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# RELIGIOSITY AND LIFESTYLE OF PATIENTS WITH DIABETES MELLITUS TYPE 2

# RELIGIOSIDADE E ESTILO DE VIDA DE PACIENTES COM DIABETES MELLITUS TIPO 2

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**ABSTRACT -** Religiosity/Spirituality and lifestyle have a positive impact on health results and, the objective of this article was to analyze association between religiosity and lifestyle of patients with type 2 diabetes mellitus. It is a cross-sectional study, quantitative approach with 21 diabetics enrolled in the HiperDia of a Family Health Strategy. The FANTASTIC lifestyle questionnaire, the DUKE-DUREL religious instrument and a socio-demographic and health form were used. Correlation of Spearman was used for the data analysis. The mean age of the participants was 62.6 years old (dp = 13.36), with 76.2% of female, 71.4% brown skin and 61.9% with low literacy. In this group, 71.5% go to religious services up to once a week and 85.7% carry out their religious practices daily. Lifestyle was “very good” for most of them (61.5%), but the "activities" dimension was below average (3.25; sd = 2.60). Organizational Religious Activity (ORA) was statistically associated with the lifestyle of these people with diabetes (r = 0.608, p =

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0.027). It was observed that the higher frequency of religious cults, the better their lifestyle, evidencing a positive association between these two variables.

**Keywords:** Religion. Spirituality. Lifestyle. Diabetes Mellitus Type 2.

**RESUMO -** Religiosidade / Espiritualidade e estilo de vida têm um impacto positivo nos resultados de saúde e o objetivo deste artigo foi analisar a associação entre religiosidade e estilo de vida de pacientes com diabetes mellitus tipo 2. Trata-se de um estudo transversal, de abordagem quantitativa, com 21 diabéticos cadastrados no HiperDia de uma Estratégia Saúde da Família. Utilizou-se o questionário do estilo de vida FANTASTICO, o instrumento religioso DUKE-DUREL e uma ficha sociodemográfica e de saúde. Correlação de Spearman foi utilizada para a análise dos dados. A média de idade dos participantes foi de 62,6 anos (dp = 13,36), com 76,2% de mulheres, 71,4% de pele morena e 61,9% com baixa escolaridade. Nesse grupo, 71,5% frequentam serviços religiosos até uma vez por semana e 85,7% realizam suas práticas religiosas diariamente. O estilo de vida foi "muito bom" para a maioria deles (61,5%), mas a dimensão "atividades" ficou abaixo da média (3,25; dp = 2,60). A Religiosidade Organizacional (RO) foi estatisticamente associada ao estilo de vida dessas pessoas com diabetes (r = 0,608, p = 0,027). Observou-se que, quanto maior a frequência aos cultos religiosos, melhor o seu estilo de vida, evidenciando uma associação positiva entre essas duas variáveis.

**Palavras-chave:** Religião. Espiritualidade. Estilo de Vida. Diabetes Mellitus tipo 2.

## INTRODUCTION

Medicine, health and religiosity have been related in all population groups since the beginning of history. The first hospitals of the western world were built and administered by religious orders. After that, this healing system was dismembered largely in economically developed countries (KOENIG et al., 2012).

Society has changed and with it, the habits of life. These changes include inadequate food intake, reduced physical exercise and increased occurrence of chronic Non-Communicable Diseases (NCD) such as: Obesity, Diabetes Mellitus (DM), Insulin


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Resistance (IR), and Metabolic Syndrome. Exaggerated consumption of foods composed of saturated fats, salt, and sugar has been pointed out as habits related to the cause of at least 14 million deaths, or 40% of all deaths per year for NCD. Sedentary lifestyle is included in this statistic, adding up to 3 million (8%) of all deaths due to NCD and, finally, completing this scenario is alcohol consumption with 2.3 million deaths per year, of which 60% of the NCD (OPAS/OMS, 2017).

