Prediction of life expectancy based on pain self-efficacy, death obsession, general health with the mediation of emotion regulation in indigent dialysis women

Azam. Charmi[1] , Leila. Zoghi[2*]

[1] Department of Psychology, Electronics Unit, Islamic Azad University, Iran
[2] Department of Psychology, Amin University of Police Sciences, Tehran, Iran

* Corresponding author email address: leila.zoghi@yahoo.com

A r t i c l e   I n f o

A B S T R A C T

Objective: This research aimed to predict life expectancy based on pain self-efficacy, death obsession, and general health by mediating emotion regulation in indigent dialysis women.

Method: The descriptive research method was correlation type. The statistical population of the current study included all poor dialysis women in the medical centers of Tehran and Alborz provinces, of which 287 women dialysis patients were selected by the available sampling method and measurement tools were Pain Self-Efficacy Questionnaire (PSEQ), Death Obsession Questionnaire (DOQ), General Health Questionnaire (GHQ), Cognitive Emotion Regulation Questionnaire (CERQ) and Life Expectancy Questionnaire (LEQ). For data analysis, the structural equation modeling method was used via SPSS-23.

Results: The findings showed that pain self-efficacy, general health, and emotion regulation have a positive and significant relationship with life expectancy ($p<0.01$), and death obsession and life expectancy have a significant negative relationship ($p<0.01$) and pain self-efficacy, death obsession, and general health had an indirect and significant relationship through emotion regulation with life expectancy ($p<0.01$).

Conclusion: This research showed that pain self-efficacy, death obsession, and general health explain life expectancy through emotion regulation, and the research model has a favorable fit. The findings of this research can be used by specialists in the fields of health and mental health to improve the life expectancy of dialysis patients.

Keywords: *Life expectancy, emotion regulation, pain self-efficacy, general health, death obsession*

1. Introduction

Today, despite the changes in the culture and way of life of many people, they are faced with life problems, lack the necessary abilities, are vulnerable to problems, and are exposed to various socio-psychological and behavioral disorders. (Moustakis et al., 2023). Sick people face a lot of psychological and social problems during their illness. In recent decades, various studies have been conducted in different societies on different aspects of dialysis people's lives, most related to psychological parameters (van der Borg et al., 2021). The existence of specific stresses during

the illness, such as separation from the family due to hospitalization, entering the hospital environment, worrying about economic issues, etc., will all negatively affect dialysis patients' physical and mental health (Edwards et al., 2023). In dialysis patients, *life expectancy* (LE) is affected due to existing conditions (Rhee, 2023). *Hope* is an inner force that enables patients to see a perspective beyond the current and chaotic situation of their pain and suffering (Nitta et al., 2023). Lack of hope and lack of purpose in life leads to a decrease in the quality of life in a person and creates disappointing beliefs. In psychology, two points of view, positive and negative, are considered (Park et al., 2022). According to the positive point of view, LE and happiness cause recovery and health and relieve tension, and according to the negative point of view, the sick person gets sicker and his life span decreases. In a positive view, a person considers himself victorious, successful, valuable, rich, and acceptable, and in a negative view, a person imagines himself as constantly defeated, weak, poor, and rejected, and he will live in the same mental pattern (Bianchi, Bianchi, & Song, 2023). LE is positively related to and predicts mental and physical health with various scales such as positive response, avoidance of stressful life events, vitality and happiness in life matters (Dhana et al., 2022).

Pain self-efficacy (PSE) is a variable related to LE in dialysis patients (Terzaki, Tsironi, & Theofilou, 2023). PSE is a person's confidence level in their ability to maintain function, despite pain (Zhu et al., 2022). Also, PSE means a person's belief in his ability to perform the necessary behavior to achieve the desired result. Mayes et al. (2022) showed that self-efficacy increases a person's capacity to cope with pain. Pain-related self-efficacy can predict pain and pain-related disabilities in patients with chronic pain, and increasing self-efficacy is related to pain reduction (Mayes et al., 2022). PSE can make it possible for a person to cope with the existing conditions and prevent them from aggravating the situation and the occurrence of psychological and social unpleasantness by strengthening the person's ability to bear discomfort and physical pain (Almutairi et al., 2023).

