assessed by using the short portable mental status questionnaire (SPMSQ). This was developed by *Pfeiffer (1975)*, *Welch and West (1999)* it includes 10 questions dealing with orientation, personal history, remote memory and calculations.

Tool II has the following score: 0-right answer, 1- wrong answer

The total score was 10, divided as follows: 0-2 error normal mental function, 3-4 errors mild cognitive impairment, 5-7 errors moderate cognitive impairment, 8-Or more errors severe cognitive impairment.

### **Tool III:**

#### **Functional status scale:**

It was assessed in the form of ability to perform activities of daily living (ADL) (*Sonn and Asberg , 1991., and Stanley , Blair , Bear, 2005*) Katz index of ADL was used to assess personal self maintenance on 6 items namely Bathing, Dressing, Toileting, Mobility, Continence, and Feeding.

Each item was rated as: 0- Independent, 1- Assisted, and 2- Totally dependent.

The total score was 12, divided as follows: 0- Independent, 1-6 Assisted, and 7-12 totally dependent

Instructional Activities of Daily Living (IDAL) was used. It deals with more complicated tasks that have a broad impact in linking social competency and independent living (*Fillenbaum, 1985*).

It included 8 items of the elderly ability for: Using telephone, Shopping, Traveling or transportation, taking the medication, handling personal finances, preparing meals, Doing housework, and Washing the clothes

Each item was rated as: 0- Independent, 1- Assisted, and 2- Totally dependent

The total score was 16, it was divided as follows: 0- Independent, 1-7 Assisted, and 8-16 totally dependent

### **Results:**

The study showed that the age of the elderly persons ranged between 60 to 100 years, with a mean of  $65.13 \pm 6.13$  years. As regards sex most of them were females and the majority of the studied sample were married, illiterates, working after retirement and non smokers

Table [I] shows the distribution of the study sample according to their social support items. It revealed that more than half of study sample reported having strong relationships with family members, friends and with

neighbors. The majority of them reported living with their families and not feeling lonely. The main source of income of the study sample was from governmental pension.

Figure [I] shows the distribution of the study sample according to cognitive status. It illustrates that less than one half of the study sample had scored with normal cognitive status, (53.0%) of the study sample had impaired cognitive status. Among those having impaired cognitive status, 47.17% were suffering from mild impairment, 15.09% were had severe impairment, and 37.74% had moderate impairment.

Table [II] shows the relationship between cognitive status of the studied sample and activities of daily living. As regard elderly ability to perform activities of daily living (ADL), the table shows that 58.18% of those who were independent had normal cognitive status, while 27.59% of those who were assisted by others had moderate impairment, About 36.84% and 47.37% of those who were dependent on others in (ADL) had moderate and severe cognitive impairment respectively and there difference was statistically significant  $(\chi^2 = 67.063, r = 0.444)$

As regards the instrumental activity of daily living (IADL), the same table illustrates that more than half of those who were independent on others in IADL had normal cognitive status. Moreover; about 34.78% & 47.83% of those who were dependent on others in IADL had moderate and severe cognitive impairment respectively. With a statistically significant difference.  $(X^2 = 64.039, r = 0.385)$

Table [III] shows the relationship between social support of the studied sample, their activities of daily living (ADL) and instrumental activities of daily living (IADL), Concerning the relationship between social support of the studied sample and their activities of daily living (ADL), the table shows that 41.21% of those who were independent and strong had social support, and more than one third of those who were assisted and dependent had weak social support. (42.11%) of the dependents had moderate social support. The difference was significant statistically.

