



RESEARCH

Correlation between spirituality, religiosity and quality of life of adolescents

Francely Tineli Farinha¹, Fábio Luiz Banhara², Gesiane Cristina Bom¹, Lília Maria Von Kostrisch¹, Priscila Capelato Prado¹, Armando dos Santos Trettene¹

1. Programa de Pós-Graduação em Ciências da Reabilitação, Departamento de Enfermagem, Hospital de Reabilitação de Anomalias Craniofaciais, Universidade de São Paulo, (USP), São Paulo/SP, Brasil. 2. Programa de Residência Multiprofissional em Síndromes e Anomalias, Departamento de Enfermagem, Hospital de Reabilitação de Anomalias Craniofaciais, USP, São Paulo/SP, Brasil.

Abstract

This study consists in an integrative review of the literature, conducted through electronic search in Lilacs, PubMed, Scopus and Web of Science databases. Articles published in the last five years (2012-2017), were selected, primary, available in full, in English, Portuguese or Spanish. The following descriptors were used: Spirituality, religion, quality of life and adolescence, which have been combined with their respective synonyms. A total of 10 articles were included, from which three thematic categories emerged: 1) Favoring and strengthening spirituality and/or religiosity in adolescents; 2) Repercussions of spirituality and/or religiosity referring to the situational confrontation; and 3) Influence of spirituality and/or religiosity in the quality of life of adolescents. There was consensus among the authors studied that there is a strong correlation between religiosity and / or spirituality in the quality of life of adolescents.

Keywords: Spirituality. Religion. Quality of life. Adolescent.

Resumo**Correlação entre espiritualidade, religiosidade e qualidade de vida em adolescentes**

Trata-se de revisão integrativa da literatura que selecionou artigos primários publicados entre 2012 e 2017, disponibilizados na íntegra, em inglês, português ou espanhol, correlacionando espiritualidade, religiosidade e qualidade de vida de adolescentes. Utilizaram-se os descritores “espiritualidade”, “religião”, “qualidade de vida” e “adolescente”, que foram combinados entre si e com os respectivos sinônimos. Foram incluídos 10 artigos que geraram três categorias temáticas: 1) favorecimento e fortalecimento da espiritualidade e religiosidade de adolescentes; 2) repercussões da espiritualidade e religiosidade referente ao enfrentamento situacional; e 3) influência da espiritualidade e religiosidade na qualidade de vida dos adolescentes. Há consenso entre os autores estudados de que existe forte correlação entre essas duas questões no bem-estar da população estudada.

Palavras-chave: Espiritualidade. Religião. Qualidade de vida. Adolescente.

Resumen**Correlación entre espiritualidad, religiosidad y calidad de vida en adolescentes**

Se trata de una revisión integrativa de la bibliografía que seleccionó artículos primarios publicados entre 2012 y 2017, disponibles de forma completa, en inglés, portugués o español, correlacionando espiritualidad, religiosidad y calidad de vida de adolescentes. Se utilizaron los descriptores: “espiritualidad”, “religión”, “calidad de vida” y “adolescente”, que fueron combinados entre sí y con sus respectivos sinónimos. Se incluyeron 10 artículos que generaron tres categorías temáticas: 1) Favorecimiento y fortalecimiento de la espiritualidad y la religiosidad de adolescentes; 2) Repercusiones de la espiritualidad y la religiosidad referente al enfrentamiento situacional; y 3) Influencia de la espiritualidad y la religiosidad en la calidad de vida de los adolescentes. Hay consenso entre los autores estudiados acerca de que existe una fuerte correlación entre estas dos cuestiones en el bienestar de los adolescentes.

Palabras clave: Espiritualidad. Religión. Calidad de vida. Adolescente.

Declararam não haver conflito de interesse.

Quality of life can be defined as the individual's *perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns*¹. It is directly related to physical health, psychological state, social relations, personal beliefs and the interaction of the individual with the environment, being therefore in this context, an indicator of health². It is also directly linked to spiritual well-being. In this way, the daily involvement of the person in this sphere tends to improve their well-being and health³.

