

Scientific Justification of A Personalized Approach To The Management of Patients with Terminal Renal Failure

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ABSTRACT

Currently, there is uncertainty about the ideal treatment for recovery and a personalized approach to the management of patients with terminal renal failure. Therefore, a systematic review was conducted over the past 10 years. Network meta-analysis of randomized control trials (RCTS), which compared the prevalence of chronic renal failure (CRF), according to various literature data. According to WHO it is from 50 to 250 people per 1 million population per year. Active therapy for terminal CRF (hemodialysis, peritoneal dialysis, kidney transplantation) is received in Western Europe by 500-600 patients, in the USA and Japan - 1000-1200 patients, while in Kazakhstan - about 100 patients per 1 million population per year. The ten-year probability of survival of patients with terminal CRF in active therapy exceeds 50%, excluding patients with diabetes mellitus. Arterial hypertension remains the most frequent symptom, largely determining the prognosis of patients with CRF. Ten-year survival of patients with CRF in combination with hypertension in hemodialysis is lower than in normotensive patients by 30-50%. Successfully performed a kidney transplant can eliminate the symptoms of chronic renal failure.

Keyword

personalized approach, end stage, innovation, hemodialysis, peritoneal dialysis, transplantation.

INTRODUCTION

Supporting kidneys involves applying principles and methods of palliative medicine to individuals with kidney ailments. The objective is to alleviate

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distress through symptom management, empathetic communication, and addressing psychosocial issues. Kidney support encompasses basic palliative care delivered by nephrology teams, alongside the potential referral of patients facing complex challenges to collaborate with an interdisciplinary palliative care unit, if available. This team may comprise physicians, nurses, social workers, clergy, and dietitians. Collaborative management with nephrologists provides an added layer of assistance to patients and their families concerning prognostic awareness, patient preferences, and care choices. Kidney support can extend to patients experiencing acute kidney injury or chronic kidney disease, including those undergoing renal replacement therapy like dialysis or transplantation. It encompasses various aspects, including end-of-life care but is not restricted to it. This research outlines personalized strategies for managing individuals with end-stage renal failure, highlighting practical applications of supportive renal therapy, particularly focusing on the nephrologist's role in symptom management, comprehensive conservative care (actively treating renal failure without dialysis), acute kidney injury in critically ill patients, and instances of dialysis refusal.

Study design

A systematic review of randomized controlled trials (RCTs), enriched with unpublished research data initiated by researchers and funded by industry. Establishment and study of the population: Persons with renal insufficiency receiving regular treatment for KD included in clinical trials of the composition of dialysate.

Selection criteria for the study: Medline, Embase, CENTRAL, Ichushi Web, 10 databases, clinical trial registries, conference proceedings, and citation lists for the last 10 years. Additional data was obtained from key researchers and clinical trial reports.

MATERIALS AND METHODS

The study included articles published within the last 10 years. There are not many scientific works by domestic authors on the study of a personalized approach to the management of patients with end-stage renal failure. Therefore, priority for the study was given to articles (literature reviews, meta-analyses). Despite the fact that a lot of research is currently being conducted abroad on a personalized approach to the management of patients with end-stage renal failure. The study was conducted in

accordance with the PRISMA guidelines for systematic reviews. We identified relevant observational studies using a comprehensive search of the following databases: PubMed, Medline, Embase and Cochrane Library. The search strategy included terms related to personalized approaches to the management of patients with end-stage renal disease.

We also examined collections of full articles and conference proceedings from 2013 to 2022 to identify upcoming research. To ensure the inclusiveness of our study, we conducted a recursive literature search by examining the reference lists of all verified relevant studies (Figure 1).

Personalized approach to the management of patients with terminal renal failure

The notion of tailoring hemodialysis treatment involves primarily enhancing its efficacy while reducing the severity of complications and improving patients' social adaptation indicators. Further refining hemodialysis hinges on customizing treatment parameters. Recently, progress has been made in employing kinetic models for individual uremic toxins or groups thereof, along with profiling sodium in dialysate, ultrafiltration rates, and other factors. It's indisputable that resolving these matters necessitates computerizing hemodialysis treatment, leveraging optimal kinetic models, and devising effective programs.

Computerization of hemodialysis treatment can significantly improve the effectiveness of medical decisions, facilitate the storage and retrieval of information during dynamic patient monitoring. It is also important that the computerization of the hemodialysis process leads to an increase in the efficiency of using expensive equipment with a reduction in the cost of treating patients. Issues of computerization of dialysis treatment in patients with terminal chronic kidney failure are quite relevant and require competent technical development and widespread implementation [1].