Death obsession (DO) is another variable related to LE in indigent dialysis women (Kılınç et al., 2023). Talking about death leads to the production of emotions such as fear, sadness, and anger; sometimes, these emotions reach such a level that they cause distress and endanger the person's mental health. Death distress includes three aspects of death depression, death anxiety, and DO (Enea et al., 2022). Death distress is associated with a negative attitude toward death

with different emotional states, mainly anxiety and fear (Arslan, 2022). The two components of death, depression, and anxiety, have been proposed and discussed by researchers before; the third component in this field is called DO by Abdel-Khalek (1998). It is suggested that death and obsessions may have a reciprocal and overlapping relationship (Abdel-Khalek, 1998). A study on obsessive symptoms shows that more than 70% of obsessive thoughts with the cause of death are common experiences among patients at the beginning of the disease (Kızılgeçit & Yıldırım, 2023). DO includes mental preoccupations, impulses, and resistant thoughts related to death (Loos, 2021). In a study examining DO among normal people, patients with anxiety disorders, schizophrenia, and substance abuse, it has been shown that anxiety patients have higher scores than other groups (Menzies et al., 2021).

General health (GH) is another variable related to LE in poor dialysis women. GH is a mental structure based on a number of spiritual needs that a person faces, including; It affects relationships at work and is full of ups and downs. This type of health is achieved by achieving a balance that is affected by life events and challenges (Dibble, Deng, & Connor, 2023). Having a good feeling means having positive emotions and being happy and satisfied, but it can also include interest, establishing a relationship, having high self-confidence, life skills, purposefulness, and progress (Theofilou, 2023). Various research has shown that health is a multidimensional concept created through a combination of emotions, personality, identity, and life experiences (Foerster et al., 2019). Therefore, GH is considered an important pillar in life because a person feels good about his life or sometimes others and will not resist accepting his weaknesses and fixing them. In addition, public health as a basic human need can be affected by many factors (Yıldırım, Akgül, & Geçer, 2022).

Emotions also play an important role in many aspects of daily life and effectively adapt to stressful events and life changes (Edwards et al., 2023). In fact, emotions are biological reactions that appear in important challenges and situations in life in order to coordinate to face and respond; Although emotions have a biological basis, people can influence emotions and ways of expressing them, which is called *emotion regulation* (ER) (Edwards et al., 2023). The inability to regulate emotions leads to long-term activity of the endocrine glands and the autonomic nervous system; Therefore, psychosomatic diseases or physical symptoms develop. Also, emotions regulate a part of the spinal cord's reflexes; in this way, pleasant emotions can inhibit the

receptors and reduce pain intensity. In fact, physical symptoms and unpleasant emotions lead to an increase in the activity of these receptors, an increase in the activity of this receptor, and an increase in the intensity of the physical symptoms of pain (Qasim et al., 2019). In dialysis patients, the expression or suppression of emotions are also effective psychological factors that can contribute to the occurrence or exacerbation of the disease (Arjeini et al., 2020).

Considering that few researchers have investigated LE, PSE, DO, GH, and emotional regulation, especially in indigent female dialysis patients, it seems necessary to investigate the factors and solutions affecting LE in this vulnerable group. Undoubtedly, any action in improving LE in this group needs to know the factors affecting it. In general, the importance of the present research can be summarized in the following points: So far, no research has been done to model the structural equations of LE based on PSE, DO, and GH with the mediation of ER. The results of this research can be used for the educational framework of increasing LE. Conducting this research can be an effective step towards conducting more research in this field; Therefore, the current research aims to predict LE based on PSE, DO, and GH with the mediation of ER in indigent dialysis women.

2. Methods

2.1. Study design and Participant

This study was correlational-descriptive research and cross-sectional in terms of data collection time. Its statistical population included all indigent dialysis women referring to the medical centers of Tehran and Alborz provinces in 2022. In this research, an available sampling method was used. The target sample was calculated based on the opinion of Kline (2011) that considers the number of samples based on the ratio of the sample size to the parameter, which is considered to be at least 20 to 1 in the structural equations (Kline, 2011); therefore, 287 people were selected as a sample. The inclusion criteria were suffering from chronic kidney disorders and the need for dialysis, age ranges between 30 and 60 years, education level from diploma to master's degree, and not having mental disorders based on the psychologist's approval in the study. The criterion for leaving the research was leaving 5% of the questions unanswered. At the beginning of each questionnaire, a complete description of how to answer the questions was given, and the confidentiality of the results and the lack of

influence of the information on the personal and social life of the participants were confirmed.