Spirituality refers to the awareness that there is something sacred, based on particular values and concepts of each individual. Religion is a collectively developed activity, encompassing a system of defined or preestablished beliefs, dogmas, and practices⁴. The benefits of developing these spheres of human life, as already pointed out by various publications, include increased sense of well-being, optimism, better situational coping, depression and stress reduction. In addition, they bring more meaning to the individual's life, making it more peaceful and comfortable⁵⁻¹⁰.

Adolescence is defined as a phase of growth and development, characterized by intense physical, mental and especially psychosocial transformations¹¹. Adolescents usually have difficulties or limitations regarding the interaction and development of issues related to religiosity and spirituality¹². At the confluence of these concepts and perspectives, the following question arises: do more spiritualized adolescents or more religion-linked adolescents have a better perception of their quality of life?

Using the integrative review method, the objective of this research was to identify and analyze the evidence in the literature regarding the correlation between these two factors and the perception of well-being of adolescents.

Methods

The integrative literature review allows us to approach several types of studies, admitting a broad analysis of the subject matter and the synthesis of the knowledge produced¹³. In order to elaborate this review, the following steps were considered: development of the guiding question "is there a correlation between spirituality and religiosity with adolescents' quality of life?"; search for primary studies in databases; extraction of study data;

evaluation of selected research; analysis and synthesis of the results and presentation of the review¹⁴.

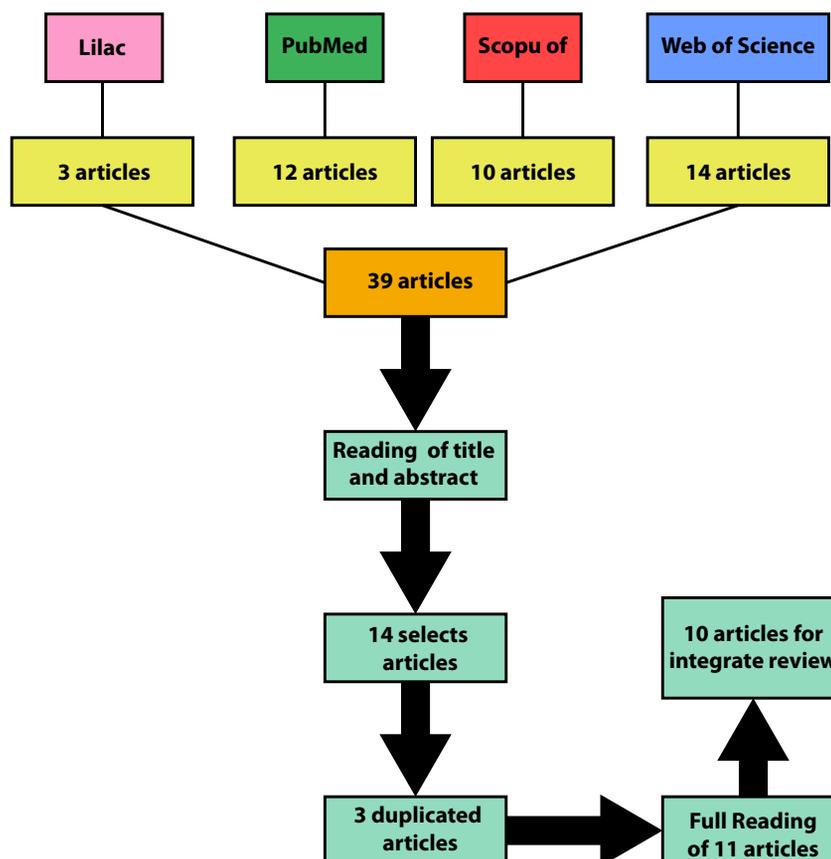
Primary papers, available in full, in English, Spanish or Portuguese, published in the last five years (2012-2017), were included. Non-primary studies were excluded, considering those of opinion and revisions, and those that, after full reading, did not respond to the guiding question. The *Literatura Latino-Americana e do Caribe em Ciência da Saúde - LILACS* (Latin American and Caribbean Literature in Health Sciences), the US National Library of Medicine (PubMed), Scopus and the Web of Science databases were queried with the descriptors "spirituality"; "Religion", "quality of life" and "adolescent", in English and Portuguese. Both these terms and their synonyms were combined.

