Original Article

Investigating Body Image and Self-Esteem in Kidney Transplant Patients: A Qualitative Study

N Akıncı, Y Varışoğlu¹

Nursing Department, Faculty of Health Sciences, Fenerbahçe University, Istanbul, ¹Midwifery Department, Faculty of Health Sciences, Atlas University, Istanbul, Turkey

Received: 14-Feb-2024; Revision: 23-Mar-2024; Accepted: 15-Apr-2024; Published: 29-Jun-2024

INTRODUCTION

Body image is a concept that has become increasingly important from the past to the present. Body image affects a person's thoughts, feelings, and reactions to their environment and events. The main components of body image are the picture that an individual creates in their mind about their body and the way they perceive the features and functionality of their body compared to the body itself.^[1,2] Everyone has a body image that they consider ideal and compare to their own body. Sudden changes in body parts due to illness or other reasons, loss of function, feelings of loneliness, and exclusion increase the inconsistency between the individual's actual body image and the idealized body image, leading to dissatisfaction.^[3,4] The body and the self-concept influence each other. The individual's self-esteem is

Access this article online				
Quick Response Code:	Website: www.njcponline.com			
	DOI: 10.4103/njcp.njcp_138_24			

Background: Kidney transplantation is one of the life-saving therapies for patients with end-stage renal disease, which affects a person's psychological, social, and physical well-being. How transplanted patients perceive their illness and their body can affect their physical and psychological recovery. Aim: This qualitative study was designed to evaluate self-esteem and body image in kidney transplant patients. Methods: The study involved 16 female renal transplanted patients. Data were collected using a two-part interview form developed by the investigators in accordance with the literature. We used Lundman's method to transcribe the interviews and coded the data from the interviews. The results of the study were discussed using the themes. The first three interviews were entered into MAXQDA, and then, additional interviews were analyzed. Results: Six main themes and 15 subthemes were generated based on the thematic analysis of the interviews with participants about body image and self-esteem. Themes included body acceptance, changes in body image, deterioration of social relationships, changes in self-esteem, spousal concerns, and organ perceptions. This study collected detailed data on body image, self-esteem, social relationships, and spouse/partner relationships after kidney transplantation. Conclusion: The change in participants' body image and self-esteem after kidney transplantation caused having negative feelings regarding sexual life, relationships, and social life and feeling unfamiliar with the transplanted organ.

Keywords: Body image, kidney transplantation, qualitative study, self-esteem

slowly diminished as their body image is damaged. In studies, physical disease is defined as an event that may affect the body image adversely. Even though kidney transplantation is one of the life-saving treatment options for patients with end-stage renal disease, it has a negative impact on a person's psychological, social, and physical well-being. There is a growing body of evidence proving that transplant patients' perceptions of their illness and body can affect their physical recovery.^[5,6] It has even been suggested that the inability of the patients to integrate the new kidney into their image may contribute

Address for correspondence: Dr. N Akıncı, Nursing Department, Faculty of Health Sciences, Fenerbahçe University, Istanbul, Turkey. E-mail: naileaksit@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Akıncı N, Varışoğlu Y. Investigating body image and self-esteem in kidney transplant patients: A qualitative study. Niger J Clin Pract 2024;27:785-91.

X785

to the actual rejection of the kidney. In addition, several interdisciplinary studies suggest that transplantation may also lead to self-presentation problems and body image fragility.^[5,7] Some physical changes that occur after organ transplantation and the physical side effects of transplant medications, such as hirsutism, gingival hyperplasia, acne, cracking, and weight gain, can challenge beliefs about body image and feelings of self-worth and selfesteem.[8-10] These difficulties take the form of hiding problematic body parts from others, as well as concerns about being unwanted in sexual activities, being disliked by others, and being noticed in social and work environments. In addition, the transplanted kidney may be perceived by the patient as a "foreign body." Individuals may think that the transplanted organ will affect their brain, emotions, and personality. This makes it difficult for them to accept the transplant and can cause psychological conflict about the kidney.^[7,8] There are no adequate studies in the literature assessing body image and self-esteem in kidney transplant patients. The comprehensive findings from the in-depth interviews in this study are intended to contribute to the limited knowledge in the relevant literature. In light of the above, this qualitative study was designed to evaluate self-esteem and body image in kidney transplant patients.