2.2. Measurements

The data were collected using *Pain Self-Efficacy Questionnaire* (PSEQ), *Death Obsession Questionnaire* (DOQ), *General Health Questionnaire* (GHQ), *Cognitive Emotion Regulation Questionnaire* (CERQ) *and Life Expectancy Questionnaire* (LEQ).

2.2.1. Pain Self-Efficacy

PSEQ was developed by Nicholas in 1989. This questionnaire has 10 questions. The way to score the questionnaire is on a 6-point Likert scale from (I can't at all - 0) to (I can completely - 6). The results of the psychometric analysis of Nicholas (1989) on the participants showed that the internal consistency of this questionnaire is 0.73 using Cronbach's alpha method. In Nicholas' study (1989), the validity of this questionnaire is 0.61, which has been confirmed (Nicholas, 1989). In Iran, Cronbach's alpha was reported as 0.82, and its validity was reported as 0.87 (Shareh & Robati, 2021). Cronbach's alpha reported in the present study was 0.91.

2.2.2. Death Obsession

DOQ was created by Abdel-khalek (1998) and consists of 15 questions that are scored on a 5-point Likert scale and have three components. Its high internal consistency evaluated by Cronbach's alpha has been shown between 0.80 and 0.90. The retest reliability after 2 weeks was 0.75, and for three years, it was 0.71, which shows that this questionnaire has good reliability. Exploratory and confirmatory factor analysis was used to check the validity of the scale. The results of the research showed that this test consists of three dimensions, and the factor loading of each question on the relevant factor is higher than 0.40 (Abdel-Khalek, 1998). Cronbach's alpha was 0.89 in the present study.

2.2.3. General Health

GHQ was presented by Goldberg and Hiller (1979) and has 28 questions and 5 sub-components and is scored on a 4-point Likert scale. To check the validity of this questionnaire, Goldberg and Hiller (1979) used exploratory and confirmatory factor analysis methods, and the results of their research show that this test consists of 5 dimensions

and the factor loading of each question on the relevant factor is higher than 0.41. In order to check the reliability of the questionnaire, Goldberg and Hiller (1979) used the test-retest method, and the results showed a positive and significant correlation of 0.79 between the two stages (Goldberg & Hillier, 1979). Cronbach's alpha reported in the present study is 0.93.

2.2.4. Emotion Regulation

CERQ was presented by Garnefski et al. (2001) and has 18 items and 9 sub-components, which are collected in a 5-point continuum. The creators of this questionnaire have calculated its validity through Cronbach's alpha for positive strategies 0.91, negative strategies 0.87, and the whole questionnaire 0.93. The convergent validity of this questionnaire with Watson et al.'s positive affect questionnaire (1988) was r-0.36, and its divergent validity was also obtained with the negative affect scale of Watson et al.'s questionnaire r=0.58 (Garnefski, Kraaij, & Spinhoven, 2001; Willey, 2019). The validity of this questionnaire was calculated in Besharat's study (2016) through the correlation between variables, the results of which were positive strategies and cognitive emotion regulation (r=0.71) and negative strategies and cognitive emotion regulation (r=0.698); It shows good validity. In the current study, Cronbach's alpha coefficient was 0.88 for positive strategies, 0.80 for negative strategies, and 0.92 for the whole (Besharat, 2016). Cronbach's alpha reported in the present study was 0.89.

2.2.5. Life Expectancy

LEQ has 70 items, and two sub-components are meaningfulness and responsibility. This tool is scored using a four-point Likert scale. The score of the tool is obtained by adding up the scores of the items and taking the average from them, and the higher the score of the subject, the better the life expectancy. The validity of this questionnaire was calculated through the correlation between the variables, the results of which were meaningfulness and life expectancy (r=0.765) and responsibility and life expectancy (r=0.844), which shows good validity (Hosseini, Kalantar, & Mirzai, 2014). Cronbach's alpha in the present study was reported as 0.872 in significance, 0.793 in responsibility, and 0.921 in total alpha.

2.3. Data Analysis

Data analysis was done by structural equation modeling, and SPSS version 26 and LISREL version 8.8 softwares were used.

3. Findings and Results

The mean age reported for them was 51.3 ± 8.97. Also, 16% (46 people) were single and 84% (241 people) were married. It should be noted that missing and outlier values were excluded from the analysis. First, correlation coefficients and descriptive indices, including mean, standard deviation, skewness, and kurtosis, are reported in Table 1.

