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DESCRIPTION OF EDUCATION AND ITS IMPACT ON DISTRESS AMONG HEMODIALYSIS PATIENTS': LITERATURE REVIEW

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Abstract

Chronic Kidney Disease (CKD) has become a significant health problem in developing and underdeveloped countries in Southeast Asia (including Indonesia). The high cases of CKD patients undergoing hemodialysis (HD) can also increase the incidence of distress. Interventions in providing education are essential to a series of therapies to deal with distress. The purpose of this review is to have an overview of providing education and its impact on the distress of CKD patients undergoing HD. The research methods for articles in this review was conducted on the PubMed, Science Direct, and EBSCO databases. The search was conducted based on a combination of Boolean and keywords (Chronic Kidney Disease OR Renal Failure OR End-Stage Renal Disease OR Hemodialysis Patient) AND (Stress OR Distress) AND (Education OR Health Education OR Health Promotion). All articles were analyzed according to the stages in the PRISMA flowchart. Results: there are 12 articles selected based on the criteria. The 12 articles analyzed the interventions: CBT, MI, psychoeducation, oral and video education, psychological training, supportive-expressive group therapy, educational-supportive group therapy, hope therapy, and empowerment programs. Due to similarities in concept and content, some interventions are grouped together as psychoeducational interventions. CBT is the most widely used and effective educational intervention in dealing with the distress of HD patients, especially those related to anxiety and depression. Conclusions several types of psychoeducational programs can be used to treat psychological distress, especially those related to depression and anxiety in HD patients.

Keywords: *Distress; Education; Hemodialysis*

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INTRODUCTION

Chronic Kidney Disease (CKD) has become a significant health problem in developing and underdeveloped countries in Southeast Asia (including Indonesia) due to the massive increase in the number of patients (Chiaranai, 2016). CKD patients who have experienced renal failure will require Renal Replacement Therapy (RRT) as a long-term and routine therapy to increase their life expectancy (Bikbov et al., 2020; Ricci, Romagnoli, & Ronco, 2016). Hemodialysis (HD) is known as one of the options of the PRC (Bikbov et al., 2020; Ricci et al., 2016).

Patients with kidney failure in Indonesia who are over 15 years old and recorded to have or are undergoing HD process are 19.3% (Litbang Depkes, 2018). Even as of December 31, 2018, in Indonesia, 132,142 Chronic Kidney Disease patients undergoing the HD process routinely, where this number had an increase two times compared to the previous year (PERNEFRI, 2018). The high cases of CKD patients who have to undergo HD can also increase the incidence of patient distress due to the HD process itself.

The CKD treatment process that lasts for years has not only a physical impact but also a psychological impact on the patient (Archentari, Gasela, Nuriyyatiningrum, & Iskandarsyah, 2017). The HD process will place much stress related to strict restrictions on the patient's diet, long-term drug use rules, and the rigorous routines of the HD process itself (Nowak & Laudański, 2014). Depression, anxiety, sleep disturbances, fatigue, exhaustion, muscle cramps, sadness, and frustration are some examples of distress that arise from this pressure (Archentari et al., 2017; Chiaranai, 2016). Interventions in providing education are essential to a series of therapies to treat distress (Richardson & Rothstein, 2008).