MATERIALS AND METHODS

Settings

The study was conducted between December 2021 and March 2022 in the organ transplant unit of a private hospital. Each phase of the study followed the tenets of the Declaration of Helsinki. Before starting the study, we obtained the necessary institutional permissions approval from the Medipol University Ethics Committee in Turkey (14.05.2020-392). Patients were given detailed information about the study to obtain their verbal and written consent. This study adhered to the Consolidated Criteria for Reporting Qualitative Research (COREQ).

Sampling

The study included 16 female patients who underwent kidney transplantation at the organ transplant unit of a private hospital and were selected using a criterion sampling method.

Inclusion criteria were: kidney transplantation at least 6 months ago, over 18 years of age, no mental and auditory learning disabilities, no history of psychiatric disorder and no medication for it, volunteering to participate in the study, and being able to speak and understand Turkish.

Exclusion criteria: kidney graft non-functional at runtime and patients with previous kidney transplant.

Data collection

Data were collected using a two-part interview form developed by the investigators in accordance with the literature. The first part consists of 17 questions describing clinical and sociodemographics (age, weight, height, marital status, educational status, occupation, income status, spouse's educational status and length of marriage (if married), length of renal failure, whether she receives dialysis treatment, length and type of dialysis treatment, donor type, presence of chronic disease, and whether disease and treatment have caused a change in body appearance). The second part consists of openended questions with subheadings to assess the impact of kidney transplantation on body image and self-esteem [Table 1].

Patients were interviewed face-to-face for an average of 35–40 minutes, alone, in a comfortable room, in a conversational atmosphere. The interviews were tape-recorded; the investigator noted observations (body language, etc.) and transcribed all the data obtained in a complete and impartial manner.

All interviews were conducted by the same investigator to ensure consistency. The investigator summarized each interview session and asked the participants if they had any points to add or remove. Due to time constraints, participants did not receive interview transcripts for additional comment.

Qualitative research is a very powerful research method used to reveal the meanings, perspectives, feelings, and perceptions of individuals about an event.^[11] The data from the interviews were coded, and themes were generated based on the content. We used Graneheim and Lundman's^[12] method for transcribing the interviews, identifying basic codes, classifying similarities, generating codes in broader subthemes, and finally generating themes from subthemes. The first three interviews were coded independently by each investigator, and the codes were then compared. If the codes were different, the discrepancy was resolved unanimously. The first three interviews were entered into MAXQDA, and then further interviews were added and analyzed. Data saturation was achieved with 16 patients at the interview. Each participant was labeled so as not to reveal the true identity of the participants. Themes generated included body acceptance, change in body image, body dissatisfaction, deterioration of social relations, changes in self-esteem, concerns about spouse/ partner, and organ perception.

Confidentiality of research

Participants were informed about the privacy and confidentiality policies of the study in the consent form.

Code numbers were used for participants instead of their full names. Data were processed and stored so that only researchers could access them. Care was taken to avoid breaches of confidentiality by disclosing information to others.

RESULTS

The mean age of the participants was 38.60 ± 12.66 years, and the majority were married (75%), had completed secondary to high school education (75%), and had children (51.4%). Overall, the participants were individuals who did not work (84%), were housewives (75%), had income equal to expenses (56.3%), and had a BMI of $25.8 \pm 5.2 \text{ kg/m}^2$. The mean time after transplantation was 3.54 ± 3.13 years. Of the participants, 68.7% were on dialysis for 3.0 years and 81.2% had a living donor transplant. All participants (100%) reported that the disease caused changes in their body [Table 2].

Based on the thematic analysis of the interviews with participants about their body image and self-esteem after the transplantation, we identified six main themes. They are presented in Table 3, along with the corresponding subthemes.

Body acceptance

The theme of body acceptance is related to the participants' attempts to accept the body with its positive and negative aspects, to have positive feelings about their body, to be happy with the body they are in, and to protect it.

"I gained weight from the drugs and had hirsutism, but when I think about it, I got off dialysis and was reborn. That's why these negatives do not affect me, because my gains are more. After all, this body is mine, with all its good and bad aspects. I love it no matter what." (P10)

"I am very happy now. There are many kidney patients who would like to be in my place. Of course, my body deteriorated. But it does not matter. I have survived no matter what happens. I love my body." (P6)

"This life has been given back to me by God. I take better care of it now. I walk every day, I eat healthier. I used to love coffee, tea, coke, etc., and bakery - I could eat a tray of pastries by myself! Now I watch my weight and what I eat. Because I want to take better care of my body. I don't want to lose my kidney, I don't want to get sick anymore." (P13)

Change in body image

The majority of participants reported experiencing negative feelings, such as feeling unattractive because of the change in their physical appearance, feeling

Table 1: Semi-structured individual in-depth interview questions

Q1 What has changed in your body before and after the transplant? (a: Could you briefly describe your experiences and problems?)

