

ORIGINAL ARTICLE

Association between resilience, religiosity and therapeutic adherence in patients undergoing hemodialysis

Associação entre resiliência, religiosidade e adesão terapêutica em pacientes submetidos à hemodiálise

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ABSTRACT: *Objective:* The objective of this research was to evaluate the level of resilience and religiosity in patients with chronic renal failure, as well as to investigate the influence of these elements on adherence to treatment and pharmacological therapy. *Method:* It is a descriptive, cross-sectional and correlational research. The study was conducted on 60 hemodialysis patients. Electronic medical record has been used to evidence when the treatment started and to measure absenteeism, and the questionnaires (Wagnild and Young's Resilience Scale, Duke University Religion Index and Morisky Medication Adherence Scale) have been used to personal characterization. The data analysis began with descriptive statistics, followed by Spearman correlation test ($p < 0.05$) and linear regression. *Results:* The average age was 59.3 ± 12.5 years and 66.7% of the patients were male. It was found that there was an association between resilience and gender ($r = 0.281$, $p = 0.030$) and self-reported health status ($r = 0.424$, $p = 0.01$), and the category "Independence and determination" correlated with absence ($r = 0.290$, $p = 0.024$). There was also a correlation between pharmacological adherence and non-organizational religiosity ($r = 0.262$, $p = 0.043$) and between intrinsic religiosity and age of patients ($r = 0.300$, $p = 0.020$). The linear regression evidenced the non-organizational religiosity collaboration in the variation of the score obtained in "Independence and determination" ($\beta = 0.445$, $p < 0.05$). *Conclusion:* The associations found between the variables suggest that properly explore religiosity in patient care may help to improve the standard of adherence to hemodialysis treatment.

Keywords: Renal dialysis; Resilience psychological; Religion; Treatment adherence and compliance; Hemodialysis.

RESUMO: *Objetivo:* Avaliar o nível de resiliência e de religiosidade em pacientes com insuficiência renal crônica, bem como investigar a influência destes elementos na adesão ao tratamento e à terapia farmacológica. *Método:* O estudo é de abordagem descritiva, transversal e correlacional. Foram incluídos 60 pacientes em hemodiálise. Utilizou-se o prontuário eletrônico para levantamento do início do tratamento e das faltas, bem como os instrumentos: questionário para caracterização pessoal, Escala de Resiliência de Wagnild e Young, Escala de Religiosidade de Duke e Escala de Adesão à Terapêutica de oito itens de Morisky. A análise dos dados iniciou-se com a estatística descritiva, seguida do teste de correlação de Spearman ($p < 0,05$) e da regressão linear. *Resultados:* A idade média encontrada foi de $59,3 \pm 12,5$ anos e 66,7% eram do sexo masculino. Constatou-se que houve associação entre resiliência e as variáveis sexo ($r = 0,281$, $p = 0,030$) e status de saúde autorreferido ($r = 0,424$, $p = 0,01$), sendo que a categoria "Independência e determinação" correlacionou-se às faltas nas sessões ($r = 0,290$, $p = 0,024$). Houve também correlação entre a adesão farmacológica e a religiosidade não organizacional ($r = 0,262$, $p = 0,043$) e entre a religiosidade intrínseca e a idade dos pacientes ($r = 0,300$, $p = 0,020$). A regressão linear evidenciou a colaboração da Religiosidade não organizacional na variação da pontuação obtida no domínio "Independência e determinação" ($\beta = 0,445$, $p < 0,05$). *Conclusão:* As associações encontradas entre as variáveis sugerem que abordar a religiosidade e resiliência no cuidado com o paciente pode auxiliar a melhorar o padrão de adesão ao tratamento hemodialítico.

Palavras-chave: Diálise renal; Resiliência psicológica; Religião; Cooperação e adesão ao tratamento; Hemodiálise.

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INTRODUCTION

Chronic Renal Disease (CRD) is present as a critical public healthcare problem; however, it is generally suffered by millions of people, impacting their quality of life, and generating exorbitant expenses on treatments and hospitalizations, as well as causing a high death rate¹. The mortality rate reaches 19.9% in the domestic territory². It is an illness characterized by a progressive and irreversible decreased renal activity, producing a severe metabolic and hydrolytic imbalance in people who suffer from this³.