Table 1

Descriptive findings and correlation test results

Var.	١	٢	٣	٤	٥	٦
1	1					
2	0.200*	١				
3	0.240*	0.097*	١			
4	0.241*	0.193*	0.102*	١		
5	-0.281*	-0.196*	-0.193*	-0.357*	١	
6	0.392*	-0.290*	0.360*	0.32*	0.32*	١
M	43.1	38.4	48.4	62.1*	56.5	127.3
SD	12.9	8.6	11.8	35.8	13.8	35.8
S	0.32	0.45	-0.73	0.65	0.83	1.13
K	0.81	0.69	-0.24	0.80	1.23	0.86

*p < 0.01; 1 = Pain self-efficacy; 2 = Death obsession; 3 = General health; 4 = Positive strategies; 5 = Negative strategies; 6 = Life Expectancy; S = Skewness; K = Kurtosis

According to Table 1, the results of the correlation matrix show that there is a significant correlation between the model variables. For example, the relationship between PSE and LE (0.39) is positive and significant at 0.01. Also, the mean and standard deviation indices to check the assumption of single variable normality show the proper dispersion of the data. The skewness and elongation indices in the range of ± 1.96 indicate the normal distribution of the data. The multivariate normality index as part of the output of Lisrel software with a coefficient (-0.31) and the non-significance of this value indicated compliance with the multivariate normality assumption. The assumptions of no missing data, removal of outliers, and significant correlation coefficients have also been previously investigated. Further, to investigate the effect of PSE, DO and GH on LE with the

mediating role of ER, the structural equation modeling approach was used using the maximum likelihood method, shown in Figure 1.

Figure 1
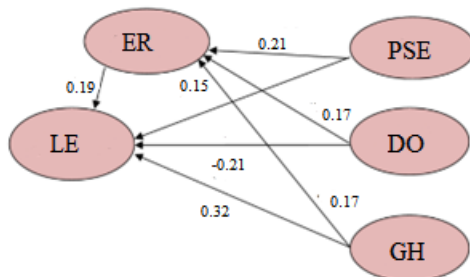
Final model including direct effects

Figure 1 shows that PSE has a positive effect with a coefficient of (0.15), and DO directly has a negative effect on LE (-0.21). GH also has a positive and direct effect on LE with a coefficient (0.32) and ER with a coefficient (0.19). In the following tables, direct and indirect routes are reported.

Table 2

Direct and Indirect effects

Direct Path	B	S. E	P-value
PSE to ER	0.21	0.065	0.002
DO to ER	0.17	0.074	0.013
GH to ER	0.17	0.066	0.013
ER to LE	0.19	0.068	0.006
PSE to LE	0.15	0.034	0.025
DO to LE	-0.21	0.019	0.002
GH to LE	0.32	0.09	0.013
Indirect Path	B	S. E	P-value
PSE to LE	0.27	0.048	0.009
DO to LE	0.36	0.055	0.001
GH to LE	0.23	0.056	0.012

Bootstrap test was used to investigate the indirect effect of LE based on PSE, DO and GH with the mediation of ER. According to the Table 2, the relationship between PSE, DO, and GH on LE was confirmed with the mediation of ER according to the bootstrap estimation method (P<0.01).

Table 3

Fit model indices

Index	X2/df	RMSEA	GFI	CFI	NFI	AGFI
Model	1.86	0.053	0.95	0.99	0.95	0.88
Approval cond.	<۳	0.08	>0.90	>0.90	>0.90	>0.85

According to Table 3, for the tested model, the goodness of fit index (GFI) is (0.95), which is higher than (0.90). The adjusted goodness of fit index (AGFI) is (0.88), which is higher than (0.85). The comparative fit index (CFI) is (0.95), which is more (0.90). The normalized fit index (NFI) is (0.95), which is higher than (0.90). Chi-square is the degree of freedom (df/X2), which is less than (3), and the root mean square error of approximation (RMSEA) is also (0.07), which is less than (0.08). According to these findings, it can be said that the tested research model has a good fit; It should be noted that the Kline's (2011) criteria were used to check the fit indices (Kline, 2011).

