REVIEW ARTICLE

Health-related Quality of Life Among Hemodialysis Patients and Its Associated Factors: A Scoping Review

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ABSTRACT

End-stage renal disease (ESRD) leads to significant difficulties in patients' lifes, which translates into impaired health-related quality of life. This study was conducted to determine the factors associated with HRQoL among hemodialysis patients. PRISMA-ScR was used as guidelines, and databases such as Google Scholar, Science Direct, and PubMed were used in this review. Inclusion criteria included English-language publications describing patients' HRQoL and related characteristics published between 2015 and 2022. Hence, 28 articles were selected for the scoping review. This review described that factors such as socio-demographics, diet, hemoglobin, dialysis adequacy, psychological factors, and comorbidities were significantly associated with impaired HRQoL in ESRD patients. Among the reversible factors identified through this scoping review are nutritional factors, hemoglobin level, hemodialysis adequacy, medical cost support, and psychological factors. The patient's quality of life can be improved if this factor is treated at an early stage before it becomes severe.

Keywords: End-stage renal disease; ESRD; Quality of life; Hemodialysis; Dialysis

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INTRODUCTION

End-stage renal disease (ESRD) is a chronic condition that significantly impacts HRQoL (1). Renal failure causes significant difficulties in many aspects of patients' lives, resulting in impaired quality of life. Hemodialysis treatment is costly, time-consuming, and involves restrictions on food intake and drinking. In addition, patients must undergo complicated treatment that requires many visits to the hospital or dialysis facility, often three times per week, which requires significant changes in patients' daily routines (1).

Rationale
Hemodialysis treatment negatively impacts the quality of life of the patient and family in many ways. Occupation, dietary habits, exercise routines, sense of stability and security, social relationships, and ability to perceive value in any aspect of daily life are among the most common problems reported by ESRD patients. To date, it is unclear what specific factors influence the HRQoL of hemodialysis patients. For this reason, a scoping study was conducted to map the research conducted in this area carefully and identify current knowledge gaps. Scoping reviews assess the literature's scope on a topic and summarise the available evidence. Scoping reviews help determine if a systematic review of the literature is needed.

Objective
The primary objective of this study is to determine the factors associated with HRQoL among hemodialysis patients. Thus, the research question for this study is what are the factors associated with HRQoL among hemodialysis patients? Associations between HRQoL and socio-demographic, clinical factors, and other factors will be investigated in this study. This review aimed to describe the HRQoL of ESRD patients undergoing hemodialysis and to identify possible associations with patients' socio-demographic profile and other clinical characteristics.

METHODS

Protocol and registration
The PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews) checklist and explanation were used as guidelines for our scoping review (2).

Identification
The search strategy focused on three components that are quality of life, dialysis, and factors associated with quality of life among hemodialysis patients. Following classification into pertinent synonyms, keywords, and MeSH (Medical Subject Heading) phrases, each component was searched systematically using Google Scholar, Science Direct, and PubMed databases.

Information sources (database)
This phase was performed to enrich the keywords applied in the search process. At this stage, it was indeed essential to use multiple keywords and databases to avoid retrieval bias (3) The search relied on the main keywords; quality of life among hemodialysis, as well as several other related keywords; HRQoL, dialysis, HD, factors associated, end-stage renal disease, ESRD, end-stage renal failure, renal impairment and renal replacement therapy. The articles were searched through several databases, namely Google Scholar, Science Direct, and PubMed. The search process was conducted between September and October 2022.

Screening (Selection of sources of evidence)
Articles published between 2015 and 2022 were chosen, and only peer-reviewed articles were selected to ensure the articles' quality. As prescribed by (4), the screening process helps to distinguish suitable articles from unsuitable ones for the review. Only articles published in English were reviewed to avoid confusion, minimise cost, and reduce time consumption (5).