$(X^2 = 9.19, r = -0.195)$

Concerning the relationship between social support of the studied sample and their instrumental activities of daily living (IADL), table III shows that 43.48% & 39.13% of those who were dependent had weak and moderate degree of social support respectively, while more than half of those who were independent had strong social support. The difference being significant statistically. ( $X^2=20.099$ ,  $r = -0.099$ )

Table [IV] shows the relationship between social support of the studied sample and their cognitive status; 42.71% & 13.54% of the elderly with weak social support had moderate and severe cognitive impairment respectively. About 74.04% of the elderly who had strong social support had normal cognitive status. While more than one quarter of those having moderate degree of social support had mild cognitive impairment, and the differences was statistically significant. ( $x^2=87.916$ ,  $r = 0.524$ )

Table [V] shows the relationship between social support items and Cognitive status of the studied sample, more than half of those who had governmental pension had normal cognitive status, while (20.23% & 15.48%) whose source of income was from sibling had moderate and severe cognitive impairment respectively. 20% the elderly of who source of income was from the spouse had moderate cognitive impairment. and The differences was not significant. ( $X^2=23.216$ ). The same table shows that (27.94%, 30.88%, & 14.71%) of the study subjects who reported a feeling of loneliness most often had mild, moderate, or severe cognitive impairment respectively, while 63.56% of those who did not have a sense of loneliness had normal cognitive status. With statistically significant difference. ( $X^2=32.782$ )

The table also shows that 7.81% of those living with their families had severe cognitive impairment. Compared to 9.09% of those living alone. With no significant difference. ( $X^2=0.170$ ).

Regarding the relationship between the elderly with their families, friends and neighbors and the cognitive status, the table shows that more than half of the studied sample who had strong social support had normal cognitive status, while about one third of those who had weak social support with had mild, moderate, and severe cognitive impairment with a statistically significant difference.

The majority of those who had strong religious and social activities had mild, moderate, and severe cognitive impairment and there was a significant difference. ( $X^2 = 35.208$ )

Table (I) Distribution of the study sample according to their social support items.

Social support items	The study sample (n=300)	
	No	%
<b><u>Source of income</u></b>		
-Siblings	84	28.00
-Spouse	32	10.67
-Governmental Pension	114	38.00
-Pension + Provident fund	70	23.33
<b><u>Sense of lonely</u></b>		
Most often	68	22.67
Sometimes	114	38.00
Not feel it	118	39.33
<b><u>Household status</u></b>		
-In families:	256	85.33
-Living alone	44	14.67
<b><u>Relation with the family members</u></b>		
Weak	34	11.33
Moderate	103	34.33
Strong	163	54.33
<b><u>Relation with friends</u></b>		
Weak	73	24.33
Moderate	75	25.00
Strong	152	50.67
<b><u>Relation with neighbors</u></b>		
Weak	54	18.00
Moderate	90	30.00
Strong	156	52.00
<b><u>Religious &amp; social activities</u></b>		
Rarely	170	56.67
Sometimes	124	41.33
Most of the time	6	2.00

Figure (1): Distribution of the study sample according to the cognitive status.

