

Analysis Of Physical Function Among End Stage Renal Disease Patients With Hemodialysis, Central Hospital, Arar, Kingdom Of Saudi Arabia

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Abstract:

Background: End-stage renal disease (ESRD) affects the lives of a disproportionate amount of people around the world today. It is estimated that there is 35% increase in the number of dialysis patients worldwide (Oxford Journals, February 2014). A comprehensive survey in Hail region, Kingdom of Saudi Arabia shows that the prevalence [95% confidence interval (CI)] of all stages Chronic Kidney Disease (CKD) was 9.4%. A study carried out in Saudi Arabia shows statistical evidence that in 2014, the dialysis population became doubled over 15 years and is expected to increase two-fold by 2020. (Mohammed Al-Homrany, King Khalid University, 2014). It has been identified that on an average of 30- 40 ESRD patients with different stages are undergoing hemodialysis per day in Artificial Kidney Unit (AKU), Central Hospital, Arar. (September, 2016). Several studies have shown that patients on hemodialysis (HD) are less physically active and have low exercise capacity and poor physical functioning than sedentary persons with normal kidney function. (Kousoula. G. etal, 2012). Exercise in hemodialysis patients has been reported to enhance insulin sensitivity, improve lipid profile, increase hemoglobin, decrease blood pressure, increase strength, improve cardiac output, cardiac fitness, possibly dialysis adequacy and improve quality of life., (Moinuddin I & Leehey D J, 2008).

Materials and Methods: In this non-experimental analysis study, data were collected from 60 hemodialysis patients with End Stage Renal Disease came to the Artificial Kidney Unit of Central Hospital, belonging to age group of 20 to 60. Composite Physical Function Scale was administered to collect data regarding physical activity of End Stage Renal disease on hemodialysis.

Results: Analysis of Modified Physical Function Scale showed more than half of the participants needed some form of help to take care of their own personal needs such as bathing (51.7%) and dressing (56.7%). It was also reported that they cannot do light household chores (60%) climb up and down a flight of stairs (55%), do own shopping and errands (61.7%), lift and carry 10 pounds (63.3%) and walk half mile (60%). Majority of them were unable to do heavy house hold works such as scrubbing and floor vacuuming (76.7%), strenuous activities like hiking and digging (81.7%).

Conclusion: The level of physical functioning (Modified composite physical function scale) reported to be decreased among End Stage Renal Diseases patients with hemodialysis.

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I. Introduction

End-stage renal disease (ESRD) affects the lives of a disproportionate amount of people around the world today. It is estimated that there is 35% increase in the number of dialysis patients worldwide (Oxford Journals, February 2014). A study carried out in Saudi Arabia shows statistical evidence that in 2014, the dialysis population became doubled over 15 years and is expected to increase two-fold by 2020. (Mohammed Al-Homrany, King Khalid University, 2014). People who are physically inactive have a 20% to 30% increased risk of mortality. Patients with end-stage renal disease (ESRD) on dialysis have physical activity levels which are 20%-50% lower than age- and sex-matched sedentary population controls. The reduced physical activity in hemodialysis patients was assessed by flexibility test and found that depression played a major role in preventing the hemodialysis subjects to be physically active. (Johansen K Letal, 2000). Diego et al (2016) concluded after a cross-sectional study among 108 individuals with chronic kidney disease under hemodialysis in which 8 % of the sample was identified as sedentary and 70.4% did not receive any guidance for performing physical activity. The investigators have come across with various studies regarding physical function among ESRD patients in different parts of the world. But a few studies have seen in the Kingdom of Saudi Arabia deal with physical function among hemodialysis patients. So, the investigators feel motivated to conduct such type of study in a hospital setting in order to assess the variables and to determine the relationship between them.

II. Material and Methods

In this non experimental analysis study, data were collected from 60 hemodialysis patients with End Stage Renal Disease came to the Artificial Kidney Unit of Central Hospital, belonging to age group of 20 to 60 . Modified Composite Physical Function Scale was administered to collect data regarding physical activity of End Stage Renal disease on hemodialysis.

Study Design: Non-experimental analysis study

Study Location: This is a tertiary care hospital-based study done in Department of Artificial Kidney unit, Central Arar Hospital, Kingdom of Saudi Arabia.