The prevalence of chronic renal failure (CRF), according to various literature data, is from 50 to 250 people per 1 million population per year. Active therapy for terminal CRF (hemodialysis, peritoneal dialysis, kidney transplantation) is received in Western Europe by 500-600 patients, in the USA and Japan - 1000-1200 patients, while in Kazakhstan—about 100 patients per 1 million population per year. The ten-year probability of

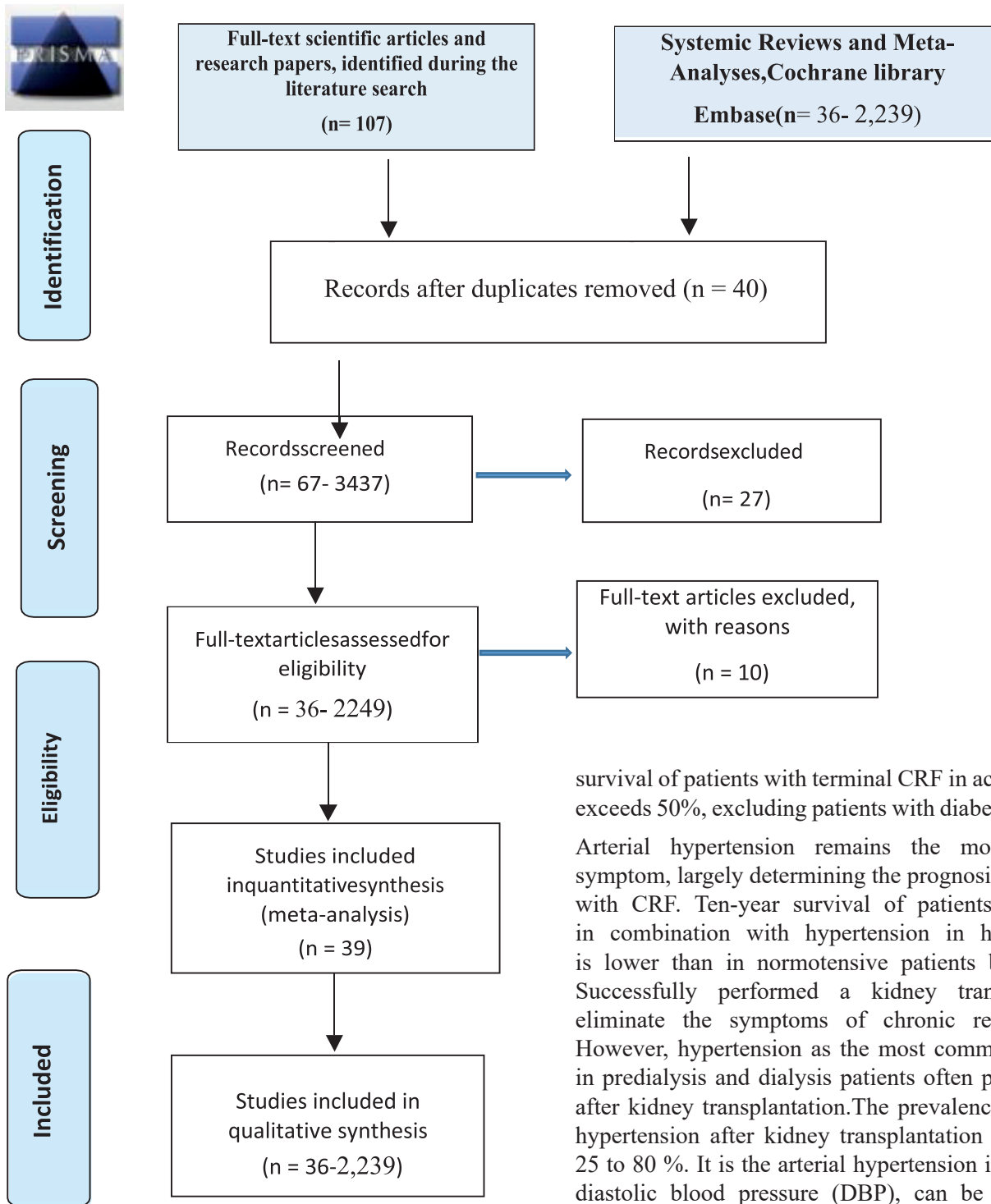


Figure 1 – The structure of the final sample – PRISMA2009FlowDiagram

survival of patients with terminal CRF in active therapy exceeds 50%, excluding patients with diabetes mellitus.

Arterial hypertension remains the most frequent symptom, largely determining the prognosis of patients with CRF. Ten-year survival of patients with CRF in combination with hypertension in hemodialysis is lower than in normotensive patients by 30-50%. Successfully performed a kidney transplant can eliminate the symptoms of chronic renal failure. However, hypertension as the most common problem in predialysis and dialysis patients often persists even after kidney transplantation. The prevalence of arterial hypertension after kidney transplantation varies from 25 to 80 %. It is the arterial hypertension in particular, diastolic blood pressure (DBP), can be one of the factors that affect the survival of the transplant, the life expectancy of patients. However, the characteristics and features of the arterial hypertension syndrome in patients with terminal CRF under treatment with various methods of treatment remains a little-studied problem. In addition, it is unclear how much arterial hypertension syndrome can affect the quality of life (QOL) of patients

with CRF, depending on different treatment methods.

These forecasts determine the relevance of work in this direction in the near future.

Programmatic hemodialysis has remained the main method of renal replacement therapy since its introduction in 1960. Almost 80% of patients with terminal renal failure are on program hemodialysis treatment.[2]

Improvement of hemodialysis techniques over the past decades has significantly improved the quality and life expectancy of patients. At the same time, the main indicators-morbidity and mortality - in patients on hemodialysis exceed those not only in the General population, but also in patients with a functioning kidney.

When performing hemodialysis as part of a standard program-three times a week for 4 hours, it is necessary to ensure the maximum effectiveness of each procedure both in terms of removing uremic products due to diffusion and filtration transfer, and to achieve a state of euolemia due to ultrafiltration. In evaluating the effectiveness of a dialysis program, especially in problem patients, it is important to monitor the effectiveness of each hemodialysis session.