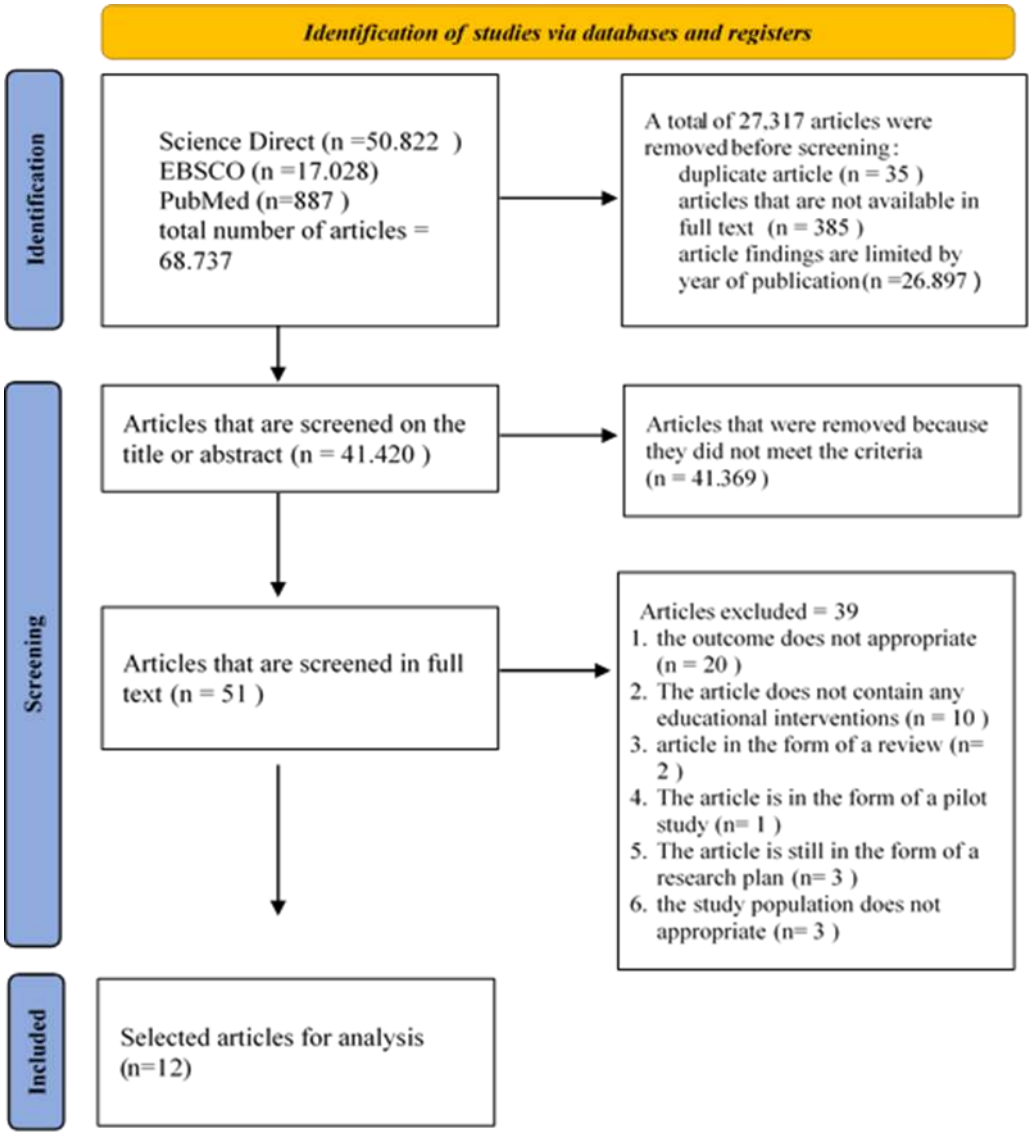
Providing education aims to make patients actively involved in treatment programs to prevent complications and improve their quality of life (Baraz, Zarea, & Dashtbozorgi, 2014). A solid theoretical foundation is needed, has clear objectives and is sourced from research findings and scientific studies to support education provision as an intervention to overcome distress. Through a literature review or scientific study, we will be helped to articulate clear objectives, present scientific evidence with adequate preparation, choose the proper method, communicate relevant results, and be able to engage in thoughtful criticism (Maggio, Sewell, & Artino, 2016). However, until now, no research has conducted an in-depth analysis or critical study related to providing education for the distress of HD patients.

