RESEARCH ARTICLE

Relationships of social support and attitudes towards death: A mediator role of depression in older patients on haemodialysis

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Abstract

Aim: To explore the mediating role of depression in older people receiving haemodialysis on social support and the attitude of participants towards death.

Design: A cross-sectional questionnaire survey.

Methods: Data were collected from older people undergoing dialysis (*N* = 209) at two regional hospitals in the north of Taiwan. Confirmatory factor analysis with structural equation model was used to clarify the strength of relationships and intermediary effects of three scales in which with 5,000 bootstrap samples using LISREL 9.31.

Results: The final model provided a good fit for the data. Social support and depression have statistically significant effects on dialysis older person' negative death attitudes. The direct effect of social support on depression was the strongest (*p*<.001). Overall, depression completely mediates social support and positive death attitudes. Depression partially mediates social support and negative death attitude.

KEYWORDS
attitudes towards death, haemodialysis, mediator, older people, social support

1 | INTRODUCTION

The incidence and prevalence of end-stage renal disease (ESRD) in Taiwan ranks first in the world (Wang et al., 2018). The severity of the problem can be reflected in particularly high kidney dialysis population which is 1.6–1.8 times that of Japan and Korea, and the highest proportions of ESRD expenditure with respect to their national health insurance systems (Ismail et al., 2019; US Renal Data System, USRDS, 2017). In addition, according to the prediction by Kidney Disease: Improving Global Outcomes (Perkovic et al., 2016), by 2040, 642 million people will be diagnosed patients of chronic kidney disease (CKD), and 40% among them will be diabetic patients, including patients with ESRD. Therefore, the functional health

maintenance and post-illness treatment of kidney function as well as end-of-life care have become an important global health issue.

In the past, research on ESRD mainly explored the long-term symptoms of haemodialysis and the impact of the disease process on daily life, such as the issues of gradual ageing of dialysis patients, degradation of their physical function, role change and decreased self-care ability (Chen & Fang, 2012). However, most of these studies focused on physiological symptoms, such as fatigue (Bai et al., 2015) and sleep disorders (Khan et al., 2019). Despite the rise of hospice palliative care in recent years, the end-of-life care of this group should also be given due attention (Chen et al., 2011; Yang et al., 2012). However, the existing research lacks the discussion of the attitudes of haemodialysis patients towards death because of

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their physical and mental symptoms. It is often not easy for patients to start the discussion this issue, particularly because of traditional cultural factors, but, to help patients obtain the end-of-life protection, addressing the issue of attitude towards death early as possible in the conscious patient who has sufficient time before death, without deliberately hiding and avoiding it, will be the key to improving the quality of death.

The utmost care in every possible way is important for everything when patients must face alone to death preparation (Davison, 2002). Thus, it is necessary for the medical staff to know the kidney dialysis patient's views on end-stage care and their attitude towards death to see whether they accept it calmly or are anxious about it. For the patients with a positive attitude towards death, medical plans can be discussed in advance to help make appointments for hospice and have open discussions with their family members on issues related to death (Lin et al., 2010).

Therefore, this study explored the intermediary role of the depression in older person undergoing haemodialysis between social support and death attitude.

1.1 | Background

1.1.1 | Attitude of haemodialysis older patients towards death

As Nozari and Dousti (2013) noted that people with an apparent difference between positive and negative attitudes towards death, awareness of health and disease severity affect the attitude of older patients under dialysis treatment, the higher the conscious health score, the higher is the score of oriented death acceptance and the attitude towards death for those with the deteriorating conditions is relief-oriented death acceptance. Taghipour et al. (2017) illustrated that death anxiety of patients undergoing hemodialysis was a major concern in human life that can be affected by different factors including spiritual health and disease characteristics. Further, higher pain index increased higher death anxiety or fear perception in patients with undergoing hemodialysis (Lee et al., 2006). Awang et al. (2018) mentioned a statistically significant difference in fear of death in the number of different chronic diseases. However, a few studies also indicate that there is no statistically significant relation between conscious health status and attitude towards death (Ardelt, 2003). Lack of consistent conclusions indicates the need for extensive research on this aspect.