The process of identification, selection and inclusion of the studies took place in three stages. In the first one, the search was made through the descriptors and their synonyms in the databases. Articles were initially selected by careful reading of titles and abstracts, including those that met the inclusion criteria. For the final choice, articles were read in their entirety. The following variables were used to collect, systematize and analyze the data: article title, authors, year of publication, method, country of origin, level of evidence, degree of recommendation and database. After these steps, the content of the articles was classified in thematic categories.

The method used to evaluate the quality of the evidence was Oxford, being classified in 1a, 1b, 1c, 2a, 2b, 2c, 3a, 3b, 4 and 5. This methodology allows to classify the studies in degree of recommendation, including "A", "B", "C" and "D", where: "A" corresponds to good evidence to support the recommendation; "B": there is reasonable evidence to support the recommendation; "C" insufficient evidence, against or in favor; and "D" means that there are indications to discard it¹⁵. The search for articles was conducted in May 2017, by two independent evaluators, concurrently. In cases in which there was no consensus, a third evaluator was consulted.

Results

Initially, 39 studies were selected from the database query. After the titles and abstracts were read, 14 articles were selected. Of these, three were excluded because they were found in more than one database. Thus, 11 articles were chosen for reading in full. Of these, 10 composed the final sample (Figure 1).

Figure 1. Flowchart of the selection process of the articles of the integrative review

Of the articles that were part of the final sample, the oldest had been published in 2012 and the most recent in 2016. All were in English and available in international databases. Regarding the origin, those developed in

the United States (USA) prevailed, accounting for 60% of the total. Regarding the design of the studies, the transversal ones with evidence level 2c (60%) and degree of recommendation B (60%) prevailed. (Table 1).

Table 1. Characteristics of the studies included in the review

Authors	Title	Methods	Location	Evidence	Level of recommendation	Database
Dallas, Wilkins, Wang, Garcia, Lyon; 2012 ¹⁶	Longitudinal pediatric palliative care: quality of life & spiritual struggle (FACE): design and methods	Randomized clinical trial	USA	1B	A	PubMed
Anye, Gallien, Bian, Moulton; 2013 ¹²	The relationship between spiritual well-being and health-related quality of life in college students	Cross-sectional study	USA	2C	B	Web of Science
Bernstein, D'Angelo, Lyon; 2013 ¹⁷	An exploratory study of HIV+ adolescents' spirituality: will you pray with me?	Cross-sectional study	USA	2C	B	Web of Science; Scopus
Bolghan-Abadi, Ghofrani, Abde-Khodaie; 2014 ⁸	Study of the spiritual intelligence role in predicting university students' quality of life	Cross-sectional study	Iran	2C	B	Scopus

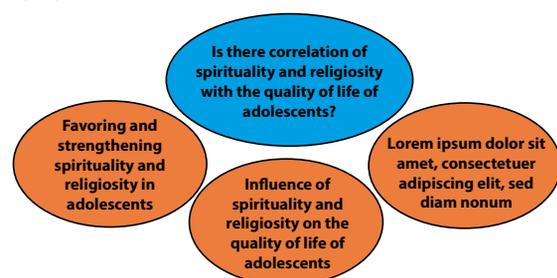
continue...

Table 1. Continuation

Authors	Title	Methods	Location	Evidence	Level of recommendation	Database
Zhang, Hui, Lam, Lau, Cheung, Mok; 2014 ⁷	Personal spiritual values and quality of life: evidence from Chinese college students	Randomized clinical trial	China	1B	A	Scopus
Lyon, Garvie, He, Malow, McCarter, D'Angelo; 2014 ⁶	Spiritual well-being among HIV-infected adolescents and their families	Estudio clínico randomizado	USA	1B	A	Scopus; PubMed
Mirghafourvand, Charandabi, Sharajabad, Sanaati; 2016 ²	Spiritual well-being and health-related quality of life in Iranian adolescent girls	Cross-sectional study	Iran	2C	B	Web of Science
Mirghafourvand, Charandabi, Sharajabad; 2016 ⁹	Spiritual well-being and its predictors among Iranian adolescent girls, 2014-2015	Cross-sectional study	Iran	2C	B	Web of Science
Miller, Wojcik, Ramirez, Ritt-Olson, Freyer, Hamilton, Milam; 2017 ¹⁸	Supporting long-term follow-up of young adult survivors of childhood cancer: correlates of healthcare self-efficacy	Estudio de cohorte	USA	2B	B	Web of Science
Lyon, Kimmel, Cheng, Wang; 2016 ¹⁹	The role of religiousness/spirituality in health-related quality of life among adolescents with HIV: a latent profile analysis	Estudio clínico randomizado	USA	1B	A	Scopus; Web of Science

