# Impact of End Stage Renal Disease upon physical activity for Adult Patients Undergoing Hemodialysis at AL-Najaf Governorate Hospitals

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**Abstract:**

**Objective** The End Stage Renal Disease (ESRD) effects on patient body, including peripheral nerves and muscles, differently from one patient to another, which is reflected on physical activity and affect the independence of the patient. This study was performed to assess physical activity for patients and comparative sample, detect the relationship between physical activity and socio-demographic characteristics.

**Methods** A descriptive design was conducted on a purposive sample of (100) patients with End Stage Renal Disease (ESRD) on hemodialysis in AL-Najaf city in the centers of Nephrology and (100) healthy personals from relative patients, center staff and my relative.                   A questionnaire has been used as a tool of data collection and consisting of socio demographic, clinical characteristic and responses related to physical activity. Conduct interviews each patients and healthy persons included in the study.

**Results** The results of the study revealed that the (38%) of the study subjects are within the age group (more than 60 year). (52%) are females. While, (90%) are married people. Regarding the educational level (38%) of the sample are able to read and write, while (48%) possess 7 or more family members.(58%) of them their economic status is enough to some extent, (78%) are population lived in urban, While (65%) of the sample are non-smokers, (86%) subjects not working, Regarding the chronic disease history (82%) of them presents positive result. the total mean of score for physical activity of studied patients (2.23) and control subjects (2.87)

**conclusion** The results of the study revealed that the physical activity of healthy people is much better than people under hemodialysis. This reflects the effect of the disease on the patient. The relationship between physical activity  and (age, residency, education level, number of family member, occupation, other chronic disease) is a significant but with (marital status, economic status, smoking) no significant.

**Recommendations** Educate people with chronic diseases such as diabetes and high pressure, especially the ages over 60 years to do the examination of renal insufficiency because of the more frequent kidney failure and the fact that the disease may occur without symptoms.

**Key words** impact, End Stage Renal Disease, physical activity, Hemodialysis

## INTRODUCTION

chronic kidney disease(CKD) is chronic progressive and irreversible diseases of the kidneys. CKD is comprehensive term that describes decreasing in the glomerular filtration rate or nephritic damage for three or additional months. CKD has been categorized into 5 stages by the National kidney Foundation (NKF) from stage one glomerular filtration rate(GFR) > ninety mil/minute/1.73 $M^2$ to stage five GFR < fifteen mil\minute\1.73 $M^2$ . This stage is known as end stage renal disease.[1]

End stage renal disease could be  a life threatening chronic sickness in which the kidney function decreases to less than 30 % of normal function , the patients initiate to suffer from signs and symptoms of uremia when renal function deteriorates to less than 30% of normal, when ESRD occurs the patient should treat by dialysis or kidney transplantation.[2]

Most common diseases which will result in chronic kidney disease are: hypertension (sever and prolonged), diabetes mellitus, glomerulonephritis, hereditary kidney disease, polycystic kidney disease, obstructive uropathy, congenital or developmental disorder, interstitial nephritis.[3]

The severity of  signs and symptoms of CKD depends in part on the glomerular filtration rate, patients age and also other underlying conditions. All body systems affected by this disease and some of these signs and symptoms are hypertension, anorexia, nausea, pulmonary edema, pericardial effusion , tired, headache, sleep disorders,  muscular irritability, lethargy, seizures, glucose intolerance, neuropathy, coma,  libido, impotence, amenorrhea. may be sodium loss with dehydration, pallor, hyperpigmentation, pruritus, ecchymoses, uremic frost, increased bleeding tendencies, anemia. Behavior and personality changes, alteration in cognitive processes.[4]

About 70% from patients with ESRD treated by hemodialysis. The remove nitrogenous wastes and toxins from blood by hemodialysis machine which acts as an artificial kidney.[4]

WHO defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure – including activities undertaken while working, playing, carrying out household chores, travelling, and engaging in recreational pursuits.[5]

## METHODOLOGY

### Design of the Study
The quantitative design, comparative study/descriptive

### Sample of the Study
Non probability " purposive " of (100) patients with ESRN on hemodialysis and (100) healthy personals from relative patients, center staff and my relative.

