

# Chronic kidney disease, spirituality and religiosity: a systematic overview with the list of eligible studies

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## Abstract

Chronic Kidney Disease (CKD) has a tremendous psychological burden, which sometimes is overlooked or underestimated in the daily clinical routine practice, since in the health care process physicians prefer to focus on the objective aspects of the pathology. In this contribution, we make a systematic overview of the relationship between spirituality/religiosity and CKD, an emerging theme which only recently has raised interest from the scientific community despite its importance. We investigate different variables, axis and categories (from the quality of life to customer's satisfaction, treatment adherence and therapeutic alliance, clinical parameters, as well as overall survival, and coping strategies adopted by the patient). Moreover, we underpin the principal clinically relevant implications (like the possibility of psycho-therapeutic interventions based on the spiritual and religious attitudes of the patient) and we discuss the main gaps, methodological barriers and difficulties in the field, fostering and advocating further research and clinical studies. This last aspect, together with the quality assessment of the studies, will be further explored in the second part of the study.

## Introduction

### Chronic kidney disease

Chronic kidney disease (CKD) is an important public health problem with a tremendous burden and social-economical implications,<sup>1-3</sup> affecting only in the USA more than 20 million people (that is to say, 10% of the overall population) and with an expected increasing prevalence in the near future.<sup>1</sup> It is a condition in which the kidneys damage leads to a loss of their physiological functions (filtering blood,

regulating the pressure, maintaining acids and bases homeostasis, regulating fluids and electrolytes). Thus, wastes are not properly removed, their level tends to increase and this leads to other complex health problems and comorbidities, including above all complications such as cardiovascular disease (CVD),<sup>4</sup> hypertension,<sup>5</sup> anemia,<sup>6</sup> malnourishment (in particular, protein-energy malnutrition, or PEM),<sup>7</sup> endocrinological disorders (impaired balance of electrolytes, erythropoietin deficiency, secondary hyperparathyroidism, hyperinsulinism, growth hormone impairment, sexual dysfunctions),<sup>8</sup> bone diseases (osteoporosis, osteomalacia, osteitis fibrosa, osteodystrophy, adynamic bone and other bone abnormalities that are included in the complex clinical syndrome termed as *renal bone disease*, or *renal osteodystrophy*, or *CKD-mineral and bone disorder*),<sup>9</sup> infections (especially, hepatitis C),<sup>10</sup> cancer,<sup>11</sup> and mental disorders like dementia and cognitive impairment.<sup>12-14</sup> People with early CKD tend not to feel any kind of symptom and the only ways to detect CKD as earlier as possible are through a blood test to estimate kidney function, and a urine test to quantitatively assess the entity of kidney damage.

For this reason, CKD is often diagnosed when patients need replacement therapy (that is to say, kidney transplantation, chronic haemodialysis or peritoneal dialysis), since CKD is usually an irreversible and progressive disease and can lead to kidney failure, also called CRF (Chronic Renal Failure), whose last stage is termed End Stage Renal Disease (ESRD), which is fatal if it is not properly treated. Once detected, CKD can be managed through medication and lifestyle changes to slow down the disease progression, and to prevent or delay the onset of kidney failure as much as possible.

CKD is more common among women than men, more than 35% of people aged 20 years or older with diabetes have CKD, more than 20% of people aged 20 years or older with hypertension have CKD.<sup>1-3</sup> CKD is a complex and chronic disease, and patients experience a daily suffering, dependence on others and on machine and have to undergo to continuous medication. Thus many psychological variables could be involved, from anxiety and depression,<sup>15-19</sup> as well as patient's personality,<sup>20</sup> sexual functioning to self-esteem and to patient's beliefs and preferences,<sup>21,22</sup> including patient-reported measures (PROM), such as HRQoL (health-related quality of life).<sup>23,24</sup> These parameters are worthy being investigated and understood by the clinicians, since they could impact on patient's compliance and adherence to the therapy and to the clinical outcome.<sup>25-28</sup> Moreover, recently, medicine has shifted from a P0 (paternalistic and not patient-centered) model to a highly participatory and interactive P6 paradigm, in which psycho-cognitive

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aspects are considered and integrated into the bio-psycho-social framework,<sup>29-32</sup> whose natural evolution is called the bio-psycho-social-spiritual model. We have to consider that the six Ps stay for personalized, predictive, participatory, preventive, psycho-cognitive, and public, that is to say a holistic and highly integrated framework of health-care process. Investigating the psychological aspects of CKD could have profound clinically relevant implications and could pave the way for a personalized treatment, based on the spiritual, religious and existential attitudes of the patient and fully integrated in the entire health-care process.<sup>33</sup> The religious beliefs and spirituality of patients on replacement therapy, peritoneal dialysis, or haemodialysis therapy, as well as waiting for a kidney transplant or living with a transplanted organ have not been studied extensively so far. Studies of the dialysis and transplantation population seem to indicate that religion may be associated with increased patient satisfaction with life and increased levels of social support, even if in some cases the results are mixed and do not reach the consistency of a scientific evidence. In this manuscript, we identify the relationships that have been studied so far, the gaps in the research field, together with the methodological difficulties and barriers, in order to foster further advancements and to help physicians.