The most common mental disorders in patients on dialysis are anxiety and depression, due to various stressful factors - constant dependence on the device "artificial kidney"; time spent on dialysis, restriction of freedom of movement and activity; strict diet and water regime; changes in appearance and disability.

An important problem that determines the results of treatment of hemodialysis and peritoneal dialysis is the state of the patient's nutritional status. The frequency of nutritional disorders among patients receiving RRT ranges from 30 to 80% (Chung S. H., 2003; Toigo G., 2000), leading to increased morbidity and mortality of patients and reducing QOL.

The concept of QOL includes not only a physical component, but also a psychological and social component. There are a number of foreign publications devoted to the problems of QOL in patients on dialysis. Diaz-Buxo J. A. and (2000) Wasserfallen J-B. (2006) believe that QOL in hemodialysis patients is higher for most QOL parameters than during treatment for kidney failure. Gokal R. (2009) Juergensen and R. N. (2019) hold the opposite point of view. Domestic publications devoted to this problem are few and also contradictory

(Vasilieva I. A., 2009; Zemchenkov A. Yu., 2009). The concept of QOL is not fully evaluated from the point of view of the use of various methods of treatment of terminal renal failure. [1,2]

A number of researchers believe that the treatment of kidney failure is subjective [40, 73, 93, 188]. According to N. Noshad (2009), in patients with renal insufficiency, there are no specific differences in General laboratory and clinical parameters, but in patients with diabetes mellitus it is better to live, And in patients with renal insufficiency there is no QOL. In a large study using educational programs for patients with ESRD, 55% of patients chose kidney failure, 45% - DAPD. high levels of physical activity, anxiety, and depression.

R. Gokal (2002) ERD QOL in patients identified the following aspects of the study: the effect of the dialysis method on the renal failure of patients, the effect of predicting disease and mortality, changes in monitoring in QOL, the effectiveness of treatment (for example, the sufficiency of dialysis, the effect of ERP treatment), comparison with QOL ESRD patients with other chronic diseases.

Due to recent improvements in ESRD in dialysis patients, QOL in healthy people and HRT patients have been compared, but QOL in HD patients is significantly reduced compared to the healthy population. The QOL of patients receiving chronic renal failure is significantly reduced compared to healthy patients, largely depends on physical health indicators, there is also an influence of psychological and clinical variables on QL, and if the task is solved to significantly increase the life of patients with impaired renal terminal, then the question of the quality of specific "artificial" life that occurs in the treatment of kidney failure, requires more in-depth study and systematic research.

The adverse dynamics of the epidemiological situation in a severe situation indicating disability, its effective treatment is a complex task and requires large financial expenditures, which is a serious problem not only for health care, but also for society as a whole. The idea of the forced nature of disability and the need for patients with chronic kidney failure from active, full-fledged social and professional activities are gradually becoming the same.

In a large DOPPS study to investigate the relationship of factors affecting CRF, conducted in 7 countries (Lopez *et al.*, 2009), 9526 renal failure patients were examined.

The influence of psychosocial parameters, including not only real medical interventions, but also improving the quality of life of patients with HD. In addition, in a number of studies, differences in QOL values for certain parameters were observed, for example, in the work of S. Fukuhara and others. Using a KDQOL-SF questionnaire conducted in Japan, Europe, and the United States (in HD 7378 patients), it was found that patients in Japan preferred parameters, kidney disease, and physical activity, and all patients paid attention to this. the disease takes a long time and has a significant impact on social activity.

The QOL study was successfully used to compare the effectiveness of various treatment methods, select effective options, and various OST methods, including kidney transplantation. In almost all QOL studies, the authors unanimously believe that QOL improved significantly after TA for such important indicators; because physical activity, energy, anxiety, anxiety, and depression reduction, which is very important with a mandatory immunosuppressive regimen after transplantation. However, the question remains as to which type of dialysis is subjectively preferable, since HSC treatment begins with dialysis, despite the practically related pathology.

The question of choosing the type of RRT as a primary therapy remains open since the introduction of PD in practice. The successful use of PD in many patients is limited to 5 years, after which patients need to be transferred to HD. According to K. Tucker (2007), PD will be greater in younger patients and can be used as a “bridge” for further transplantation; if the transplant is refused, PD can be resumed and the limbs “preserved” as the last form of PST for further treatment of kidney failure. According to some authors, it is better to use PD in elderly patients. L. in the work of Frimat and others. (2009) before transplantation, it was found that the rate of hospitalization of CAPD for the significance of PST type is lower and better due to the fact that these patients have a better life, and the kdqol-SF cooperative did not reveal a significant statistical difference in the parameters of QOL assessment for HD and PD. Effective treatment of PN, which has lasted more than 5 years, will be more successful in 50-70% of cases, the rest of the patients need to switch to HD.

Each of these types of PST has advantages and disadvantages, but in many countries, among therapeutic measures in patients with terminal uremia, renal failure

occupies a leading place [2].

A number of different studies have been conducted that have included safe variants of painkillers for chronic kidney disease (CKD). A comparative analysis of the harm from opioids compared with non-steroidal anti-inflammatory drugs (NSAIDs) in terminal chronic renal failure. Study design: prospective cohort study, participants: 39 patients with CKD in a cohort study of chronic kidney failure. Exposures: 30-day use of analgesic during annual visits. Results: the combined result of a 50% reduction in glomerular filtration rate and renal failure requiring renal replacement therapy (RRT), as well as outcomes of renal failure requiring RRT, hospitalization and death before renal failure.