Eligibility (Eligibility criteria)
Articles that studies regarding patient quality of life and factors associated with it will be included in this review. There are two researchers went over the articles in this review. Articles were included if they were: published between the period of 2015 and 2022, written in English, involved patients undergoing hemodialysis treatment, and described the factor that influences their quality of life. Cross-sectional study, cohort study and quasi-experimental were included to take into account the many aspects of factors associated with quality of life. Papers were disqualified if they did not adhere to the study's objective and were not focused on HRQoL among ESRD patients such as acute pulmonary oedema or other complication. In eligibility criteria, the selected 65 articles were re-examined to ascertain adherence to the selection criteria. At this stage, the abstracts were read to determine the suitability of the articles. Subsequently, the full articles were reviewed comprehensively to ensure they fulfilled the inclusion and exclusion criteria. Fig. 1 shows the
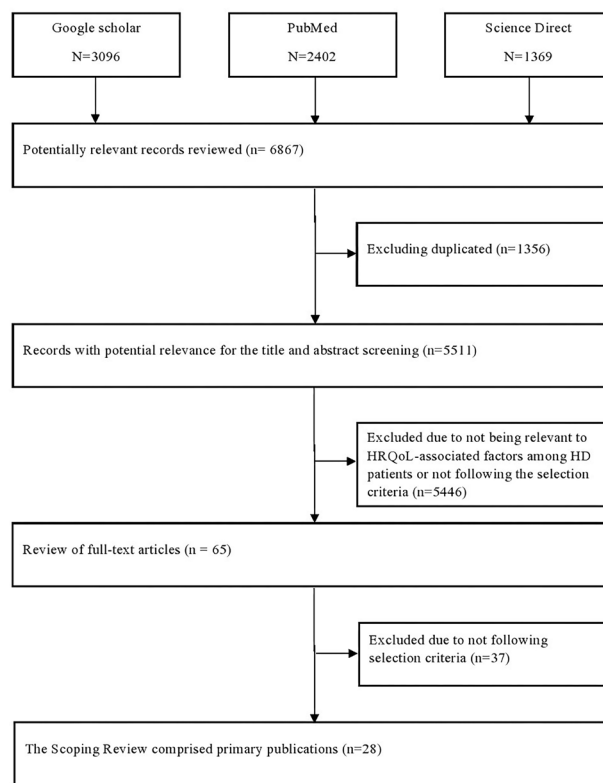

Fig. 1 : Systematic Selection of Records: Flow Diagram.

flow diagram of systematic selection of articles.

RESULTS

The authors initially sought relevant papers in these three areas: abstract, results, and discussion. The data gathered from the chosen studies were combined and interpreted using a charting technique based on a descriptive method (6). Following this strategy, the names of the authors, the year that the research was published, the research setting, its design, its methodology, and any accessible study findings were noted. Microsoft Excel and Microsoft word is used to compile and summarise the data from the articles. The result sections of each article were carefully studied to find statements referring to the factors that correlated with the quality of life of ESRD patients requiring hemodialysis. Table I contains summaries of the papers that have been evaluated. Table II lists the research characteristics, including study type, venues, publication, and total number of studies (n=28). The maximum and lowest sample sizes, as well as characteristics that affect HRQoL, are also mentioned (n=28 studies total). Factors related to socio-demographics are described further in Table III, and other factors that affect the quality of life are described in Table IV.

Table I : Summary of selected articles (n=28)

First authors	Year publication	Setting	Sample size	Study design	Socio-demographic	Nutrition	Haemoglobin level	HD adequacy	Psychological	Comorbid	Others
							Factor associated with HRQoL				
Ai-Rubaia ZR	2022	Iraq	174	Cross-sectional				√			
Anees M	2018	Pakistan	135	Cross-sectional	√						
Boukhira I	2022	Morocco	441	Cross-sectional	√		√			√	√
D'Onofrio G	2016	Italy	103	Cross-sectional		√					√
Daniel SC	2020	USA	124	Cross-sectional	√	√			√		
de Alencar SB	2020	Brazil	171	Cohort					√		
de Brito DC	2019	Brazil	205	Cohort	√						
Ebrahimi H	2016	Iran	99	Quasi-experiment	√	√					
Emtair A	2021	Libya	115	Cross-sectional	√		√			√	
Garg AX	2017	Canada	245	Quasi-experiment							√
Gesualdo GD	2017	Brazil	110	Cross-sectional	√	√					√
Haswita	2018	Indonesia	20	Cross-sectional	√				√		
Jose JV	2022	India	152	Cross-sectional	√						√
Joshi U	2017	Nepal	150	Cross-sectional	√						
Kang GW	2015	Korea	101	Cross-sectional	√	√	√		√		
Khatib ST	2018	Palestine	141	Cross-sectional	√						
Kim K	2018	Korea	102	Cross-sectional					√		
Kim S	2022	Korea	141	Cross-sectional			√		√		√
Ng HM	2021	Malaysia	379	Cross-sectional		√					
Pan CW	2018	China	315	Cross-sectional	√		√				√
Pretto CR	2020	Brazil	183	Cross-sectional	√		√		√		√
Ravindran A	2020	India	503	Cross-sectional	√						
Saad M	2015	USA	111	Cross-sectional	√		√				√
Shumbusho G	2022	Rwanda	89	Cross-sectional	√		√			√	
Tabata A	2022	Japan	61	Cross-sectional	√						
Vasilopoulou C	2015	Greece	395	Cross-sectional	√				√		
Xie J	2022	China	122	Cross-sectional	√	√		√	√	√	
Zhou X	2017	China	125	Cross-sectional	√					√	