Q2 Do you think other people can tell from your appearance that you have had a kidney transplant or that you have a health problem? How do you feel about this? (a. Do you think you look different from other people after a kidney transplant? b. What do other people's thoughts about the change in your body mean to you?)

Q3 Are you happy with your body? Can you explain your feelings and thoughts about your current appearance and your newly transplanted kidney? How has your relationship with your spouse/ partner changed? (a. What are the problems you experience in your relationship with your spouse/partner? b. How would you describe your relationship with your spouse/partner?)

Table 2: Sociodemographic and clinical characteristics of the participants

	n (%)
Age (years)	
Min-Max (Median) (Mean±SD)	22-58 (38.60±12.66)
BMI (kg/m ²)	
Min-Max (Median) (Mean±SD)	25.8±5.2
Educational status	
Primary school and below	3 (18.7)
Secondary/high school	12 (75)
University	1 (6.2)
Marital status	
Single	4 (25)
Married	12 (75)
Child	
Yes	10 (51.4)
No	6 (48.6)
Working status	
Working	3 (18.8)
Not working	13 (81.2)
Income status	
Income higher than expenses	2 (12.5)
Income equal to expenses	9 (56.3)
Income less than expenses	5 (31.2)
Time after the transplantation	3.54±3.13 years
Dialysis treatment	
Yes	11 (68.7)
No	5 (31.3)
Length of dialysis treatment (years)	
Median	3.0
Donor type	
Living	13 (81.2)
Cadaver	3 (18.8)
Whether the disease has caused a	
change in the body	
Yes	16 (100)
No	-

Table 3.	Themes	and	relevant	subthemes
Table J.	1 nemes	anu	ICICVAIL	subtlicines

Themes	Subthemes	
Body acceptance	Positive effect on the body	
	Protecting the body	
Change in body image	Feeling of incompleteness	
	Feeling of inadequacy	
	Not feeling pretty	
Deterioration of social relations	Stigma	
	Ostracization	
	Social isolation	
Change in self-esteem	Increased self-esteem	
	Decreased self-esteem	
Concerns about spouse/partner	Thought of not being liked	
	by spouse/partner	
	Feeling insufficient (towards spouse/partner	
	Fear of losing spouse/partner	
Organ perception	Feeling the organ foreign to	
Changes in habits	the body	

inadequate and incomplete, and not being able to enjoy themselves by getting involved in life. They also reported that having a transplanted kidney felt as if it did not belong to themselves.

"This illness came out of nowhere. I was a very pretty girl. I used to attract a lot of attention. I have no one around me like before, I gained weight, my body swelled up, the shape of my face changed, and acne appeared. I think I have become ugly. Or maybe it's because I'm ill. That's why I feel like I don't deserve to be with anyone, or I don't want to be with anyone because he'll leave me anyway and cheat on me. Even though I hide my illness, everyone seems to understand when they look at my face and my body." (P2)

"There is someone else's organ in my body, but it's there thanks to the drugs, so it doesn't really belong to me. I've had a transplant, but I'm still not a complete person. So if my body rejects the kidney, I could die, I could go back on dialysis. The operation has improved my life, but I am still an incomplete person." (P5)

Deterioration of social relationships

Participants reported experiencing negative situations such as stigma, exclusion, pity, and social isolation in their social relationships.

"When people find out I'm ill, they pity me which makes me feel bad. But this is a disease, who knows, hodie mihi cras tibi. And they also say to me, "Are you going to be like this forever, your face is swollen, your color is faded". That's why sometimes I don't go out of the house, so that I don't see anyone, so that I don't have to explain and I don't see the expression between pity and disgust on their faces. Isn't that good for me too, so that I don't get infected anyway? It kills two birds with one stone (laughs)." (P16)

"When they see me, at school, in the neighborhood, at work, people talk to each other "This is the girl who had a kidney transplant". Sometimes they even point at me. Why do I need so much talk? Then I feel bad, sometimes I even cry. I never feel like going out. I don't have as many friends as I used to, they don't want to be friends with me. Imagine their mothers, they said I could infect them. Even if I get better, no one wants to be friends with or date someone who is sick." (P4).

Change in self-esteem

Participants' self-esteem increased, especially in those who had been on dialysis for a long time, while selfesteem decreased in those who had kidney failure for a short time.