Opioid use had a stronger association with side effects than NSAIDs, and the association of the latter with kidney disease outcomes was limited to specific subgroups, especially those of the black race [3].

The authors have investigated in dialysis patients. These patients often experience problems related to taking medications. The relationship of interdisciplinary drug treatment (IDT) with 30-day indicators was studied. Study design: a Retrospective cohort study: supportive dialysis patients were discharged home from emergency hospitals between may 2016 and April 2017, who returned to the Organization’s emergency dialysis clinic for end-stage renal failure after discharge. Patients who were readmitted within 3 days, died or were admitted to a hospice within 30 days were excluded.

The initial result was a 30-day readmission. Results: IDT services after hospital discharge were associated with fewer 30-day readmissions in dialysis patients. Randomized controlled trials evaluating different IDT delivery models and cost-effectiveness in dialysis populations are justified [4].

The efficacy and safety of peritoneal dialysis (PD) regimens using only Icodextrin and glucose is unclear. The purpose of this study was to compare a one-day long-term intake of Icodextrin with glucose in patients with kidney failure who had KD. Study design: a systematic review of randomized controlled trials (RCTS), enriched with unpublished research data initiated by researchers and funded by industry. Analytical approach: qualitative synthesis of demography, measurement scales and results. Quantitative synthesis with Mantel-Hensel risk coefficients, Peto coefficients, or (standardized) mean differences (MD). The risk of bias of the included studies

at the results level was assessed using the Cochrane bias risk assessment tool for RCTS.

Results: 19 RCTS with 1,693 participants were meta-analyzed. Ultrafiltration was improved with Icodextrin (medium-term MD, 208.92 [95% CI, 99.69-318.14] ml / day; high confidence of evidence), which is also reflected in fewer episodes of fluid overload (HR 0.43 [95% CI, 0.24 - 0.78]; high confidence). PD containing Icodextrin probably reduced the risk of mortality compared to PD containing only glucose (Peto OR, 0.49 [95% CI, 0.24–1.00]; moderate confidence). Despite evidence of lower glucose absorption in the abdominal cavity with Icodextrin-containing PD (medium-term MD, -40.84 [95% CI, -48.09 to -33.59] g / long stay; high confidence), this did not directly affect changes in fasting plasma glucose levels (-0.50 [95% CI, -1.19 to 0.18] mmol / l; low confidence) and hemoglobin A1C levels (-0.14% [95% CI, from -0.34% to 0.05%]; high confidence). Safety results and residual kidney function were the same in both groups; quality of life and health-related pain indicators were inconclusive. Conclusions: Icodextrin for prolonged PD once a day has clinical benefits for some patients, including those who do not meet the goals of ultrafiltration and are at risk of fluid overload. Further research is needed on the patient-oriented results and cost-effectiveness associated with Icodextrin. [[PMID: 32173107 DOI: 10.1053 / j.a.jkd.2019.12.002 [5].

A 2018 systematic review and online meta-analysis of randomized control trials (RCTS) was conducted, comparing the three-month risk of failure of available treatments. Methods: data Sources were Medline, Scopus, Embase, and the Cochrane library. The paired meta-analysis was based on random effects models. The network meta-analysis was conducted as part of a private research system with an approach using various random effects variables to model treatment effects in different studies. The chosen metric was the odds ratio along with the corresponding 95% confidence interval (CI). Results: Sixteen double-arm RCTS were included with 2011 patients who were randomized to six different treatments (angioplasty using a simple balloon, open surgery, stents, stent grafts, drug-coated balloons (DCB), and incision balloons). The RCT network had a star-shaped geometry, and angioplasty with a simple balloon was a common comparator. There were no significant differences between treatments regarding the risk of failure after three months, except for the use

of a stent graft, which significantly reduced the risk of failure compared to angioplasty with a simple balloon (OR 0.53, 95% CI 0.34-0.84) [6].

Several studies have focused on sleep disorders in patients with ESRD. Often occur in people with chronic kidney disease (CKD). In clinical practice, several approaches are used to improve sleep quality, including relaxation techniques, exercise, acupressure, and medication. Evaluate the effectiveness and concomitant side effects of interventions aimed at improving sleep quality among adults and children with CKD, including people with end-stage kidney disease (ESRD) who have received dialysis or kidney transplantation.

Search method: the search was conducted in the Cochrane registry of kidney and transplant research until October 8, 2018 by an information specialist, using search terms related to this review. Research in the Registry is identified using CENTRAL, MEDLINE, and EMBASE searches, conference materials, the international registry of clinical trials (ICTRP) search portal, and ClinicalTrials.gov. Selection criteria: randomized controlled trials (RCTS) or quasi-randomized RCTS of any intervention in which researchers reported an impact on sleep quality were included. Two authors independently reviewed the titles and abstracts of identified entries.