Hemodialysis is among the most commonly adopted treatments available, one of the replacement therapies subsequent to renal failure. Its function is to remove liquids and residual uremic products from the organism. It is performed using a dialysis machine in an extracorporeal mechanical process⁴. The hemodialytic treatment and specialized technical support dependence for keeping the patient alive can trigger suffering and anguish, considering the pain, monotony, and limitation of the patient regarding becoming ill, exerting a direct influence on the physical and psychological aspects of patients⁵.

Although patients who suffer from CRD recognize the benefits of dialytic treatment, considering this makes it possible to wait for a kidney transplant, there are negative feelings related to the disease that is frequently experienced⁶. This context has brought about stressful situations and demands a re-adaptation to one's routine, including modifying food and water intake and restricting job activities, bodily changes, and consequently decreased autonomy^{6,7}. Such modifications severely affect patients' personal, family, professional, and social lives and can impact therapeutic adherence, frequency of hemodialytic sessions, adherence to nutritional recommendations, and pharmacological adherence⁷.

Resiliency and religiosity have been mentioned in studies focused on patient strategies for facing chronic renal insufficiency as essential resources to understand and face stressing agents present in this scenario⁷. The concept of resiliency is understood as an adaptive operational standard. It is a dynamic experience of resistance and positive adaptation regarding adversities, capable of propitiating strategies by the patient to overcome, making him or her cease to be a passive observer and thus seek his or her resources and surroundings to resolve conflicts^{8,9}. They are commonly associated with approaching the sacred and transcendent in religiosity constituted as an organized system of beliefs, rituals, symbols, and practices^{10,11}.

Research studies have proven that among the multiple factors addressing the resiliency process, there are indications that religiosity can aid individuals in developing necessary resources in facing their situation of

illness¹². It is considered a tool to support and strengthen in facing hardships related to their health condition, propitiating to an individual the resignification of their process of falling ill and consequently promoting an improved quality of life¹³.

Thus, the purpose of the present study is to evaluate the level of resiliency and religiosity in patients who suffer from chronic renal insufficiency and investigate the influence of these elements in adherence to treatment and pharmacological therapy. It is expected to supply subsidies for expanding support practice resources through this work, proving the importance of wholly contemplating the human being from the biopsychosocial-spiritual model lens.

MATERIALS AND METHODS

The quantitative and transversal approach delineated this study, involving 60 patients who suffered CRD submitted to hemodialysis in a quaternary hospital located in the city of Itajubá/MG. Only individuals over eighteen years old were included in this study, whose clinical conditions were appropriate and with good cognitive capacity for answering the applicable instruments, and who agreed to participate in the study by signing the Free and Informed Consent Form (FICF), according to the "Ministério da Saúde" (Health Ministry) Resolution # 466/12. The research project was approved by the "Comitê de Ética em Pesquisa" (Research Ethics Committee) through the "Parecer Consubstanciado" (Substantiated Opinion) # 3.061.427.

A semi-structured questionnaire was used for the instruments, containing the personal and health characteristics. They collected data on the hemodialysis treatment period and the number of time the patients was absent in sessions by registering on the patients' electronic medical records. The coefficient of Cronbach's Alfa (α) was considered and used for the three scales. It measures the correlation between the items on the instruments to the study results to investigate the reliability coefficient, as $\alpha > 0.90$ is very high, $0.90 > \alpha > 0.75$ is high, $0.75 > \alpha > 0.60$ is moderate, $0.60 < \alpha < 0.30$ is low, and $\alpha < 0.30$ is very low.

The Wagnild and Young's Resilience Scale comprises 25 items described with a Likert-type response, and the variation ranges from 1 to 7, as 1 is (complete disagreement) and 7 is (complete agreement). The scores range from 25 to 175 points, as 25 to 125 points are rated as low resistance, 125 to 145 points as medium, and over 145 points as high. The scale is divided into three domains: (1) Action and Value Resolution, integrating items 1, 2, 6, 8, 10, 12, 14, 16, 18, 19, 21, 23, 24, 25; (2) Independence and Determination, through positive statements 5, 7, 9, 11, 13, 22; and (3) Self-confidence and Capacity for Adapting to the Situation, through elements 3, 4, 15, 17, 20¹⁴.