This understanding makes researchers interested in conducting a literature review on providing education and its impact on the distress of HD patients. This review aims to seek and critically analyze articles from related journals to get an overview of providing education and its impact on the distress of CKD patients undergoing the HD process

METHOD

This research is a narrative review. The search for articles used in this review was carried out on the Pubmed, Science Direct, and EBSCO databases. The search was conducted based on a combination of Boolean and keywords (Chronic Kidney Disease OR Renal Failure OR End-Stage Renal Disease OR Hemodialysis Patient) AND (Stress OR Distress) AND (Education OR Health Education OR Health Promotion).

The inclusion criteria in this literature review are all research articles using Randomized Controlled Trial (RCT) and Quasi-experimental, having samples of CKD patients undergoing hemodialysis, published January 2010 – December 2020, full text available for free. The exclusion criteria are research articles in the form of reviews, editorials, book synopsis or articles that are still in the form of pilot studies. Each selected article is carried out a critical appraisal. Researchers used tools from The Joanna Briggs Institute's Critical Appraisal Tools (JBI) to assess the quality of each research article



RESULT AND DISCUSSION

Presenting the Results

The research results on the three databases found a total of 68,737 articles. Articles found on the PubMed database were 887 articles, Science Direct were 50,882 articles, and EBSCO were 17,028 articles. A total of 12 research articles passed the identification, screening and critical appraisal. The synthesis of the results of critical appraisal articles, the characteristics of each intervention, and the synthesis of each intervention and outcome can be seen in table 1, table 2, table 3, and table 4.

Table 1. Synthesis of Critical Appraisal for RCT Research Articles with JBI

Study	Questions												
	True randomization	Appropriate concealment	Similarity baseline	Blind of participant	blind of delivering treatment	blind of outcomes assessors	Treatment group treated identically	follow up was analyzed and described	Randomized participants were analyzed	outcomes measured in the same way	outcomes measured in a reliable way	Appropriate statistical analysis	Appropriate trial design

	n												
Chen et al., 2011.	y	y	y	n	y	u	y	y	y	y	y	y	y
Badiee Aval, Samari, & Badiee Aval, 2020.	n	n	y	n	n	n	y	y	y	y	y	y	y
Dashtidehkordi, Shahgholian, Maghsoudi, & Sadeghian, 2018	y	n	y	y	n	y	y	y	y	y	y	y	y
Hosseini, Espahbodi, & Goudarzi, 2012.	n	n	y	n	n	n	y	y	y	y	y	y	y
Lerma et al., 2017.	y	y	y	n	y	y	y	y	y	y	y	y	y
Moattari, Ebrahimi, Sharifi, & Rouzbeh, 2012.	u	n	y	n	n	n	u	y	y	y	y	y	y
Rahimipour, Shahgholian, & Yazdani, 2015.	u	n	y	n	n	n	y	y	y	y	y	y	y
Valsaraj, Bhat, & Latha, 2016.	y	n	y	y	n	u	y	n	y	y	y	y	y
Lazarus, 2018.	y	u	y	y	y	y	y	y	y	y	y	y	y

y=yes, n=no, u=unclear

The critical appraisal results show that some articles did not correctly and adequately randomize the respondents assigned to each group. Most research articles also did not conceal the respondents when they were going to divide them into groups. Most research articles do not blind the respondents, intervention providers and those who will measure the outcomes of each intervention. These results allow for the risk of bias in each of these articles.

Table 2. Synthesis of Critical Appraisal for Quasi-Experimental Research Articles with JBI

Study	**Questions**								
	No confusion about cause and effect	**Similarity of participant**	**Similarity of treatment**	**There was a control group**	**Multiple measurements of outcome**	**Follow up was analysed and described**	**Outcomes measured in the same way**	**Outcomes measured in a reliable way**	**Appropriate statistical analysis**
Baraz et	y	y	y	y	y	u	y	y	y

al., 2014									
Espahbodi, Hosseini, Mirzade, & Shafaat, 2015.	y	y	y	y	y	y	y	y	y
Mansouri, Jalali, Rahmati, & Salari, 2020	y	y	y	y	y	y	y	y	y

y=yes, n=no, u=unclear

The critical appraisal results show that most research articles have met quasi-experiment standards. Only one research article did not clearly explain the follow-up of respondents who experienced loss to follow-up. These results indicate that the risk of bias arising from quasi-experimental articles is minimal.