Main results: Sixty-seven studies with 3,427 participants met the selection criteria. Thirty-six studies involving 2,239 participants were included in the meta-analysis. Follow-up for clinical outcomes ranged from 0.3 to 52.8 weeks (5 weeks on average). Activities included relaxation techniques, exercise, acupressure, cognitive behavioral therapy (CBT), educational interventions, benzodiazepine treatment, dopaminergic agonists, telephone support, melatonin, reflexology, light therapy, various forms of peritoneal dialysis, music, aromatherapy, and massage. Incomplete information about key methodological details has led to an uncertain risk of bias in many studies. With very low confidence in the evidence, relaxation techniques had an undefined effect on sleep quality and duration, health-related quality of life (HRQoL), depression, anxiety, and fatigue. The studies were not designed to assess the effect of relaxation on sleep latency or hospitalization. Exercise had an undefined effect on sleep quality (SMD -1.10, 95% CI -2.26 to 0.05; I² = 90%; 5 studies, 165 participants; evidence with very low confidence). Exercise probably reduced depression

(MD -9.05, 95% CI -13.72 to -4.39; I² = 0%; 2 studies, 46 participants; evidence of moderate confidence) and fatigue (SMD -0.68, 95% CI from 1.07 to -0.29; I² = 0%; 2 studies, 107 participants; evidence of moderate confidence). Compared to the absence of acupressure, the acupressure effect had an indeterminate effect on sleep quality (Pittsburgh sleep quality index scale (PSQI) 0-21) (MD -1.27, 95% CI from -2.13 to -0.40; I² = 89%; 6 studies, 367 participants: very low confidence in the evidence). Acupressure probably slightly improved sleep latency (scale 0-3) (MD -0.59, 95% CI from -0.92 to -0.27; I² = 0%; 3 studies, 173 participants; evidence of moderate confidence) and sleep time (scale 0-3) (MD -0.60, 95% CI from -1.12 to -0.09; I² = 68%; 3 studies, 173 participants; evidence of moderate confidence), although the effect on sleep disturbance was uncertain because the reliability of the evidence was very low (scale 0 - 3) (MD -0.49, 95% CI -1.16 to 0.19; I² = 97%). With moderate confidence, acupressure probably reduces fatigue (MD -1.07, 95% CI -1.67 to -0.48; I² = 0%; 2 studies, 137 participants). Acupressure had an uncertain effect on depression (MD -3.65, 95% CI -7.63 to 0.33; I² = 27%; 2 studies, 137 participants; evidence with very low confidence), while studies were not designed to assess the effect of acupressure on HRQoL, anxiety, or hospitalization. It was doubtful whether acupressure compared to false acupressure improved sleep quality (PSQI scale from 0 to 21), because the data confidence was very low (MD -2.25, 95% CI -6.33 to -1.82; I² = 96%; 2 studies, 129 participants), but the overall sleep time could be improved (SMD -0.34, 95% CI -0.73 to 0.04; I² = 0%; 2 studies, 107 participants; evidence with a low degree of confidence). 2 = 2 = there have been no studies designed to directly examine and / or correlate the effectiveness of any sleep-enhancing interventions that could be undertaken for the spectrum of sleep-related respiratory disorders. No studies have reported therapeutic effects for children. Adverse effects of therapy were [7].

The Japanese society of dialysis therapy has developed 14 guidelines for clinical practice (CPG) for various areas of renal replacement therapy and the management approach for patients with end-stage renal failure. It has been about 10 years since the previous guidelines for peritoneal dialysis (PD) were established. New PD guidelines were developed in 2016. Recently, the methods of CPG development have changed a lot.

The previous recommendations were described in a

training format. However, these types of guidelines no longer meet the definition of CPG defined by the National Academy of medicine in the United States, according to which “CPG are statements that include recommendations aimed at optimizing patient care that are based on a systematic analysis of evidence and an assessment of the benefits and harms of alternative care options.” Evaluation, development, and evaluation (GRADE) is a systematic approach to evaluating the validity of evidence in systematic reviews and other evidence syntheses. New guidelines are created based on the same policy. The new recommendations are presented in 2 parts, namely: Initiation of KD, Adequacy of KD, Adequate nutrition in patients with KD, Assessment of peritoneal membrane function, Discontinuation of KD for the prevention of encapsulating peritoneal sclerosis, are renin-angiotensin inhibitors useful for the treatment of KD? CQ2. Is the combination of an Icodextrin solution with a glucose-based solution useful or not in the treatment of KD? CQ3. Is mupirocin or gentamicin ointment useful for preventing infection at the exit site? CQ4. Which method is more useful for inserting a PD catheter - open or laparoscopic surgery? CQ5. Intravenous or intraperitoneal administration, which pathway is more effective in treating patients with PD-related peritonitis? CQ6. Which therapy is preferable for the treatment of diabetic end-stage renal failure is all discussed but has not yet been fully implemented in PD or HD practice [8].

Open kidney transplantation (OKT) is a standard approach in patients with end-stage renal failure, but recently robotic kidney transplantation (RACT) has also become a common approach. Methods: a systematic review was conducted using the PubMed / Medline and Embase databases and the keywords “Robotic kidney transplantation” and “Robotic kidney transplantation”. Results: Past RAKT studies have tended to suffer from patient selection bias, but after completing learning curves in specialized centers, the indications for RAKT have recently been expanded to include more complex cases. The technique has evolved over the years, and both intraperitoneal and extraperitoneal accesses are now accepted; Conclusion: despite its limitations, RAKT appears to be an attractive, feasible, safe, and reproducible operation. It offers surgical benefits and a lower complication rate, especially in obese patients, and provides functional results comparable to those achieved with OKT [9].