Table II : Descriptive results summary (n=28)

Items	Summary
Type of Study	
Cross-sectional study	24
Cohort study	2
Quasi-experimental	2
Setting	
Brazil	4
Canada	1
China	3
Greece	1
India	2
Indonesia	1
Iran	1
Iraq	1
Italy	1
Japan	1
Korea	3
Libya	1
Malaysia	1
Morocco	1
Nepal	1
Pakistan	1
Palesti	1
Rwanda	1
USA	2
Year of publication	
2015	3
2016	2
2017	4
2018	5
2019	1
2020	4
2021	2
2022	7
Range of sample size in studies	
Minimum	20
Maximum	503

Factors that influence HRQoL	
Socio-demographic factor	21
Nutritional factors	7
Haemoglobin factors	8
Dialysis adequacy factors	2
Psychological factors	9
Comorbidities	5
Others	9

Table III : Socio-demographic factors that associated with HRQoL

Socio-demographic factors that associated with HRQoL	Summary
Gender	4
Age	8
Education level	10
Marital status	5
Income	10

Table IV : Other factors that associated with HRQoL

Other factors that associated with HRQoL	Summary
Medical cost support	2
Long dialysis treatment	2
Dialysis session	2
Sleep quality	1
Spirituality and religiosity	1
Intradialytic weight gain	1

Influence of socio-demographic factors on quality of life

In this review, several articles (n= 3), mentioned that male patients have a better quality of life (7-9), and some reported (n=1) female have good quality of life (22). Other studies reported that (n=4) younger patients, less than 21 years old on average have a better quality of life (10,12-14) compared to older patients. On the contrary, some studies reported that older people, those more than 60, have a superior quality of life (8, 15, 16, 21). Another study found that age had no impact on quality of life (17, 27). Most of the studies (n=10) found that high education is positively associated with better quality of life (7, 8, 12-14, 18-20, 22, 23). In addition,

other studies (n=5) reported that having a partner or being married was positively associated with a good quality of life (12, 14, 22-24). While in another study, the authors noted no significant association between marital status and quality of life (25). Most studies (n=10) described that higher income is associated with better quality of life (7, 9-11, 14, 16, 18, 22, 24, 26) among ESRD patients and those requiring hemodialysis.

Influence of nutritional factors on quality of life
Albumin levels were shown to be an indicator of the nutritional status of ESRD patients. Normal albumin level indicates adequate nutrition. In this scoping review, several studies (n= 7) reported that a higher albumin level is positively associated with good quality of life (14, 19, 20, 22, 27, 28, 31).

Influence of hemoglobin factors on quality of life
Several studies (n= 8) reported that normal or higher hemoglobin levels among hemodialysis patients were positively associated with a good quality of life (7-10, 12,17, 27, 29).

Influence of the adequacy of dialysis on quality of life
Adequate frequency of dialysis was reported to be among the main factors of good quality of life, as described in two studies (14, 30). However, another study found that the sufficiency of dialysis was not associated with the quality of life (31).

Influence of psychological factors on quality of life
In this review, some studies (n=9) found that anxiety and depression were significantly associated with quality of life. Psychological factors was found to be the main determinant of low quality of life. (8, 14, 15, 19, 23, 27, 29, 34. 38).

