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1 **Title: Influence of Religious and Spiritual Elements on Adherence to Pharmacological**
2 **Treatment**

3 **Abstract**

4 The objective of this study is to know the influence of religious/spiritual elements
5 on the adherence to pharmacological therapy. The descriptors used for this literature
6 review were “medicine, medication, drug, or treatment,” “adherence to treatment,” and
7 “religion or spirituality or faith or prayer” in different databases (CINAHL, PsycINFO,
8 PubMed). Finally, 23 articles were selected. Articles available in full text, published
9 between 2010 and 2017, in English or Spanish were included. The results showed that
10 some studies relate positively the R/S and therapeutic adherence, but others determine an
11 opposite or even mixed effect, mainly addressing pathologies such as HIV and other
12 chronic diseases. The influence of religiosity/spirituality on therapeutic adherence requires
13 that health professionals acquire sensitivity and competence to address these issues with
14 their patients.

15 **Keywords** Religion; Spirituality; Treatment adherence; Pharmacological therapy

16 **Background**

17 Since the mid-twentieth century, studies show the relationship between religiosity/spirituality
18 (R/S) and health (de Diego and Badanta 2017; de Diego 2016; Lucchetti and
19 Lucchetti 2014). This connection is highlighted in areas related to the health promotion and
20 the prevention of disease (Byrne and Price 1979; Levin 1994; Levin and Vanderpool 1987;
21 Quiceno and Vinaccia 2009; Vaux 1976), such is the case of the influence on adherence to
22 clinical treatments (Barría et al. 2016; Stewart et al. 2013; Abarzúa et al. 2011; Laos
23 Manrique 2010).

24 However, health professionals continue to focus on pragmatic aspects of their work,
25 which in many cases do not take into account the type of beliefs of patients. This obviates
26 the reality that people use their religion to confront problems related to their health or
27 illness and that this trend does not disappear with the discovery and evolution of
28 increasingly effective and precise medical treatments (Moreira-Almeida 2013).

29 Patients are often those who demand comprehensive care including spiritual or religious
30 factors as a way to improve the coping with diseases (Cardoso et al. 2014). It is also
31 important to improve health professionals knowledge about the beliefs of the population

32 they serve aiming to provide holistic care, considering that in the specific case of adherence
33 to treatment, it is a conditioning factor (Carrasco 2015).

34 **Objective**

35 The objective of the study is to know the influence of religious and spiritual elements on
36 pharmacological therapy's adherence.

37 **Methods**

38 Relevant databases have been used for this literature review: CINAHL, PubMed, PsycINFO.

39 The search strategy was performed using these descriptors: "medicine, medication,
40 drug, or treatment," "adherence to treatment," and "religion or spirituality or faith or
41 prayer," combining them with the Boolean "AND" (Table 1).

42 INSERT TABLE 1 HERE

43 Inclusion criteria were articles with full text available, published between 2010 and
44 2017, and whose theme was appropriate to the objectives. Exclusion criteria were articles
45 referring to relationships between beliefs and adherence to non-pharmacological therapeutic
46 treatments. The selection resulted among reading the title, abstract, and full text if it
47 was appropriate. Finally, 23 scientific articles were selected.

48 **Results**

49 The content analysis of the literature review shows the impact of religious and spiritual
50 factors on the pharmacotherapy adherence (Table 2).

51 INSERT TABLE 2 HERE

52 Most studies address chronic pathologies: firstly HIV/AIDS (9 articles), secondly
53 psychiatric disorders (4 articles), and finally cystic fibrosis (3 articles). The remaining
54 studies address other chronic diseases such as diabetes mellitus, cardiovascular problems,
55 intestinal disease, asthma or cancer. Of all the selected studies, 9 show negative relationships
56 between R/S and pharmacological adherence, and 7 detect positive relationships.

57 On the other hand, there are also 6 articles that show mixed results, both positive and
58 negative, and 1 article where the existence of a relationship is not determined. Although in
59 some studies the religious and spiritual elements are approached simultaneously, in the
60 majority the cultural elements associated with religion predominate. In general, religion is
61 not specified, but among those identified, Islam stands out, followed by Catholicism and
62 Protestantism. For the spiritual elements, the attribution of healing powers to healers or

63 agents of nature such as water is frequent.

64 **Discussion**

65 There is a disparity of results in the studies analyzed. While some show a positive relationship
66 between R/S and therapeutic adherence, in others an opposite effect is observed.