The aim of the study was to generalize the frequency and consequences of acute kidney injury (AKI) after kidney transplantation (LTx) to the results after LTx. Literature searches were conducted using MEDLINE, EMBASE, and Cochrane databases from the beginning until December 2018. Results: Thirty-eight cohort studies, with a total of 13,422 patients with CRF, were reported. Overall, the combined estimated rates of morbidity and severe AKI requiring renal replacement therapy (RRT) were 40.7% (95% CI: 35.4% - 46.2%) and 7.7% (95% CI: 5.1% - 11.4%), respectively. Meta-regression showed that a year of training did not significantly affect the incidence of AKI after LTx ($p = 0.81$). Total estimated inpatient or 30-day mortality and 1-year mortality of patients with AKI after LTx were 16.5% (95% CI: 10.8% ± 24.3%) and 31.1% (95% CI: 22.4% - 41.5%), respectively. AKI after LTx and severe AKI requiring RRT were associated with significantly higher mortality with combined HR OF 2.96 (95% CI: 2.32–3.77) and 8.15 (95% CI: 4.52–14.69), respectively. Compared to patients without AKI after LTx, recipients with AKI after LTx had a significantly increased risk of liver transplant failure and chronic kidney disease with combined HR of 3.76 (95% CI: 1.56-9.03) and 2.35 (95% CI: 1.53- 3.61), respectively. Conclusion: the Overall estimated incidence of OLP after LTx and severe OP requiring RRT is 40.8% and 7.0%, respectively. There are significant associations of post-LTx AKI with increased mortality and graft failure after transplantation. In addition, the incidence of AKI after LTx remained stable during the ten years of the study. 95% CI: 1.53- 3.61 Thirty-eight cohort studies, with a total of 13,422 patients with CRF, were reported [10].

Patients in late adolescence and early adulthood who receive renal replacement therapy (RRT) experience impaired normal activity, which affects their well-being. This study determined the psychosocial and lifestyle choices for young people on PTA compared to the General population. Study design: a cross-sectional study was conducted (the SPEAK study is a Survey of patients suffering from kidney failure in young people)) using validated indicators and General population comparison data from the health survey for England and the Avon Longitudinal study of parents and children. Additional clinical information was obtained from the UK kidney registry. The study was conducted by a patient from 16 to 30 years old receiving RRT. Cranialis. analytical approach. Results were compared between population groups using age-

and gender-adjusted regression models weighted to account for biased responses by gender, ethnicity, and socioeconomic status. Our results were used to update a recent meta-analysis. Results: 976 young people were involved in the study, and 64% responded to the survey: 417 (71%) with kidney transplantation and 173 (29%) with dialysis therapy. Compared to the General population, young adults who receive RRT are less likely to have relationships, have children, and are more likely to live in a family home, earn no income, and are unable to work for health reasons. They had a poorer quality of life, poorer health, and a double probability of psychological distress (OSH, 2.7; 95% CI, 2.0-3.7; $P < 0.001$). They reported that they smoke less, abuse alcohol and drugs, and commit crimes. In a meta-analysis, the study showed the largest differences in quality of life compared to the General population. Conclusions: This study involving a large group of young adult transplant patients and patients on dialysis shows worse psychosocial outcomes, but a more positive lifestyle in young people with RRT compared to the General age of the population. (OSH, 2.7; 95% CI, 2.0-3.7; $P < 0.001$). Longitudinal study [11].

Cognitive impairment is associated with poor quality of life, risk of hospitalization, and mortality. Cognitive impairment is common in people with end-stage renal failure receiving hemodialysis, but the severity and specific cognitive impairment remain uncertain. Research design: a systematic review and meta-analysis. Conditions and population: adults receiving hemodialysis compared to the General population, people with non-dialysis-dependent chronic kidney disease (NDD-CKD), people receiving peritoneal dialysis, or people with undialyzed chronic kidney failure.

Studies: randomized controlled trials, cohort or cross-sectional studies without language restriction.

Test index: validated neuropsychological tests of cognition.

Results: 42 studies out of 3522 participants. The studies had a high or uncertain risk of systematic error, rated on the Newcastle-Ottawa scale. People who received hemodialysis had lower cognitive function than the General population, especially in attention ($n = 22$; standardized mean difference [SMD], -0.93; 95% CI, -1.18 to -0.68). Patients on hemodialysis perform better than non-dialysis patients with chronic renal failure with attention ($n = 6$; SMD 0.70; 95% CI 0.45 to 0.96)

and memory ($n = 6$; SMD 0.36; 95% CI, 0.08 to 0.63), but it had a poorer memory than the General population ($n = 16$; SMD, -0.41; 95% CI, -0.91 to 0.09) and people with NDD-CKD ($n = 5$; SMD, -0.40; 95% CI, -0.60 to -0.21). There was insufficient data to show other differences between people receiving hemodialysis and those receiving peritoneal dialysis or with NDD-CKD. [12,13,14].