Study Duration: August 2017-August 2018

Sample size calculation: The sample size was estimated to be 60 for this nonexperimental analysis study, after analyzing the reports of pilot study among 6 patients in the same study setting. From the target population the investigators selected 60 samples by following convenient sampling method.

Subjects & selection method: The study population was drawn from a tertiary care hospital in Department of Artificial Kidney unit, Central Arar Hospital, Kingdom of Saudi Arabia between from August 2017 to August 2018.

Inclusion criteria:

1. ESRD Patients undergoing hemodialysis in AKU, Central Arar Hospital.
2. Age group is between 20 – 60years.
3. Patients who speak or read Arabic.
4. Both males and females are included.

Exclusion criteria:

1. Patients with other complications like hypoglycemia, hypotension during hemodialysis therapy.
2. Patients who are seriously ill.
3. Non-cooperative patients.
4. Patients with other infectious diseases such as hepatitis, HIV etc.
5. Patients with dementia or cognitive impairment.

Procedure methodology

After written informed consent was obtained, a well-designed questionnaire was used to collect the data of the recruited patients. By following convenient sampling method and after considering inclusion and exclusion criteria 60 samples were selected from the study setting. A semi- structured tool which has been translated to Arabic language, was used to assess the physical function among ESRD patients with hemodialysis, through an interview (read only) technique by two Arabic speaking nursing personnel for 20-30 minutes per subject. Duration of data collection will be one month, the questionnaire included socio-demographic characteristics such as age, sex, marital status, occupation, duration of illness, co morbid conditions, dietary pattern, frequency of performing sala and Modified Composite Physical Function Scale. Modified Composite Physical Function scale includes 12 components of physical activities in which each item is graded with maximum score 2 and minimum 0.

Modified CPF Rating Scale:

High (Advance) functioning – those able to perform all 12 activities without assistance (CPF score of 24)

Moderate functioning – those with current ability to perform at least 7 activities (score of 14) without assistance, thus meeting commonly recognized requirements for physical independence – able to take care of personal needs, do light housework, walk 3-4 blocks, do own shopping, etc.

Low functioning (at risk) – those unable to meet requirements for moderate functioning, thus indicating a person may be ‘at risk’ for losing physical independence. (score of 6).

Statistical analysis

Data was analyzed using SPSS version 20 (SPSS Inc., Chicago, IL). Descriptive statistics was used to identify the significance of different variables in the study. Pearsons co-relation was used to identify the relationship between the selected variables and the level of physical function among the study participants.

III. Result

Table-1: Description of Selected Demographic Variables

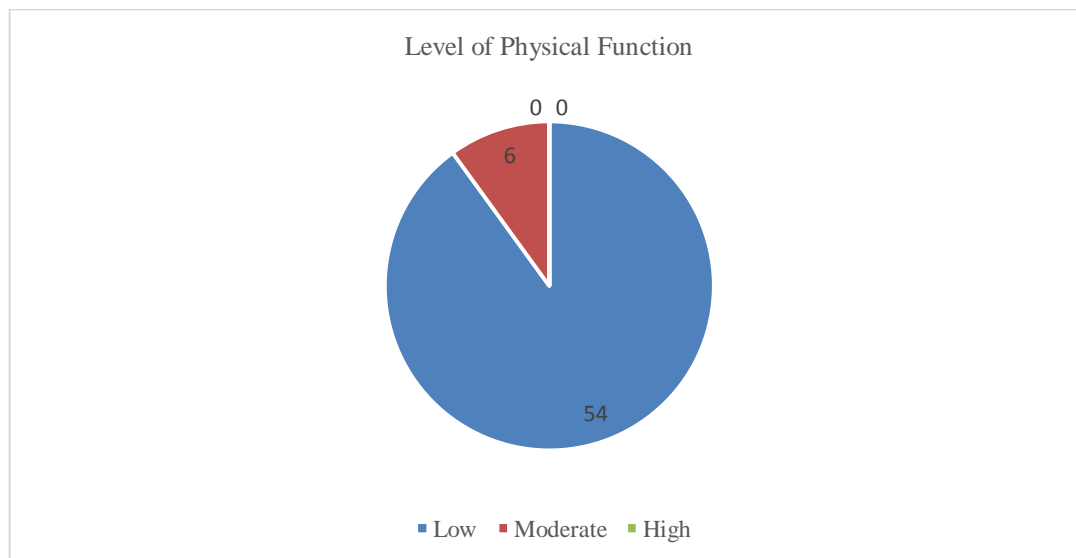
S.no	Name of the variables	Subgroups	Frequency	Percentage
1	Age	20-30	12	20
		31-40	10	16.7

