Hemodialysis and the Effects of Exercise on Quality of Life and Depression Symptoms

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Objectives

1. The participant will gain a clear understanding of the role of a Child Life Specialist with this unique population.

2. The participant will gain a clear understanding of the impact of dialysis treatments on children ages 10-17 social and emotional health.

3. The participant will describe how cycle ergometry affects the quality of life of hemodialysis patients.
6 Key Goals of a Certified Child Life Specialist

1. Assess coping responses and needs of children and families to healthcare experiences.
2. Minimize stress and anxiety for the child.
3. Prepare children and families for health care experiences.
4. Provide essential life experiences.
5. Create opportunities which strengthen self-esteem and independence.
6. Communicate effectively with other members of the health care team.
Why A Child Life Specialist?

• As a child life specialist, we are trying to normalize the child's environment. That looks different for each patient and each day they spend in the hospital.

• Normal activities for children are being active; whether that’s playing sports or going for a walk.
  • We know that dialysis patients don't always have the energy, don't believe they can work out and just don't want to.
  • To provide normalization exercise for these patients in a safe environment to empower them to be physically active outside of their treatments.
Define Physical Fitness/Activity

“The term physical fitness encompasses several basic tenets. These include the individual's ability to perform daily functions with sufficient energy, alertness, and without undue fatigue. Physical activity is differentiated from physical fitness as a concept; physical activity is associated with contractions of muscles, movement of body and increased utilization of energy. Overall, physical activity is a structured, planned, and purposeful activity”

ESRD & Physical Activity

- ESRD patients display decreased physical activity in comparison to healthy individuals.

- Hemodialysis patient's vs Non-ESRD patients
  - HD patients have decreased steps taken in a day and less time walking.
  - On non-dialysis days, HD patients had increased physical activity, but not the same level as non-ESRD patients.
Exercise & Hemodialysis in Adults
Literature Review Themes:

• Inactive lifestyle of an ESRD patient
• Quality of life and physical activity
• Depression and physical activity
• Appropriate physical activity for hemodialysis patients
Inactive Lifestyle of Hemodialysis Patients

- ESRD/CKD patients have increased risk of cardiovascular deaths due to inactive lifestyles.
- 80% of adults and adolescents receiving hemodialysis do not reach the World Health Organizations suggestions for physical activity level.
- Side effects of dialysis treatments lead to decreased physical activity.
- Lack of motivation decreases desire for physical activity.
- Decreased desire to exercise, fatigue, lack of time, pain from treatment and depression are all reasons why physical inactivity is common with hemodialysis patients.
- Stage 5 (ESRD) hemodialysis patients have low physical function; it is often compared to a 70-year-old who doesn’t have ESRD.
- Both hemodialysis and peritoneal dialysis patients had low physical function and low physical activity.
Quality of Life and Physical Activity

• Dialysis patients are known for having decreased quality of life in part to decreased physical activity.

• Physical activity is shown to improve quality of life for chronic hemodialysis patients.

• According to Lima et. al, “Physical exercise and/or physical activity increased patients on chronic hemodialysis’ quality of life.”

• Physical activity for 1 hour, 3 times a week has been shown to improve quality of life for ESRD patients.

• Despite kidney transplants being an option for the ESRD patients, minimized quality of life still affects this population.
Depression and Physical Activity

• “Depression is one of the main symptoms in patients receiving hemodialysis.”
  • Sadness, irritation, low self-esteem, and poor sleep
  • Depression symptoms have a direct correlation to suicidal events
• Depressive symptoms are one of many comorbidities that dialysis patients experience over time.
• Physical activity and mental health are one of many important lifestyles to consider for chronic hemodialysis patients.
• There is a strong correlation with aerobic activity and decreased depressive symptoms and increased quality of life.
• “Bicycle riding is an excellent way to improve the quality of life and reduce the severity of depression and can be used for patients suffering from depression because of chronic hemodialysis.”
Appropriate Physical Activity for Hemodialysis Patients

- Exercise programs should be based on an individualized developed plan for each patient.
- The exercise program should start at a low-intensity and increase to a higher intensity over time to allow the body to acclimate to the exercise.
- Patients see large benefits when utilizing aerobic activity.
- 30 minutes of exercise with values recorded every 10 minutes.
- Strength & Aerobic training were the most studied in relation to hemodialysis patients.
  - Aerobic activity offered in treatment centers can improve physical activity with hemodialysis patients.
  - Intradialytic exercise is one of the leading methods to overcome physical activity in dialysis patients.
- Patients should be able to mimic the exercise they are getting in-center outside of the dialysis unit.
Children's Mercy DEX

- Requirements
- Exclusion Criteria
- Inclusion Criteria
- Aims of the Study
- Length of Study
- Team Members
- Plan of Care

The Children’s Mercy dialysis clinic is looking for volunteers aged 10-17.9 years old to participate in an exercise program for kids with stage 5 end stage renal disease.

Participation requires:
- Male or female.
- 10 to 18 years old at the time of data collection.
- Capable of riding recumbent exercise bike during HD treatment.
- Capable of completing two surveys gathering information on depression and Quality of Life.
- Ability to obtain and understand informed consent and assent.

Testing locations at Children’s Mercy Adele Hall
(Downtown, Kansas City, MO)

Contact the Amanda Porter, Nephrology Child Life Specialist at 816-234-3000 x51180 to enroll or for more information.
Surveys

PedsQL
(End Stage Renal Disease Module)

CES-D Scale
Data Collection Form

Physical Activity and Hemodialysis
Data Collection Form

Date of Test _____ / _____ / _____
ID: ____________
Session No: ________________
Height: ____________
Weight: ____________
Resting BP: ____________
How are you feeling today: ______________________________________
Participated □
Did Not Participate □

Heart Rate (5 Minutes): _____
Heart Rate (10 Minutes): _____
Heart Rate (15 Minutes): _____
Heart Rate (20 Minutes): _____
Heart Rate (25 Minutes): _____
Heart Rate (30 Minutes): _____
Summary

- Adult ESRD patients show decreased physical activity.
- Physical activity has shown an increase in quality of life with adult hemodialysis patients.
- Depression is one of the main symptoms in patients receiving hemodialysis.
- “Bicycle riding is an excellent way to improve the quality of life and reduce the severity of depression and can be used for patients suffering from depression because of chronic hemodialysis.”
Questions & Contact Information

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References


• Zhao, C., Ma, H., Yang, L., & Xiao, Y. (2016). Long-term bicycle riding ameliorates the depression of the patients undergoing hemodialysis by affecting the levels of interleukin-6 and interleukin-18. *Neuropsychiatric Disease and Treatment, Volume 13*, 91–100. doi: 10.2147/ndt.s124630