شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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Effectiveness of Muscle Stretching Exercise on Quality of Life of Hemodialysis Patients

Thesis

Submitted For Partial Fulfillment of Master Degree in Internal Medicine

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List of Abbreviations

Abb.	Full term
AVF	Arteriovenous fistula
AVG	Arteriovenous graft
B2M	Beta 2 microglobulin
BDI	Beck Depression Inventory
BKD	Burden of kidney disease
BUN	Blood urea nitrogen
Ca	Calcium
CDI	Cognitive Depression Index
CDQOLS	Chinese Dialysis Quality of Life Scale
CKD	Chronic kidney disease
CNS	Central nervous system
CVD	Cardiovascular disease
EKD	Stage kidney disease
EQ -5D	EuroQOL -5 Dimensions
ESRD	End stage renal disease
FLZ	Life satisfaction score
GFR	Glomerular filtration rate
HD	Hemodialysis
HRQoL	Health-related quality of life
IEQ	Illness Effects Questionnaire
KDOQI	Kidney Disease Outcomes Quality Initiative
MCS	Mental component symptoms
MUST	Misr University for Science and Technology
NHP	Nottingham Health Profile
NKF-KDOQI	National Kidney Foundation- Kidney Disease Outcome Quality Initiative

List of Abbreviations Cont...

Abb.	Full term
PAN	Poly acryl nitril
PCS	Physical component symptoms
PD	Peritoneal dialysis
PLC	Profile for chronic diseases
PMMA	Poly methyl meth acrylate
PO4	Phosphorus level
PROs	Patient-reported outcomes
QALI	Quality of American Life
QoL	Quality of life
RRT	Renal replacement therapy
SF-36	Short Form-36
SIP	Sickness Impact Profile
SPKD	Symptoms and problems of kidney disease
URR	Urea reduction ratio

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INTRODUCTION

Chronic kidney disease (CKD) is a disease affecting both kidneys in which progressive irreversible destruction of the renal tissues occurs. This leads to alteration of the metabolic function of the kidneys due to destruction of the nephrons ***(Thomas et al., 2008).*** Kidney dysfunction is considered to occur when the glomerular filtration rate (GFR) falls below 60 ml/min/1.73 m2, for longer than three months ***(Stevens et al., 2016).***

There are five stages of chronic renal failure based on the GFR, stage 5 (GFR < 15 ml/min/1.73m^2); this stage is also called end stage renal disease (ESRD) ***(Vadakedath and Kandi, 2017).*** Worldwide, patients with CRF are estimated to be 3,730,000 patients of them, 2.5 million patients undergo renal replacement therapy (RRT). And this percentage is expected to increase to reach 4.5 million patients by the end of 2030 ***(Bikbov et al. 2020).***

Hemodialysis is a time consuming procedure that takes at least 3 to 5 hours a day, twice or three times a week ***(Jung and Park, 2011).*** Dialysis induces notable metabolic changes involving hypovolemia due to ultrafiltration, and rapid changes in electrolyte concentrations and systemic inflammation, which can all adversely affect physical function ***(Magnard et al., 2013).***

It is proved that exercise ;not only physical activity; could improve the quality of life of patients; physical activity is different from exercise in that Physical activity includes any movements involving contraction of muscles while exercise means physical activity that is organized and planned ***(Katzmarzyk et al., 2017);*** Clarke et al., found that exercise not only useful in reduction of hemodialysis complications but also in reduction of mortality rate in those patients ***(Clarke et al., 2019).***

Stretching exercises have been traditionally used in treating increased resistance to passive movement, based on the biological principle that connective tissue will remodel over time in response to physical stress. At the cellular level, motion restrictions include the formation of cross bonds of the periarticular connective tissue that forms between the collagen bundles. Effective stretching exercises denature these cross bonds, allowing the collagen fibers to be reoriented parallel to the line of stress over time, thus creating the opportunity for plastic deformation of the collagen tissue ***(Jacobs and Sciascia, 2011).***

Within the past 40 years, many clinical trial were conducted to assess the role of physical training among hemodialysis patients. Physical activity among hemodialysis could be divided into intradialytic training and interdialytic training according to the time of physical exercises. Another classification was held whether it is a group or individualized sessions. Other experts adopted a different classification for

physical activity by dividing it into many groups with each having different outcome

The benefits of exercise are approved worldwide, in Australia, Jayaseelan et al studied HD patients' perception concerning role of exercise in their life and they found that more than 50% of patients were totally aware that exercise prevents the weakness of muscles and improves their appetite ***(Zeng et al. 2020).*** Chu and McAdams-DeMarco ***(Chu and McAdams-DeMarco, 2019)*** hypothesized that exercises help to relieve the uremic toxins which alters the degree of awareness of those patients which in turn improves their cognition and decreases their morbidity and mortality.

Despite that, patients do not regularly engage in active exercise programs. Worldwide, it was estimated that only 6% of HD patients undergo 4 to 5 days regular exercises ***(Clarke et al. 2019).*** Segura-Ortí et al et al., compared between patients with stage 3 or 4 CKD, patients undergoing hemodialysis and other healthy controls concerning their physical activity and regular engagement in exercises and found that healthy participants are significantly more likely to be active while stage 3 or 4 CKD patients physical activity status did not significantly differ from those undergoing hemodialysis ***(E et al. 2018).***

Establishing a physical activity routine for patients on dialysis more than 6 months has advantages such as greater willingness to engage in training, convenient scheduling,