Table 3. Characteristics of intervention

Author and location	Type and duration	Outcome Variable	Instrument	Results
Baraz et al., 2014. **Iran**	**Oral education dan video education** Duration ≤ 45 minutes/session Total 2 sessions	Quality of life	Short Form Health Survey (SF-36)	1. There was no difference in the quality of life between the video education group and the oral education group after the intervention. 2. There was a significant difference between before and after the intervention in the group receiving oral education in the energy and fatigue domains (p=0.005) but not in the video education group.
Chen et al., 2011. **Taiwan**	**Cognitive Behavioural Therapy (CBT) dan Sleep Hygiene Education (SHE).** Duration 30 minutes/week Total 6 weeks	Sleep quality, anxiety, and depression	Pittsburgh Sleep Quality Index (PSQI), Beck Anxiety Inventory (BAI), dan Beck Depression Inventory (BDI)	1. There are differences in sleep quality, depression, and anxiety scores between the intervention group (CBT) and the control group (SHE).
Espahbodi, Hosseini, Mirzade, & Shafaat, 2015. **Iran**	**Psychoeducation** Duration 60 minutes/session Total 3 sessions	Anxiety and depression	Hospital Anxiety and Depression Scale (HADS)	1. There is a significant difference in the mean score of depression and the total score of HADS pre-test compared to post-test after the test psychoeducation, but there was no difference in anxiety scores (p=0.185).
Badiee Aval, Samari, & Badiee Aval, 2020. **Iran**	**Supportive-Expressive Group Therapy (SEGT) dan CBT** Duration 90 minutes/15 sessions Total 15 sessions	Depression Obedience	Beck Depression Inventory-II (BDI-II), Karami and Keyvanara Physician-Patient Relation Patterns questionnaire, dan Treatment Adherence Questionnaire for the Chronic	1. There were significant differences in depression and adherence to treatment variables between the SEGT intervention group, CBT, and the control group. 2. The SEGT intervention had a larger short-term (0.81) and long-term (0.83) effect size than the CBT intervention in reducing depression and increasing patient adherence to treatment.

			Kidney Patients	
Dashtidehkordi, Shahgholian, Maghsoudi, & Sadeghian, 2018. **Iran**	**Motivational interviewing (MI)** Duration 90 minutes/session Total 5 sessions	General health	General Health Questionnaire (GHQ)	1. There is a significant difference in respondents' total general health scores and all domains, except the somatic symptoms' domain, between the intervention group and the control group after the intervention.
Hosseini, Espahbodi, & Goudarzi, 2012. **Iran**	**Psychological training** Duration 60 minutes/day Total 6 sessions	Anxiety and depression	Hospital Anxiety and Depression Scale (HADS)	1. There is no significant difference in total HADS scores and mean depression and anxiety scores between the intervention and control groups.
Lerma et al., 2017. **Iran**	**CBT** Duration 120 minutes/session Total 5 sessions	Anxiety and depression	Beck Anxiety Inventory (BAI) dan Beck Depression Inventory (BDI)	1. Cognitive behavioural interventions effectively reduce depression, anxiety and cognitive distortions and improve the patient's quality of life. The clinical utility of CBT intervention on depression is 33%, and 43% on anxiety. 2. In the control group, there were no significant changes.
Mansouri, Jalali, Rahmati, & Salari, 2020. **Iran**	**Educational Supportive Group Therapy (ESGT)** Duration 50 minutes/session Total 8 sessions	Quality of life	Kidney disease quality of life short form (KDQOL-SFTM)	1. There was a significant difference in the mean quality of life scores between the control and intervention groups.
Moattari, Ebrahimi, Sharifi, & Rouzbeh, 2012. **Iran**	**Empowerment program** Duration 90-120 minutes/session Total 2 sessions	Quality of life, self-efficacy, and decision making	Quality of life questionnaire developed by Carol Estwing Ferrans dan Marjorie Powers, Strategies Used by People to Promote Health (SUPPH),	1. There are significant differences in all variables of self-efficacy, quality of life (total score and all dimensions), stress reduction, and decision-making between the intervention and control groups.
Rahimipour, Shahgholian, & Yazdani, 2015 **Iran**	**Hope therapy** Duration 60-90 minutes/session Total 8 sessions	Anxiety, stress, and depression	Depression, Anxiety, and Stress Scale (DASS)-21 questionnaire	1. There are significant differences in the mean scores of depressions, anxiety and stress between intervention and control groups after the intervention and a month after.
Valsaraj, Bhat, & Latha, 2016. **India**	**CBT** Duration 50-60 minutes/session Total 10 sessions	Anxiety and depression	Hospital Anxiety and Depression Scale (HADS)	1. There was a significant difference in the mean depression scores between the intervention group and the control group 3 and 6 months after the intervention.
Lazarus, 2018. **India**	**Education and training** Duration 25 minutes/session Total 1 session	Quality of life	Kidney Disease Quality of Life-Short Form (KDQOL-SF)	1. There is a significant difference in the quality of life (total score and all KDQOL items except domain work status and social support between groups intervention and control group during the first post-test and second post-test.

