



# PREVALENCE OF MUSCULOSKELETAL PAIN AMONG DIALYSIS PATIENTS

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**Abstract:** The main purpose of this study was to investigate the association between MSK symptoms and HRQoL among HD patients. The study was carried out on 200 patients with chronic renal failure on chronic HD at Parul sevashram hospital. They completed answer of the Nordic MSK Questionnaire. The mean age of the patients was 50.6 years, 61% were males. Of the 200 HD patients, 180 patients (90%) had MSK manifestations. The most commonly affected part was knee joint (51.5%). Regarding HRQoL, patients with MSK symptoms had significantly lower scores than did patients without on the physical role ( $p = 0.035$ ), pain domain ( $p = 0.003$ ), general health ( $p = 0.017$ ), quality of social interaction ( $p = 0.046$ ), and sleep domain ( $p = 0.022$ ). Conclusion: MSK manifestations have a negative impact on HRQoL in HD patients. So, early identification and treatment are highly recommended.

key words : health related qol, msk, dialysis

## Introduction:

Dialysis is a type of treatment that replicates many of the functions of the kidneys. It is often used to treat cases of kidney failure, which is also known as end-stage renal disease. This is where the kidneys have been severely damaged and lost almost all of their ability to function. The kidneys are two bean-shaped organs that are located at the back of the abdomen behind the liver and the intestines. Every day, kidneys filter blood, removing waste products that are collected as part of normal bodily functions, along with any excess fluid. The waste products and excess fluid become urine, which is stored in the bladder until go to the toilet.<sup>[5]</sup>

If the kidneys fail, an excess of waste products can build up in blood, leading to a range of symptoms including: Vomiting, Itchy skin, Fatigue, swelling of the feet, hands and ankles Without treatment, such as dialysis, kidney failure will eventually prove fatal. There are two kidneys, each about the size of a fist, located on either side of the spine at the lowest level of the rib cage.<sup>[7]</sup>

Etiology of ESRD was identified among 78% of patients and was distributed as follows: vascular renal disease 18.3%, diabetic nephropathy 18.3%, non-diabetic glomerulopathy 11%, tubule interstitial disease 11% and hereditary nephropathy 19.4%.<sup>[5]</sup>

There are two types of dialysis: Hemodialysis , Peritoneal dialysis

Hemodialysis is the type of dialysis that most people are aware of. It involves inserting a needle, which is attached by a tube to a dialysis machine, into a blood vessel. Blood is transferred from body and into the machine, which filters out waste products and excess fluids. The filtered blood is then passed back into body.

Peritoneal dialysis is a less well-known method of dialysis, although it is becoming more common. Peritoneal dialysis involves using the peritoneum as a filter. The peritoneum is a thin membrane that lines the inside of the abdomen, and surrounds and supports the abdominal organs, such as the stomach and the liver. Like the kidneys, the peritoneum contains thousands of tiny blood vessels, making it useful as a filtering device.

## HEMODIALYSIS

### ADVANTAGES:

The main advantage of hemodialysis is that, unlike with peritoneal dialysis, we will be able to have four 'dialysis-free' days a week.<sup>[7]</sup>

### DISADVANTAGES:

Hemodialysis usually involves using the dialysis machine three times a week, with each dialysis session usually lasting for about four hours. One disadvantage of hemodialysis is that we will have to plan life around dialysis sessions. For example, if you travel to another country you have to pre-arrange access to dialysis facilities.<sup>[9]</sup> Another disadvantage of hemodialysis is that diet and the amount of fluid you drink needs to be restricted. For example, many people receiving hemodialysis have to avoid foods that are high in potassium, such as bananas, chocolate and crisps, and are usually advised not to drink more than a couple of cups of fluid a day.<sup>[10]</sup>