Based on the analysis of the studies selected, three thematic areas were established: 1) favoring and strengthening spirituality and religiosity among adolescents; 2) repercussions of spirituality and religiosity regarding situational confrontation; and 3) influence of spirituality and religiosity on the quality of life of adolescents (Figure 2).

Figure 2. Thematic categories established from the analysis of the articles included in the integrative review



Discussion

Strengthening of spirituality and religiosity

Spirituality and religiosity are among the most important cultural factors, since they give meaning

to life and are an especially useful mechanism for coping with chronic diseases²⁰.

Research carried out with 45 HIV-positive adolescents demonstrated that talking about spirituality and religiosity was a way of strengthening in the fight against the disease. HIV negative participants also believed that, if infected, they would consider it important for their fight against the disease to talk about these issues¹⁷.

Most patients said they would like physicians to ask about their spiritual beliefs in the following situations: when they were diagnosed with a serious illness; when they were suffering from long-term illness, when they were recovering from serious illness and when they were possibly dying. The reasons why they wished to discuss spiritual matters related to their desire for physicians to understand them better, favoring treatment¹⁷.

The desire to talk and expose ideas stems from physical maturation, intellectual development, and identity-building. Adolescence is a period of growth and change in which young people are establishing their own belief systems, while still being influenced by their parents, either accepting or challenging their opinions¹⁷.

Therefore, spiritual development is part of the maturation of children in the transition to adolescence and adult life. Becker, Maestri and Bobato²¹ also point out the responsibility of the family in the evolution of the spiritual health of the young. After some time, the adolescent can progressively commit to this issue, although needing guidance to progress spiritually and participate in religious activities.

It follows that the family has great influence on the religious and spiritual formation of the adolescent. Research shows that parental beliefs and participation in religious ceremonies with the family contribute significantly to this topic, with consequent improvements in quality of life^{9,22}. A longitudinal study on palliative care in this age group evidenced the fundamental role of the family in strengthening the coping ability of adolescents¹⁶.

A study with groups of students revealed that spiritual well-being is directly related to the sense of spirituality and participation in religious activities. The participation of adolescents in these activities stems from the influence of the parents, as well as from a positive view of the community, which motivates the student to take part and interact with the others¹².

Several studies show that spirituality and religiosity are linked to the mental health of adolescents and young people. Some show that in this age group many seek help and counseling with psychologists, whether because of anxieties and concerns about the subject, or due to confusion of values, problematic relationships with peers, sexual concerns and thoughts of being punished for their own sins^{23,24}.

In general, the studies considered that, in order to help adolescents to manage stress, reduce depressive symptoms and stimulate health promotion behaviors, educators and family members should be prepared to address their spiritual health⁷.

Spirituality and religiosity in situational coping

Several studies warn that these two points can help the situational coping when it refers to the health of the individual. The increase in spirituality and religiosity has been associated with favorable health outcomes^{2,3,6}.

Research conducted with American adolescents pointed out that there is a strong belief in God among them and that faith is important in making decisions and making choices⁶. However, another study showed that regardless of religious

affiliation, people with spiritual values have more resources to manage challenges, find meaning and purpose in their lives, which promotes their physical and psychological well-being⁷.

A research conducted with children and adolescents aged 5 to 18 and undergoing oncological treatment in two large pediatric medical centers in Los Angeles (USA) identified that spiritual and religious aspects, independently and combined, are associated with the best preparation of survivors for self-care, as well as helping them to maintain hope in this transition process and the connection with others. The research also associated quality of life with self-efficacy as a result of self-care activities¹⁸.