Long-term struggle with disease makes patients aware of the impending death, and at that stage, they have realized the fact that the disease is irreversible and death is unavoidable, as observed by Cheng (2009), who studied the dialysis group. The acceptance of death got the highest score, echoing the research results of Lee et al. (2006a), who showed that the chronic disease groups had the highest attitude of accepting death, because of the deterioration of their own disease or serious illness and their attitude to face death.

1.1.2 | Social support for older haemodialysis patients

According to House (1981), social support has three health promotion aims: (1) to directly increase spiritual well-being: personal safety, affirmation, sense of belonging, social contact and emotional satisfaction; (2) indirectly improve health: reduce the stress of daily life; and (3) indirectly improve resilience: in a stressful situation (haemodialysis treatment), it can buffer the impact of negative emotions and have a positive effect on physical and mental health as well as life adaptation. There are statistically significant associations between psychological resilience and social support in hemodialysis patients, and the patients perceived the highest support from their families have better mental health (Karadag et al., 2019). This study proved that informative support can improve the self-care ability of patients and reduce their psychological pressure to adapt to the lifestyle of dialysis (Liu, et al., 2018).

1.1.3 | Intermediary relationship of depression between social support and death attitude

For the long-term haemodialysis treatment, older people need to go to the hospital three times a week regardless of any hardship and take a cumbersome and complicated dialysis diet, while dialysis fistula patency affects the treatment process. Moreover, half of all deaths among ESRD patients are due to cardiovascular disease in which conventional haemodialysis could be induced myocardial injury (Ahmadmehrabi & Tang, 2018). Depressive symptoms affect almost half of dialysis patients and the emotion status possibly affects compliance to therapy (Cirillo, et al., 2018). Liu et al. (2015a) observed that the higher the comorbidity index, the more is the tendency of depression. Later, Liu et al. (2018) pointed out a significantly positive association between the depression of older dialysis patients and physical symptoms. Furthermore, Min et al. (2015) found that depressed patients are prone to suicidal thoughts.

Depression in older people is positively correlated with negative death attitudes, in a similar vein; Lan et al.(2008) reported that the depression of the older in institutions correlates positively with negative death attitudes and that a higher depressive mood enhanced the fear of death and a tendency to escape. Cheng, Huang, Lee and Liao (2016) reported that depression of the older in the community is directly related to the negative attitude towards death, indicating that depression withdraws any hope towards the future and is suicidal. This echoes the findings of Min et al. (2015), who observed that patients with depression have negative attitudes towards death and have suicidal thoughts. Therefore, we should be alert to depressed older people on dialysis and rank them as highly tracked. After the older person undergoes haemodialysis treatment, they have to understand about dialysis, its associated physical discomforts, and change their dietary habits that have been maintained for a lifetime (Vulpio et al., 2021). This induces depression and negative attitudes towards death. Pourtaghi et al. (2019) also indicated that

the enhanced emotional social support can buffer the depression of middle-aged and older people.

2 | AIM

This study has verified that the depression of the participants correlates negatively with social support, indicating the need for higher social support in highly depressed subjects. The positive attitude towards death can be achieved by improving depression and increasing emotional social support.

The aim of this study was to assess the following hypotheses in older patients undergoing haemodialysis:

H 1 *Verify that depression has mediating effects on social support and positive attitude towards death.*

H 2 *Verify that depression has mediating effects on social support and negative attitude towards death.*

3 | METHODS

3.1 | Design

A cross-sectional study design was used.