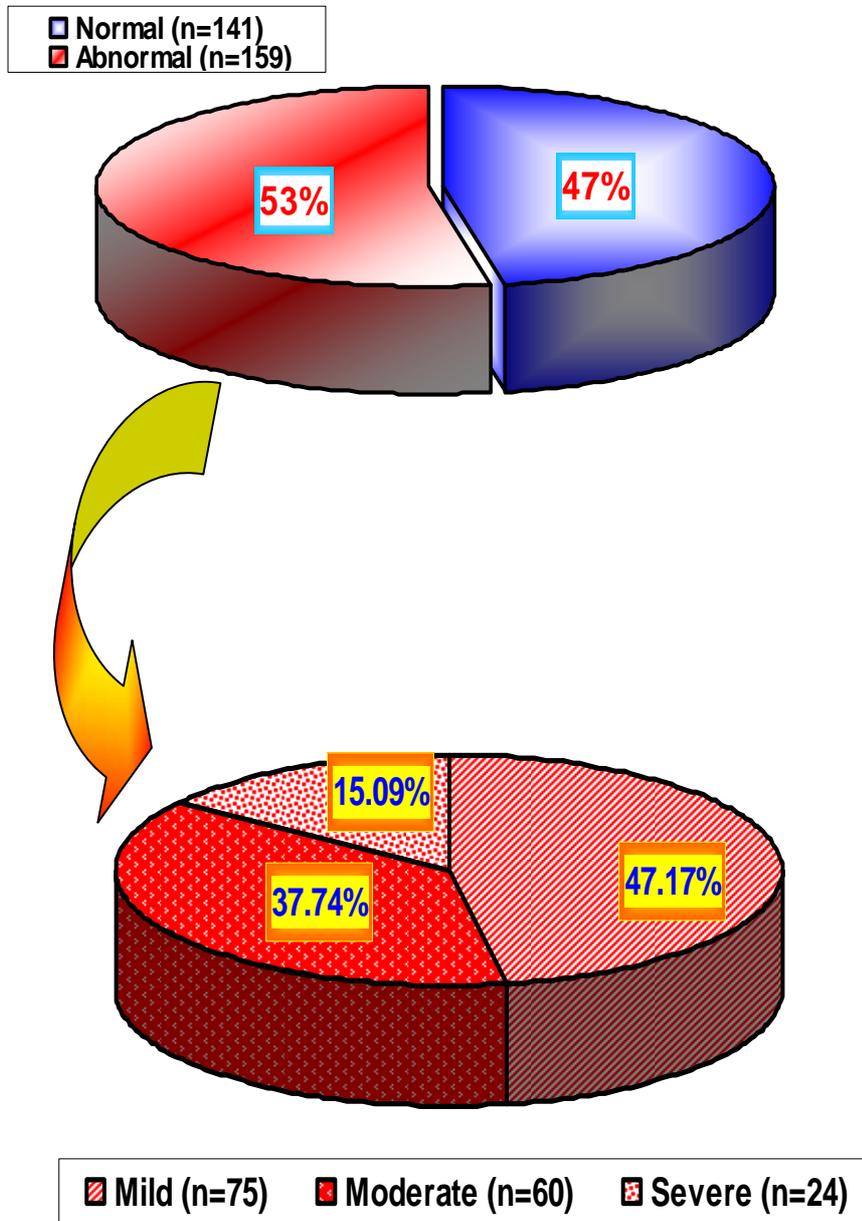


Table (II) Relationship between the cognitive status and activities of daily living of the study sample.

Variables	Cognitive status of the study sample									
	Normal (n=141)		Mild (n=75)		Abnormal (n=159) Moderate (n=60)		Severe (n=24)		Total (n=300)	
	No	%	No	%	No	%	No	%	No	%
<b>•Activities of daily living</b>										
Independent	96	58.18	38	23.03	21	12.73	10	6.06	165	55.00
Assisted	43	37.07	36	31.03	32	27.59	5	4.31	116	38.67
Dependent	2	10.53	1	5.26	7	36.84	9	47.37	19	6.33
X <sup>2</sup>	67.063***									
r	0.444***									
<b>Instrumental activities of daily living</b>										
Independent	21	58.33	7	19.44	6	16.67	2	5.56	36	12.00
Assisted	118	48.96	66	27.39	46	19.09	11	4.56	241	80.33
Dependent	2	8.70	2	8.70	8	34.78	11	47.83	23	7.67
X <sup>2</sup>	64.039***									
r	0.385***									
(Pearson correlation coefficient)										

Significance: \*\*\*P&lt;0.001

**Table (III) Relationship between social support of the study sample and their activities of daily living and instrumental activities of daily living.**

Variables	Degree of social support						Total	
	Weak 5-<15 (n=96)		Moderate 15-<25 (n=100)		Strong 25-32 (n=104)		Total (n=300)	
	No	%	No	%	No	%	No	%
<b>●Activities of daily living</b>								
<b>Independent</b>	46	27.88	51	30.91	68	41.21	165	55.00
<b>Assisted</b>	44	37.93	41	35.34	31	26.72	116	38.67
<b>Dependent</b>	6	31.58	8	42.11	5	26.31	19	6.33
$X^2$			20.777*					
r			- 0.195					
<b>●Instrumental activities of daily living</b>								
<b>Independent</b>	9	25.00	6	16.67	21	58.33	36	12.00
<b>Assisted</b>	77	31.95	85	35.27	79	32.78	241	80.33
<b>Dependent</b>	10	43.48	9	39.13	4	17.39	23	7.67
$X^2$			20.099*					
r			- 0.099 ns					
(Pearson correlation coefficient)								

*ns: non significant*

*Significant: \*P<0.05*

Table (IV) Relationship between social support of the study sample and their cognitive status.