Influence of comorbidities on quality of life
Most of the studies (n=5) found that the absence of comorbidities such as diabetic nephropathy (n=1) and cardiovascular (n=1) was associated with better quality of life (7, 9, 14, 10, 25).

Influence of others factors on quality of life
Only a few studies explored other factors on the HRQoL. Patients without financial support for medical costs (n=2) were associated with poor quality of life (10, 11). The studies found that long dialysis treatment (n=2) was also associated with poor quality of life (12, 31). Other studies found that fewer dialysis sessions (10), poor sleep quality (29), low spiritual and religiosity (22), higher intradialytic weight (17), and frequent infections were associated with poor quality of life (8).

Summary of factors that associated with HRQoL among hemodialysis patients
According to this scoping review, most studies show that factors such as socio-demographics, nutrition,

hemoglobin, dialysis adequacy, psychological factors, and the presence of comorbidities are associated with quality of life in hemodialysis patients. Besides that, there are other individual factors that few authors have studied as predictors, such as no support for medical costs, long dialysis year, fewer dialysis sessions, poor sleep quality, spirituality and religiosity, higher intradialytic weight and frequent infections, which are associated with poor quality of life.

DISCUSSION

The physical, psychological, and social aspects of health that are influenced by a person's experiences, beliefs, hopes, and expectations are referred to as quality of life. This definition is based on the World Health Organisation's (WHO) definition of quality of life. Some authors (13) define quality of life as a person's perspective on their life in relation to their goals, expectations, norms and concerns, and the culture and value system of where they live. Meanwhile, (8) added that a patient's physical and mental health, independence, social relationships, worldview, and environmental characteristics influence the quality of life.

Influence of socio-demographic factors on quality of life
Researchers in many countries have studied the relationship between socio-demographic factors such as gender, age, education level, marital status, income, and quality of life. (7-20, 22-27). The association between quality of life and gender is inconsistent. According to this review, the male sex has a better quality of life than women (7, 8, 9). According to (9), the mean score for overall quality of life was higher in men. Female gender was associated with lower HRQoL scores than male gender, and the reason for this may be that women perceive illness more negatively than men (7). In contrast, some discovered that women had a high HRQoL compared to men, who were more likely to have a poor HRQoL in 'belief', which was related to not having a job or having a spouse who made it worse (22). However, (17) found that gender did not affect HRQoL. Similarly, some researchers found no statistically significant results when comparing gender scores (13).

Overall, younger people have been shown to have a better quality of life (n=4) (10, 12-14). Age between 45 and 65 years was a protective factor (CI: 0.24 - 0.89, P = 0.006) against poor quality of life (10). This suggests that patients in this age group have a higher quality of life than patients who are over 65 years old. This could be because older people are better able to adapt to chronic diseases and have a shorter life expectancy than younger people (10). Similar to (13), their research found a decline in HRQoL scores with age. In addition, their data show that the HRQoL of older patients in

the social domain was significantly lower than that of younger patients. This could be due to a lack of healthy interpersonal relationships and an unsatisfactory sex life (8). In contrast, some researchers found that older people had a good quality of life (n=4) (8, 15, 16, 21). Age groups under 60 years had lower scores in the categories of limitations due to emotional problems and mental components (8). It is hypothesised that older people, in contrast to younger people, have more flexibility or maturity to cope and respond better to stress, favouring a more favorable impression of HRQoL in the face of chronic kidney disease (8). Older age was associated with a better HRQoL score in the social domain (p=0.005) (16). This phenomenon might be attributed to the idea that older individuals tend to possess a more nuanced comprehension of the constraints within social life, leading to greater satisfaction with their lives despite the presence of the disease. Moreover, younger patients may perceive the ailment as a formidable challenge and a significant loss. In contrast, older individuals are inclined to view it as less daunting and more integral to the natural course of life (8). In addition, (15) found that the 60-year-old age group had better HRQoL and concluded that hemodialysis patients, although fearful of the situation, have a good quality of life despite their advanced age. However, some researchers noted that age does not influence quality of life. Other authors found that age did not reach statistical significance in theirs studies (17,27).