3.2 | Sample/participants

This study was a survey through a questionnaire with a convenient sampling. The four compulsory inclusion criteria of participants were as follows: (1) regular dialysis thrice a week for more than six months; (2) aged 65 years or older; (3) clear-minded with ability to communicate in Chinese and Taiwanese; and (4) agree to participate in this study. Patients with cancer with a life expectancy of less than one year or those who were in an emergency or hospitalized were excluded. It was estimated using G-Power version 3.1, setting 0.05 as the maximum tolerable type I error, and the statistical test power to 95%, that 189 cases were needed to achieve the detection effect of 0.15 (Liu, et al., 2015b). At a 20% sample loss rate, the total number of cases received is estimated to be 209 (Cohen, 1988).

3.3 | Data collection

A total of 209 participants were recruited during the period of case collection from 1 August to 30 December 2018.

3.4 | Measures/validity and reliability

The basic demographic characteristics included age, gender, marital status and conscious health status.

The scale first introduced the Geriatric Depression Scale (GDS) developed by Yesavage et al. (1982) and has been widely used in clinical testing of the older for the depression status. The scale was used to evaluate the emotional distress of older patients receiving haemodialysis treatment and mainly assessed three major factors including emotional, cognitive and physical activities, through a total of 15 questions. The dichotomy method (Yes and No) was used with the score range of 0–15 points, and a higher score indicated more melancholy. After analysis of the subjects in this study, we found that the internal consistency reliability coefficient value (Cronbach's α) of this scale was 0.84 and the results show that this scale has a good range.

The "Social Support Scale" revised by Zhen (1993) referred mainly to the Inventory of Socially Supportive Behavior (ISSB) developed by Barrera, Sandler and Barrera et al. (1981). This scale used a set of 10 questions to assess the difference in the degree of social support provided by the family and medical staff to the older patients receiving haemodialysis treatment. Each question had three options, from "unhelpful" to "helpful," respectively scoring 1–3 points, and the score range is 4–40 points; a higher score indicated better social support. The Cronbach's α value of this study is 0.94, showing good stability of this scale.

The "Death Attitude Scale" was translated by Chen and Lin (2005) from the Death Attitude Profile of Gesser et al. (1987). This scale uses a set of 32 questions to evaluate the life-and-death issues related to older patients who receive haemodialysis treatment. It mainly comprises five aspects such as fear of death, death avoidance, approach acceptance, escape acceptance and neutral acceptance and each question has five options: from "strongly disagree" to "strongly agree," scoring 1–5 points respectively, and the score range is 32–160 points; a higher score indicates better attitude towards death. This scale is further divided into two subscales, of "positive death attitude" including the aspects of "approach acceptance" and "neutral acceptance," and "negative death attitude" including the aspects of "fear of death," "death avoidance" and "escape acceptance." The Cronbach's α value of the death attitude scale in this study is 0.70, indicating a good range of reliability.

3.5 | Ethical considerations

This study was approved by the Institutional Review Board of National Taiwan University Hospital Hsin-Chu Branch (IRB: 107–077-E). The older undergoing dialysis at the haemodialysis centres of two teaching hospitals was used as the participants.

3.6 | Data analysis

SPSS 20.0 (IBM SPSS Statistics Version 20) statistical software was used including one-way ANOVA, *t* test and Pearson correlation coefficient. LISREL 9.31 version was adopted for structural equation modelling (SEM) and path analysis, and their fit was examined.

The significance level of the research hypothesis was set to 0.05. The research hypothesis derived from this research framework was verified, and the impact of both social support and depression on the death attitude of older under dialysis was considered using the observed variable path analysis (OVPA) for structural equation modelling analysis to explore the mediating effects of depression, besides taking social support, depression and death attitudes as latent variables.

4 | RESULTS

4.1 | Characteristics of participants

A total of 209 participants were recruited, with an average age of 74.77 years (SD = 7.14). One hundred fifty-nine older (76.08%) were married, and 65 (31.1%) subjects had poor health. Considering depression, the average score was 6.24 points (SD = 4.03), and 41.1% of the subjects had depression. The total score of the social support section averaged 2.585(SD = 0.457), indicating that the subjects received good social support. The average score for a positive attitude towards death was 3.454 (SD = 0.579), while the negative attitude towards death was 2.990 (SD = 0.743) (Table 1).