### Setting of the study
The study is achieved in AL-Najaf City in the center of Nephrology in  AL-Hakeem general hospital and AL-Sader medical city. This study started from 1st November 2016 to 20 June 2017.

### Instruments
The questionnaire was constructed for the purpose of the study. The instruments consisted three parts as below:
Part1. Socio-demographic Characteristic of the Study Samples. ( 10 ) items
Part2. Clinical Characteristics. ( 6 ) items
Part3. physical activities: ( 10 ) items.
All items are scored at three level type of likert scale; (3) independent, (2) Partially dependent, (1) Totally dependent. The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 20. Through the application of descriptive statistical data analysis include (Frequencies, Percentages, and Cumulative Percent) and arithmetic mean with standard deviation, Mean of score (M.S.) with their Standard Deviation (SD),  inferential statistics, and Relative Sufficiency (R.S.%).

## RESULTS

Table (1) shows that (38%) of the study subjects are within the age group (more than 60 year). (52%) are females. While, the study revealed that the majority of them represents (90%) are married people. Regarding the educational level the study declared that (38%) of the sample are able to read and write, while (48%) of the subjects possess 7 or more family members. In regard to economic status the present study revealed that (58%) of them their economic status is enough to some extent, Same table revealed that high percentage represents (78%) are population lived in urban, While (65%) of the sample are non-smokers, Concerning the occupation the results demonstrated high percentage (86%) subjects not working, Regarding the chronic disease history (82%) of them presents positive result, While hypertension found to account (54%) as a kind of chronic disease. Table (2-A) showed that the mean of score for patients in ( Move from the chair to the bed ) highest score and ( Driving a car ) less score.Table (2-A) showed that the mean of score for patients in ( Move from the chair to the bed, Sitting in the chair and movement ) highest score and ( Housework ) less score. Table (3-C) showed that the Mean of Score of Physical Activity Items of control subjects were higher (P≤0.01) than studied patients. Table (3) show that there were significant differences in the mean of score for variables ( age, gender, educational, number of family member, residency, occupation, if other chronic disease found ) in relation to physical activity and no significant in ( marital status, economic status, smoking, other chronic disease ) with relation physical activity.

## DISCUSSION

In order to achieve the first objective of the study, the first part of the discussion presents and explains the nature of the comparison between patients and control for physical activity which consist of ten items.

Data analysis has revealed that mean score of physical activity items for control subjects were higher than studied patients, this mean healthy persons more active than patients. This result agreement with Bonner et al., (2009) who mentioned that the participants from patients in study reported a reduced ability To accomplish the daily work and share the others to enjoy, it all because of ESRD.[6]

Also, this result supported by Segura-orti, et al., (2011) they found that decrease activities of daily living for patients. This findings may come because complication of disease, affected all body system.[7]

In order to achieve the second objective of the study, the second part of the discussion presents and explains the nature of the relationship between physical activity and demographic characteristics for studied patients.

The study results indicate that there were a significant differences in the mean of score (M.S) of variables of the physical activity in relation to age groups of studied patients. However. In all variables patients of age more than 60 years have a lower mean of score (M.S) than patients of other ages. This result agrees with Anees, et al., (2014) who reports that age have negative relationship with physical activity.[8]