The majority of studies show that a high level of education is positively associated with better quality of life (7, 8, 12-14, 18-20, 22, 23). According to (7), a high level of education and a high HRQoL are significantly correlated with each other. This may be because informed patients have a better awareness of their condition, and its impacts, and will benefit from the best therapy, or because they are more knowledgeable about the therapies, report adhering to them more often, and have stronger relationships with their medical staff. This outcome is consistent with previous research. Higher education is believed to be crucial for improving coping skills and increasing knowledge of chronic conditions. Supported by (19) level of education had a significant relationship with depression due to their coping ability and subsequently affect their overall HRQoL. Additionally, individuals with low levels of education are 4.3 times more likely to have poor HRQoL than those with higher levels of education (22). Both authors discovered that a patient's HRQoL was favourably influenced by their educational background (8, 13). The degree of education is a positive indicator of health since it increases employment opportunities and, therefore, possibilities for a steady income and improved socioeconomic situations. More literate patients are more aware of the condition, its treatments, and the need to alter their lifestyles. Therefore, in this research, individuals with university education and those in the workforce had better scores across all areas. (8, 12).

Having a partner is positively associated with good quality of life (n=5) (12, 14, 22-24). According to (22), patients who reported having "without a partner" and "poor/bad" health were, respectively, 4.2 and 10.2 times more likely to exhibit low quality of life (QoL) in the area of "inner peace" compared to those who had a committed spouse and "good/great" self-reported health. This is supported by (23), who found that the average total score of quality of life was significant in married people (p=0.007). According to (14), one reason for this could be that patients who aren't married are more likely to have inadequate family support and social isolation, which can result in poorer adherence to the hemodialysis and other treatment regimens that are provided for them. Some researchers conversely note that marital status has no effect on quality of life. According to (25), marital status had no significant effect on the quality of life. Nonetheless, the patients in their study were almost all married, which may explain why their findings differ from those of earlier studies. A small number of single patients are unlikely to suggest that the marital status of maintenance hemodialysis patients affects their quality of life.

Lastly, patients with higher incomes have been found to have a better quality of life (7, 9-11, 14, 16, 18, 22, 24, 26). Given that family income is one of the indices of socioeconomic status (7), it was anticipated that people with lower family incomes would have a worse quality of life than those with higher incomes. Their research findings align with those of earlier studies that found a connection between family income and HRQoL. Additionally, their analysis demonstrates a substantial relationship between work and quality of life in the current study, and it has been shown in other studies that unemployment is a significant risk factor for poor HRQoL in patients receiving hemodialysis. According to (10), professionally engaged patients had better HRQoL ratings. Similar to (22), those who claimed to have "no occupation" were 4.4 times more likely to have low HRQoL than those who reported having an occupation. According to the research, patients with greater incomes may easily afford better therapy and meet their demands (16). Additionally, it would be predicted that having financial stability would result in higher self-esteem, a sense of fulfilment, and less fear about the future, all of which improve quality of life.

Influence of nutritional factors on quality of life
According to (22), albumin levels are considered to be a good marker of the nutritional state of patients with a diagnosis of kidney disease. Low levels are associated with a greater risk of morbidities and mortality. Normal albumin levels are typically an indication of good nutrition. Most findings corroborate that higher

albumin level is positively associated with good quality of life (n= 7) (14, 19, 20, 22, 27, 28, 31). Higher dietary phosphorus intakes were substantially linked with worse quality of life, although serum albumin levels were favourably associated with physical functioning (P = 0.041) (28). Besides that albumin, triglyceride, and phosphorus, which were used as an index of nutritional status, showed a positive association with HRQoL (27). In a similar vein, according to (20), improper nutrition was linked to decreased HRQoL and an increase in comorbidities among patients with chronic HD. Additionally, these patients need ongoing education to manage their constantly changing demands in terms of both physical and emotional elements since they have special dietary requirements and are being treated with a range of drugs. According to (19), higher average levels of protein intake may be an indication of better overall health status. Thus, the observed increase in average KDQOL can be noticed among participants with higher protein intake (> 125 g/day).