67 One of the best-known examples of the negative correlation is between contraceptive
68 therapy and religiosity (Carvajal and Gavilanez 2014). Other times the influence is mixed
69 (Peeters et al. 2015; Zagodzdon and Wrotkowska 2017). In these studies with diabetic
70 patients and with mental pathology, respectively, there are cases where the R/S improves
71 the adherence and others in which the opposite occurs. While depression and religiosity did
72 not correlate with adherence, for spirituality the correlation was positive according to the
73 results of Álvarez et al. (2016) in patients with heart failure.

74 In the case of HIV/AIDS (one of the diseases most addressed in the selected studies),
75 therapeutic adherence is related to the suppression of viral load, which decreases the risk of
76 morbidity, mortality, and subsequent transmission of the virus. According to Tymejczyk
77 et al. (2016), both this pathology and CF are associated with a shortening of life. This
78 magnifies the importance of adherence to treatment and raises spiritual or religious
79 problems (Grossoehme et al. 2013). In this respect, findings of Lyon et al. (2011) also
80 coincide. They identify that young people with HIV/AIDS are more likely to ask themselves
81 “Has God abandoned me?” In this case, adolescent spirituality was associated with
82 less anxiety and depression and better adaptation to chronic illness. Park and Nachman
83 (2010) also detected a higher religious score in the best adherence to treatment in adolescents
84 with HIV. However, Vyas et al. (2014) got opposite results. The people least
85 adherent to antiretroviral treatment were those who believed that God would not turn away
86 from them, regularly attended religious services, and prayed and meditated.

87 The use of spirituality as a method of coping with chronic diseases can be positively or
88 negatively related to the adherence to pharmacological treatment depending on the type of
89 coping. Adherence is greater with positive coping styles, referring to trusting an attachment
90 to God, finding meaning in life, and being spiritually connected with others (Grossoehme
91 et al. 2016). The negative coping style—associated with worse adherence—refers to the
92 lack of attachment to God, the difficulties in finding the meaning in life, and spiritual
93 struggles. These struggles include questioning the existence of God, doubts about love or

94 acts of God, or redefining the stressor as a punishment from God or the act of an evil power
95 (Freitas et al. 2015). Conventional beliefs in God as a source of comfort, support, and help
96 to cope with stressors seem to be associated with better adherence, while fundamentalist
97 beliefs in God's powers to heal prevent some patients from continuing pharmacological
98 treatment (Tumwine et al. 2012). On the other hand, Hobbs (2010) determined that
99 adherence to medication was not related to spiritual well-being, social support, or trust in
100 the doctor. However, a significant positive correlation was found between spiritual wellbeing
101 and trust in the doctor, which could be a factor favoring this adherence.

102 In relation to elements of R/S that favor adherence to treatment, some works should be
103 highlighted. A study that addressed the adherence to oral hormonal therapy in women with
104 cancer showed that 94% was adherent during Ramadan. Although this percentage was
105 lower than that reported in months of non-fasting (96%), no statistically significant differences
106 were observed. Maintaining this adherence during Ramadan was facilitated by the
107 non-complex schedules of these medications and the relative lack of their side effects. In
108 this way women instead of taking drugs during the day did so at night, at which time eating
109 and drinking are allowed by Islam (Zeeneldin et al. 2012). These factors could also explain
110 the differences obtained in the study by Hanif et al. (2013), where during the Ramadan fast,
111 treatment with vildagliptin resulted in better adherence to treatment compared to
112 sulfonylureas in Muslim patients with diabetes mellitus. Although Dávila Soto et al. (2014)
113 emphasized factors favoring adherence to oral antidiabetics such as marital status, educational
114 level, and the presence of other chronic pathologies, cultural or belief aspects are
115 not taken into account once again.

116 In another study of Muslim people, the desire to fulfill the obligations of fasting affected
117 the adherence to antiretrovirals, but also these people wanted to avoid the questions of
118 relatives and friends who did not know their HIV status (Ume Tocco 2017).

119 Dalmida et al. (2017) showed that the satisfaction of social support as well as praying at
120 least once a day was significantly associated with 90% adherence to antiretroviral treatment.