**Table (1). Distribution of Demographic Characteristics of the study and control group (n=100).**

| Variables | Study group | Patients | | Control | |
|---|---|---|---|---|---|
| | | F | % | F | % |
| 1- Age Groups | >30year | 16 | 16% | 15 | 15% |
| | 30-45year | 27 | 27% | 27 | 27% |
| | 46-60year | 19 | 19% | 21 | 21% |
| | **<60year** | **38** | **38%** | **37** | **37%** |
| 1- Gender | Male | 48 | 48% | 45 | 45% |
| | **Female** | **52** | **52%** | **55** | **55%** |
| 2- Marital Status | Single | 9 | 9% | 11 | 11% |
| | **Married** | **91** | **91%** | **89** | **89%** |
| 3- Levels of Educational | unable to read and write | 27 | 27% | 24 | 24% |
| | **read and write** | **38** | **38%** | **36** | **36%** |
| | Primary | 13 | 13% | 16 | 16% |
| | Secondary | 15 | 15% | 13 | 13% |
| | diploma and above | 7 | 7% | 11 | 11% |
| 4- Number of family member | 1-2member | 2 | 2% | 6 | 6% |
| | 3-4 member | 17 | 17% | 19 | 19% |
| | 5-6 member | 33 | 33% | 31 | 31% |
| | **7 member or more** | **48** | **48%** | **44** | **44%** |
| 5- Economic Status | Enough | 30 | 30% | 33 | 33% |
| | **enough to some extent** | **58** | **58%** | **51** | **51%** |
| | not enough | 12 | 12% | 16 | 16% |
| 6- Residency | **Urban** | **78** | **78%** | **82** | **82%** |
| | Rural | 22 | 22% | 18 | 18% |
| 7- Smoking | **non-smoker** | **65** | **65%** | **59** | **59%** |
| | Smoker | 13 | 13% | 15 | 15% |
| | ex-smoker | 22 | 22% | 26 | 26% |
| 8- Occupation | Working | 14 | 14% | 19 | 19% |
| | **not working** | **86** | **86%** | **81** | **81%** |
| 9- Other Chronic Disease | Yes | **82** | **82%** | 0 | 0% |
| | No | 18 | 18% | **100** | **100%** |
| 9- If Other Chronic Disease Found | **Hypertension** | **45** | **54.49** | 0 | 0% |
| | Diabetes | 9 | 10.97 | 0 | 0% |
| | hypertension + diabetes | 28 | 34.14 | 0 | 0% |

**Table (2-A) Scores for Physical Activity Items of studied patients (n=100)**

| Physical Activity Items | Total dependent | | Partial dependent | | Independent | | M.S | ±SD | R.S |
|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | | | |
| State of walking | 8 | 8 | 19 | 19 | 73 | 73 | 2.65 | 0.626 | 88.33 |
| State of exercise | 41 | 41 | 27 | 27 | 32 | 32 | 1.91 | 0.884 | 63.67 |
| The rise and descent stairs | 26 | 26 | 32 | 32 | 42 | 42 | 2.16 | 0.813 | 72.00 |
| Praying | 9 | 9 | 13 | 13 | 78 | 78 | 2.69 | 0.631 | 89.67 |
| Housework | 35 | 35 | 32 | 32 | 33 | 33 | 1.98 | 0.829 | 66.00 |
| Move from the chair to the bed | 7 | 7 | 8 | 8 | 85 | 85 | 2.78 | 0.561 | 92.67 |
| Sitting in the chair and movement | 8 | 8 | 8 | 8 | 84 | 84 | 2.76 | 0.588 | 92.00 |
| Driving a car | 62 | 62 | 15 | 15 | 23 | 23 | 1.61 | 0.840 | 53.67 |
| The use of general transport | 31 | 31 | 40 | 40 | 29 | 29 | 1.98 | 0.778 | 66.00 |
| Traveling | 45 | 45 | 35 | 35 | 20 | 20 | 1.75 | 0.770 | 58.33 |
| Total | 272 | 27.2 | 229 | 22.9 | 499 | 49.9 | 2.23 | 0.730 | 74.234 |