Researchers have reviewed 12 research articles using both RCT and quasi-experimental designs. All research articles do not use the term distress as a research outcome. All research articles mention research locations in Asia. This review found various educational interventions: CBT, MI,

psychoeducation, oral and video education, psychological training, SEGT, ESGT, hope therapy, and empowerment programs to overcome the distress in HD patients. From the analysis results, it can be concluded that CBT intervention is the most widely used educational intervention, contained in 4 research articles. From the researcher's analysis results, the educational therapy was also varied, namely from video, oral, psychoeducation, and psychological training. However, these educational therapies are grouped into one because they have similar concepts and interventions.

Tabel 4. Synthesis of Findings from 12 Aricles

Intervention	Variables outcome								
	Depression	**Anxiety**	**Fatigue**	**Sleep**	**Life**	**Compliance**	**Stress**	**Efficacy**	**General Health**
CBT [11,12,15,18]	✓	✓	✓	✓	✓	✓			
ESGT [21]					✓				
Empowerment Program[16]					✓		✓	✓	
SEGT [12]	✓					✓			
Psychoeducation [9,14,19,20]	✓	✓			✓	✓			
Hope Therapy [17]	✓	✓					✓		
MI [13]									✓

CBT intervention is used to overcome depression, anxiety, fatigue, cognitive distortions, and sleep disturbances and improve quality of life and compliance (Badiee Aval et al., 2020; Chen et al., 2011; Dashtidehkordi et al., 2018; Hosseini et al., 2012). However, SEGT intervention has proven to be more effective (short term and long term) in overcoming depression and increasing adherence of HD patients (Chen et al., 2011). Psychoeducational interventions can treat depression and anxiety and improve the quality of life and adherence of HD patients (Baraz et al., 2014; Lerma et al., 2017; Moattari et al., 2012; Rahimipour et al., 2015). Espahbodi's study (2015) showed that psychoeducational interventions were ineffective in overcoming anxiety. In contrast, Hosseini's study (2012) was effective in dealing with anxiety.

In addition to CBT and psychoeducation interventions, two other interventions can improve the quality of life of HD patients, namely the intervention ESGT and the empowerment program (Baraz et al., 2014; Lazarus, 2018; Rahimipour et al., 2015; Valsaraj et al., 2016). Not only improving the quality of life but empowerment program interventions are also used to increase self-efficacy and reduce stress and IDWG scores (Lazarus, 2018). In addition to empowerment programs, Hope therapy can also be used as an educational intervention to deal with stress, anxiety, and depression (Espahbodi et al., 2015). The last intervention found in this review was MI. MI is an intervention used to improve the general health of HD patients (Mansouri et al., 2020).