Influence of hemoglobin factors on quality of life

Normal or higher hemoglobin levels are positively associated with a good quality of life, according to the majority of the researchers (7-10, 12, 17, 27, 29). According to (9), a higher overall KDQOL mean score was associated with, hemoglobin of 10-11 g/dl and other factors. This was supported by (10), who found in their multivariate analysis that poor HRQoL was significantly associated with anaemia (CI: 1.02 - 2.79; P = 0.037). This finding is consistent with another study that found high hemoglobin levels are significantly associated with better HRQoL and reported that anaemia commonly contributes to poor HRQoL in patients with CKD. From a clinical perspective, it makes sense that anaemia affects HRQoL in hemodialysis patients, as it is a frequent comorbidity of CKD and is associated with an elevated risk of CKD progression, cardiovascular problems, and mortality. Hemoglobin level is the indicator of anemia and is commonly associated with impaired energy and stamina, which leads to poorer HRQoL (12). Without a doubt according to (8) concerning CKD complications, anaemia was reported by a greater percentage of their respondent (69.4%), showing a worsening in the quality of life according to the severity of the anaemia.

Influence of dialysis adequacy factors on quality of life

Hemodialysis is administering an adequate hemodialysis dosage to patients to treat their uremic syndrome symptoms, blood pressure, biochemical indicators, comfort, and nutritional status. According to (33), sufficient hemodialysis is accomplished when the patient's quality of life increases. According to some researchers, dialysis adequacy is positively associated with better quality of life (14, 30). In their research, (30) found a very significant correlation

between patients' quality of life and the sufficiency of their dialysis, with a p-value of 0.00. Surprisingly, they also found that around 64.9 % of patients had a Kt/V less than 1.2. Without a doubt, a strong correlation exists between Kt/V values and mortality rates in dialysis populations. Therefore, improvement of dialysis adequacy reduces the risk of mortality. As a result, Kt/V level >1.2 resulted in significant improvement of HRQoL in dialysis patients. However, some researchers notice that dialysis adequacy is not associated with quality of life (n= 1). Some researchers discovered that some studies' variables that appeared to be associated with HRQoL were unreliable predictors. Their study did not find a significant association between Kt/V quality of life (31).

Influence of psychological factors on quality of life

Psychological factors show a significant association with quality of life, and depression is the main determinant of low quality of life. (n=9) (8, 14, 15, 19, 23, 27, 29, 34, 38). The quality of life concerning health is significantly diminished in many patients with end-stage renal disease. Most prior research has concentrated on clinical factors, but psychosocial factors can also impact quality of life (27). Their research showed a significant association between the EQ-5D index depression (P < 0.001), and anxiety (P < 0.001). Similar results to (14) depression and anxiety were single factors influencing the quality of life of HD patients (P<0.05). Depression does impact the quality of life with r=0.532 with p 0.008 <0.05 in their research (15). The results show there is an effect of depression on the quality of life of patients with hemodialysis therapy. But in contrast, there is no impact of anxiety on the quality of life in their study. Supported by (23), it was found that there was a statistically significant association between anxiety and depression with quality of life (p<0.001, respectively). More specifically patients with low levels of anxiety or depression had a better quality of life compared to those with moderate or high levels of anxiety or depression. More than half of the respondents reported symptoms of depression, according to the analysis of (8) of the signs of depression. In this group, depressive disorders have been linked to worse clinical outcomes, comorbidities, complications from the illness and therapy, hospitalizations, longer hospital stays, and discontinuation of dialysis. Despite the association between depression and adverse outcomes, only a small percentage of patients are appropriately confronted; this scenario may be brought on by the overlap of symptoms related to uremia. Poor treatment compliance may be a contributing factor in the link between high levels of anxiety or depression and low quality of life suggested by (23).

Influence of comorbidities on quality of life

The absence of comorbidities is associated with good

quality of life (n=5) (7, 9, 10, 14, 25). According to (9) in their study, a higher overall KDQOL mean score was related to the lack of comorbidities. Consistent with the findings of (10) in their research, comorbidities, particularly diabetes and cardiovascular disease, as well as BMI, were identified as factors associated with a diminished Health-Related Quality of Life (HRQoL). Comorbidity was also kept as a risk factor for low quality of life, particularly diabetes, cardiovascular disease, and arterial hypertension, which were associated with low HRQoL and low KDQoL, respectively. In addition, (7) found a significant relationship between HRQoL and the underlying disease, especially diabetic nephropathy, which was associated with lower HRQoL scores in their recent study. Similarly, with (25) in their study, patients with diabetes had significantly lower quality of life scores (p<.05, Z=−2.062) than non-diabetic patients. This could be the case since diabetes can cause several organs to lose functionality. Particularly, diabetic patients having dialysis often have organs other than the kidney that are dysfunctional, and dialysis is unable to reverse the damage to these other organs. This concludes that diabetes, without a doubt, is associated with a lower HRQoL.

