# بسم الله الرحمن الرحيم


MONA MAGHRABY


# شبكة المعلومات الجامعية

# التوثيق الالكتروني والميكروفيلم

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# جامعة عين شمس

# التوثيق الإلكتروني والميكروفيلم

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***MONA MAGHRABY***

# The Effect of Hemodialysis Vintage on Pulmonary Functions in Patients with End Stage Renal Disease

Thesis

*Submitted for Partial Fulfillment of Master Degree in Internal Medicine*

By

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# List of Abbreviations

| Abb. | Full term |
|---|---|
| ACE | Angiotensin converting enzyme |
| ACR | Albuminto creatinine ratio |
| AKI | Acute kidney injury |
| ARDS | Acute respiratory distress syndrome |
| CKD | Chronic kidney disease |
| COPD | Chronic obstructive pulmonary disease |
| CPRI | Cardio-pulmonary-renal interactions |
| DLCO | Diffusing Lung Capacity Of Carbon Monoxide |
| ESAs | Erythropoiesis-stimulating agents |
| ESKD | End stage kidney disease |
| ESRD | End-stage renal disease |
| FEV1 | Forced expiratory volume in 1 second |
| FVC | Forced vital capacity |
| GFR | Glomerular filtration rate |
| HD | Hemodialysis |
| HF | Heart failure |
| IL | Interleukin |
| KDOQI | The national Kidney Foundation Kidney Disease Outcomes Quality Initiative |
| PD | Peritoneal dialysis |
| PFTs | Pulmonary function tests |
| TNF | Tumor necrosis factor |

# ABSTRACT

**Background:** Chronic kidney disease (CKD) is an irreversible and progressive disorder characterized by loss of kidney function. CKD gradually progresses to end-stage renal disease (ESRD). ESRD patients eventually need renal replacement therapy via dialysis (subdivided into hemodialysis and peritoneal dialysis) or kidney transplantation in order to survive.

**Aim of the Work:** To see the effect of hemodialysis vintage on pulmonary function in patients with ESRD in Ain-Shams University Hospitals.

**Methods:** This was a prospective study at the Ain-Shams University hospitals for six month duration on patient with ESRD on regular dialysis, 100 patients were chosen for this study, divided into 2 groups each group consists of 50 patients. Incident group (on chronic hemodialysis for 1-6 months duration) and Prevalent group (on chronic hemodialysis for more than 2 years).

**Results**; this study reveals that there was statistically higher indices among incident compared to prevalent hemodialysis research groups before and after hemodialysis as regards improved Pulmonary Functions.

**Conclusion:** prevalent cases on hemodialysis sessions have been improved clinically as regards basal crepitations and lower limb edema but didn't improve significantly in comparison to incident cases as regards Pulmonary functions on the other hand incident cases have been improved as regards Pulmonary functions In a more significant manner then prevalent cases but didn't improve as regards clinical basis concerning lower limb edema and basal crepitations.



KEY WORDS: HEMODIALYSIS VINTAGE ON PULMONARY FUNCTIONS IN PATIENTS WITH END STAGE RENAL DISEASE

# INTRODUCTION

The definition and classification of chronic kidney disease (CKD) have evolved over time, but current international guidelines define this condition as decreased kidney function shown by glomerular filtration rate (GFR) of less than 60 mL/min per 1·73 $m^2$, or markers of kidney damage, or both, of at least 3 months duration, regardless of the underlying cause. Diabetes and hypertension are the main causes of CKD in all high-income and middle-income countries, and also in many low-income countries ***(KDIGO, 2013).***

Incidence, prevalence, and progression of CKD also vary within countries by ethnicity and social determinants of health, possibly through epigenetic influence. Many people are asymptomatic or have non-specific symptoms such as lethargy, itch, or loss of appetite. Diagnosis is commonly made after chance findings from screening tests (urinary dipstick or blood tests), or when symptoms become severe. The best available indicator of overall kidney function is GFR, which is measured either via exogenous markers (eg, DTPA, iohexol), or estimated using equations ***(Morton et al., 2016).***

Presence of proteinuria is associated with increased risk of progression of CKD and death. Kidney biopsy samples can show definitive evidence of CKD, through common changes such as glomerular sclerosis, tubular atrophy, and interstitial

fibrosis. Complications include anaemia due to reduced production of erythropoietin by the kidney; reduced red blood cell survival and iron deficiency; and mineral bone disease caused by disturbed vitamin D, calcium, and phosphate metabolism ***(Smyth et al., 2014).***

People with CKD are five to ten times more likely to die prematurely than they are to progress to end stage kidney disease. This increased risk of death rises exponentially as kidney function worsens and is largely attributable to death from cardiovascular disease, although cancer incidence and mortality are also increased ***(Reddy et al., 2015).***

Health-related quality of life is substantially lower for people with CKD than for the general population, and falls as GFR declines. Interventions targeting specific symptoms, or aimed at supporting educational or lifestyle considerations, make a positive difference to people living with CKD. Inequity in access to services for this disease disproportionally affects disadvantaged populations, and health service provision to incentivise early intervention over provision of care only for advanced CKD is still evolving in many countries ***(Levey et al., 2015).***

Chronic kidney disease (CKD) arises from many heterogeneous disease pathways that alter the function and structure of the kidney irreversibly, over months or years. The diagnosis of CKD rests on establishing a chronic reduction in

kidney function and structural kidney damage ***(Garasto et al., 2014).***

The best available indicator of overall kidney function is glomerular filtration rate (GFR), which equals the total amount of fluid filtered through all of the functioning nephrons per unit of time.12 The definition and classification of CKD have evolved over time, but current international guidelines define CKD as decreased kidney function shown by GFR of less than 60 mL/min per 1·73 $m^2$, or markers of kidney damage, or both, of at least 3 months duration, regardless of underlying cause ***(Lamb et al., 2014).***

When GFR is less than 15 mL/min per 1·73$m^2$ (category G5, table 1), a person has reached end stage kidney disease (ESKD), at which point kidney function is no longer able to sustain life over the long term. Options for patients with ESKD are kidney replacement therapy (in the form of dialysis or kidney transplantation), or conservative care (also called palliation or non-dialytic care) ***(Hoste et al., 2015).***