DM is defined as a syndrome of multiple etiology, due to lack of insulin and/or inability to adequately exert its effects, involving specific pathogenic processes, resistance to insulin action and disorders of secretion or defect in the regulation of hepatic glucose production. DM is classified as DM type 1 (DM1), DM type 2 (DM2) and other specific types, including gestational DM (SDB, 2015-2016). The present study will investigate Type 2 Diabetes Mellitus (DM2).

In many countries of the Americas, the prevalence of DM2 has rapidly increased and an even greater increase is expected. According to the World Health Organization's report on diet, nutrition and the prevention of NCD, habitual food consumption is one of the main determinants of the disease, which can be modified to avoid it. About 422 million adults in the world had diabetes in 2014, and in the Americas, the estimate is that by 2040, 109 million people will be living with the disease (OPAS/OMS, 2017).

According to recent data from a worldwide survey of all-cause mortality between 2005 and 2015, there were 1,150,200 deaths from DM in 2005 and 1,519,000 deaths in 2015, an increase of 32.1%. In addition, diabetes mellitus is one of the leading causes of lost years of life. It occupied position 27$^{th}$ in 1990, going to 18$^{th}$ in 2005 and recently in 2015 was in the 15$^{th}$ place (MURRAY, 2015).

Despite this unfavorable context, studies prove that individuals involved in some way with religion and spirituality receive positive interference in physical and mental health. Religion is a dimension that influences the improvement of biological markers related to cardiovascular diseases, style and quality of life, helping people cope and deal with stress situations (ANIFANTAKIS et al., 2013; ALZAHRANI; SEHLO, 2013; ABDALA et al., 2015; CRES et al., 2015).

In a study with cancer patients, it was observed that forms of private religiosity such as meditation, prayer and the study of religious texts, as well as attendance at church are associated with better physical performance and lower symptoms of depression, contributing to the general well-being of the patient (CAPLAN et al., 2013).


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Rivera-Hernandez (2016), in his study on religiosity associated with the health of elderly and diabetic Mexican patients, it was stated that religiosity had no significant influence on health, but was positively associated with self-care and diabetes control.

Researchers have also shown that Religiousness / Spirituality (R / E) can positively influence glycemic control, self-care, depression, anxiety and better quality of life outcomes of DM2 patients (HOW et al., 2011; HEIDARI et al., 2017; YAZLA et al., 2017).

Furthermore, intervention programs conducted in faith-based communities have been successful in preventing DM2 and in the health behavior of participants, mainly in reducing the consumption of high-fat foods and increasing exercise practice (PENGPID et al., 2014; BAIG et al., 2015; SATTIN et al., 2016).

The discussion of the relationship between faith, spirituality, disease, healing, health and ethics must advance as scientific and biotechnological advances continue. When bridging the gap between care and spirituality, health professionals should also use, whenever possible, the patient's own reference sources. Acting in this way would be acting ethically in favor of respect and autonomy as well as beneficence (LUENGO; MENDONÇA, 2014).

In addition, physicians should also observe the culture to which this patient is inserted, which will greatly influence their decision making in clinical practice (LUCCHETTI et al., 2016). The main aim should be to prolong life, especially a healthy life through political action, either by improving health services or by strengthening prevention programs (MURRAY et al., 2016).

Thus, the present study sought to deepen and give continuity to the current and relevant topic about the relationship between R / E and lifestyle, contributing to aggregate the results obtained to the existing research. Thus, it aimed to analyze the association between religiosity and lifestyle of patients with Type 2 Diabetes Mellitus.

## METHODS

It is a descriptive, exploratory, cross-sectional and quantitative approach. It is part of a larger study, based on an intervention that used Health Spirituality Workshops to guide the adoption of healthy habits related to the "eight natural remedies" (balanced nutrition, exercise, water, temperance, sunlight, fresh air, rest and trust in God) for a group of 21 DM2 patients in a Family Health Strategy unit in the city of Cachoeira – BA, Brazil.