### Religious beliefs and spirituality: gaps, methodological barriers and difficulties

Scholars tend to distinguish between reli-

giosity (as an institutionalized, structured, organized array of creed items and of sacred-related rituals and practices) and spirituality (as an existential need for transcendence and connection with the Universe, the experience of the divine, the search for a meaning and a purpose, the sense of inner peace, spiritual strength, well-being and completeness, as well as a perception of hope, optimism and faith, according to the World Health Organization Quality Of Life-Spirituality Religion and Personal Beliefs group), even though this distinction, if clear in theory, is poorly respected in the psychological practice and literature. Indeed there is no universal scientific consensus about an operational definition of *spirituality*. This represents the first barrier. Moreover, some scholars maintain that there would be a *publication bias* about the putative relationship between spiritual attitudes and clinical outcome in chronic pain patients, since only positive results have been published and lack of spirituality is poorly investigated. Another hurdle is that, despite the North American Nursing Diagnosis Association-International (NANDA-I) acknowledged the *spiritual anguish* response, originally *spiritual distress*, as a pertinent nursing diagnosis, there is apparently few interest in the spiritual

category from the clinicians.<sup>34</sup> Other biases may be due to the fact that the available religiosity and spirituality scales could fail to quantify religiosity or spirituality, capturing instead other factors directly or indirectly related to them, as suggested by Berman and co-workers.<sup>35</sup> In fact, it is rather difficult to rigorously assess and precisely measure both religiosity and spirituality, and thus a quantitative study should be coupled with a qualitative one. A further limitation of the studies could be linked with the so-called *center-effect*, defined by Berman *et al.* as the *extent to which the unit and staff reflect the dominant religious modes of their patient population*.<sup>35</sup>

## Method

This umbrella systematic review was conducted searching on PubMed/MEDLINE, Scopus, SCIELO, LILACS, CINAHL, EMBASE Nursing, ISI Web of Knowledge, using a combination of strings and MeSH (Medical) where appropriate. Duplicate references were eliminated. Only peer-reviewed articles and studies written in English were selected; reviews, and editorials were not included.<sup>35-89</sup> The eligible studies are summarized in Supplementary Table 1. A brief recall to the stages of ESRD and

the investigated categories are summarized in Tables 1 and 2.

## Main findings

In this contribution, we made a systematic overview of the relationship between spirituality/religiosity and CKD, an emerging theme which only recently has raised interest from the scientific community despite its importance, investigating different axis and categories (from the quality of life to customer's satisfaction, treatment adherence and therapeutic alliance, from clinical parameters, as well as overall survival, to the coping strategies adopted by the patient).

These investigated relationships are summarized as follows.

### Spirituality versus religiosity

Some authors observed a different correlation between spirituality and religiosity, for example Song and collaborators,<sup>36</sup> Spinale *et al.*,<sup>37</sup> Tanyi,<sup>38</sup> on the contrary Valcanti and co-workers,<sup>39</sup> found that spiritual coping could not be reduced to a non-religious form of coping, and also other authors such as Theofilou,<sup>40</sup> Reig-Ferrer,<sup>41</sup> Davison,<sup>42</sup> Martin,<sup>43</sup> observed a strict link between religiosity and spirituality. However, some authors, such as Rambod,<sup>44</sup> did not make any distinction between religiosity and spirituality and used these two terms/domains as interchangeable. Moreover, some authors reported differences among the different creed and religious affiliations, while others emphasized that there is no need to tailor nephrology nursing to ethnic variables, such as the work by O'Brien.<sup>45</sup> While spirituality, spiritual well-being and religiosity are well-known categories, the concept of *impaired spirituality* and *spiritual anguish* are emerging ones, for example in the work by De Cássia Lopes Chaves.<sup>46</sup>

**Table 1. A summary of end-stage renal disease stages (modified from KDOQI, clinical practice guidelines for chronic kidney disease: evaluation, classification, and stratification).**

Stage	Comment	GFR (MI/Min/1.73 M2)
1	Kidney damage with normal or relatively high GFR	≥90
2	Mild reduction in GFR	60-89
3	Moderate reduction in GFR	30-59
4	Severe reduction in GFR	15-29
5	Established kidney failure	<15

GFR, glomerular filtration rate.