4.2 | Correlation analysis of social support, depression and attitude towards death

Social support correlated significantly negatively with depression ($r = -.262$, $p < .01$), indicating that better social support can reduce depression in the participants. A significantly positive correlation between social support and positive death attitude ($r = .180$, $p < .01$) was observed, indicating that better social support made it easier to accept death. A positive relationship between positive and negative death attitudes, but they were non-significant associations. (Table 2).

4.3 | Analysis of research model fit

According to the theoretical model of Figure 1, the model fit of the positive death attitude reached the ideal state ($\chi^2 = 19.051$, DF = 17, Chi/df = 1.121, GFI = 0.978, NNFI = 0.994, CFI = 0.996, RMSEA = 0.024, SRMR = 0.033). The structural model indicated that social support correlated significantly negatively with depression ($p < .001$), a positive correlation of social support with positive attitude towards death ($\beta = 0.172$, $t = -1.722$), although the negative correlation of depression with positive attitude to death was supported ($\beta = -.238$, $p < .05$).

On analysing the theoretical model in Figure 2 for the ideal state of the better model fit of the negative attitude towards death ($\chi^2 = 24.250$, DF = 17, Chi/df = 1.426, GFI = 0.962, NNFI = 0.981, CFI = 0.988, RMSEA = 0.045, SRMR = 0.057).

TABLE 1 Status of social support, depression and death attitude of the participants (N = 209)

Variables	n	%
Age (M ± SD)	(74.770)	(7.140)
Gender		
Male	103	49.280
Female	106	50.720
Marital status		
Married	159	76.080
Single/Divorce/Widowed	50	23.920
Conscious health		
Poor	65	31.100
Ordinary	115	55.020
Good	26	12.440
Well	3	1.440
	Mean	**SD**
Depression	6.244	4.031
Social support	2.585	0.457
Positive attitude towards death	3.454	0.579
Negative attitude towards death	2.990	0.743

4.4 | Confirmatory factor analysis of the scales

In this study, LISREL was used for confirmatory factor analysis, and its combined reliability and convergence validity came from the factor load of each question. A total of 10 questions in the social support scale had a factor load of more than 0.75 of high validity. The recommended standard of composite reliability was more than 0.6, and the value of each aspect was more than 0.8; the convergence validity standard was more than 0.5, and each aspect was above 0.6, showing good construct validity. The social support scale used aspects of emotional support, and the structural equation modelling (SEM) from questions 1–3 was used for path analysis.

For analysing depression, only questions 2, 7 and 10 of the "Emotional Aspect" were included in the SEM for path analysis. The load factor, composite reliability and convergence validity of these three questions all met the standards.

Except for D27 and D30, the factor load of all the other questions of the 32-question death attitude scale was more than 0.5. The recommended standard for composite reliability was above 0.6, and both positive and negative death attitudes scored above 0.9. The convergence validity standard and both aspects were above 0.5, showing good construct validity.

### 4.5 | Verification of mediation by depression in social support and attitude towards death

The mediating variable is the third variable derived by exploring the influence of the independent variable on the dependent variable.