**Table (2-B) Scores for Physical Activity Items of control subjects (n=100)**

| Physical Activity Items | Total dependent | | Partial dependent | | independent | | M.S | ±SD | R.S |
|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | | | |
| State of walking | 0 | 0 | 2 | 2 | 98 | 98 | 2.98 | 0.14 | 99.33 |
| State of exercise | 2 | 2 | 9 | 9 | 89 | 89 | 2.87 | 0.39 | 95.67 |
| The rise and descent stairs | 2 | 2 | 8 | 8 | 90 | 90 | 2.88 | 0.38 | 96.00 |
| Praying | 0 | 0 | 1 | 1 | 99 | 99 | 2.99 | 0.10 | 99.67 |
| Housework | 3 | 3 | 24 | 24 | 73 | 73 | 2.70 | 0.52 | 90.00 |
| Move from the chair to the bed | 0 | 0 | 0 | 0 | 100 | 100 | 3.00 | 0.00 | 100.00 |
| Sitting in the chair and movement | 0 | 0 | 0 | 0 | 100 | 100 | 3.00 | 0.00 | 100.00 |
| Driving a car | 5 | 5 | 12 | 12 | 83 | 83 | 2.78 | 0.52 | 92.67 |
| The use of general transport | 3 | 3 | 12 | 12 | 85 | 85 | 2.82 | 0.46 | 94.00 |
| Traveling | 5 | 5 | 19 | 19 | 76 | 76 | 2.71 | 0.56 | 90.33 |
| Total | 20 | 2.0 | 87 | 8.7 | 893 | 89.3 | 2.87 | 0.31 | 95.77 |

**Table (2-C) Comparison for Physical Activity Items between patients and control subjects**

| Physical Activity Items | M.S | | $\chi^2$ Statistics |
|---|---|---|---|
| | Patients | Control | |
| state of walking | 2.65 | 2.98 | |
| state of exercise | 1.91 | 2.87 | |
| the rise and descent stairs | 2.16 | 2.88 | |
| Praying | 2.69 | 2.99 | $\chi^2$=11.857 Df=1 P value= 0.001 |
| Housework | 1.98 | 2.70 | |
| move from the chair to the bed | 2.78 | 3.00 | |
| sitting in the chair and movement | 2.76 | 3.00 | |
| driving a car | 1.61 | 2.78 | |
| the use of general transport | 1.98 | 2.82 | |
| Traveling | 1.75 | 2.71 | |

Critical $\chi^2$ (df=1, α=0.01) =6.635

The study results reveal that the mean of score (M.S) of male was higher (P <0.01) than female in the Physical Activity. This result supported by Ann Bonner, et al., (2009) who found that male more independent in exercise and social activities.[9]

Data analysis has reveal that there were no significant relationship between physical activity and marital status. This results supported by Joshi. et al., (2017) who repot that no significant association between marital status and physical activity.[10]

Regarding educational level showed that there were high significant (P≤0.01) in the mean of score (M.S) of physical activity in relation to level of education of studied patients. This result is consistent with the study of Parvan, et al., (2013) which found a significant relationship between physical activity and education level.

The study results indicate that there were high significant for all items of physical activity in relation to number of family members of studied patients. This means that small family better from large family in physical activity. This result disagree with Anees. et al.,

(2014) who found no significant in number of family member. This result comes may be due to living requirement to large family.[8]

The study shows that there is no significant relation among all items for economic status and physical activity. This results disagree with Joshi, et al., (2017) who found no significant relationship between economic status and physical activity of studied patients. This findings comes because Ministry of Health in Iraq free treatment to the patients and society does not differentiate between the rich and the poor to some extent.[10]

As shown in this study which refers to there were significant differences in the mean of score (M.S) of all items of physical activity in relation to residency of studied patients. The mean of score (M.S) of Urban were higher ((P <0.01) than rural patients. Also the finding consistent with result obtained by Anees, et al., (2014) which explains relationship between physical activity and residence, rural patients better physical activity as compared to patient living in urban.[8]