4. Discussion and Conclusion

The present study aimed to predict LE based on PSE, DO, and GH with the mediation of ER in indigent dialysis women. The present study's findings showed that PSE and LE have a direct and meaningful relationship with each other, which is in line with the past findings (Almutairi et al., 2023; Buster & Ozsaker, 2022; Terzaki, Tsironi, & Theofilou, 2023) About the meaningful relationship between self-efficacy and LE, it can be said that self-efficacy plays a central role in the motivational processes and performance acquisitions of a person, and self-efficacy judgments determine how much a person will try and persist on a task. One with strong self-efficacy will put a lot of effort into challenging tasks to succeed. While people with weak self-efficacy, their efforts are insignificant, or they will stop trying after starting any action (Almutairi et al., 2023). One with high self-efficacy will face obstacles and problems with higher motivation and persistence and show more efficiency. People with low self-efficacy are likely to believe that things are more difficult than they really are. Self-efficacy beliefs are among the strongest predictors of people's behavior. Belief in self-efficacy affects many aspects of life such as choosing goals, decision-making, amount of effort, level of continuity, sustainability and facing challenging issues, level of motivation, and implementation of goals (Terzaki, Tsironi, & Theofilou, 2023); Therefore, the relationship between PSE and LE can be justified.

The research findings revealed a negative and significant relationship between DO and LE. This finding is consistent with the past studies (Kılınç et al., 2023; Kızılgeçit & Yıldırım, 2023). A higher LE can affect a person's physical, mental and social health and cause their lifestyle to be associated with higher quality; The more psychological pressure people have, the lower their LE, and in fact, there is

an inverse relationship between DO and LE (Kılınç et al., 2023); Therefore, the inverse relationship between LE and DO can be justified.

Also, the results of this research showed that GH and LE have a positive and significant relationship with each other, which is in line with the results of former studies (Dibble, Deng, & Connor, 2023; Foerster et al., 2019; Qasim et al., 2019). In the present explanation, it can be said: hope is used as a placebo in the treatment of physical and mental diseases and causes positive changes in human physiology (Qasim et al., 2019); Hope predicts GH as determined by a variety of indicators, including self-reported health, positive response to medical interventions, mental health, positive mood, strong psychological safety, effective coping, and health-promoting behaviors. (Dibble, Deng, & Connor, 2023). Therefore, the relationship between GH and LE is justified.

5. Limitations

This research has also been associated with limitations such as: using the available sampling method. This method can affect the results and the external validity. Therefore, the impact of this problem can be reduced by using random sampling methods. The present study was limited to female dialysis patients, which makes it difficult to generalize it to other groups;

6. Suggestions and Applications

It is suggested to conduct the present research on other groups as well. Also, this model can be examined with other mediating variables to get a more comprehensive understanding of LE.

Acknowledgments

The cooperation of all participants in the research is thanked and appreciated.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethics principles

In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were observed.

References

Abdel-Khalek, A. M. (1998). The structure and measurement of death obsession. *Personality and individual differences*, *24*(2), 159-165. https://doi.org/10.1016/S0191-8869(97)00144-X

Almutairi, B. A., Al Odaibi, F. A., Alnahdi, A. H., Omar, M., Algashami, A., & Alonazi, M. (2023). Cross-cultural adaptation and validation of the Arabic version of the Pain Self-Efficacy Questionnaire in Arab people with chronic low back pain. *Physiotherapy Theory and Practice*, *39*(1), 182-192. https://doi.org/10.1080/09593985.2021.2005196

Arjeini, Z., Zeabadi, S. M., Hefzabad, F. H., & Shahsavari, S. (2020). The relationship between posttraumatic growth and cognitive emotion regulation strategies in hemodialysis patients. *Journal of education and health promotion*, *9*. https://doi.org/10.4103/jehp.jehp_673_19

Arslan, G. (2022). Understanding wellbeing and death obsession of young adults in the context of Coronavirus experiences: Mitigating the effect of mindful awareness. *Death Studies*, *46*(8), 1923-1932. https://doi.org/10.1080/07481187.2020.1871122

Besharat, M. A. (2016). Cognitive Emotion Regulation Questionnaire: Instruction and Scoring. *13*(50), 221-223. https://jip.stb.iau.ir/article_529166.html?lang=en

Bianchi, F., Bianchi, G., & Song, D. (2023). The long-term impact of the COVID-19 unemployment shock on life expectancy and mortality rates. *Journal of Economic Dynamics and Control*, *146*, 104581. https://doi.org/10.1016/j.jedc.2022.104581