Degree of social support	Cognitive status of the study sample									
	Normal		Abnormal (n=159)				Total			
	(n=141)		Mild (n=75)		Moderate (n=60)		Severe (n=24)		(n=300)	
	No	%	No	%	No	%	No	%	No	%
<b>Weak (5-&lt;15)</b>	16	16.67	26	27.08	41	42.71	13	13.54	96	32.00
<b>Moderate (15-&lt;25)</b>	48	48.00	28	28.00	15	15.00	9	9.00	100	33.33
<b>Strong (25-32)</b>	77	74.04	21	20.19	4	3.85	2	1.92	104	34.67
$X^2$ $r$ (Pearson correlation coefficient)					87.916***					
					0.524***					

Significance: \*\*\* $P < 0.001$

Table (V) Relationship between social support items of the study sample and their cognitive status.

Social support items	Cognitive status of the study sample										X <sup>2</sup>
	Normal		Abnormal (n=159)						Total		
	(n=141)		Mild (n=75)		Moderate (n=60)		Severe (n=24)		(n=300)		
	No	%	No	%	No	%	No	%	No	%	
<b>Source of income</b>											
-Siblings	28	33.33	26	30.95	17	20.23	13	15.48	84	28.00	23.216 ns
-Spouse	17	53.13	7	21.88	7	21.88	1	3.13	32	10.67	
-Governmental Pension	62	54.39	22	19.30	22	19.30	8	7.02	114	38.00	
-Pension + Provident fund	34	48.57	20	28.57	14	20.00	4	5.71	70	23.33	
<b>Sense of lonely</b>											
Most often	18	26.47	19	27.94	21	30.88	10	14.71	68	22.67	32.782***
Sometimes	48	42.11	29	25.44	29	25.44	8	7.02	114	38.00	
Not feel it	75	63.56	27	22.88	10	8.47	6	5.08	118	39.33	
<b>Household status:</b>											
-In families:	120	46.88	64	25.00	52	20.31	20	7.81	256	85.33	0.170 ns
-Living alone	21	47.73	11	25.00	8	18.18	4	9.09	44	14.67	
<b>Relation with the family members</b>											
Weak	7	20.59	12	35.29	12	35.29	3	8.82	34	11.33	17.869**
Moderate	46	44.66	22	21.36	26	25.24	9	8.74	103	34.33	
Strong	88	53.99	41	25.15	22	13.50	12	7.36	163	54.33	
<b>Relation with friends</b>											
Weak	14	19.18	21	28.77	25	34.25	13	17.81	73	24.33	52.249***
Moderate	31	41.33	18	24.00	21	28.00	5	6.67	75	23.00	
Strong	96	63.16	36	23.68	14	9.21	6	3.95	152	50.67	
<b>Relation with neighbors</b>											
Weak	9	16.67	15	27.78	19	35.19	11	20.37	54	18.00	49.812***
Moderate	35	38.89	23	25.56	25	27.78	7	7.78	90	30.00	
Strong	97	62.18	37	23.72	16	10.26	6	3.85	156	52.00	
<b>Religious &amp; social activities</b>											
Weak	58	34.12	44	25.88	48	28.24	20	11.76	170	56.67	35.208***
Moderate	78	62.90	30	24.19	12	9.68	4	3.23	124	41.33	
Strong	5	83.33	1	16.67	-	-	-	-	6	2.00	

ns: non significant

Significance: \*\*P<0.01, \*\*\*P<0.001

## **Discussion**

The elderly population has been increasing recently and is expected to continue doing so for the next several decades because of the increase in the life span and improved quality and availability of health care services. Normal aging is characterized by minimal cognitive deterioration, physical disability, and social changes (*Rebarce, 2002., and Meredith & Sharby, 2003*).