A survey that included HIV-positive adolescents and their families identified that the former had more difficulty than the latter to forgive the damage caused by the disease⁶. This finding may reflect the spiritual struggle waged by adolescents to forgive or not the "other" who was the source of transmission. This inability to forgive is associated with depression and revolt, and may have implications even for the adherence to antiretroviral treatment. The researchers also recognized the importance of religious communities to address the HIV epidemic, as they can help adolescents individually and collectively to reduce behaviors linked to HIV transmission⁶.

Religiosity and spirituality can have different meanings, influencing attitudes, decisions and behaviors of adolescents, besides involving physical, mental, emotional and social aspects. With this, the adolescent can develop health-related behaviors because of these two elements that will function as factors of protection and health promotion⁹.

Another study with adolescents with HIV identified that, although religiosity plays an important role, reducing risk behaviors, giving support and being a coping mechanism, as well as generating hope and comfort, it can also increase spiritual distress. That is, the individual can think of the disease as punishment, which will lead to poor adherence to medication and worse results¹⁷.

However, other studies have demonstrated the positive relationship between spirituality and religiosity to face certain situations, demonstrating an important relationship with the decision not to consume alcohol and marijuana, for example, which, therefore, favors health in general^{25,26}. Spiritual well-being and religious activity, including meditation, prayer, spiritual reading, as well as the participation of church meetings, are related to positive evaluations of the individual's health¹².

Thus, more spiritual or religious people suffer fewer physical problems recover faster and feel less stress during serious illness^{26,27}.

Spirituality and religiosity in the quality of life

The studies analyzed indicate that these factors have a great influence on the issue addressed here. A study carried out with Chinese university students identified that their spiritual values and religious affiliation act on the perception about quality of life. On the other hand, it was found that, for them, more earthly matters, such as money and material goods, did not promote daily well-being. The work showed that, in their view, these values were more linked to influence in society, to gaining and preserving social status, to experiencing material pleasures than to ensuring one's overall well-being⁷.

Spiritual intelligence plays an important role in people's lives and health. Iranian university students questioned about this point and quality of life indicated that there is a positive and relevant relationship between both, that is, the more spiritualized the better the perception of well-being⁸. Another study confirmed that there is a positive relationship between quality of life and spiritual well-being in Iranian teenagers².

A study among HIV-positive adolescents and their families found that well-being in daily life was also linked to higher spirituality⁶. Another study that explored religiosity and spirituality among young people in the same condition identified that quality of life was strongly linked to these two factors. In addition, it showed that participation in religious services provided social support and could be attributed to improved health and general well-being¹⁹.

Final considerations

Considering the individual aspects of the articles and the fact that they analyze different contexts, a consensus was observed that religiosity and spirituality directly influence the perception of quality of life in adolescents. By establishing meaning for existence and stimulating the shared experience of world beliefs and visions, strengthening social bonds and the sense of belonging, they become effective allies in the protection, promotion and recovery of health in situations of insecurity and anguish, as is commonly the case in adolescence and especially when one is living with severe illness in this age group.