Buster, S., & Ozsaker, E. (2022). Locus of control, self-efficacy perception and treatment adherence in kidney transplant patients. *Transplant Immunology*, *75*, 101723. https://doi.org/10.1016/j.trim.2022.101723

Dhana, K., Franco, O. H., Ritz, E. M., Ford, C. N., Desai, P., Krueger, K. R., Holland, T. M., Dhana, A., Liu, X., & Aggarwal, N. T. (2022). Healthy lifestyle and life expectancy with and without Alzheimer's dementia: population based cohort study. *bmj*, *377*. https://doi.org/10.1136/bmj-2021-068390

Dibble, K. E., Deng, Z., & Connor, A. E. (2023). Abstract C116: Racial/ethnic disparities in perceived quality of breast cancer survivorship care among older women by general health status: A SEER-CAHPS study. Cancer Epidemiology, Biomarkers & Prevention,

Edwards, D. P., Kalantar-Zadeh, K., Streja, E., Ahdoot, R. S., Norris, K. C., & Molony, D. (2023). Practicing health equity in involuntary discharges to overcome disparities in dialysis and kidney patient care. *Current Opinion in Nephrology and Hypertension*, *32*(1), 49-57. https://doi.org/10.1097/MNH.0000000000000851

Enea, V., Candel, O. S., Zancu, S. A., Maftei, A., Bîrlădeanu, L., & Timofte, D. (2022). Death Obsession, COVID-19–Related Fear and Religiosity in People Living with Type 2 Diabetes. *OMEGA - Journal of Death and Dying*, *0*(0), 00302228221085402. https://doi.org/10.1177/00302228221085402

Foerster, M., Henneke, A., Chetty-Mhlanga, S., & Röösli, M. (2019). Impact of adolescents' screen time and nocturnal mobile phone-related awakenings on sleep and general health symptoms: a prospective cohort study. *International journal of environmental research and public health*, *16*(3), 518. https://doi.org/10.3390/ijerph16030518

Garnefski, N., Kraaij, V., & Spinhoven, P. (2001). Negative life events, cognitive emotion regulation and emotional problems. *Personality and individual differences*, *30*(8), 1311-1327. https://doi.org/10.1016/S0191-8869(00)00113-6

Goldberg, D., & Hillier, V. (1979). A scaled version of the General Health Questionnaire. *Psychological medicine*, *9*(1), 139-145. https://doi.org/10.1017/s0033291700021644

Hosseini, M., Kalantar, M., & Mirzai, O. (2014). Investigating the Role of Gender and Employment in the Relation between Existential Crisis and Life Expectancy of the Students at Allameh Tabataba'i University. *Counseling Culture and Psycotherapy*, *5*(17), 23-39. https://qccpc.atu.ac.ir/article_314.html

Kılınç, M., Arslan, G., Çakar, F. S., & Yıldırım, M. (2023). Psychological maltreatment, coping flexibility, and death obsession during the COVID-19 pandemic: A multi-mediation analysis. *Current Psychology*, *42*(20), 17435-17443. https://doi.org/10.1007/s12144-021-02576-9

Kızılgeçit, M., & Yıldırım, M. (2023). Fear of COVID-19, death depression and death anxiety: Religious coping as a mediator. *Archive for the Psychology of Religion*, *45*(1), 23-36. https://doi.org/10.1177/00846724221133455

Kline, R. B. (2011). Convergence of structural equation modeling and multilevel modeling. *The SAGE handbook of innovation in social research methods*, 562-589. https://doi.org/10.4135/9781446268261.n31

Loos, T. (2021). Rafael Lozano-Hemmer Is a Crowd Pleaser. He's Also Obsessed With Death. *The New York Times. New York City, New York, United States*. https://bitforms.art/pdfs/bibliography/lozano-hemmer/2018NYT.pdf

Mayes, J., Castle, E. M., Greenwood, J., Ormandy, P., Howe, P. D., & Greenwood, S. A. (2022). Cultural influences on physical activity and exercise beliefs in patients with chronic kidney disease:'The Culture-CKD Study'—a qualitative study. *BMJ open*, *12*(1), e046950. https://doi.org/10.1136/bmjopen-2020-046950

Menzies, R. E., Zuccala, M., Sharpe, L., & Dar-Nimrod, I. (2021). Are anxiety disorders a pathway to obsessive-compulsive disorder? Different trajectories of OCD and the role of death anxiety. *Nordic journal of psychiatry*, *75*(3), 170-175. https://doi.org/10.1080/08039488.2020.1817554