Working after retirement is subject of the person's ability and capacity to perform tasks, which enable him to be productive and maintain a satisfying life. The occupation after retirement evaluates the psychological and social functioning, motor and sensory integrative functioning, cognitive, and performance abilities (*Richard and Susan, 2004*) In the present study there was a high percentage of the working elderly (nearly two thirds). This could be explained by that the majority of them were farmers with low socioeconomic status and they needed to work to earn money for living. Furthermore, less than two thirds of those who worked after retirement had normal cognitive status, and was independent, and more than one third of them had strong social support. A significant relation was found between the occupation and ADL/IADL. This in agreement with the result of Sung (2002), who found that there were positive relations between occupation and education, cognition status and ADL/IADL (*Sung, 2002*). *De Vito (2000)*, reported in his study that working elderly was found in a high proportion among aging women who were at the bottom level of the social-status class and are generally poorly educated with low income and social support level. He also reported that negative outcomes for health are possible when an age-related imbalance appears between physical workload and physical work capacity (*De Vito, 2000*)

The sensory function is one of the most important factors that affect communication, social activities, and activities of daily living (*Watking, 2005*). The result of the present study showed that the elderly had vision problems rather than hearing problems. Furthermore, it was found that more than two thirds of those who had both good or excellent vision and hearing had normal cognitive status. Consequently, a significant relation was found between sensory status and cognition. This refers to the fact that if the elderly have good sensory function, they may be more interested in

maintaining communication with others and responds appropriately to sensory inputs from the environment which leads to healthy cognition, and strong social relation. This is in agreement with the result of (*Pieper, 2005*), who found a significant relation between sensory function and cognition. Another study found that, nearly half of the elderly had visual problems compared to less than 15% who had hearing problems (*Capella, 2005*).

Difficulty with both vision and hearing constitute double the risk of activity restriction, which leads to isolation and withdrawal from community (*Piguet and Grayson, 2002*). The present study showed a significant relation between the sensory function of the studied elderly and their ability to perform ADL& IADL as well as social support. *Jansen, (2006)*, reported that there was a relation between sensory losses and attention demands and the ability to manage daily activities requiring concentration. *Capella-McDonnall (2005)*, found in her study that dual sensory loss had a significant effect on depressive symptoms. *Brennan (2005)* found that one fifth of older adults reported dual sensory impairment, which was associated with greater IADL than ADL task difficulty compared with single sensory loss. Furthermore, high levels of dual impairment were shown to increase the risk of difficulty in three of six IADL tasks (preparing meals, shopping, and using the telephone) over vision impairment alone. Findings highlight the importance of sensory resources for everyday competence and suggest the need for effective vision and hearing rehabilitation to assist older adults in improving or maintaining their functional independence (*Brennan, 2005*)

As regard the relationship between the marital status and social support, the present study revealed that about one half of the married elderly had strong social support. A significant relation was found between the marital status and social support. This is in agreement with the result of *Zaranek (2005)*, who found a positive relation among the marital status, social support, and social activity. This is also in agreement with the result of *Cacioppo (2006)*, where he found that loneliness was associated with more depressive symptoms, widow status, low social support, and perceived stress

Retirement from work is a life crisis for many people as it is usually associated with dramatic changes in the retired life style. Retirement is not only associated with reduced income but also may be accompanied with decreased social contact with colleagues and loss of status and prestige.

These factors may predispose to social and psychic upsets resulting from imbalance between continuing needs and restricted income (**Hammed, 1994**). It was reported that income of the elderly is one of the important factors contributing to loneliness and social isolation. Furthermore, **Kac (2006)** reported that low income was potentially associated with minor psychiatric disorders. **Lofors (2006)**, reported that there was an association between income and anxiety and common mental disorders. In the present study, it was found that about 40% of the studied sample depended on governmental pension, and more than half of them had normal cognitive status. However, there was no significant relation between the income of the studied elderly and their cognitive status. A study on elderly population in Giza governorate showed that 53% of the sample depended on pension payment for their income. In Cairo, another study showed that governmental pension was the source of income for 70% of the males and 44% of the females (**Hammed, 1994**). In another study, 49.7% of the sample reported that their income was not enough for their needs and they were forced to ask for financial assistance from siblings in 44.6% of them and from other relatives or even neighbors in 4.8% (**Crisis, 2005**).