		41-50	33	55
		51-60	5	8.3
2	Sex	Male	26	43.3
		Female	34	56.7
3	Marital status	Single / Unmarried	6	10
		Married	39	65
		Separated / Divorced	15	25
4	Occupation	Sedentary	45	75
		Moderate worker	15	25
5	Duration of illness	2-5 Years	34	56.7
		5-10 years	23	38.3
		>10 years	3	5
6	Co-morbid Conditions	Diabetes Mellitus	17	28.3
		Hypertension	24	40
		Cardiac diseases	4	6.7
		Renal diseases	15	25
		Others	0	0
7	Diet	Strict	17	28.3
		Non Strict	43	71.7
8	Performing Sala	Yes	60	100
		No	0	0
9	Number of times in a day doing sala	5	2	3.3
		4	0	0
		3	55	91.7
		2	0	0
		1	3	5

Descriptive analysis of the study participants showed that majority of them (55%) belongs to 41-50 years followed by 16.7% in the 31-40 years age group. Most of the study participants (75%) reported sedentary lifestyle. Nearly half of the 40% had a history of Hypertension, followed by Diabetes (28.3%) and renal diseases (6.7%). The study also showed that most of the participants (71.7%) had an unhealthy dietary pattern.

Table-2: Level of Physical Function: Composite Physical Function Scale

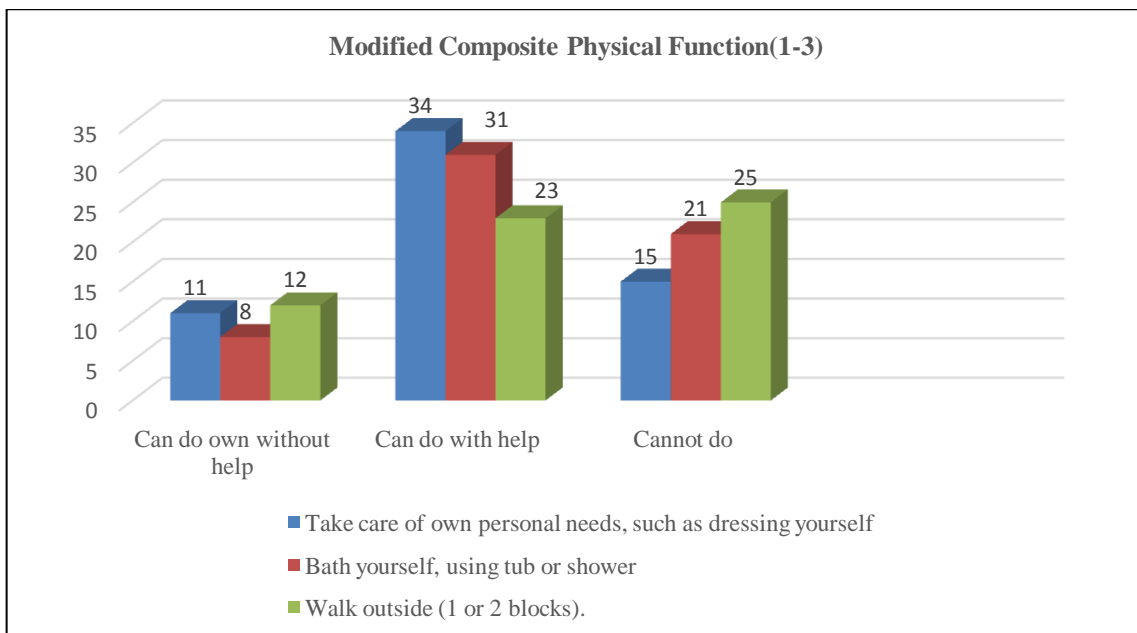
S.no	Name of the variables	Subgroups	Frequency	Percentage
1	Level of Physical function	Low	54	90
		Moderate	6	10
		High	0	0