Referências

1. World Health Organization. WHOQOL: measuring quality of life [Internet]. Geneva: WHO; 1997 [acesso 31 maio 2017]. Disponível: <https://bit.ly/1mUDzu6>
2. Mirghafourvand M, Charandabi SM, Sharajabad FA, Sanaati F. Spiritual well-being and health-related quality of life in Iranian adolescent girls. *Community Ment Health J* [Internet]. 2016 [acesso 2 maio 2017];52(4):484-92. Disponível: <https://bit.ly/2zXmucS>
3. Souza VM, Frizzo HCF, Paiva MHP, Bousso RS, Santos AS. Spirituality, religion and personal beliefs of adolescents with cancer. *Rev Bras Enferm* [Internet]. 2015 [acesso 13 maio 2017];68(5):509-14. Disponível: <https://bit.ly/2RQj4QD>
4. Panzini RG, Maganha C, Rocha NS, Bandeira DR, Fleck MP. Brazilian validation of the Quality of Life Instrument related to spirituality, religion and personal beliefs. *Rev Saúde Pública* [Internet]. 2011 [acesso 2 maio 2017];45(1):153-65. Disponível: <https://bit.ly/2DoGBE6>
5. Dhar N, Chaturvedi SK, Nandan D. Spiritual health scale 2011: defining and measuring 4th dimension of health. *Indian J Community Med* [Internet]. 2011 [acesso 26 maio 2017];36(4):275-82. Disponível: <https://bit.ly/2OFCo0R>
6. Lyon ME, Garvie P, He J, Malow R, McCarter R, D'Angelo LJ. Spiritual well-being among HIV-infected adolescents and their families. *J Relig Health* [Internet]. 2014 [acesso 2 maio 2017];53(3):637-53. Disponível: <https://bit.ly/2DDXbRI>
7. Zhang KC, Hui CH, Lam J, Lau EY, Cheung SF, Mok DS. Personal spiritual values and quality of life: evidence from Chinese college students. *J Relig Health* [Internet]. 2014 [acesso 2 maio 2017];53(4):986-1002. Disponível: <https://bit.ly/2PS02Mz>
8. Bolghan-Abadi M, Ghofrani F, Abde-Khodaei MS. Study of the spiritual intelligence role in predicting university students' quality of life. *J Relig Health* [Internet]. 2014 [acesso 16 maio 2017];53(1):79-85. Disponível: <https://bit.ly/2FhmRoC>
9. Mirghafourvand M, Charandabi SMA, Sharajabad FA. Spiritual well-being and its predictors among Iranian adolescent girls, 2014-2015. *IJCS* [Internet]. 2016 [acesso 16 maio 2017];21(2):104-15. Disponível: <https://bit.ly/2zaC9pX>
10. Konopack JF, McAuley E. Efficacy-mediated effects of spirituality and physical activity on quality of life: a path analysis. *Health Qual Life Outcomes* [Internet]. 2012 [acesso 16 maio 2017];10:57. DOI: 10.1186/1477-7525-10-57