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Three instruments were used to collect data: the FANTASTIC lifestyle questionnaire validated in Brazil by Rodriguez-Añez et al. (2008) e Silva, Brito e Amado (2014); the DUKE-DUREL religious instrument validated by Taunay et al. (2012) and a form containing sociodemographic and health data of the participants.

The FANTASTIC lifestyle questionnaire comprised of nine dimensions involves: family and friends; activity; nutrition; tobacco; alcohol; sleep, seat belts, stress and safe sex; type of behavior; insight and career.

The instrument of religiosity, DUKE-DUREL, is composed of five items that capture three of the dimensions of religiosity that are most related to health outcomes: Organizational Religious Activity (ORA), Non-Organizational Religious Activity (NORA) and Intrinsic Religiosity (IR) . The first two items address ORA and NORA and were extracted from large epidemiological studies conducted in the United States and were related to indicators of physical, mental health and social support. The other three items refer to IR and are better related to social support and health outcomes, and it may be considered the total score on this scale (LUCCHETTI et al., 2013). In the DUKE-DUREL analysis, the scores on the three dimensions (ORA, NORA and IR) should be analyzed separately and the scores of the three dimensions should not be summed in a total score (KOENIG, 2012).

## PROCEDURES

Data collection was carried out in August 2016. DM2 patients were enrolled who were registered in a Family Health Strategy unit in the city of Cachoeira - BA - Brazil, and who accepted to participate in the study, signing the Term Free and Informed Consent (EHIC). The project was approved by the Research Ethics Committee of the Adventist University Center of São Paulo (CEP / UNASP), opinion number: 1,542,117 - CAAE: 51672215.2.0000.5377.

### Statistical Analysis

Data analysis was performed through the SPSS statistical program with descriptive and analytical results of the religiosity and lifestyle of diabetic patients. The Spearman correlation test was performed with the objective of correlating the variables of religiosity and lifestyle (DANCEY; REIDY, 2013).


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## RESULTS

The average age of the patients with diabetes in this study was 62.6 (SD = 13.36), 76.2% were female, 71.4% were brown and 61.9% were uninstructed and / or with incomplete elementary school. Of the participants, 66.7% declared to be of Adventist religion; 23.8% Catholics and 9.5% Baptists. Summing up evangelicals and Catholics, a total of 95.2% claimed to be practicing, that is, attending the church assiduously. Although a majority (81.0%) stated that they underwent systematic medical follow-up, a significant portion (26.3%) reported that they almost always forget to use the medication as prescribed (Table 1). The present study also points out, as shown in Table 1, the low educational level of diabetic patients.

In this current study, it was found that 26.3% forgot to use the medication regularly, indicating that there is a difficulty for patients to adhere properly to the treatment.

The results of the DUKE-DUREL religiosity index observed in the present study indicated that, regarding Organizational Religious Activity (ORA), the subjects surveyed stated that the majority (42.9%) attended church more than once a week and 28.6% reported attending the services once a week (Table 2).

The Cronbach's Alpha for this questionnaire applied in this sample was 0.86. Analyzing Non-Organizational Religious Activity (NORA), it was found that only 14.3% dedicate their time to religious activities more than once a day, while 71.4% dedicate part of their time "daily" to religious activities and 14.3% two or more times per week (Table 2).

Regarding intrinsic religiosity (IR), in the first question on "feeling the presence of God or the Holy Spirit in life", it was observed that most participants (90.5%) stated that they were "totally true" while to 4.8% "in general is true" and also "in general is not true" for them "(Table 2). Combining, therefore, the first two options of response, it was observed that the majority (95.3%) feel the presence of God and the Holy Spirit in their lives.


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In the second question about whether "religious beliefs are behind the way of life," 81% answered "totally true", 14.3% answered that "in general it is true" and 4.8% that "in general it is not truth". In other words, 85.8% of the participants affirmed that the influence of religious beliefs on the adopted lifestyle is considered to be true (Table 2).