## PERITONEAL DIALYSIS

### ADVANTAGES:

The obvious advantage of peritoneal dialysis is that, unlike hemodialysis, it does not require regular visits to a dialysis unit or, in the case of home hemodialysis, having a bulky machine installed in your house. Also, the equipment that is used in peritoneal dialysis is portable, allowing more freedom to travel than hemodialysis patients.<sup>[9]</sup> There are two main types of peritoneal dialysis equipment. One type is roughly the size of a hat stand on wheels, and the other type is the size and weight of a small suitcase. Another advantage of peritoneal dialysis is that there are fewer restrictions on diet and fluid intake compared with hemodialysis. People having hemodialysis are given a strict limit on the amount of fluids that they can drink.<sup>[12]</sup>

### DISADVANTAGES:

One of the main disadvantages of peritoneal dialysis is that we need to perform it every day, whereas hemodialysis is usually only performed three days a week. Another major disadvantage of peritoneal dialysis is that it increases the risk of your peritoneum becoming infected with bacteria (peritonitis). Peritonitis causes symptoms that include: Abdominal pain, Vomiting, Chills (episodes of shivering and cold)

Another drawback of peritoneal dialysis is that the dialysis fluid that is used in peritoneal dialysis can cause a reduction in protein levels, which can lead to a lack of energy and, in some cases, malnutrition. Some people using peritoneal dialysis also experience a raise in their blood cholesterol levels, which can increase their risk of developing a cardiovascular disease, such as heart attack or stroke. Weight gain is another side effect of peritoneal dialysis that affects some people.<sup>[3]</sup>

Most studies have not showed an association of musculoskeletal pain with the common derangements in patients with ESRD. The purpose of this study is to determine the prevalence of myalgia in ESRD patients and to analyze this relationship between myalgia and ESRD using clinical features and determinants.<sup>[3]</sup>

The pain is one of the most frequently reported conditions associated with poor health-related quality of life (HRQOL) in hemodialysis patients. The most common source of pain has been reported as musculoskeletal problems as well as neuropathic, visceral, underlying kidney disease, co-morbidities, and dialysis therapy. Low back pain (LBP) is also one of the major causes of musculoskeletal pain in hemodialysis patients.<sup>[6]</sup>

As LBP is a common health problem, many individuals experience LBP at some point their lives. It mostly originates from bones, intervertebral discs, joints, muscles, ligaments, neural structures, and blood vessels.<sup>[2]</sup> In the minority of cases, LBP is caused by a specific etiological factor, including infection, tumor, or osteoporotic fractures. In hemodialysis patients, LBP can be attributed to sedentary lifestyle, low physical performance, muscular weakness, psychological factors, altered metabolic activity of the bones and joints, and rare causes such as tumor, spinal infection, and osteoporotic fractures.<sup>[7]</sup>

The Nordic Musculoskeletal Questionnaire (NMQ) was developed from a project funded by the Nordic Council of Ministers.<sup>[1]</sup> The aim was to develop and test a standardized questionnaire methodology allowing comparison of low back, neck, shoulder and general complaints for use in epidemiological studies. The tool was not developed for clinical diagnosis.

Need for the study is Dialysis related musculoskeletal pain among patients. There have been many researches carried out for the dialysis related to musculoskeletal pain on professions but there is lack of research done on all age groups. This study will be done to evaluate all age groups people perception of dialysis related factors that may

be contribute to pain, symptoms and disorders. As people are involved in physical tasks, pain injuries by knowing prevalence and risk factors will be important. Furthermore, all age groups people can adapt more appropriate posture and treatment strategies while handling the patient to prevent dialysis related to disorders.

Aims are to evaluate the prevalence of musculoskeletal pain among dialysis patient. Objectives are to know the prevalence of musculoskeletal pain among dialysis patient &to determine quality of life among dialysis patient.

Hypothesized as Null Hypothesis (H0) is There is no significant prevalence of musculoskeletal pain among dialysis patient. Alternate Hypothesis (H1) is There is significant prevalence of musculoskeletal pain among dialysis patient.

Inclusion Criteria is Participants who have kidney disease with musculoskeletal pain.

Exclusion Criteria are A-nested prevalence study was carried out. It started with a prevalence study on 200 ESRD patients on chronic HD aged >30 years from different HD units in, Parul sevashram hospital, and was followed by a prevalence study. The study was conducted between 10th November 2020 and June 2021. Patients who had malignancies or any chronic rheumatic, MSK, neurological disease before starting HD were excluded.