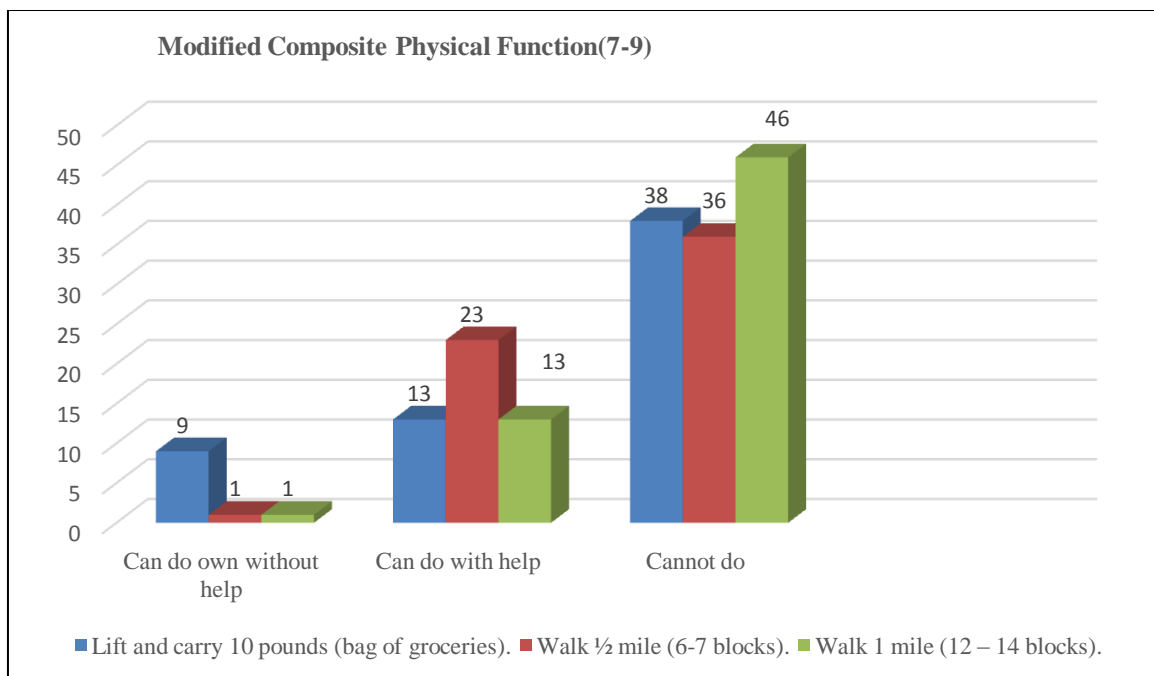
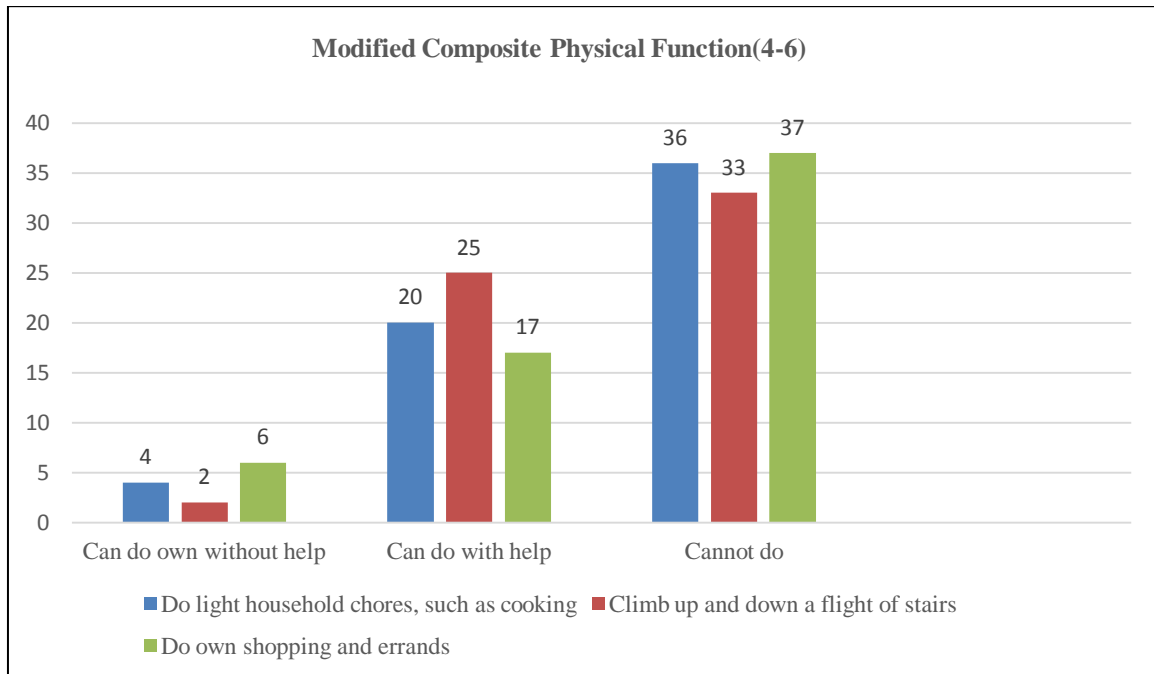