In the third question about "striving to live religion in all aspects of life"; 66.7% said to be "totally true", 23.8% stated that "in general it is true"; 4.8% "were not sure" of this and 4.8% stated that "in general it is not true" (Table 2). In this respect, we again see the predominance of those who strive to live in conformity with the religion they profess.

When classifying the dimensions of the FANTASTIC lifestyle, it was observed that the total lifestyle score was 73.54 (dp = 7.27), being considered "very good". The Cronbach's Alpha for this instrument in this population was 0.52 possibly due to the losses in this collection. In the evaluation of dimensions, the item "activity" (I am vigorously or moderately active) was below the mean (3.25; dp = 2.60) (Table 3).

In the correlation between the dimensions of religiosity and the total lifestyle score, Organizational Religious Activity (ORA) was statistically associated with lifestyle ($r = 0.608$; $p = 0.027$), that is, the higher the frequency of religious cults, better the lifestyle of these diabetics (Table 4).

## DISCUSSION

The data in Table 1 show that the majority of the participants declared themselves to be brown and / or blacks. These data demonstrate that the prevalence of DM2 is higher among blacks than in other population groups and is considered a risk factor for changes in glycated hemoglobin in these patients (TEIXEIRA et al., 2017).

In addition, some studies of individuals of African descent confirm that there is a higher prevalence of chronic diseases and worse self-reported health status in this group (OLIVEIRA et al., 2014).

As to schooling, the present study confirmed the Brazilian data in which the level of schooling between browns and blacks was shown to be lower than the individuals declared white. Among black women, the number is twice as large as white women (IBGE, 2014).

Reflecting on adherence to treatment, in a study of men with hypertension and diabetes, this difficulty for adherence to treatment was basically related to the following factors: to attribute greater importance to work than to health; resistance to demand for


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health services, only in severe situations; suspension of medication due to the use of alcohol and tobacco and, finally, adequacy of the times of taking the medications with daily demand (YOSHIDA; ANDRADE, 2016).

The lack of adherence to treatment is still low, even with high access to medications and treatment free of charge by SUS. In this direction, Meneirs et al. (2017) consider that health professionals have left gaps where dialogue, orientation and knowledge construction would fit.

In addition, lower levels of schooling could also affect self-care, exerting a negative influence on adherence to treatment, as well as in making decisions for adopting healthy habits and consecutively, a good quality of life for those with diabetes (SANTOS; PORTELA, 2016; FARIAS et al., 2016).

In a study carried out with 154 patients with DM2, in a hospital in Iran, it was found that there is a statistically significant positive correlation between religious practices and their self-care ($p < 0.05$). The authors suggest that healthcare professionals should be aware of the role religion plays in the lives of those with DM2 (HEIDARI et al., 2017).

In another study with 212 patients with DM2 in a university clinic in Malaysia, the authors found a positive association between religiosity and diabetes control, that is, those patients with greater religious involvement, especially the Muslims, also had better short-term glycemic control (HOW et al., 2011).

Regarding Religiosity, specifically ORA, similar data were also found for 364 patients with DM2 with a mean age of 61.8, in which 67.0% of them also declared themselves to be very religious (RIVERA-HERNANDEZ, 2015).

For another sample of 132 African Americans with an average age of 52, it was found that 83% believed in God, 69.7% had private religious involvement, and 82% considered religiosity important to solve everyday problems (WATKINS et al., 2013).

Regarding lifestyle, several studies have found results with the categories "good" or "very good", but with a lack of physical exercise. We need to invest in strategies for greater involvement in this dimension that is so defining as a healthy lifestyle (TABÁK et al., 2012; MEIRA et al., 2015; MIRANDA et al., 2018).