"After this illness, my husband's family's attitude towards me has changed. They treat me as if I'm not worthy of their son. As if I'm half a person, a cripple. As if I had such a huge shortcoming that I couldn't afford to make any other mistakes. Perfect mother or super cook, I don't know, everything has to be perfect to hide this flaw. I started to feel that way, too. I started to despise myself." (P8)

"I feel much stronger than before the transplant. During the dialysis period, my face was very yellow and pale, I was weak. I couldn't make any plans because I was on dialysis all the time. I felt that people looked at me with pity, and I guess I have felt sorry for myself, too. Now it's like I've been born again. At least being able to urinate was such a nice feeling that I haven't felt for a long time (laughs). I'm just now realizing that I exist in life, now I'm in it." (P7)

Concerns about the spouse/partner

The majority of the participants reported that their sexual desire decreased after transplantation and that they avoided relationships because they thought their spouse/partner would not like them as much as before, they felt incomplete, they were afraid of losing them, the opposite sex would not want to be with them because of their disease, and they would not be preferred.

"This disease suddenly came into my life. Actually, my husband and I got married very happily, but he doesn't seem to love me or like me anymore. How to say, he doesn't touch me and he doesn't look at me like he used to. I'm not as sexually enthusiastic as I used to be. Actually, sexual intercourse is not important, not necessarily, but in the past, he used to hug me, kiss me, now he runs away from me, his eyes don't shine anymore when he looks at me. He looks at other women when he walks beside me in the street. As if he only cares for me because he's my husband, I mean conscientiously. I don't think he sees me as a woman anymore. Although he has been very tired for my recovery, this illness has made him and me both tired and sad. Maybe it's because of the tiredness." (P11)

"My husband is a very handsome man. He can marry a much prettier, younger, healthier woman than me. Maybe it should be so, after all, I am ill, I am not as pretty as I used to be, I may not be able to give him a healthy child, I think it would be better for him to leave me. In fact, his family and even everyone also thinks so (her eyes fill with tears). They say I am not worthy of him. What can I say, they are right." (P15)

"I don't want a boyfriend, they don't want me anyway. Would you like it? Why would anyone be like a turkey voting for an early Christmas? Although there are some people who are the ones no one likes and wants. Should I accept it just so that someone can love me and I can have a boyfriend? I want to hide my illness, but the person who looks at me already understands that I am ill. I wish nobody knew or understood. I wish I could have a normal life like any other young girl. I guess this is my test in this world." (P1)

Organ perception

Participants' feelings about using someone else's organ were examined under the subthemes of feeling that the organ was foreign to their body and changes in habits.

"When I think about having someone else's organ inside me, it's like having two different people in the same body. A part of another person is now in my body. It is entrusted to me, both mine and not mine. It's a very strange feeling." (P6)

"Believe me, I never liked pickles and the smell of rose water made me want to vomit. The first thing I wanted after the operation was pickled cucumbers (laughs). In Ramadan, I wanted rose pudding with rose water. My mum, everybody was very surprised. My kidney came from a cadaver. I think the owner loved pickles and rose water. I think I carry the soul of the person from whom I take a kidney. There are many more changes in me after the operation. If I count, it will not end" (P15)

DISCUSSION

In recent years, with immunosuppressive treatment, infection control, and developments in surgical techniques, kidney transplantation has become the most preferred and successful treatment. In addition, while kidney transplantation improves the hormonal and metabolic environment in recipients, the scarring left by chronic end-stage renal disease, the physical effects of transplant surgery, and the side effects of immunosuppressive drugs can all affect a person's body image and negatively affect their self-esteem. After the transplantation, individuals may experience adaptive behaviors in the areas of self-concept and adjustment, such as making positive plans for the future, feeling like a new person, becoming accustomed to society's perspective, and accepting to live with medication for life, and maladaptive behaviors, such as feeling guilty about receiving a transplant from a close relative, fear of death and losing the transplant, and poor body image due to medication side effects.^[13-15]

The beliefs and feelings that a person has acquired about themselves over a period of time make up the self-concept domain. The self-concept adjustment domain is defined along two dimensions: the physical self (sexual function, physical function and qualities, and appearance), and the personal self (self-confidence, dreams, moral values, character, and self-reliance).^[16-18]

Kidney transplant recipients may develop ineffective adaptive behavior in both dimensions of selfconcept. Causes such as constant dependence on immunosuppressive drugs after transplantation, side effects of drugs, body image deterioration due to steroids, food and fluid restrictions, susceptibility to infection, and sexual problems all have a negative impact on self-esteem.