Since five questions capture the three dimensions of religiosity in the Duke University Religion Index (DUREL) related to health outcomes: organizational religiosity (OR), non-organizational religiosity (NOR), and intrinsic religiosity (IR), the first two items (OR and NOR) investigate how much the individual attends religious nature surroundings or participates in personal spiritual activities, such as prayers or meditation. The other items on the Likert-type scale refer to IR and evaluate the desire for internalization and whole religiosity experience as their primary purpose in life. The three individual domains are recommended regarding score calculation that should be individually assessed¹⁵.

There are eight items for interpreting the Morisky Medication Adherence Scale (MMAS8) distributed a sample of the three adherence levels: high (8 points), intermediate (6-7 points), and low (≤ 5 points). Only the individuals who were classified as high adherence are considered as adherent to pharmacological therapeutic medications¹⁶.

The data analysis was performed using the SPSS-22 software and began by descriptive statistics (percentage, average, medium, standard deviation, and frequency) for the sociodemographic and health characteristics, and scores from the instruments were used. Following that, a normality study was performed on the distribution of variables by performing the Kolmogorov-Smirnov test. The first test identified that part of them was asymmetric; however, their distribution methods were applied for these normalizing.

The Spearman correlation coefficient was used afterward; the values were considered $p < 0.05$ as statistically significant, strong correlation indexes as $0.60 \leq |r| \leq 1.0$, moderate from $0.4 \leq |r| \leq 0.6$, and weak as $|r| \leq 0.4$. Resilience was qualified as a dependent variable, and linear regression was performed for analyzing its relationship to independent variables (the other instruments and sociodemographic variables) were correlated as $p < 0.20$ as the outcome variable. The stepwise technique was used for multivariable analysis, and this step, a significance level of 5%, was defined again with a 95% confidence interval.

RESULTS

The characterization of the participants for this study can be seen in Table 1.

The average age of the 60 hemodialysis patients was 59.3 ± 12.5 years old, 66.7% were male, 58.3% were married, 51.7% had studied elementary school. At that time of their treatment, 78.3% of the participants had been undergoing hemodialysis for over a year. Furthermore, it was possible to observe that 55% of the patients had evaluated their health condition as “good” or “very good.”

53.3% had not been absent for their hemodialysis sessions in the last six months.

Table 1. Descriptive Statistics related to clinical and sociodemographic data of patients submitted to hemodialysis treatment

Clinical/Sociodemographic characteristics	Value – n (%)
Age range	
Younger or equal to 35 years old	3 (5)
From 36 to 50 years old	12 (20)
From 51 to 65 years old	28 (46.7)
From 66 to 80 years old	15 (25)
Over 80 years old	2 (3.3)
Gender	
Male	40 (66.7)
Female	20 (33.3)
Civil status	
Single	11 (18.3)
Married	35 (58.4)
Divorced	6 (10)
Widow/er	8 (13.3)
Scholastic level	
Illiterate	4 (6.7)
Able to read and write	3 (5)
Finished elementary school	31 (51.7)
High school graduate	12 (20)
College graduate	10 (16.6)
Treatment period	
12 months or less	13 (21.7)
From 12 to 24 months	22 (36.7)
From 24 to 36 months	8 (13.3)
Over 36 months	17 (28.3)
Self-perception health status	
Very Bad	1 (1.7)
Weak	1 (1.7)
Moderate	25 (41.7)
Good	29 (48.3)
Very Good	4 (6.6)
Number of session absences in the past six months	
0 Absence	32 (53.3)
From 1 to 3 absences	21 (35)
From 4 to 7 absences	3 (5)
More than 7 absences	4 (6.7)

55% of the patients displayed average resilience, and only 13.3% achieved a high score on the Wagnild and Young instrument regarding the scores obtained on the scales as shown in Table 2. Thus, this work presented a high-reliability index ($\alpha = 0.82$). The religiosity analysis on the DUREL scale displayed a moderate internal consistency ($\alpha = 0.72$). It obtained a high index in the three dimensions, considering that the average 3.2 score

for OR, 1.8 for NOR, and 4.5 for IR. And 18 (30%) of the patients displayed low therapeutic medication adherence

(score<6 in MMAS-8), being that this tool showed high internal consistency in this study ($\alpha = 0.79$).