11. World Health Organization. Maternal, newborn, child and adolescent health: adolescent development [Internet]. 2017 [acesso 25 jul 2017]. Disponível: <https://bit.ly/1gRxy8r>
12. Anye ET, Gallien TL, Bian H, Moulton M. The relationship between spiritual well-being and health-related quality of life in college students. *J Am Coll Health* [Internet]. 2013 [acesso 26 jul 2017];61(7):414-21. Disponível: <https://bit.ly/2RNWlVg>
13. Mendes KDS, Silveira RCCP, Galvão CM. Revisão integrativa: método de pesquisa para a incorporação de evidências na saúde e na enfermagem. *Texto Contexto Enferm* [Internet]. 2008 [acesso 26 jul 2017];17(4):758-64. Disponível: <https://bit.ly/2Q9Jk7A>
14. Whittemore R, Knafk K. The integrative review: updated methodology. *J Adv Nurs* [Internet]. 2005 [acesso 26 maio 2017];52(5):546-53. Disponível: <https://bit.ly/2zi92kD>
15. Centre for Evidence-Based Medicine. Oxford Centre for Evidence-based Medicine: levels of evidence (March 2009) [Internet]. 2009 [acesso 25 jul 2017]. Disponível: <https://bit.ly/2ywhNqR>
16. Dallas RH, Wilkins ML, Wang J, Garcia A, Lyon ME. Longitudinal pediatric palliative care: quality of life & spiritual struggle (FACE): design and methods. *Contemp Clin Trials* [Internet]. 2012 [acesso 2 maio 2017];33(5):1033-43. Disponível: <https://bit.ly/2FvtL9M>
17. Bernstein K, D'Angelo LJ, Lyon ME. An exploratory study of HIV+ adolescents' spirituality: will you pray with me? *J Relig Health* [Internet]. 2013 [acesso 2 maio 2017];52(4):1253-66. Disponível: <https://bit.ly/2DDOcje>
18. Miller KA, Wojcik KY, Ramirez CN, Ritt-Olson A, Freyer DR, Hamilton AS *et al.* Supporting long-term follow-up of young adult survivors of childhood cancer: correlates of healthcare self-efficacy. *Pediatr Blood Cancer* [Internet]. 2017 [acesso 8 jun 2017];64(2):358-63. Disponível: <https://bit.ly/2FjB6sY>
19. Lyon ME, Kimmel AL, Cheng YI, Wang J. The role of religiousness/spirituality in health-related quality of life among adolescents with HIV: a latent profile analysis. *J Relig Health* [Internet]. 2016 [acesso 8 jun 2017];55(5):1688-99. Disponível: <https://bit.ly/2TdSySB>
20. Alvarez JS, Goldraich LA, Nunes AH, Zandavalli MCB, Zandavalli RB, Belli KC *et al.* Associação entre espiritualidade e adesão ao tratamento em pacientes ambulatoriais com insuficiência cardíaca. *Arq Bras Cardiol* [Internet]. 2016 [acesso 8 jun 2017];106(6):491-501. Disponível: <https://bit.ly/2TchoT1>
21. Becker APS, Maestri TP, Bobato ST. Impacto da religiosidade na relação entre pais e filhos adolescentes. *Arq Bras Psicol* [Internet]. 2015 [acesso 8 jun 2017];67(1):84-98. Disponível: <https://bit.ly/2zTKfTr>
22. Mirghafourvand M, Charandabi SMA, Jafarabadi MA, Tavananezhad N, Karkhane M. Predictors of health-related quality of life in Iranian women of reproductive age. *Appl Res Qual Life* [Internet]. 2016 [acesso 22 maio 2017];11(3):723-37. Disponível: <https://bit.ly/2DDj9UB>
23. Krägeloh CU, Henning MA, Billington R, Hawken SJ. The relationship between quality of life and spirituality, religiousness, and personal beliefs of medical students. *Acad Psychiatry* [Internet]. 2015 [acesso 22 maio 2017];39(1):85-9. Disponível: <https://bit.ly/2TcVWNB>
24. Yonker JE, Schnabelrauch CA, Dehaan LG. The relationship between spirituality and religiosity on psychological outcomes in adolescents and emerging adults: a meta-analytic review. *J Adolesc* [Internet]. 2012 [acesso 2 jul 2017];35(2):299-314. Disponível: <https://bit.ly/2OJ8pFg>
25. Felipe AOB, Carvalho AMP, Andrade CUB. Spirituality and religion as protectors for adolescent drug use. *SMAD Rev Eletrônica Saúde Mental Álcool Drog* [Internet]. 2015 [acesso 2 jul 2017];11(1):49-58. Disponível: <https://bit.ly/2RUcFUG>
26. Ford JA, Hill TD. Religiosity and adolescent substance use: evidence from the national survey on drug use and health. *Subst Use Misuse* [Internet]. 2012 [acesso 8 maio 2017];47(7):787-98. Disponível: <https://bit.ly/2zOvW2i>
27. Trevino KM, McConnell TR. Religiosity and religious coping in patients with cardiovascular disease: change over time and associations with illness adjustment. *J Relig Health* [Internet]. 2014 [acesso 8 maio 2017];53(6):1907-17. Disponível: <https://bit.ly/2PrcljF>

Correspondência

Armando dos Santos Trettene – Rua Silvio Marchione, 3-20 CEP 17012-900. Bauru/SP, Brasil.

Francely Tineli Farinha – Mestre – francelyfarinha@usp.br
 Fábio Luiz Banhara – Especialista – fabiobanhara@hotmail.com
 Gesiane Cristina Bom – Mestre – gesibom@yahoo.com.br
 Lilia Maria Von Kostrisch – Doutora – lmvk@usp.br
 Priscila Capelato Prado – Doutora – priprado@usp.br
 Armando dos Santos Trettene – Doutor – armandotrettene@usp.br

Participation of the authors

Francely Tineli Farinha conceived the project and, with Fábio Luiz Banhara, performed the research in the literature, analyzed and interpreted the data. Gesiane Cristina Bom contributed with the analysis and interpretation of the data and, with Lilia Maria Von Kostrisch, also wrote and revised the manuscript. Priscila Capelato Prado and Armando dos Santos Trettene provided the critical revision of the intellectual content, and the latter approved the version to be published.