Moustakis, I., Filippas, M., Koretsi, M., Linardakis, M., & Rikos, N. (2023). Investigating overall health and life quality of patients undergoing dialysis in chronic dialysis units: Life quality of patients in dialysis units. *Health & Research Journal*, *9*(1), 23-34. https://doi.org/10.12681/healthresj.30770

Nicholas, M. (1989). Self-efficacy and chronic pain. *St Andrews : Annual Conference of British Psychological Society, 1989*. https://cir.nii.ac.jp/crid/1571417125165593472

Nitta, K., Hanafusa, N., Kawaguchi, Y., & Tsuchiya, K. (2023). Physical function management for elderly dialysis patients: prevention and improvement of frailty and disability. *Renal Replacement Therapy*, *9*(1), 1-7. https://doi.org/10.1186/s41100-023-00459-2

Park, S.-J., Ma, C.-H., Lee, C.-S., Jeon, C.-Y., Shin, T.-S., & Park, J.-S. (2022). Survival and Functional Outcomes after Surgical Treatment for Spinal Metastasis in Patients with a Short Life Expectancy. *Journal of clinical medicine*, *12*(1), 46. https://doi.org/10.3390/jcm12010046

Qasim, H., Alarabi, A. B., Alzoubi, K. H., Karim, Z. A., Alshbool, F. Z., & Khasawneh, F. T. (2019). The effects of hookah/waterpipe smoking on general health and the cardiovascular system. *Environmental health and preventive medicine*, *24*(1), 1-17. https://doi.org/10.1186/s12199-019-0811-y

Rhee, C. M. (2023). 52 - Abnormalities of Thyroid Function in Chronic Dialysis Patients. In A. R. Nissenson, R. N. Fine, R. Mehrotra, & J. Zaritsky (Eds.), *Handbook of Dialysis Therapy (Sixth Edition)* (pp. 466-480). Elsevier. https://doi.org/10.1016/B978-0-323-79135-9.00052-5

Shareh, H., & Robati, Z. (2021). Effect of Cognitive-Behavioral Group Therapy on Pain Self-efficacy, Fatigue, Life Expectancy and Depression in Patients With Multiple Sclerosis: A Randomized Controlled Clinical Trial [Original Research]. *Iranian Journal of Psychiatry and Clinical Psychology*, *26*(4), 418-431. https://doi.org/10.32598/ijpcp.26.3.225.11

Terzaki, F., Tsironi, M., & Theofilou, P. (2023). Do Clinical and Demographic Characteristics Affect Pain Self-Efficacy in Chronic Disease Patients Under-going Occupational Therapy? A Cross-Sectional Study in Greece. *EC Nursing and Healthcare*, *5*, 1-6. https://jcmimagescasereports.org/article/JCM-V2-1334.pdf

Theofilou, P. (2023). Healthcare: How do Greek Outpatients Evaluate it? A Descriptive Study in a General Hospital of Athens. *Advances in Public Health. Wyoming, USA: Academic Reads*. https://www.researchgate.net/profile/Paraskevi-Theofilou/publication/366440401

van der Borg, W. E., Verdonk, P., de Jong-Camerik, J., & Abma, T. A. (2021). How to relate to dialysis patients' fatigue-perspectives of dialysis nurses and renal health professionals: A qualitative study. *International journal of nursing studies*, *117*, 103884. https://doi.org/10.1016/j.ijnurstu.2021.103884

Willey, B. (2019). *RSA in Young Adults: Identifying Naturally-Occurring Response Patterns and Correlates* Seattle Pacific University]. https://www.proquest.com/openview/6eb7f18e1115e062f47cedc41615b893

Yıldırım, M., Akgül, Ö., & Geçer, E. (2022). The effect of COVID-19 anxiety on general health: The role of COVID-19 coping. *International journal of mental health and addiction*, *20*(2), 1110-1121. https://doi.org/10.1158/1538-7755.DISP22-C116

Zhu, Y., Song, Y., Wang, Y., Ji, H., Wang, D., Cai, S., & Wang, A. (2022). Relationships among social support, self-efficacy, and patient activation in community-dwelling older adults living with coronary heart disease: a cross-sectional study. *Geriatric Nursing*, *48*, 135-140. https://doi.org/10.1016/j.gerinurse.2022.09.008