TABLE 2 Correlation of the social support, depression and death attitude of the participants (N = 209)

Variables	Mean	SD	1	2	3	4
1. Social support	2.585	0.457	.943			
2. Depression	6.244	4.031	−.262**	.844		
3. Positive attitude towards death	3.454	0.579	.180**	−.175*	.870	
4. Negative attitude towards death	2.990	0.743	.209**	−.162*	.072	.890

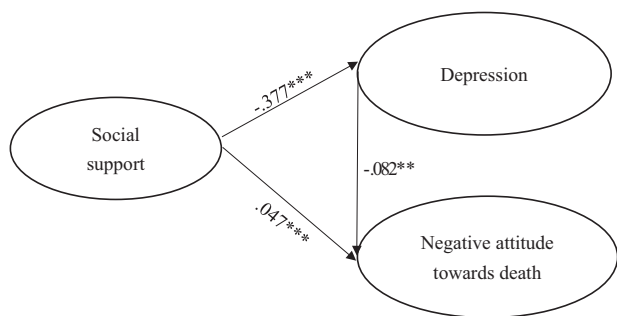*Note:* The diagonal is the alpha value of the reliability analysis of each scale.
*p<.05 **p<.01 ***p<.001.
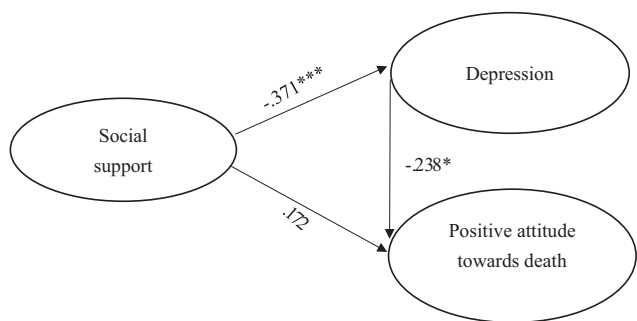
Chi-Square=19.051, df=17, *p*-value=.325
Chi/df=1.121, GFI=.978 NNFI=.994, CFI=.996, RMSEA=.024, SRMR=.033

FIGURE 1 Effect of social support on positive attitudes towards death in older patients on hemodialysis mediated by depression

Chi-Square=24.250, df=17, *p*-value=.112
Chi/df=1.426, GFI=.962, NNFI=.981, CFI=.988, RMSEA=.045, SRMR=.057

FIGURE 2 Effect of social support on negative attitudes towards death in older patients on hemodialysis mediated by depression

Baron and Kenny (1986) proposed that through "indirect effect," the independent variable influences the dependent variable via the mediating variable. Partial mediating effect means the partial effect of adding the mediating variable; the other complete mediating effects indicate that the addition of the mediating variable significantly reduces the independent variable's effect on the dependent variable. When the independent variable of the model was social support, the dependent variable was a positive attitude towards death, the mediating variable was depression, and the result was a complete mediating effect.

4.5.1 | Verification of mediating effect of depression in older undergoing Haemodialysis on social support and positive attitude towards death

The results of the *SEM* showed that social support negatively affects depression, which has a direct effect on positive attitude towards death, while social support has a direct effect. Finally, we found that social support can reduce depression and imparts a positive attitude towards death, with the *t* test threshold of 1.96 (Table 3). These results are presented after estimating the parameters. Although the direct relationship between social support and positive attitude towards death was not significant, the direct relationship between depression and social support and between depression and positive death attitude was supported by the hypothesis of this study, with an ideal coefficient intensity. These results indicate that the total effect of all potential variables reached a statistically significant level. According to the hypothesis (H1) proposed in this study, depression has mediating effect on social support and positive attitude towards death, and all relationships were supported.

The mediating effect of depression of the social support of older people undergoing dialysis on a positive attitude towards death was −0.238 (*p* < .05), and its *t* value was −2.095 (when *t* value is greater than 1.96, *p* < .05), showing the full mediation effect (Figure 1, Table 3). The results of the mediating effects indicate that the effect of increasing social support to produce positive death can only be achieved by improving the individual's depression; simply put, strengthening social support may not necessarily achieve the best results in producing positive attitude towards death. Instead, such effects can only be reached by reducing depression.