1.1. Create a Discussion

The 12 works of literature analysis found that the provision of CBT intervention is part of an effort to overcome the distressing problem in HD patients. Study Zegarow, Manczak, Rysz, & Olszewski (2020) also found similar results to the current study, where CBT has been proven as a non-pharmacological intervention method that can reduce the severity of depressive symptoms in HD patients. Not only has an impact on depression, but CBT has also been shown to be beneficial in reducing stress and anxiety in patients with multiple sclerosis (Pahlavanzadeh, Abbasi, & Alimohammadi, 2017). The results of Li et al (2021). study even concluded that CBT is also known as an intervention that is relatively safe and able to improve the sleep quality of patients with traumatic brain injury. According to Fenn & Byrne, (2013), interventions can reduce the distress experienced by patients by helping them to develop understanding and adaptive behaviours.

According to Currid, Nikčević, & Spada, (2011) CBT is an intervention that focuses on problems and is structured in terms of duration and therapy sessions. Due to its structured and time-limited nature, for cases of anxiety and depression that are not comorbid, CBT is usually given in 5-20 sessions (Fenn & Byrne, 2013). Duarte,

Miyazaki, Blay, & Sesso, (2009) also did the same thing, where they gave CBT intervention as many as 12 weekly sessions for three months to treat major depression in hemodialysis patients.

Educational intervention in the form of psychoeducation was also found to be an effective educational intervention in dealing with distress in HD patients. According to McGillion, Arthur, Victor, Watt-Watson, & Cosman, (2008) this psychoeducational intervention aims to solve the patient's daily problems such as pain, decreased mobility and endurance, as well as anxiety and stress. Nisa, Soedarsono, & Makhfudli, (2019) systematic review study shows that psychoeducation as a medical management strategy has positive impacts and benefits for emotional and psychological health by reducing anxiety and stress levels. The study results by Al saraireh, Aloush, Al Azzam, & Al Bashtawy, (2018) even found that psychoeducational interventions, when compared with CBT interventions, had the same effectiveness against depression in HD patients. In line with the findings in this review, Husna, Kusnanto, & Herawati, (2021) stated that psychoeducation is the most recommended intervention to improve patient compliance with treatment programs and improve the lifestyle of HD patients.

In addition to CBT and psychoeducation, other interventions impacting anxiety and depression as a sign of distress in HD patients are SEGT and hope therapy. The SEGT intervention is known to have eight focus goals; namely, the first is to address medical problems and treatments. The second is to focus on disorders related to coping abilities. The next is family and social communication. The fourth is to focus on the relationship between healthcare providers and patients. Lastly, it focuses on the relationship between health care providers and patients. Focuses on re-prioritizing life values, the sixth focuses on self-image, the seventh focuses on the fear of death, and the last focuses on problems related to the group (Leszcz, 2020). Research by Lai, Song, Ren, Li, & Xiao, (2021) showed that providing education through the SEGT intervention improved quality of life and reduced symptoms of depression and anxiety in women with breast cancer. Even though a systematic review study by Julien & O'Connor, (2016) found results that align with the current review's findings, the effect size of SEGT intervention is more significant than CBT in overcoming psychological distress in the form of depression. In another study by Prajayanti & Sari, (2020) supportive group intervention for HD patients' was also able to reduce their anxiety.