The family is still the basis of security for adults in later life. Extended families are most comprehensive in their function as they serve as a unit of reproduction, production, consumption, recreation, investment and social security for every member in the family including the elderly (**Wating, 1996**). The current study showed that the majority of the elderly lived with their families. However, there was no significant relation between the household status of the elderly and their cognitive status. A study in Upper Egypt reported that 90% of the elderly in urban areas lived in nuclear families, 28% of those in rural areas lived in extended families (**Abdel-aty, et al, 2001**). **Nordberg (2005)**, found that the amount of informal care was much greater than formal care and it was also greater among demented than non-demented. There was a relationship between the severity of the cognitive decline and the amount of informal care while this pattern was weaker regarding formal care (**Nordberg and Srauss, 2005**).

In the present study, the subjective feeling of loneliness was significantly associated with cognitive impairment as about two thirds of those who did not feel of lonely had normal cognitive status. This is in agreement with the result of **Bondevik (1998)**, who found association

between functional ability, social contacts, and emotional and social loneliness. *Prince, et al. (1997)*, found that there was a relationship between social support, loneliness, handicap and depression. However, a person may live alone with few social contacts and not feel lonely. In contrast, an individual surrounded by others may report a long-standing sense of loneliness. With respect to the elderly, a discrepancy between the social network and the need for social contact may cause loneliness (*Richard and Susan, 2004*)

Older adults are faced with loss of loved ones, multiple health problems, decreasing ability to care for themselves and require support and hope. Sources of hope include religious symbols, relationships with others, and sharing activities. The current study revealed that the majority of those who had strong religious and social activities had normal cognitive status. This is documented by other studies (*Thomas, 2001*). The positive effect of religious and social activities on the well-being of the elderly could be attributed to the fact that these activities constitute the main source of relief from stress.

Healthy aging is characterized by good support systems, which means that the elderly person should be surrounded by family members, friends, neighbors and community resources as mosques or other organizations which provide supported assistance. In the current study, a positive relation was found between the cognitive status and the elderly relation with family, friends, and neighbors. This may be due to the effects of the culture, extended families, and the rules of Islam. Within any hierarchical society, an individual's social rank can have profound effects on its health and reproductive success. This is in agreement with *Fratiglioni et al, (2000)*, who found that individuals living alone, and those without any close social ties, both had adjusted relative risk for developing dementia.

### **Conclusion:**

It can be concluded that the social support play an important role on the cognitive status on the elderly there was apposite relationship between the social support and cognitive status.

### **Recommendations:**

1-Periodic assessment the elderly should be carried out and giving special attention to their mental status.

- 2- Family member should be supported by professionals to dealing with cognitively impaired elderly.
- 3- Community resources and non governmental organization need to be established to help the elderly and their families to maintain social active life and decrease the burden of care on the care providers.
- 4- Mass media must play role in providing families and the public with accurate information about the elderly.

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## الملخص العربي

### تأثير الدعم الاجتماعي على الحالة الإدراكية لدى كبار السن

يزداد عدد المسنين بصورة كبيرة في جميع أنحاء العالم وفي مصر أيضاً. وعموماً، فإن الأشخاص الذين تصل أعمارهم إلى الستين والسبعين يكونون في صحة جيدة، ونتيجة لزيادة متوسط العمر المتوقع أكثر من أي وقت مضى فإن المسنين يحتاجون لتطوير خطة حياتهم لجعل السنوات الـ ٢٠ أو الـ ٣٠ القادمة من حياتهم مرحلة ممتازة وجيدة ويرغبون بحب في عيشها. وتتأثر الحالة الإدراكية للمسنين بعدة عوامل متداخلة منها الحالة الصحية والنفسية والاجتماعية. كما تتأثر الحالة الإدراكية بالتاريخ المرضي السابق للمسنين واستعمال المخدرات أو الأدوية، ودرجة النشاطات الاجتماعية، ومدى المساندة والدعم الاجتماعي الذي يتلقاه المسن. وعلى أية حال، فإن المسن يمكن أن يبقى في سلامة إدراكية إذا أحيط بعناية ملائمة ودعم إجماعي كافي.

#### الهدف:-

تهدف هذه الدراسة إلى معرفة تأثير الدعم الاجتماعي على الحالة الإدراكية لدى المسنين.