121 Also in patients with HIV/AIDS and high religiosity, Tumwine et al. (2012)
122 determined the main reasons for adherence or not to pharmacological treatment. Among
123 the supporters were the perception of the ineffectiveness of prayers to cure HIV, the
124 continuous counseling from multiple sources, and beliefs such as that God heals in different

125 ways. However, the main reasons associated with non-adherence in patients with
126 high religiosity were related to the support of biblical scriptures, teachings and prophecies
127 of religious leaders and testimonies of “comrades already healed” who had stopped ART
128 to explain their decisions. Other beliefs based on the locus of divine control reflect lower
129 scores of therapeutic adherence in Africans who reported that God played an influential
130 role in their asthma in relation to white patients (Ahmedani et al. 2013). These results
131 coincide with Finocchiaro-Kessler et al.’s (2011) who obtain that those people who
132 believed that God controlled their HIV strongly were less prone to an adherence of 90% or
133 more. The active coping style, a lower perception of God as a controller of health, and a
134 lower perceived stress were the best predictors of greater adherence.

135 In relation to spiritual beliefs, in Ethiopia, the healing potential of holy water was
136 associated with non-adherence to ART (Tymeczyk et al. 2016). In another study performed
137 in Tanzania (Thielman et al. 2014), most participants who took antiretrovirals
138 sought an herbal cure for HIV by going to a spiritual leader. The visit to the healer was
139 associated with a significant, but not permanent decrease in adherence to treatment,
140 highlighting fatigue as an influential factor in making the decision to go to the healer. On
141 another occasion, the presence of religion displaced the belief in Mapuche healers as the
142 main actors in the process of health recovery. Nevertheless, they continued using medicinal
143 herbs, to complement the pharmacological treatment of their chronic pathology, to
144 diminish the side effects or to enhance the therapeutic effect (Barría et al. 2016).

145 In the case of other diseases such as cystic fibrosis in children, the parents’ R/S has
146 influenced both treatment adherence and decision making; lower levels of R/S were
147 associated with worse adherence, perhaps due to greater parental anxiety due to the lack of
148 divine support to cope with their children’s illness (Grossoehme et al. 2015). The influence
149 of the R/S was contrary in the HTA. In an intervention performed by Kretchy et al. (2013),
150 it is evident that the spiritual beliefs of the patients increased their confidence in the
151 expectation of divine healing, thus decreasing the adherence to the treatment with
152 antihypertensive

153 drugs. However, in the study by Silva et al. (2016), weekly religious attendance
154 was associated with a lower prevalence of hypertension compared to participants
155 who did not attend religious services. The social support of these practices could favor

156 normalized blood pressure figures.
157 For psychiatric disorders, although in recent decades research on religion and
158 schizophrenia has increased, these have mainly focused on hallucinations and delusions
159 (Gearing et al. 2011). Some of the limiting factors of drug adherence have been the belief
160 in the supernatural causes of mental illness related to the support of religious and spiritual
161 sources (Abdel Aziz et al. 2016). In patients with mental illness, Touchet et al. (2012)
162 observed the influence of the R/S both in the medication treatment adherence (delays in
163 searching for treatment and non-adherence to it) and in the participation in psychotherapy.
164 This was due to experimentation in 14.4% of conflicts between their spiritual and religious
165 views and psychiatric treatments.
166 Definitely, to address the R/S of patients and make it a mechanism that favors therapeutic
167 adherence, it would be necessary to create specialized departments to manage the
168 integration of spirituality with conventional treatment in hospitals, such as those identified
169 by Lucchetti et al. (2012); spiritual therapies were performed by volunteers and offered
170 free of charge to patients and staff. In another study (Huguelet et al. 2011), patients showed
171 willingness to discuss religious issues with their psychiatrist. Also Stolovy et al. (2013)
172 showed how patients were more engaged, involved, and better connected with their doctor
173 when the doctor had a greater knowledge of the particular religion. Therefore, it is
174 important to promote cultural sensitivity and offer assistance from the health system.

175 **Conclusions**

176 The positive or negative influences of religious and spiritual elements on adherence to
177 pharmacological therapy are evidenced. Therefore, it is necessary to design interventions
178 aimed at encouraging the use of positive coping strategies and addressing the adverse
179 implications of religious fatalism.

180 There are numerous pathological processes or pharmacological treatments linked to the
181 R/S. Those who address HIV/AIDS stand out, in which the social support provided by
182 belonging to a certain religion or practices such as prayer has positive effects for adherence
183 to ART.

184 Health professionals should be aware of the role that R/S plays in the life of patients.
185 They must respect beliefs and include them in care planning. This will promote a holistic
186 patient-centered approach and will support them in making self-care decisions.

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