Adopting an adequate lifestyle, including regular physical activity and a balanced diet, is practically twice as effective as the DM2 pharmacological treatment (SDB, 2015-2016). The estimated prevalence for 2030 of pre-diabetics around the world will be greater than 470 million people. Authors claim that lifestyle modifications would reduce risk factors for this disease by 40-70% (GAZQUEZ et al., 2016).


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In a review study on the Lifestyle of patients with Type 1 Diabetes, it was found that physical activities interfere directly in the health of these patients, calling the attention of the health professionals to explore more the possibilities of practicing physical activities for the promotion of health (SALES-PERES et al., 2016). One of these strategies is to have the understanding that DM2 is preventable and can be reinforced by group interventions, through changes in lifestyle habits (BARROS et al., 2013).

The other dimensions of the FANTASTIC lifestyle in our study were presented with high averages (Table 3), perhaps because the participants declared themselves to be evangelicals, in the majority (76.2%). Baig et al. (2015) demonstrate that religious involvement influences the choice and decision of healthy behaviors.

Rivera-Hernandez (2016) pointed out that the "organizational religiosity" and sense of the importance of it was associated with self-care. In the study of the relationship between RO and the FANTASTIC lifestyle, and control of DM2.

Faith is an instrument of healing for diabetic patients because it brings hope and strength to face difficulties. Religious leaders consider that a person in faith has a better coping with the problems brought about by his illness than that which has no Faith (HIVERA-HERNANDEZ, 2015).

Thus, it is reiterated that R / E can positively influence the lifestyle outcomes of patients with DM2, for example: glycemic control, self-care, less depression, anxiety, decrease in fatty foods, exercise and better quality of life. life (HOW et al., 2011; PENGPID et al., 2014; BAIG et al., 2015; SATTIN et al., 2016; HEIDARI et al., 2017; YAZLA et al., 2017).

As the present study was based on an intervention for a limited number of patients with DM2 (n = 21), who used Health Spirituality Workshops as a strategy to guide the adoption of healthy habits related to the "eight natural remedies", it was not possible establish a causal relationship, thus considering a limitation of this study.

## CONCLUSION

The majority of patients with DM2, who were surveyed in this study, were elderly, female, brown, low-educated, evangelical, and regularly attended "once a week."

Participants' lifestyles, according to the FANTASTIC questionnaire total score, were found to be "very good" for most of them, but the "activities" dimension was below average, meaning that it was difficult to perform physical activity regularly. Most have


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stated that they refrain from using alcohol, tobacco and drugs, reinforcing their commitment to the religion adopted, since most of them confirmed that they are practicing.

By associating the dimensions of religiosity with the lifestyle according to the FANTASTIC, it was found that ORA (frequency of religious services) was positively associated with the lifestyle of diabetics, that is, the higher the frequency of religious services, the better their lifestyle.

When talking about health promotion for people with diabetes mellitus type 2, it is necessary to focus on the religiosity and practice of physical activities to further improve the lifestyle of these patients.


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**Table 1 –** Socio - demographic and health data of patients with Diabetes mellitus type 2, residents of Cachoeira – Bahia, BRAZIL. (N = 21), 2017.

| Variables | Categories | N | % |
|---|---|---|---|
| Gender (n=21) | Female | 16 | 76.2 |
| | Male | 5 | 23.8 |
| Referred skin color (n=21). | White | | 9.5 |
| | Pale | | 71.4 |
| | Black | | 14.3 |
| | Yellow | | 4.8 |
| Education (n= 21) | No education | 13 | 61.9 |
| | Elementary School / Junior High | 4 | 19.0 |
| | High School /Unfinished High School | 3 | 14.3 |
| | Graduation | 1 | 4.8 |
| Religion (n=21) | Adventist | 14 | 66.7 |
| | Baptist | 2 | 9.5 |
| | Catholic | 5 | 23.8 |
| Practitioner (n=21) | Yes | 20 | 95.2 |
| | No | 1 | 4.8 |
| Systematic medical follow-up (n=21) | Yes | 17 | 81.0 |
| | No | 1 | 4.8 |
| | Not always | 3 | 14.3 |
| Glicemic control (n=21) | Oral hypoglycemic agents | 18 | 85.7 |
| | Insulin | 3 | 14.3 |