**Table 2. Parameters investigated in this study.**

Investigated parameters	Examples
Demographic data	Age, gender, ethnicity
Laboratory data	Serum sodium, potassium, calcium, phosphorus, chloride, creatinine, uric acid, BUN, CO2 concentration, systolic and diastolic pressure, hematocrit, weight and weight change
Clinical data	Cause of the CRF (chronic glomerulonephritis, diabetes mellitus, hypertension), ESRD stage, time since the diagnosis, kind of treatment, psychopathology (suicide attempt, depression, anxiety), EEG, co-morbidities, nutritional assessment (SGA, triceps skinfolds, mid upper arm circumference, mid arm muscle circumference, albumin, transferrin)
Clinical outcome	Survival and mortality rate, QOL
Psychosocial parameters	Psychosocial adjustment, illness beliefs, representation and awareness, emotional reaction to the disease, locus of control, body perception and image, self-perception, personality correlates, perceived social support and social networks, stressors and stress levels, coping skills and strategies
Spirituality and religiosity	Religious affiliation, attendance, literature, pray, spiritual well-being
Patient's behaviors	Sick role behavior, compliance, adherence, and willingness to cooperate and collaborate with the medical staff, treatment choice and preference

BUN, Blood Urea Nitrogen; CRF, Chronic Renal Failure; ESRD, End-Stage Renal Disease; QOL, Quality Of Life; SGA, Subjective Global Assessment.

### Spirituality/religiosity and demographic characteristics of the studied population

Authors such as Reig-Ferrer,<sup>41</sup> Valcanti,<sup>39</sup> Kao,<sup>47</sup> Kimmel,<sup>48</sup> Lai,<sup>49</sup> found that spiritual beliefs were higher among women. No differences has been observed as far as ethnicity is concerned, for example in the survey conducted by Welch and collaborators,<sup>50</sup> but some scholars instead found some differences, such as Weisbord *et al.*<sup>51</sup>

### Spirituality/religiosity and quality of life

Many studies show that religious and spiritual beliefs are associated with decreased perception of burden of illness, decreased level of depression, increased perception or use of social support, and higher perception of quality of life in a CKD/ESRD population, such as in the work by Wechpradit,<sup>52</sup> Lucchetti,<sup>55</sup> Patel,<sup>56</sup> even if some authors reported only partial or weaker correlations, like in the studies by Davison.<sup>42,53</sup> Quality of life and spirituality score are negatively correlated, since as the physical condition of the patient deteriorates the spiritual need increases and becomes stronger. However other studies, such as the research carried out by Kao and co-workers,<sup>47</sup> have found mixed results, since both patients with no spiritual/religious beliefs and those with strong attitudes have reported high scores using SF-36.

### Spirituality/religiosity and customer satisfaction

Some studies have found that religious beliefs are related strongly to measures of satisfaction with life, whereas religious behaviors are related to satisfaction with medical care. Berman and co-workers have found that higher spiritual scores on a 74 HD population correlated with higher customer satisfaction and perception of quality of the medical care.<sup>35</sup>

### Spirituality/religiosity and treatment adherence

Spirituality/religiosity and treatment adherence, which is defined as the extent to which an individual chooses behavior that coincides with a clinical prescription. Scholars found a positive relationship, such as Weil,<sup>57</sup> Tany.<sup>61</sup> However, Berman and co-workers did not find a correlation.<sup>35</sup> Other studies present mixed or negative results, such as the work by Kranenburg and co-workers.<sup>58</sup>

### Spirituality/religiosity and treatment choice and preference

Spirituality/religiosity and treatment choice and preference (end-of-life care *versus* dialysis withdrawal), like in the study carried out by Davison.<sup>59,60</sup>

### Spirituality/religiosity and therapeutic alliance

Patient are supposed to be more collaborative with the physicians and to be more involved or feeling like to be involved in the health-care process.