### Methodology:

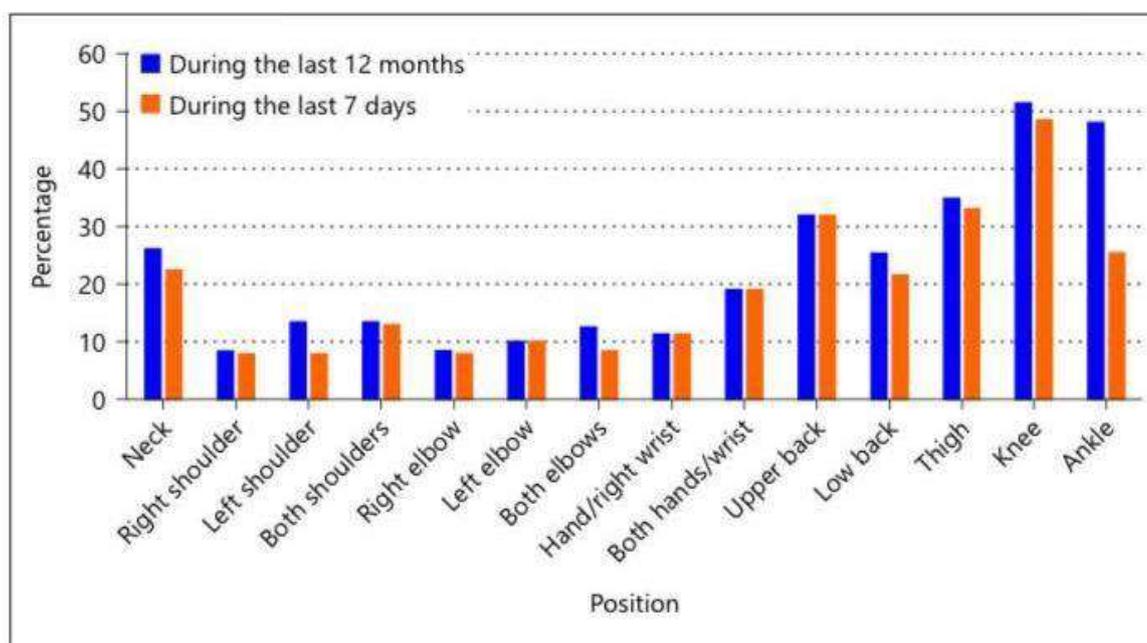
This sample size calculation was conducted based on G\*Power. Sample size is 200. Total duration of the study was 6 months. Source of data is Parul sevashram hospital. OUTCOME MEASURE: The Nordic Musculoskeletal Questionnaire. The study was explained to all patients, and informed written consents were obtained from them before starting the study. Demographic and clinical data of the patients were recorded.

STATASTICAL SOFTWARE: For the analysis of the data Microsoft Word and Microsoft Excel were used. Graphs and tables were also generated by Microsoft word and Microsoft Excel.

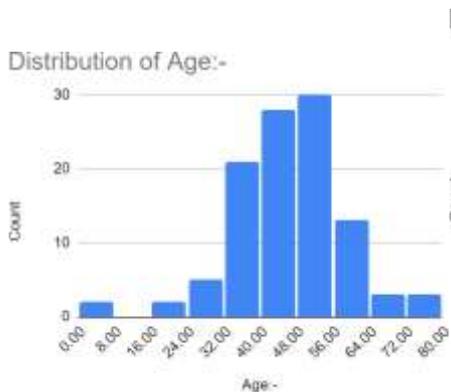
DATA ANALYSIS: Statistical analysis was performed with SPSS 20.0 for Windows. Descriptive statistics were used to describe demographic characteristics. Comparative analyses of demographic characteristics were computed using either the Mann-Whitney U test or the chi-square test depending on the levels o of measurement