Table 2. Classification of the scores obtained from hemodialysis patients on the Wagnild and Young Resilience Scale, the Duke University Religion Index (Durel), and the Morisky Medication Adherence Scale (MMAS-8)

Resilience, religiosity, and therapeutic medication adherence	Hemodialysis patients n=60
Resilience (Average ± standard deviation)	127,7 ± 17,3
Low resilience (n,%)	19 (31.7)
Medium resilience (n,%)	33 (55)
High resilience (n,%)	8 (13.3)
Religiosity (Average ± standard deviation)	
Organizational	3.2 ± 1.5
Non-organizational	1.8 ± 1.0
Intrinsic	4.5 ± 2.2
Therapeutic medication adherence (Average ± standard deviation)	6.0 ± 1.8
Low adherence (n,%)	18 (30)
Medium adherence (n,%)	24 (40)
High adherence (n,%)	18 (30)

After applying the Spearman correlation test comparing the sociodemographic variables to the scores obtained from the instruments, it was noticed that the overall resilience score was correlated significantly and positively to gender ($r=0.281$) and the self-perception status ($r=0.424$), as the first correlation is weak and the second is moderate. Regarding resilience, it displayed a moderate correlation, yet significant; between the “action and value resolution” and gender ($r=0.417$), as well as the self-perception health status ($r=0.446$), or as the male gender and patients who showed a more positive perception of their health status display a greater tendency

for resolving conflicts.

Since the “Self-confidence and capacity for adapting to the situation” are significantly related to the self-perception health status ($r=0.329$), there is a weak correlation indicating the more significant the self-confidence and flexibility are, the more positive the health condition will be. It was possible to identify a weak and significant correlation from being absent from sessions ($r=0.290$) regarding “Independence and determination,”; indicating that patients who scored high in this requisite tend to be absent in more sessions. The mentioned correlations are shown in Table 3.

Table 3. Correlations related to resilience and their dimensions in patients undergoing hemodialysis.

Variables	Self-perception health status		Gender		Absenteeism in sessions	
	Correlation coefficient	p-valor	Correlation coefficient	p-valor	Correlation coefficient	p-valor
Total resilience score	0.424**	0.01	0.281*	0.030	0.234	0.072
Actions and value resolution	0.446**	0.001	0.417**	0.001	0.133	0.310
Self-confidence and the capacity for adapting to the situation	0.329*	0.010	0.179	0.170	0.145	0.270
Independence and determination	0.236	0.069	0.020	0.877	0.290*	0.024

* 0.05 is the significance correlation level; ** 0.01 is the significance correlation level.

The religiosity analysis was divided based on the three dimensions, and it obtained a significant positive correlation of a weak amplitude between non-organizational religiosity ($r=0.262$) and the total score of therapeutic medication adherence, as shown in Table 4, indicating that patients who performed private spiritual practices displayed greater adherence to therapeutic medication therapy. It also identified a

relationship between IR and the patients’ ages ($r=0.300$), as that correlation was weak, significant, and positive; it suggests that older patients who have experienced have had a more in-depth experience in their religiosity. It must be emphasized; this research has not found statistically significant correlations in the univariate analysis between the level of religiosity and resilience.

Table 4. Correlations related to religiosity dimensions in patients undergoing hemodialysis

Variables	The total score of medication adherence		Age	
	Correlation coefficient	p-value	Correlation coefficient	p-value
Non-Organizational Religiosity	0.262*	0.043	0.013	0.922
Intrinsic Religiosity	0.156	0.235	0.300*	0.020

* 0.05 is the significance correlation level.

Multivariate linear regression analyses were performed between the total scores and the partial resilience. The other variables, including religiosity, therapeutic medication adherence, and social demographic scores, presented a Spearman correlation coefficient lower than 0.20. The β coefficients that describe the mentioned models are shown in Table 5. It is possible to notice the self-perception health status contributed significantly ($\beta=0.463$, $p<0.01$) to explain the changes in the total score of resilience. The total score of therapeutic medication adherence ($\beta=0.235$, $p<0.05$) and gender ($\beta=0.233$, $p<0.05$) also impacted the description of such variables.