The post-transplant period is perceived more positively in people with chronic kidney failure due to the physical changes caused by uremia and dialysis treatment than in those with a short period of illness followed by immediate transplantation.^[4,8,18] Similarly, in our study, patients who had waited a long time and received a transplant described it as a "rebirth" or a "second chance." Participants' self-esteem increased, especially among those who had been on dialysis for a long time, while self-esteem decreased among those who had kidney failure for a short time. The reason for this may be associated with the fact that the problems they face after transplantation are easier for them than the difficulties they experienced before, and that they finally get this chance because they have waited a long time for transplantation and are more persevering in facing the difficulties they experience.

It is important to maintain a relationship of trust with people who have received a kidney transplant. Patients want to know that they will receive support from healthcare professionals, their families, social circles, and society when they need it. Ineffective adaptive behaviors may be observed in patients who are not adequately supported and with whom a trusting relationship cannot be established. People whose immune systems have been weakened by drug treatment following kidney transplantation may experience deterioration in social relationships due to fear of infection, emotional relationships due to changes in physical appearance and sexual problems, and family relationships due to loss of employment.^[19-21] In our study, similar to the literature, the participants reported experiencing negative situations such as stigma, exclusion, pity, and social isolation in their social relationships.

Sexuality is an important issue that needs to be addressed in patients with end-stage renal disease and kidney transplant patients. Side effects of drugs taken after transplantation, such as weight gain; moon face; gingival enlargement; proportionally distorted body appearance due to lipidosis in the neck, abdomen, and hips and thinness in the limbs; and hirsutism, may negatively affect the individual's body image. Emotional and psychological distress and immunosuppressive drugs may reduce interest in sexual activity and impair sexual function.^[20,21] Vaginal dryness in women can reduce sexual satisfaction and life satisfaction and negatively affect body image. This can have a negative impact on the relationship with the partner/spouse and may interfere with the initiation or continuation of the relationship.^[9,22] The results of this study are similar to those in the literature. The majority of participants reported that their sexual desire decreased after transplantation and that they avoided relationships because they thought their spouse/partner would not like them as much as before, they felt incomplete, they were afraid of losing them, the opposite sex would not want to be with them because of their disease, and they would not be preferred.

Transplantation is a major challenge for patients, acting as an intense stressor causing changes in neurotransmitter and endocrine-metabolic changes. It can lead to a psychosomatic crisis that may cause changes in self-perception and identity, with possible psychopathological consequences that require patients to activate all their psycho-psychosocial resources in the process of adapting to the new foreign body. It has been suggested in the literature that patients may perceive the new organ as a foreign organ that carries the characteristics of the donor and that they believe it will affect their brain, emotions, and personality.^[7,13,23] In our study, as in the literature, some participants said that they felt the newly transplanted organ was foreign to their body, while others said that some of their habits had changed after organ transplantation.

Implications for practice: It has been reported that posttransplant patients experience anxiety and depression

790

due to physiological, psychological, and socioeconomic difficulties, and psychiatric morbidity is observed at high rates. It is anticipated that the results of the research will raise awareness by informing the patients about body image, self-esteem, and psychosocial changes in the post-transplant period, thus contributing to the quality of care. It may also contribute to the development of supportive techniques that can improve the recovery of kidney transplant patients by providing a better understanding of the complex psychosomatic nature of the transplant process.

Limitations

Due to factors such as the lack of racial/ethnic or cultural diversity and the limited number of participants, the findings of this study are limited by the sample group. Another limitation is that due to time constraints, transcriptions of the interviews were not shared with participants for retrospective feedback or revision. In addition, due to the lack of studies on this topic in the literature, the discussion section had a limited number of sources. Nevertheless, this qualitative analysis provides a first indication of problems specific to transplant patients. Further studies with different sample groups are recommended.

CONCLUSION

The change in participants' body image and self-esteem after kidney transplantation caused having negative feelings regarding sexual life, relationships, social life, and feeling unfamiliar with the transplanted organ.

Ethical Aspect of the Study: For the study, ethics committee approval was obtained from the Clinical Research Ethics Committee of Medipol University and institutional permission from Memorial Hospital Group. Verbal and written consent was obtained from the patients who were informed in detail about the study to participate in the study.