Limitations: potentially biased research that is not fully adapted to education. High heterogeneity, mainly due to the wide variety of tests used to assess cognition. **Results:** a total of 817 participants were included. The results showed that nursing intervention resulted in significantly higher dialysis compliance than standard care. The pilot analysis showed that various intervention strategies, including educational, cognitive, and behavioral approaches, had limited impact on dialysis compliance. **Conclusion:** Nursing intervention is useful for increasing compliance with dialysis, which indicates the need to strengthen nursing care for patients with ESRD who are prescribed dialysis in daily clinical practice. A randomized controlled trial was conducted. **Methods:** a blind randomized controlled trial with blind ratings was conducted in blind dialysis centers throughout Singapore with 44 patients on hemodialysis with SDN and $\geq 8\%$ glycated hemoglobin (HbA1c). Patients were randomized in accordance with changes of dialysis. 20 patients were assigned for intervention and 24 were in routine care. **Results:** out of 44 patients recruited at the beginning of the study, 42 patients were examined later. One patient died and one stopped the study due to poor health. C-DIRECT's recruitment, retention, and acceptance rates were generally satisfactory, with HbA1c levels declining in both groups, but C-DIRECT had more participants with HbA1c $< 8\%$ at follow-up compared to conventional treatment. Significant improvements in role restriction due to physical health were noted for C-DIRECT, while levels remained stable under normal care. No statistically significant differences between the groups were observed for other clinical markers and other results reported by patients. There were no side effects. **Conclusions:** the test demonstrated satisfactory feasibility. A short intervention performed at the patient's bedside as part of routine dialysis care showed some advantages in glycemic control and in the QOL area compared to conventional treatment, although no effect was observed in other secondary outcomes.

Further research is needed to develop and evaluate interventions that promote self-control of diabetes in socially vulnerable patients [14,15,16,17].

Patients who start renal replacement therapy (RRT) for end-stage renal disease (ESRD) without timely access to specialized renal services have poor results. In one NHS Trust in England, the community-wide management of CKD resulted in a reduced incidence of RRT and the lowest percentage of patients admitted within 90 days of starting RRT in the UK. We describe a Protocol for a quality improvement project to extend and evaluate this innovation. **Methods:** the intervention is based on an Autonomous database that combines laboratory results from blood samples taken in all conditions, which are stored under different identification tags related to the same patient. Graphs of the estimated glomerular filtration rate (GFR) over time are created for patients < 65 years of age with incoming GFR < 50 ml / min / 1.73 m² and patients > 65 years of age with incoming GFR < 40 ml / min / 1.73 m². Graphs in which kidney function deteriorates are marked by a laboratory scientist, and details are sent to the primary care doctor (GP) with a hint about the need for further action. We will evaluate the impact of implementing this intervention on a large population served by a number of UK kidney centers using a mixed method. The order of implementation among participating centers will be randomly distributed. Implementation will continue with unidirectional steps from control group to intervention group until all centers generate eGFR graphs over time. The main result of the quantitative assessment is the proportion of patients who went to specialist kidney services within 90 days of the start of RRT, using data regularly collected by the UK kidney registry. A qualitative assessment will examine the intermediaries and barriers to acceptance and dissemination of interventions. It will include: semi-structured interviews with laboratory staff, kidney center staff, and service commissioners; an online survey of General practitioners receiving intervention; and focus groups of primary care staff [18,19,20,].

Late submission of Nephrology to patients with ESKD is a source of potentially preventable harm. This Protocol describes a reliable quantitative and qualitative assessment of quality improvement interventions to reduce late presentation and improve outcomes for patients with ESKD [21,22,23,24,25].



Table 1 -Modern types of treatment and technologies in the approach to the management of patients with terminal renal failure