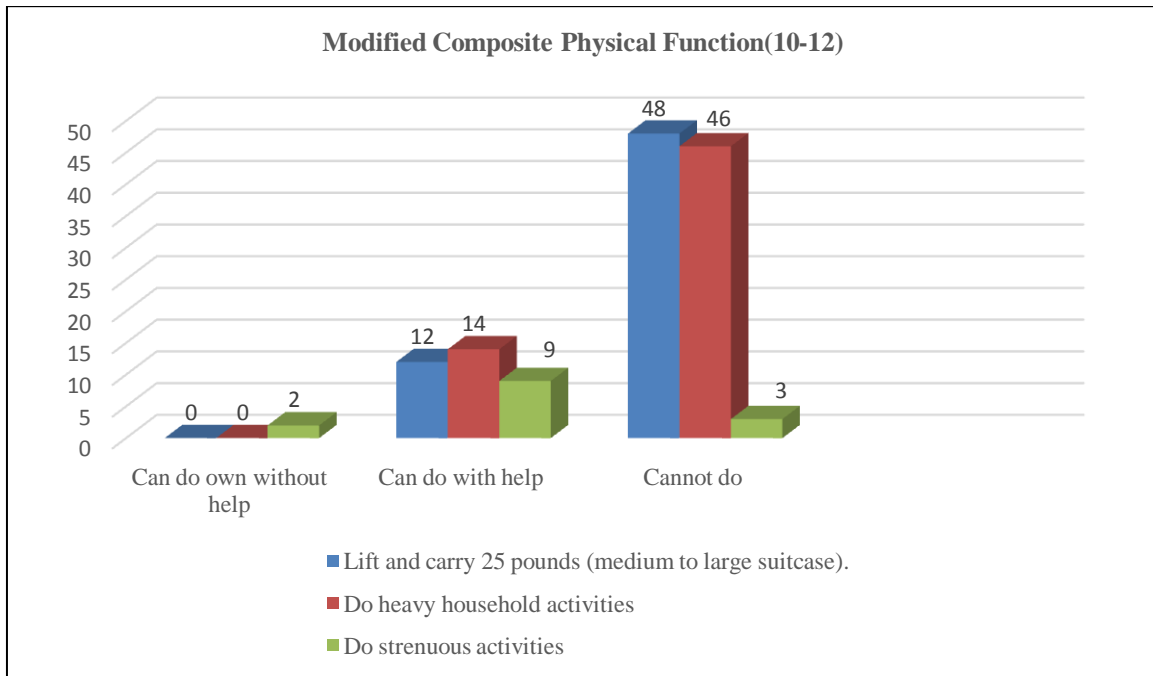
Assessment of level of physical function by using Composite Physical Function Scale showed that majority of the participants (90%) are having low level of physical function followed by 10% with moderate level of physical function and no one reported with high level of physical functioning.