4.5.2 | Verification of mediating effect of depression in older undergoing dialysis on social support and negative attitude towards death

The total effect of depression on social support was quite high, reaching −0.377 (*p* < .001), while on negative, attitudes towards death reached −0.082 (*p* < .01). The social support's total effect on negative death attitude was statistically significant at 0.078 (*p* < .001). These results indicate that social support improves negative attitude

TABLE 3 Summary of the direct, indirect and total effects of statistically significant factors on positive attitude towards death

	Dependent variable					
	Depression			Positive attitude towards death		
Independent variable	Effect	t	95% C. I.	Effect	t	95% C. I.
Exogenous variables						
Social Support						
Direct effect	−0.371	−3.993***	−0.553~−0.189	0.172	1.722	−0.024~0.368
Indirect effect				0.088	1.933	−0.001~0.178
Total effect	−0.371	−3.993***	−0.553~−0.189	0.260	2.771**	0.077~0.445
Endogenous variables						
Depression						
Direct effect				−0.238	−2.095*	−0.461~−0.015
Indirect effect						
Total effect				−0.238	−2.095*	−0.461~−0.015

*p < .05; **p < .01; ***p < .001.

TABLE 4 Summary of the direct, indirect and total effects of statistically significant factors on negative attitude towards death

	Dependent variable					
	Depression			Negative attitude towards death		
Independent variable	Effect	t	95% C. I.	Effect	t	95% C. I.
Exogenous variables						
Social Support	−0.377	−13.610***	−0.432~−0.322	0.047	6.470***	0.020~0.074
Direct effect				0.031	2.635**	0.007~0.055
Indirect effect	−0.377	−13.610***	−0.432~−0.322	0.078	5.638***	0.051~0.105
Total effect						
Endogenous variables						
Depression						
Direct effect				−0.082	−2.649**	−0.143~−0.021
Indirect effect				−		
Total effect				−0.082	−2.649**	−0.143~−0.021

*p < .05; **p < .01; ***p < .001.

towards death, and the partial mediating effect of social support on depression and negative attitude towards death was statistically significant (Figure 2, Table 4). Therefore, the total effect among all potential variables was significant.

The above results indicate that the overall fit test results of the hypothesis (H2) proposed in this study are ideal, and the hypothesis model and observation data have a good fit. Therefore, the hypothesis that depression has a mediating effect on social support and negative death attitude is established. Nevertheless, this is a partial mediation.

5 | DISCUSSION

This study explored the mediating effects of depression in older undergoing dialysis on social support and the attitude of subjects towards death. The causes of ESRD, a chronic disease increasing worldwide, are complications caused by hypertension, diabetes and cardiovascular disease (Ministry of Health and Welfare, 2019). When renal failure requires haemodialysis treatment, the older patients, already suffering from several diseases and declining physical conditions, often feel uncomfortable symptoms during treatment and feel a threat to their survival. Therefore, it is more important to establish a positive attitude towards death.

5.1 | Depression in older patients undergoing haemodialysis

The analysis of the difference between depression and demographics revealed that people who were single and older person, with worse health status and more dialysis symptoms had more severe

depression (Han et al., 2014; Khan et al., 2019) in accordance with the results of our study.

The depression scores of the subjects in this study indicate that older people undergoing haemodialysis exhibited depression, similar to the previous research results (Ma et al., 2010). Therefore, the staff should understand which response methods are necessary and accessible to the older undergoing haemodialysis, besides accessing depression and guiding the cases at the behavioural or cognitive level for positive thinking and attitude towards death. Furthermore, the staff should also track the regular patients of the haemodialysis centre at the administrative level and include them in the psychological care services for regular evaluation to detect the importance of depression in high-risk groups at an early stage. Intervention with appropriate care and psychological support as early as possible can effectively reduce the depression of this group (Cheng et al., 2016). Therefore, the staff of the dialysis centre should have a keen observation in this regard, give companionship, care and timely guidance in emotional venting, and refer the patient to psychological counselling or psychiatric outpatient follow-up treatment.