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| | | | |
|---|---|---|---|
| Forget to take medicine (n=19) | Always | 1 | 5.3 |
| | Almost Always | 5 | 26.3 |
| | Never | 13 | 68.4 |

**Resource:** authors elaboration.

**Table 2 –** Absolute and relative frequency of Religiosity variables (n = 21). Cachoeira - BA, 2017.

| Variables | Categories | N | % |
|---|---|---|---|
| **ORA** | More than 1 x per week | 9 | 42.9 |
| | Once p / week | 6 | 28.6 |
| | 2 to 3 x per month | 3 | 14.3 |
| | Some times per year | 2 | 9.5 |
| | Once x p/ year or less | 1 | 4.8 |
| **NORA** | More than 1 x p day | 3 | 14.3 |
| | Diariamente | 15 | 71.4 |
| | 2 or more x per week mais x per semana | 3 | 14.3 |
| **IR 1** | Totally true for me | 19 | 90.5 |
| | In general it is true | 1 | 4.8 |
| | In general it is not true | 1 | 4.8 |
| **IR 2** | Totally true for me | 17 | 81.0 |
| | In general it is true | 3 | 14.3 |
| | In general it is not true | 1 | 4.8 |
| **IR 3** | Totally true for me | 14 | 66.7 |
| | In general it is true | 5 | 23.8 |
| | I am not true | 1 | 4.8 |
| | In general it is not true | 1 | 4.8 |

**Resource:** authors elaboration.


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**Legend: ORA =** OrganizaTional Religious Activity; **NORA=** Non Organizational Religious Activity; **IR** = Intrinsic Religiosity, (**IR 1**= Feel the presence of God or the Holy Spirit?; **IR 2**= My beliefs are behind my way of living?; **IR 3**= I strive to live my religion in all aspects of life?).

**Table 3** - Descriptive analysis of the dimensions of FANTASTIC and total score, Cachoeira - Bahia, 2017.

| Subscales | Average | Standard Deviation | Minimum | Maximo |
|---|---|---|---|---|
| Family and friends (N=19) | 6.63 | 1.73 | 2 | 8 |
| Activity (N=20) | 3.25 | 2.60 | 0 | 8 |
| Nutrition (N=20) | 8.20 | 2.44 | 3 | 12 |
| Tobacco (N=21) | 14.81 | 1.54 | 10 | 16 |
| Alcohol (N=20) | 11.8 | 0.60 | 10 | 12 |
| Sleep/Seatbelts/Stress/Safe Sex (N=16) | 14.13 | 4.69 | 2 | 18 |
| Type of Behavior (N=21) | 4.29 | 2.55 | 0 | 8 |
| Insight (N=21) | 7.62 | 2.01 | 4 | 12 |
| Career (N=21) | 3.19 | 1.17 | 0 | 4 |
| FANTASTIC total | 73.54 | 7.27 | 58 | 86 |

**Resource:** authors elaboration.


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**Table 4 -** Spearman correlation between the dimensions of Religiosity and the total lifestyle score. Cachoeira - BA, 2017.

| | ORA | NORA | IR 1 | IR 2 | IR 3 |
|---|---|---|---|---|---|
| **Lifestyle** | **0.608** | -0.037 | 0.194 | -0.024 | 0.352 |
| **P value** | **0.027** | 0.903 | 0.526 | 0.937 | 0.238 |

**Resource:** authors elaboration.

**Statement of Human Rights:**

"All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards."

**Compliance with Ethical Standards:**

The author A declares that she has no conflict of interest. The author B declares that she has no conflict of interest. The author C declares that she has no conflict of interest and the author D declares that she has no conflict of interest.

**Informed Consent:**

Informed consent was obtained from all individual participants included in the study.

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