**Table (3) association of socio-demographic with physical activity of studied patients.**

| Variables | Study group | Physical activity | | | |
|---|---|---|---|---|---|
| | | M.S | ±SD | F/t value | p-value |
| 1- Age Groups | >30yrs | 2.627 | 0.513 | F value 8.434** | 0.007 |
| | 30-45yrs | 2.368 | 0.672 | | |
| | 46-60yrs | 2.479 | 0.694 | | |
| | **<60yrs** | 1.834 | 0.635 | | |
| 2- Gender | Male | 2.448 | 0.603 | t value 3.869** | 0.00 |
| | **Female** | 2.023 | 0.493 | | |
| 3- Marital Status | Single | 2.14 | 0.52 | t value 0.441 NS | 0.660 |
| | **Married** | **2.24** | **0.59** | | |
| 4- Levels of Educational | unable to read and write | 1.863 | 0.520 | F value 6.148** | 0.000 |
| | **read and write** | **2.205** | **0.638** | | |
| | Primary | 2.523 | 0.390 | | |
| | Secondary | 2.480 | 0.413 | | |
| | diploma and above | 2.657 | 0.336 | | |
| 5- Number of family member | 1-2member | 3.000 | 0.000 | F value 8.534** | 0.000 |
| | 3-4 member | 2.518 | 0.438 | | |
| | 5-6 member | 2.415 | 0.437 | | |
| | **7 member or more** | **1.963** | **0.613** | | |
| 6- Economic Status | Enough | 2.36 | 0.64 | F value 1.068 NS | 0.348 |
| | **enough to some extent** | **2.17** | **0.51** | | |
| | not enough | 2.20 | 0.77 | | |
| 7- Residency | **Urban** | **2.331** | **0.528** | t value **3.521**** | **0.001** |
| | Rural | 1.859 | 0.646 | | |
| 8- Smoking | **non-smoker** | **2.18** | **0.53** | F value **2.633 NS** | **0.077** |
| | Smoker | 2.57 | 0.50 | | |
| | ex-smoker | 2.17 | 0.72 | | |
| 9- Occupation | Working | 2.821 | 0.275 | t value 4.467** | 0.000 |
| | **not working** | **2.130** | **0.566** | | |
| 10- Other Chronic Disease | Yes | **2.21** | **0.57** | t value 0.361 NS | 0.719 |
| | No | 2.27 | 0.68 | | |
| 11- If Other Chronic Disease Found | **Hypertension** | **2.36** | **0.52** | F value 3.628* | 0.031 |
| | Diabetes | 2.22 | 0.58 | | |
| | hypertension + diabetes | 1.99 | 0.62 | | |

The study finds that there no significant relationship between physical activity and smoking. This results agree with Wan. Et al., (2015) who found no significant relationship between quality of live and smoking.[13]

The study results reveal that there were significant difference association between physical activity and occupation of patients, mean score of working was higher than not working patients. this means that physical activity for working better from not working patients. this results supported by Joshi, Et al., (2017) who found mean of score for employment higher than unemployment patients.[10]

Regarding other chronic disease, there is no association with physical activity. This results agreement with Wan, et al., (2015) who found presence of comorbidities were not associated with health related quality of live.[13]

The study results reveal that significant relationship between diabetes, hypertension or both of them with physical activity. This result disagrees with study conducted by Yusop, et al., (2013) who found better quality of live with absence diabetes. This result comes because control or uncontrolled on disease for all time or some time, this irregular leading to result unclear.[14]

## CONCLUSION

Based on the findings of this study, it can be concluded that the physical activity of healthy people is much better than people under dialysis. This reflects the effect of the disease on the patient and shows the sobriety of the questionnaire.The relationship between physical activity and (age, residency, education level, number of family member, occupation, other chronic disease) is a significant but with (marital status, economic status, smoking) no significant.

## RECOMMENDATIONS

1 -The use of different ways to educate people with chronic diseases such as diabetes and high pressure, especially the ages over 60 years to do the examination of renal insufficiency because of the more frequent kidney failure and the fact that the disease may occur without symptoms.

2 - Working to provide the needs of dialysis patients because of daily life activities much less than healthy people.

3 - Increasing kidney transplant centers inside Iraq because kidney transplant patients more active and less expensive than dialysis patients

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