Patients who lack a family support system experience more depression than married people. Therefore, nursing staff should pay more attention to widowers, widows and older people living alone, strengthen emotional and substantial support and propose improvement proposals. The staff should also encourage the participants to participate in community meal activities on non-dialysis days to strengthen interpersonal relationships and reduce loneliness (Dahlberg & McKee, 2014; Thomas et al., 2016).

5.2 | Social support for haemodialysis older

Social support comes from the family support system and medical staff provides substantial help and dialysis-related information. The participants have a better social support score, when the family support system is good; they are accompanied by family members to receive dialysis treatment, so they can be assisted in the process and symptoms such as a sudden drop in blood pressure and cramps can be dealt with in time to improve comfort. Social support through staff in medical care can provide complete care plans and related health education information, so that patients can receive support for care information helpful for disease cognition and the application of care skills.

5.3 | Attitude towards death of older patients undergoing haemodialysis

We observed the subjects' scores for a positive attitude towards death. This result is similar with the study of Hailey and Moss (2000) in the dialysis group, who observed the highest score for compliance behaviour association with the attitude of neutral acceptance, that is realizing the impending death because of co-existing with the disease for a long time. At this stage, one has realized that disease is irreversible and death is inevitable, as was also observed by Lee et al. (2006a). In the cases of chronic diseases, the positive death attitude prevails, and the patients can face death calmly because of their own disease deterioration or serious illness. However, due to the complexity of attitude towards death, they cannot be segmented, and the individual's positive and negative death emotions appear simultaneously (Assari & Lankarani, 2016). The results of this study also show that older on dialysis, in the face of their deteriorating physical health and troubled by the symptoms of dialysis consider themselves to be a burden to others, and are lonely in life.

The negative attitude towards death related significantly to education level, consistent with the findings of Lee et al. (2006a), who reported that the fear of death in uneducated people is higher than that in people with high school or higher education. The research finding was also corroborated by López-Pérez et al. (2020). The possible reason is that those with low education levels are less probably to receive relevant courses in life education, so they are afraid of death due to ignorance, the pain of death, separation from loved ones and the fear of losing everything. In addition, a negative attitude towards death is significantly related to dialysis symptoms. There may be an emergency at any time during the haemodialysis process, compounding the fear of death, so avoiding death issues can help evade the psychological fear. Moreover, on watching a patient of the same disease under emergency treatment during the dialysis process, they will feel terrified and inevitably associate themselves with the fear of death and escape. Contrarily, people with near-death experiences do not think that death is terrible but feel comfortable, and love life more than before (Shi & Chien, 2012).

5.4 | Relationship between depression, social support and attitude towards death

We observed a statistically significant negative correlation between the depression of these participants with social support, consistent with the results of Liu et al. (2018), indicating that good social support can ease their depression and help them adapt to dialysis treatment positively.

The results of this study were similar to those of Pan et al. (2019), who state that enhanced social support has a buffering effect on the depression in haemodialysis patients. In this study, depression negatively correlated with social support, indicating that depression increased with the lower social support and improved on increasing effective social support and develop a positive attitude towards death.

The level of depression and positive attitude towards the death of the participants in this study was not statistically significant, although a more depressive state indicated a more severe

negative attitude towards death, similar to the research results of Lan et al. (2008). Their study showed that the depression of the older in the institution is associated directly with the negative attitude to death. Similarly, Bektaş et al. (2017) as well as Min et al. (2015) showed that the depression of the older in the nursing home brought hopelessness and suicidal tendency in the future.

The social support of these participants aided in the positive attitude towards death indicating that better social support helped in positive acceptance of death and that under the care and attention of relatives and friends, the participants will not be afraid of impending death, which is a positive emotional response.