Acknowledgements

The authors would like to thank all the participants who gave their time to take part in the study and to assist with recruitment.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

- Demir B, Bulbuloglu S. Perceived body image and distress after liver tansplantation in recipients. Transplant Immunol 2021;69:101483.
- 2. Kara A, Eryılmaz A. Elements of creating positive body image

through the eyes of emerging adults. J Qual Res Educ 2018;6:94.

- 3. Yagil Y, Geller S, Sidi Y, Tirosh Y, Katz P, Nakache R. The implications of body-image dissatisfaction among kidney-transplant recipients. Psychol Health Med 2014;20:955–62.
- Yagil Y, Geller S, Levy S, Sidi Y, Aharoni S. Body-image, quality of life and psychological distress: A comparison between kidney transplant patients and a matching healthy sample. Psychol Health Med2018; 23:424–33.
- Pasquale CD, Pistorio ML, Sorbello ML, Parrinola L, Corona D, Gangliano M. Body image in kidney transplantation. Transplant Proc 2010;42:1123-6.
- Gündüz ES, Akyolcu N. Psychosocial experiences of kidney transplant patients: A qualitative study with a current approach in psychiatry. Curr Approaches Psychiatry 2020;12:204-18.
- 7. Tedesco Pietro C. Organ transplant, body image, psychosis. Psychoanal Q 1983;41:3.
- Látos M, Lázár G, Ondrik Z, Szederkenyi E. Positive psychology intervention to improve recovery after renal transplantation. J Contemp Psychother 2022;52:35–44.
- Yang FC, Chen HM, Huang CM, Hsieh PL, Wang SS, Chen CM. The difficulties and needs of organ transplant recipients during postoperative care at home: A systematic review. Int J Environ Res Public Health 2020;17:5798.
- Vranješ IM, Školka I, Jakab J, Krajina I, Krajina V, Šantić A, et al. Sexual function in hemodialysis and post-renal transplant women in a relationship. Int Urol Nephrol 2022;54:2037-46.
- 11. Baltacı A. The qualitative research process: How to conduct a qualitative research? KEFAD 2019;5:368-88.
- 12. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: Concepts, procedures and measures to achieve trustworthiness. Nurse Educ Today 2004;24:105-12.
- 13. Pasquale CD, Veroux M, Fornaro M, Sinagra N, Basil G, Gozzo C, et al. Psychological perspective of medication

adherence in transplantation. World J Transplant 2016;6:736-43.

- Gokoel SRM, Handoko KBG, Zwart TC, Paul JM, Moes DJAR, Fijter JW. Medication non-adherence after kidney transplantation: A critical appraisal and systematic review. Transplant Rev 2020;34:100511.
- 15. Roy C. The Roy adaptation model. 3rd ed. New Jersey Upper Saddle River: Pearson Prentice Hall Health; 2009.
- Roy SC. Extending the Roy Adaptation Model to meet changing global needs. Nurs Sci Q 2011;24:345-51.
- 17. Phillips KD, Harris R. Roy's adaptation model in nursing practice, in: Alligood MR, Tomey AM. (Ed.), Nursing theory: utilization and application, 5st edit, Elsevier Mosby. United States. 2014.
- Chilcot J, Guirguis A, Friedli K, Almond M, Day C, Da Silva-Gane M, *et al.* Depression symptoms in haemodialysis patients predict all-cause mortality but not kidney transplantation: A cause-specific outcome analysis. Ann Behav Med 2019;52:1-8.
- Gustavsen MT, Midtvedt K, Lonning K, Jacopsen T, Reisater AV, Geest S, *et al.* Evaluation of tools for annual capture of adherence to immunosuppressive medications after renal transplantation. Transplant Int 2019;32:614–25.
- Rocha FLD, Echevarría-Guanilo ME, Silva DMGVD, Gonçalves N, Lopes SGR, Boell JEW, *et al.* Relationship between quality of life, self-esteem and depression in people after kidney transplantation. Rev Bras Enferm 2020;73:e20180245.
- Agarwal KA, Pavlakis M. Sexuality, contraception, and pregnancy in kidney transplantation. Kidney Med 2021;3:1-11.
- Abarca-Durán X, Fernández-Medina IM, Jiménez-Lasserrotte MDM, Dobarrio-Sanz I, Martínez-Abarca AL, Fernández-Sola C. Sexuality in kidney transplant recipients: A qualitative study. Healthcare 2021;9:1432.
- 23. Zimbrean PC, Gan G, Deng Y, Emre S. Body image in liver transplantation recipients. Liver Transplant 2019;25:712-23.