### Spirituality/religiosity and clinical parameters

Despite some studies have found no relationship between spirituality and clinical factors, other scholars have reported a profound impact of spiritual attitudes on sleep disturbs, which are very frequent in dialysis patients,<sup>62,63</sup> such as the research by Young and co-workers,<sup>64,65</sup> the outcome of the palliative care,<sup>66,67</sup> the nutritional status,<sup>68</sup> but for example intriguingly no relationship was found between spirituality scores and co-morbidity (as assessed using the Charlson co-morbidity index), as emerging in the work by Finkelstein and co-workers.<sup>69</sup> However, a correlation between spirituality/religiosity and symptom severity was found by Schwartz and co-workers.<sup>70</sup>

### Spirituality/religiosity and mental health

There is a good consensus about the positive impact of spiritual well-being and depression and anxiety, such as in the work by Theofilou,<sup>40</sup> Lucchetti,<sup>55</sup> even though Ko and collaborators failed to find any correlation.<sup>71</sup>

### Spirituality/religiosity and locus of control

There are very few studies focusing on this topic, some interesting exceptions are given by the study carried out by Theofilou,<sup>40</sup> Ibrahim and co-workers,<sup>54</sup> Davison *et al.*<sup>50-60</sup>

### Spirituality/religiosity and survival

This is a topic that has raised interest only recently and very few studies exist about this relationship, because of different difficulties and methodological barriers. Foster and collaborators were the first to investigate the relationship between a religious affiliation and survival rate.<sup>72</sup> Greenberg *et al.*<sup>73</sup> confirmed this result. Spinale and co-workers,<sup>37</sup> for example, have been able to prove a positive correlation between spiritual beliefs and involvement and survival, in a sample of 166 ESRD patients, finding that religion is used more as a psycho-social support than as a coping strategy. However, the impact on survival remains only partially explained, since after applying adjustment not only the scores and data have confirmed the correlation, and thus further studies are needed in order to replicate these findings and to shed light on this relationship.

### Spirituality/religiosity and coping strategies

In general, there is a consensus that spirituality and religion can be used as a coping strategies in order to overcome the psychological burden of CKD. There seems to be two principal coping strategies categories: the first dimension is using religion in order to enhance the psychological adjustment and to experience greater existential well-being (EWB), such as in the work by Elliott,<sup>74</sup> Breckenridge,<sup>75</sup> Baldree,<sup>76</sup> Walton,<sup>77</sup> Tanyi,<sup>78,79</sup> Caress,<sup>80</sup> the second one is the social support mediated by religion itself, like in the work by Spinale,<sup>37</sup> Shah.<sup>81</sup> The last strategy apparently is less used.

### Spirituality/religiosity and psychotherapeutic interventions

On the basis of the possible relationship between spirituality and better clinical outcome in CKD populations, some scholars have put forward the proposal of introducing meditation or spiritual counseling as complementary supporting therapy.<sup>82-86</sup> Spiritual counseling, in fact, is expected to make the patient search for a meaning or a purpose of his/her disease and the presence of a chaplain or a religious figure could make the patient more self-aware of his/her own spiritual resources and subsequently better cope with the disease. However, once again, too few studies exist and a randomized clinical trial would be needed. Some scholars, such as Davison, speculate that the advent of new and modern medical technologies and devices could have lead to an underestimation of spiritual and pastoral needs and thus to an under-treatment. The author advocates that religious/spiritual services and resources should be made more available in the hospitals, integrated into a holistic nursing and health-care process. Another interesting point is whether or not this psychological intervention should be tailored to the kind of treatment (hemodialysis *versus* peritoneal dialysis), but few authors found differences between the two treatments, such as Parker and collaborators.<sup>87</sup> Psycho-spiritual interventions should be applied at the light of the evidence-based spirituality, avoiding those practices which did not reach an adequate level of evidence, such as the intercessory prayer, as emerging in the beautiful demonstration by Matthews *et al.*<sup>88</sup>

The biological and cellular basis of these relationships are still unclear, but a major role may be played by regulation of stressors and immunological/inflammatory axis (release of cytokines and interleukines, resistance to infection).<sup>89</sup>

As a further remark we should notice that most of these studies are cross-sectional and not longitudinal, so a causal inference cannot

be extrapolated. They are not randomized, apart from few exceptions, and the sample is often selected as convenience sample, thus the results cannot be generalized to the general population.

## Conclusions

Patient's spiritual attitudes, coping strategies, preferences and health-related beliefs and behaviors, as well as end-of-life care needs, are poorly routinely reported by the nephrology staff and are not currently systematically integrated into their renal care, such as pain and symptom management, advance care planning, and psychosocial and spiritual support even though some surveys have shown that CKD have diffuse spiritual needs. An integrated, holistic, approach in the framework of P6 medicine is thus advocated as necessary to provide the patient with his/her demands and needs and to deliver a true patient-centered treatment. Only recently spiritual beliefs are being investigated by scholars, a theoretical foundation is still lacking and further studies are needed to establish a scientifically sound impact on health-care.

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