Hope therapy comes from the word "hope", which is needed to increase the flexibility, vitality and mental health of a human being (Raphi, Bani, Farvareshi, Hasanpour, & Mirghafourvand, 2021). "Hope" has become an essential element inherent in patients with chronic diseases and dramatically affects their adaptability (Ghazavi, Khaledisardashti, FirouzKeshani, & Smaeilzadeh, 2018). The process in the implementation of hope therapy usually consists of having goals to be achieved by the patient, making strategic plans to achieve these goals, strengthening self-motivation to achieve these goals, and recognizing and overcoming obstacles (Raphi et al., 2021; Retnowati, Ramadiyanti, Suciati, Sokang, & Viola, 2015). The results of research conducted by Kashani, Vaziri, Esmaeil Akbari, et al., (2014) supported the findings in this review, where the provision of interventions by creating hope and expectations can reduce the distress experienced by women with breast cancer. In line with that, the research of Mozooni, Heravi-Karimooi, Rejeh, Rahmani, & Sharif Nia, (2017) also found that giving hope therapy effectively reduced depression in patients with unstable angina when compared to usual standard care.

Meanwhile, there are also ESGT interventions and empowerment programs known to impact the quality of life of HD patients, in addition to CBT. According to Prajayanti & Sari (2020), a supportive group is an intervention that provides support among group members with relatively the same problems by sharing information, and solutions, learning together and strengthening each other. Intervention supportive group or group therapy is carried out to provide information, psychoeducation, support, and opportunities for self-expression (Leszcz, 2020). The study by Prajayanti & Sari (2020) found that anxiety in HD patients significantly decreased after being given a supportive group. The results that support the findings in this review were also obtained in the study of Faridah, Nursalam, Aris, Sholikhah, & Rukmawati (2021), where HD patients experienced an increase in quality of life after being given supportive family therapy.

According to Hala Mohamed, Aml Khalil, & Elizabeth (2017) an empowerment program was created to change from a treatment process that professionals only guide to a partnership between patients and health workers. The counselling

process has become an integral part of a patient empowerment program. According to Kaakinen, Leena, Maria, & Helvi (2012), in nursing, counselling is more commonly used in conjunction with other terms such as patient education, information, advice, teaching and guidance. The study by Thomas, Joseph, Francis, & Mohanta (2009), showed that HD patients experienced a constant improvement in quality of life by 2% after counselling. The study of Zhao, Zhang, & Yu (2021), also found results similar to the findings in this review; namely, the value of depression and anxiety in HD patients was reduced after pre-transplant counselling.

The last intervention known to impact the distress of HD patients is MI. According to Crown, Vogel, & Hurlock-Chorostecki (2017), what healthcare professionals should do in MI is to help patients explore their ambivalence and offer direction when they are motivated to change. When giving MI, the principles that need to be considered are holding the righting reflex, understanding and exploring the patient's motivation, listening with empathy, and empowering the patient (Crown et al., 2017). The results of another study by Ok & Kutlu, (2021) found that MI can improve the adherence of HD patients to fluid and dietary restrictions and their quality of life.

In addition to the type of intervention, media use is one factor contributing to the effectiveness of providing an educational intervention. According to Yang et al. (2021), exposure to health education in the form of videos has a negative correlation with mental problems such as anxiety and depression but is positively correlated with healthy living behaviour. Similar results to the current review findings were obtained in the study of Maslakpak & Shams (2015), where providing education using video was as effective as providing face-to-face education.

CONCLUSION

This review did not find articles containing outcome-related distress in terminology. The review found several types of psychoeducational programs (CBT, ESGT, empowerment programs, SEGT, psychoeducation, hope therapy and MI) that can be used to treat psychological distress (depression, anxiety, sleep quality, quality of life, compliance, stress, self-efficacy, and general health) primarily related to depression and anxiety in HD patients. The most widely used psychoeducational intervention is CBT. However, when viewed from the long-term effect in improving adherence and overcoming depression, the SEGT intervention is more recommended than CBT.

2. Author's declaration

Authors' contributions and responsibilities

1,2,3	The authors made substantial contributions to the conception a
1,2,3	The authors took responsibility for data analysis, interpretation
2,3	The authors read and approved the final manuscript.

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√ All data are available from the authors.

Competing interests

√ The authors declare that there are no competing interests related to

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