### Result:

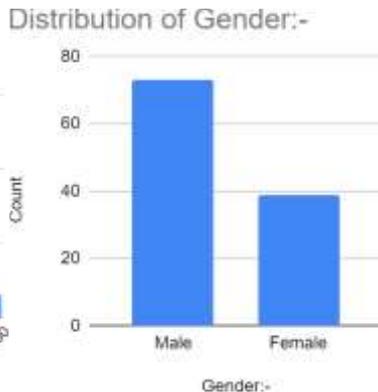
The sample consisted of 200 HD patients. The patients' characteristics are described in Table 1. The mean age of the patients was 50.6 years (SD 10.7). Among the studied patients, 122 (61%) were males, 195 (95.5%) were married, and 109 (54.5) were residents in urban areas. The mean body weight was 80.2 kg. Most of patients (73.5%) did not complete their education beyond preparatory school. About half the patients (52%) were employed. Most of patients (76.5%) had been on dialysis for <5 years.



Graph 1: prevalence of MSK symptoms with position and percentage



Graph 2: age



Graph 3: gender

MSK discomfort	Studied group (n = 200), n (%)
No discomfort	20(10)
At least 1 discomfort	17(8.5)
At least 2 discomfort	30(15)
At least 3 discomfort	45(22.5)
>3 discomforts	88(44)
<b>MSK, musculoskeletal</b>	

Table 1: Number of MSK discomforts per individual in the last 12 months using Nordic MSK Questionnaire among the studied group (n = 200)

According to the body regions, maximum number of patients reported pain in the last 12 months in the knee (51.5%) and the ankle (48%), followed by thigh (35%) and 1 upper back (32%), followed by neck (26%) and low back (25.5%), followed by left shoulder (13.5%) and both shoulders (13.5%), right shoulder (8.5%) and right elbow (8.5%) were the least common symptoms. [According to Nordic MSK Questionnaire, most of studied patients (90%) reported MSK discomfort at the last 12 months. Only 8.5% described at least one site of discomfort, while 15% described at least two, 22.5% had at least 3, and 44% had >3 sites of MSK discomfort as shown in Table 2. Table 3 showed that there was no significant difference between patients with MSK symptoms and those without regarding their demographic characters.

The study employed the scores of HRQoL domains according to the presence or absence of MSK symptoms. Patients with MSK symptoms had significantly lower scores than did patients without on the physical role (p = 0.035), pain domain (p = 0.003), general health (p = 0.017), quality of social interaction (p = 0.046), and sleep domain (p = 0.022).[26] However, there was no connection between MSK disorders and other domains such as emotional well-being, role- emotional, social function, energy/fatigue, symptoms/ problems list, effect of kidney disease, burden of kidney disease, work status, cognitive function, sexual function, social support, and patient satisfaction.

**Discussion:**

This study represents the prevalence of musculoskeletal pain among dialysis in Parul sevashram hospital. In this study graph 1 that all the joints of body are affected but rate is higher in knee, ankle, upper back, thigh, lower back and neck, other joints also affected but the prevalence is low (under 20% between <15-20%) Graphs 2, age distribution show that age of 24 to 64 are more common for occurrence. There is less prevalence between the ages of 0 to 23 years as it is known fact uncommon after the age of 64 there is no prevalence. We also compare the gender in study and on the basis of graph 3 suggest male are more (70%) affected as compare of female (30%) renal diseases. Graph 2 suggests that there is a higher prevalence between the ages of 24 to 64. there is no any musculoskeletal discomfort before 24 and after 64 years of age. Graph 3 illustrates distribution of gender in which male are more affected almost 70% compare to female. There is a less prevalence in female for dialysis and musculoskeletal pain

**Conclusions:**

We can conclude that, it seems reasonable to say that MSK symptoms have a negative impact on HRQoL in HD patients. So, early identification and treatment are highly recommended, on the basis of study, HD involves major joint of muscle more as a compare of other joints of body. Every patient of HD suffers from musculoskeletal pain and severity may differ from mild to severe. The majority of knee joint is more than other joints.

**Limitation** is the sample size taken for the study was small.

**Further recommendation** A limited numbers of factors were selected. The study can be further continue with a larger population.

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