5.5 | Mediating role of depression

According to the hypotheses proposed in this study, social support has a direct effect on depression, which directly affects a positive attitude towards death. Furthermore, social support mediates and affects a positive attitude to death through depression. The t test in this study reached the threshold of 1.96, supporting the above-mentioned hypothesis. The analysis also revealed that depression plays a fully mediating role in the process of social support and affects positive attitudes to death. The older, after haemodialysis, needed to learn the process to understand their physical discomforts, changes in their diet habits for life, which may cause depression, difficulty in adapting to diseases, with aggravated effects of symptoms (insomnia, exhaustion) on quality of life and even negative attitudes towards death. Here, we observed a statistically significant level of depression ($p < .05$) in the participants, and social support is greatly needed to ease depression and promote positive response to the impact of disease (Liu et al., 2018). Similarly, Pourtaghi et al. (2019) showed that more emotional and social support had a buffering effect on the depression of middle-aged and older people. As verified in this study, the depression of the participants decreased with social support and positively affected the attitude towards death.

The hypothesis of partial mediation of depression between social support and negative death attitudes was significant, and it was also supported by statistical verification. Depression directly affected the negative attitude towards death, while enhanced social support improved this attitude. Among the impact factors, depression only partly affected the negative attitude towards death, and the effect of social support still needs to be considered. Addressing depression or good social support can eliminate the negative attitude to death. This is similar to the results of EunJeong and Jong-Eun (2019) who showed that depression in a solitary hypertensive older in Korea correlated positively with suicidal tendencies and that depression and social support were negatively correlated. These were also verified in this study, indicating that a high degree of depression can easily lead to negative attitude towards death and can be eliminated only by fostering positive interpersonal relationships and good social interaction.

5.6 | Limitations

This study took a convenient sampling method and was limited to older patients in the haemodialysis centres of the two regional teaching hospitals. Attitude towards death in the Chinese culture is a sensitive topic, and people avoid talking about it, so most of the answers are neutral. Therefore, it is less able to reflect the real situation; furthermore, haemodialysis groups of other ages are not involved, so this study only gives limited inference. In addition, this is a cross-sectional study and future research of qualitative, quantitative, and in-depth study of the impact factors and is recommended to further learn the impact of life education interventions on attitudes towards death so that people can face their conditions and live positively, thus opening up the cultural taboos for one's preparation for hospice.

6 | CONCLUSION

This study is the first to explore the relationship between social support and attitude of haemodialysis older people towards death and verified the mediating effect of depression. The results indicate that the depression of the research subject was the mediating variable for social support and negative death attitudes, and also exerted a partial mediating effect between social support and negative death attitudes.

Therefore, recommendations for clinical nursing practice are as follows: (1) To evaluate the level of depression: For haemodialysis patients with poorer health status, more dialysis symptoms and older age, the depression should be measured every six months, and their mental health problems must be assessed to implement timely intervention measures. (2) Replace the existing health education lectures with life seminars, encourage kidney disease patients to express their attitudes towards death and share their experiences on dialysis.

In terms of nursing education, it is recommended that nurses facing high-risk haemodialysis older people be taught dialysis-related care skills in basic development education or continuing on-the-job education. Furthermore, in terms of recommendations on policy and administration, the hospital care team should provide the consultation to older people facing haemodialysis to assess the need for hospice care of end-stage dialysis patients. Finally, the attitude towards death in qualitative research perspectives can be further explored in the future. Through the interview process, patients can express their feelings or attitudes towards death, thereby opening cultural taboos and getting prepared for hospice at an early stage.

CONFLICT OF INTEREST

The author(s) declare that they have no conflict of interests.

AUTHOR CONTRIBUTIONS

HF and CJ made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data. HF, CJ and CH involved in drafting the manuscript or revising it critically for important intellectual content. HF, CJ, PF, CH and CY gave final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. HF, CJ, PF, CH and CY agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

IRB APPROVED

This study was approved by the Institutional Review Board of National Taiwan University Hospital Hsin-Chu Branch (IRB: 107-077-E).

DATA AVAILABILITY STATEMENT

The dataset generated during the current study is available from the corresponding author on reasonable request.

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