It is essential to emphasize the independent variable “Self-perception health status” also contributed significantly for predicting the score for the “Action and Value Resolution” ($\beta=0.429$, $p<0.01$) e “Self-confidence and Capacity for Adapting to the Situation” ($\beta=0.390$, $p<0.05$) categories. As the first variable, “Therapeutic medication adherence” also contributed to its description ($\beta=0.329$, $p<0.05$). Another relevant item of data observed in this analysis was the effect of NOR ($\beta=0.445$, $p<0.05$) in the score variation of the “Independence and determination” domain, indicating the impact of individual spiritual practices in the patient’s resilience.

Table 5. The coefficients for resilience multivariate linear regression.

Independent Variable	Dependent Variable			
	Total resilience score	Action and value resolution	Self-confidence and capacity for adapting to the situation	Independence and determination
Self-perception health status	0.463**	0.429**	0.390*	0.230
Medication/therapeutic adherence	0.235*	0.329*	0.167	-0.175
Age	-0.103	-0.109	0.016	-0.161
Gender	0.233*	0.292	0.142	-0.065
Absenteeism from sessions	0.083	-0.008	0.112	0.146
Organizational religiosity	-0.003	0.049	0.063	0.321
Non-organizational religiosity	-0.017	0.021	0.116	0.445*
Intrinsic religiosity	0.026	-0.024	0.127	-

* $p < 0.05$; ** $p < 0.01$.

DISCUSSION

Such sampling, in sociodemographic terms, is similar to the hemodialysis patient population, according to the data obtained from the “Inquérito Brasileiro de Diálise Crônica” (Brazilian Chronic Dialysis Investigation), in 2017, which indicated that 58% of the patients were male². This preponderance can be explained by the fact that men attend primary healthcare services to a lesser degree. Research studies performed by the Health Ministry have indicated that approximately one-third of the male population (31%) do not habitually visit a doctor¹⁷. This negligence in healthcare can prevent renal deficiencies from early diagnosis, thereby making the patient undergo dialytic treatment.

It has been pointed out that after the age of 40,

there is an increased possibility of the manifestation of some renal deficiency, regarding the age factor, due to the occurrence of a reduction of glomerular filtration¹⁸. According to the data collected by the “Sociedade Brasileira de Nefrologia” (Brazilian Nephrology Association), 42.6% of the patients ranged from 45 to 64 years old, indicating similarity comparing such data to and the results found².

In other research studies involved in chronic renal insufficiency considering the low medication adherence level found in this study, the proportion of non-adherence ranged from 10% to 65.7%¹⁹⁻²². The acceptance of a therapeutic medication regimen is essential, and transgression prevents achieving the proposed benefits, and this is associated with the increase in the numbers of hospitalized patients and deaths²³. The improvement of

professionals has been relevant to the process of guidance for dialysis patients, adapting to healthcare measures to the role of subjects who suffer from this disease, and provide them a more active participative role in their treatment process, and consequently, increased adherence to therapeutic medication.

The patients who have displayed an important tendency to resiliency corroborate with other studies involving CRD patients^{9,24,25}. It is essential to state that one of these also employed the Wagnild and Young scale and achieved an average score of 131.38 points²³. Moreover, related to the reduced rating of patients with high scores in this requisite, it can be suggested that such phenomenon occurs due to the manner as to how the illness strongly impacts their lives, as has already been demonstrated in another study²⁶. There are many changes in routines after starting the treatment, such as special dietary precautions, moderation in liquid intake, extreme care with arteriovenous fistulas, and the necessity for strictly adapting to a defined scheduled therapeutic medication regimen²⁷. Patients tend to display depressive symptoms and anxiety throughout the treatment, which can hinder their resilience, as that compromises their capacity to deal with adversities and their ability to create positive strategies for facing the disease²⁸.

There was a high-level rating of religious involvement in the three measured dimensions, reconfirming the results from the other similar samplings¹¹. Therefore, it is crucial to emphasize high levels of religiosity are commonly associated with an improved quality of life (psychological, social, and environmental). Numerous patients have sought a manner to attribute meaning to their experiences, obtain hope, and maintain peace in facing situations that mobilize large amounts of suffering in the sphere of religiosity²⁹, as occurs while facing CRD. Religious beliefs, for this reason, need to be respected by professionals who are acting in the nephrology segment since they can be essential support aids to patients who are in the process of facing hardships caused by renal insufficiencies.