Influence of other factors on quality of life

There are other individual factors (n=9) that few authors have studied as predictors, such as no support for medical costs, long dialysis year, fewer dialysis sessions, poor sleep quality, spirituality and religiosity, higher intradialytic weight, infections, which are associated with poor quality of life (8, 10-12, 17, 22, 29, 31). In addition, some factors (n=1) are associated with good quality of life, such as frequent hemodialysis (32). Future research should investigate these relationships to establish stronger correlations.

Reversible versus irreversible factors affecting quality of life

According to the reviewed paper, there are a number of reversible and irreversible factors. If this issue is addressed before it worsens, the patient's health-related quality of life (HRQoL) may be improved. This scoping review has revealed a number of reversible factors, including dietary factors, hemoglobin level, adequate hemodialysis, medical cost assistance, and psychological issues. The strategy to enhance the patient's nutritional status is to give educational interventions on their dietary intake, which can lead to improvements in HRQoL. Healthcare professionals are positioned to help patients learn in order to improve their health and HRQoL (25). Therefore, it is necessary to investigate strategies that enhance protein consumption without raising body fat percentage (17). Additionally, anaemia can have an adverse impact on HRQoL, and among HD patients, hemoglobin correction is linked to an improvement in

HRQoL (29). The best way to reverse the effect is to adequately treat anaemia by treating gastrointestinal symptoms and promoting diet compliance. Providing nursing care to prevent blood loss during hemodialysis may also help lower the risk of this complication and its consequences (8). Giving the ideal hemodialysis dose increases the adequacy of hemodialysis and subsequently improves quality of life (30). Regarding medical expense support, patients who received it reported a better HRQoL. Therefore, the government and those in charge of making decisions should be aware of the need to lower treatment costs and raise the socioeconomic status of patients, especially those receiving hemodialysis, or provide them with adequate health insurance that would enable widespread and reasonably priced access to medical services (10). Furthermore, it has been demonstrated that depression, a modifiable factor, negatively affects patients' HRQoL with chronic kidney disease (29). These results underline how crucial it is to evaluate depression in CKD patients and take that evaluation into account when making care decisions. (29). It is crucial to use strategies to lessen depressed symptoms, such as educational and problem-solving programmes which may be implemented in dialysis units (8).

Still, certain things are unavoidable. Age, comorbidities, gender, and marital status are a few of the irreversible variables. Healthcare professionals who provide hemodialysis treatment should recognise the necessity and significance of determining the demographic characteristics linked to HRQoL, including age, marital status, and gender (22). To lessen the adverse effect, a few alternatives may be used. For instance, single persons can receive sufficient emotional and monetary assistance from their relatives in order to improve their HRQoL (16). Comorbidities such as diabetes may cause various organ dysfunction, and it may be the reason why individuals with the disease had a poorer HRQoL than those without it. Unfortunately, dialysis treatment cannot prevent damage to other organs in diabetic patients. However, we can try to find alternatives to reduce the risk or prevent the progression of the disease (25).

Limitations

Research published in other languages may not have been included in the review, as only studies published in English were considered. Nevertheless, many English-language studies came from countries where English is not the official language, such as China and Japan. The main drawback of the review is the paucity of relevant literature, which prevents us from going beyond a comparison and contrast of the included studies in terms of the relevant criteria. However, the main aim of a review is to thoroughly examine the literature and find gaps in the chosen topic.

CONCLUSION

The findings of this review point to an area of research that could improve the quality of life of people with ESRF. The literature review revealed a lack of studies on the elements that influence the quality of life of hemodialysis patients. As the definitions of quality of life used in the research are similar, the conclusions of the studies are consistent and conclusive. Most studies show that factors such as socio-demographics, nutrition, hemoglobin, dialysis adequacy, psychological factors, and the presence of comorbidities are associated with quality of life in hemodialysis patients. In addition, other relevant factors should be investigated in future research to discover associations and establish stronger correlations.

ACKNOWLEDGEMENT

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