Authors	Studydesign	Researchtime	Country	Gender	Age	Sample	Indicators	Researchtopic
1 Krylova, MariaIvanovna	2 Single-stage cross-sectional study	3	4	5	6	7	8	9 Quality of life of patients on hemodialysis and peritoneal dialysis.
Zhan M1, Doerfler RM2, Xie D3, Chen J4, Chen HY3, Diamantidis CJ5, Rahman M6, Рикардио AC7, Sondheimer J8, Шргайс L6, Бартеп LA2, Weir MR2, Финк JC9;	A comparative meta-analysis of prospective cohort study	2011	China	Women and men	40-49	3939	(-0.14%) 95% CI, from -0.34% to 0.05%	Association of opioids and non-steroidal anti-inflammatory drugs with CKD outcomes: results of the CKF (chronic kidney failure) study.
Manley HJ1, Awch G2, Weiner DE3, Jiang H2, Miskulin DC3, Johnson D2, Laeson EK4.	Retrospective cohort study	from May 2016 to April 2017	Canada	Women and men	30-70	54547	0.25%	Management of interdisciplinary drug therapy and hospitalization in patients undergoing supportive dialysis: a retrospective cohort study.
Goossen K1, Becker M1, Marshall MR2, Bühn S1, Breuing J1, Firanek CA3, Hess S1, Nariai H4, Sloand JA3, Yao Q5, Chang TI6, Chen J7, Paniagua R8, Takatori Y9, Wada J10, Pieper D1.]	Systematic review of randomized controlled trials	2008-2012	USA	Women and men	30-70	1693 participants	OR, 0.49 [95% CI, 0.24-1.00]	Icodextrin Versus Glucose Solutions for the Once-Daily Long Dwell in Peritoneal Dialysis: An Enriched Systematic Review and Meta-analysis of Randomized Controlled Trials.
Copyright 2019 European society of vascular surgery. Published by Elsevier B. V. All rights reserved.	Systematic review of 2018 and network meta-analysis of randomized control trials	2019	Hong Kong	Women and men	50-70	100 000	OSH 0.53, 95% CI 0.34-0.84	Based on the surface under the values of the cumulative ranking curve (SUPRA), the best interventions to save thrombosed or ineffective AVG were DEB and stent grafts.
Natale P1, Ruospo M, Saglimbene VM, Palmer SC, Strippoli GF	Systematic review of 2018 and NETWORK meta-analysis of randomized control trials	2009	Canada	Women and men	50-90	3427 participants	(MD -2,25, 95% CI -6,33-1,82; I2 = 96%;	Interventions to improve sleep quality in people with chronic kidney disease.
1, Tawada M ^{2,3} , Yuasa H ⁴ , Ryuzaki M	Randomized trial	2016	USA Japan	Women and men	50-75	458002	0.730.73 (95% CI 0.66 - 0.82)	New guidelines of the Japanese society of peritoneal dialysis dialysis.
Territo A ¹ , Subiela JD ¹ , Regis F ² , Gallioli A ³ , Breda AJ.	Systematic review	2019	USA	Women and men	20-70	3451	Per 11.7 X100 000 population	Current state of robotic kidney transplantation and its future. "Robotickidneytransplantation"
1 Thongprayoon C1, Kaewput W2, Thamcharoen N3, Bathini T4, Watthanasuntorn K5, Lertjitbanjong	2 Thirty-eightcohortstudies	3	4	5	6	7	8	9 Incidence and impact of acute kidney injury after liver transplantation: a meta-analysis.
Hamilton AJ ¹ , Caskey FJ ² , Casula A ³ , Ben-Shlomo Y ⁴ , Inward CD ²]	Longitudinal study	2016	Brazil	Women and men	30-45	13,422 patients with CKF	95% CI: 1.53-3	Psychosocial health and lifestyle behaviors in young people receiving kidney replacement therapy compared to the general population: study results.

CONCLUSIONS

The work provides a comprehensive clinical assessment of modern technologies of program hemodialysis. The necessity and effectiveness of an integrated approach to the use of various devices, their indicators and functions are shown. Demonstrated treatment for recovery and a personalized approach to the management of patients with end-stage renal failure. Therefore, a systematic review was conducted over the past 10 years. network meta-analysis of randomized control trials. For the first time during hemodialysis sessions in the gamma chamber, the stability of hemodynamics was demonstrated during ultrafiltration hemodialysis. For the first time, a paradoxical increase in the diameter of the inferior Vena cava against the background of ultrafiltration in patients with secondary hyperparathyroidism was detected, which can be considered as one of the mechanisms for the development of intradialysis hypotension. For the first time in domestic practice, the effectiveness of removing the acetate ion from the dialysis fluid in terms of preventing intradialytic hypotension, as well as the possibility of using the plasma conductivity index to optimize the sodium balance during hemodialysis has been shown. In this paper, algorithms for measures aimed at preventing and reducing the severity of major cardiovascular complications characteristic of patients on program hemodialysis treatment, as well as ensuring an effective and uncomplicated course of hemodialysis sessions, are formed. The main directions of improvement of program dialysis treatment in order to improve its results are shown.

Sixty-seven studies with 3,427 participants met the selection criteria. Thirty-six studies involving 2,239 participants were included in the meta-analysis. Follow-up for clinical outcomes ranged from 0.3 to 52.8 weeks (5 weeks on average). Activities included relaxation techniques, exercise, acupressure, cognitive behavioral therapy (CBT), educational interventions, benzodiazepine treatment, dopaminergic agonists, telephone support, melatonin, reflexology, light

therapy, various forms of peritoneal dialysis, music, aromatherapy, and massage. Incomplete information about key methodological details has led to an uncertain risk of bias in many studies. With very low confidence in the evidence, relaxation techniques had an undefined effect on sleep quality and duration, health-related quality of life (HRQoL), depression, anxiety, and fatigue. The studies were not designed to assess the effect of relaxation on sleep latency or hospitalization. Exercise had an uncertain effect on sleep quality (CM -1.10, 95% CI -2.26 to 0.05; $I^2 = 90%$; 5 studies, 165 participants; evidence with very low confidence). Exercise probably reduced depression (MD -9.05, 95% CI -13.72 to -4.39; $I^2 = 0%$; 2 studies, 46 participants; evidence of moderate confidence) and fatigue (SMD -0.68, 95% CI from 1.07 to -0.29; $I^2 = 0%$; 2 studies, 107 participants; evidence of moderate confidence). Compared to the absence of acupressure, the acupressure effect had an indeterminate effect on the quality of sleep. It was doubtful whether acupressure compared to false acupressure improved the quality of sleep (PSI scale from 0 to 21), because the reliability of the data was very high.

There were no studies designed to directly study and correlate the effectiveness of a personalized approach to the management of patients with terminal renal failure aimed at improving the overall condition that could be undertaken for the practical spectrum. No studies have reported the therapeutic effects of a personalized approach to the management of patients with end-stage renal failure.

Based on the results of the literature above, we found that only a small number of comprehensive studies have been conducted in the field of personalized management of patients with end-stage renal failure. This group of people needs medical and social factors, quality and accessibility of medical care, logistics of clinics, provision of qualified personnel, modern research on providing consultations and requires modern research.

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