Male patients display the greatest tendency to resilience and problem solving, as has already been proven in other studies with similar samplings^{26,30,31}. Some authors justify this correlation comparing male gender and resilience, confirming they utilize greater rational inclination in how they deal with a problem, using their resources to rationalize while facing stress generating situations³². But contrary to these findings, another research study involving hemodialysis patients demonstrated that women tend to display greater resilience capacity than men while facing the situation of illness⁹.

Patients who display a more positive perception of their health condition have shown more resilience problem solving regarding their surroundings, as they have been more self-confident and adaptive. Countless

scientific works point out a positive relation regarding this between resilience and self-esteem, identifying the latter as a protective factor aiding in facing their hardships³³. In this study, absenteeism in dialysis sessions was associated with the "Independence and determination" factor. This data item suggests a more positive perception of their capacity for facing hardship in a persistent and self-sufficient manner that may be related to a greater tendency for the individual to be absent from sessions. However, it was not possible to find the association between such constructs in the literature.

The relation between non-organizational religiosity and therapeutic medication adherence is found in the results obtained in the correlating research study³⁴. That study suggests an influence comparing such variables, indicating that religious practices predispose exercising activities related to health, such as diet, monitoring weight, and correct utilization of medications. However, these findings contrast results found by other researchers who did not identify such correlation^{7,35}. It was possible to find a relationship between religiosity and adherence to dialysis involving CRD patients in one of these investigations with a similar approach⁷.

Elements of intrinsic religiosity and age were also associated with this study. Considering that the first variable is related to a full religious experience, it was commonly noticed that the elderly had used religiosity as a resource for facing stressful situations, using it to achieve meaning to their lives again, suffering, and death³⁶. As one ages, it can bring about a natural increase of incapacitating morbidities. That fact can trigger an increased need for comfort and religious compensation³⁷, considering that the same is also viewed as the most explicit manner of the existential finiteness condition. There are indications that high levels of religiosity provide the elderly with an improved physical and mental well-being and, consequently, contribute to reducing deteriorations of illnesses³⁸⁻⁴⁰.

Regarding the predictive variables of the resilience factors in the multivariate analysis, besides the variables that have already been correlated in such an instrument in univariate analysis, non-organizational religiosity has been proven as a predictor for the score obtained in the "Independence and Determination" factor. Thus, it can be inferred that the patients who performed spiritual activities individually and assiduously displayed more perseverance and were more apt to solve their own individual conflicts. There was a study involving factors associated with the resilience of Diabetes Mellitus patients that identified that the frequency of prayer impacts the process of resiliency⁴¹. Practicing a religion is also associated with introspection and promoting improved health, as shown in a study involving 58 hemodialysis patients in Paraíba State. It demonstrated that religious attitudes aid the patient in facing problematic situations, improving the

quality of life of this population⁴². Therefore, frequent individual religious practice can be an essential support tool in overcoming adversities and increasing resiliency.

This study displays limitations due to its transversal delineation and the reduced number of participants restricted to only one Hemodialysis Center. Although it was possible through the obtained results to identify potential variables that influence the development of resources for a more positive adaptation to the disease and hemodialysis treatment, health professionals can enlarge their possibilities of acting holistically. Moreover, it is necessary to elucidate the need for further studies on more extensive sampling to produce new scientific evidence for the implementation in clinical practice to identify other protective factors that can strengthen cognitive and

emotional skills in patients who suffer from chronic renal insufficiency.

CONCLUSION

There has been an association between resilience and gender variable, health self-perception status, and hemodialysis sessions; since non-organizational religiosity was related to medication adherence and intrinsic to the age factor. There were also indications encountered that non-organizational religiosity can be associated with resilience and independence, and determination. Such data items suggest that an excellent approach to these aspects in the patient's care can improve the adherence pattern in treating chronic renal insufficiency.

Author's participation: *Gabriela Vilas Bôas*: theme delimitation, statistical analysis, data collection and interpretation, project elaboration, writing, organization and editing; *Maria Vilela Pinto Nakasu*: article review, correction, guidance and final approval to article.

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