#### أدوات الدراسة:-

تشتمل استمارة المقابلة الشخصية على ثلاث أدوات رئيسية وهي:

##### ١- الأداة الأولى:

- معلومات عن بعض الخصائص الشخصية والتاريخ الصحي للمسن.

##### ٢- الأداة الثانية:-

مقياس تقييم الحالة الإدراكية لدى المسن (SPMSQ).

##### ٣- أداة الثالثة:-

مقياس تقييم الحالة الوظيفية :-

تم تقييم الحالة الوظيفية على أساس القدرة لأداء نشاطات المعيشة اليومية وذلك حسب مقياس Katz ويشتمل على ٦ عناصر هي : القدرة على الاستحمام، القدرة على ارتداء الملابس، القدرة على دخول الحمام، القدرة على الحركة، القدرة على التحكم في البول، القدرة على تناول الطعام.

#### النتائج

##### الحالة الصحية للمسنين:-

- تراوحت نسبة المسنين الذين كانوا يعانون من مشاكل صحية (٨٧,٦٧ %) ، منهم ٥٧,٣٣ % كانوا يعانون من مرض واحد ، بينما ٣٠,٣٣ % كانوا يعانون من أمراض متعددة.
- أسفرت نتائج البحث على أن نسبة ٣٠,٣٣ % من أفراد العينة كانوا يعانون من مرض الزمهم الفراش لمدة اقل من شهر خلال ال ٦ أشهر الماضية.

##### عناصر الدعم الاجتماعية:-

- مصدر الدخل الرئيسي لحوالي ٣٨ % من عينة الدراسة كان من المعاش الحكومي. واعتمد أكثر من ربع المسنين (٢٨,٠ %) على الأبناء والأشقاء.
- أكثر من ثلاثة أرباع المسنين (٨٥,٣٣ %) كانت تعيش مع عائلاتهم.

- أكثر من نصف العينة (٥٤,٣٣ % & ٥٠,٦٧ % & ٥٢,٣٣ %) ذكر وجود علاقة قوية مع العائلة ، الأصدقاء ، والجيران على التوالي. ٤٤,٣٧ % من الذكور كان عندهم دعم اجتماعي قوي مقارنة بالنساء ٢٥,٩٥ %.

#### الحالة الإدراكية للمسنين: -

- مثلت أقل من نصف عينة الدراسة (٤٧,٠ %) درجة الإدراك الطبيعية ، بينما عانى أكثر من نصف (٥٣,٠ %) عينة الدراسة من اختلال في الحالة الإدراكية وتراوح الضعف بين البسيط والمتوسط والشديد.
  - حوالي ٥٧,٥٩ % من الذين كانوا يعملون بعد سن التقاعد كان عندهم حالة إدراكية طبيعية.
- العلاقة بين الحالة الإدراكية والدعم الاجتماعي:-

- حوالي ثلاثة أرباع المسنين الذين كان عندهم دعم اجتماعي قوي كان عندهم حالة إدراكية طبيعية، بينما ٢٨,٣ % من أولئك الذين كان عندهم درجة متوسطة من الدعم الاجتماعي كان عندهم ضعف إدراكي بسيط . ومنها يتضح انه هناك علاقة ايجابية هامة بين الدعم الاجتماعي والحالة الإدراكية.

#### التوصيات: -

- وقد أوصت الرسالة بالآتي:-
- يجب أن يهتم مقدمو الرعاية الصحية بتعزيز الدعم الاجتماعي للمسن لكي يساعد في زيادة الحالة الإدراكية الطبيعية للمسنين.
- ضرورة إجراء الفحص الطبي والإدراكي المنتظم للمسن للاكتشاف المبكر لأي اختلال وإعادة التأهيل.
- يجب تدعيم العائلة و المجتمع بالتنظيف الصحي حول السمات الطبيعية للشيوخ، وطرق علاج مشاكل المسنين، حتى يمكن أن تتعرف الأسرة على أى اختلال غير طبيعي في حالة المسن الصحية والإدراكية.
- تأهيل وتدريب ممرضات صحة المجتمع على رعاية المسنين ومساعدة عائلاتهم في تقديم الدعم الاجتماعي اللازم وتوجيههم إلى أماكن تقديم هذا الدعم.

رقم الإيداع