Table-3: Description of Modified Composite Physical Function

S.no	Name of the variables	Subgroups	Frequency	Percentage
1	Take care of own personal needs, such as dressing yourself.	Can do own without help	11	18.3
		Can do with help	34	56.7
		Cannot do	15	25
2	Bath yourself, using tub or shower.	Can do own without help	8	13.3
		Can do with help	31	51.7
		Cannot do	21	35
3	Walk outside (1 or 2 blocks).	Can do own without help	12	20
		Can do with help	23	38.3
		Cannot do	25	41.7
4	Do light household chores, such as cooking, dusting, washing dishes, sweeping a walkway.	Can do own without help	4	6.7
		Can do with help	20	33.3
		Cannot do	36	60
5	Climb up and down a flight of stairs.	Can do own without help	2	3.3
		Can do with help	25	41.7
		Cannot do	33	55
6	Do own shopping and errands (walk approx. 3-4 blks:400 yds).	Can do own without help	6	10
		Can do with help	17	28.3
		Cannot do	37	61.7
7	Lift and carry 10 pounds (bag of groceries).	Can do own without help	9	15
		Can do with help	13	21.7
		Cannot do	38	63.3
8	Walk ½ mile (6-7 blocks).	Can do own without help	1	1.7
		Can do with help	23	38.3
		Cannot do	36	60
9	Walk 1 mile (12 – 14 blocks).	Can do own without help	1	1.7
		Can do with help	13	21.7
		Cannot do	46	76.7
10	Lift and carry 25 pounds (medium to large suitcase).	Can do own without help	0	0
		Can do with help	12	20
		Cannot do	48	80
11	Do heavy household activities, such as scrubbing, floor vacuuming, raking leaves.	Can do own without help	0	0
		Can do with help	14	23.3
		Cannot do	46	76.7
12	Do strenuous activities, such as hiking, digging in garden, moving heavy objects, aerobic dance activities strenuous calisthenics bending	Can do own without help	2	3.3
		Can do with help	9	15
		Cannot do	49	81.7







Analysis of Modified Physical Function Scale showed more than half of the participants needed some form of help to take care of their own personal needs such as bathing (51.7%) and dressing (56.7%). It was also reported that they cannot do light household chores (60%) climb up and down a flight of stairs (55%), do own shopping and errands (61.7%), lift and carry 10 pounds (63.3%) and walk half mile (60%). Majority of them were unable to do heavy house hold works such as scrubbing and floor vacuuming (76.7%), strenuous activities like hiking and digging (81.7%).

Table 4: Correlation between Level of Physical Functioning and the selected demographic variables

S.no	Name of the variables	Scale	Pearson correlation	Significance
1	Age	Composite physical function scale	1	0.00
2	Sex	Composite physical function scale	-.243	0.062
3	Marital status	Composite physical function scale	-.155	.236
4	Occupation	Composite physical function scale	0.240	0.065
5	Duration of illness	Composite physical function scale	-.474	.000
6	Co-morbid Conditions	Composite physical function scale	-.243	0.061
7	Diet	Composite physical function scale	0.081	0.540
8	Performing Sala	Composite physical function scale	-	-
9	Number of times in a day doing sala	Composite physical function scale	-0.059	0.655

Analysis of correlation between level of physical functioning and the selected demographic variables using Pearson Correlation showed significant positive linear relationship between age and level of physical function with a correlation value of 1. While gender difference and presence of co morbid conditions in comparison with level of physical functioning have a moderate negative relationship with a value of (-.243). It also shows that presence of co morbid conditions like Diabetes and Hypertension moderately reduced the level of physical functioning among study participants. Participants who are engaged in work had reported more level of physical functioning compared to participants who followed a sedentary life style with a correlation value of 0.240.

IV. Discussion

The incidence of end stage renal diseases is increasing alarmingly worldwide and became one of the important reasons for reduced physical functioning in hemodialysis patients. As a part of treatment protocol, they have to undergo pre and post investigation procedures and 2 to 3 cycles of hemodialysis per week. It was observed that patients of hemodialysis were suffering from decreased level of physical functioning due to prolonged duration of hemodialysis and its related side effects.

The study result represented that more than half of the participants were middle adults belonged to the age group of 41-50 years. Chronic diseases like hypertension and diabetes mellitus were found to be the predisposing factors for the end stage renal diseases among them as well as most of the participants followed an unhealthy diet pattern which may also increase the risk of end stage renal diseases.

The researcher found that more than half of the participants needed some form of help to take care of their own personal needs such as bathing (51.7%) and dressing (56.7%). It was also reported that they cannot do light household chores (60%) climb up and down a flight of stairs (55%), do own shopping and errands (61.7%), lift and carry 10 pounds (63.3%) and walk half mile (60%). Majority of them were unable to do heavy household works such as scrubbing and floor vacuuming (76.7%), strenuous activities like hiking and digging (81.7%). The review of results from related studies also showed that indices of physical functioning were decreased according to the progression of Chronic disease. (Hirki, K et al, 2013).

V. Conclusion

The level of physical functioning (Modified composite physical function scale) reported to be decreased among End Stage Renal Diseases patients with hemodialysis.

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