

Religiosity and Spiritual/Religious Coping in Adults with Type 1 Diabetes Mellitus

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Abstract

Background: Spirituality/Religiosity (S/R) plays an important role in chronic diseases coping, improvement of quality of life (QL) and adherence to treatment. There is a gap in studies regarding Type 1 Diabetes Mellitus (T1DM) coping and if S/R can help in metabolic control and complications decrease.

Objective: To evaluate the religiosity profile and relevance of spiritual/religious coping in adult patients with T1DM.

Method: This is a cross-sectional, descriptive study conducted in outpatient care in 56 T1DM patients in a tertiary service. Patients filled out questionnaires referring to demographic and clinical data, socioeconomic classification, the Index of Religiosity of the University of Duke - Duke scale (DUREL), and an adapted Spiritual-Religious Coping scale (SRCOPE).

Results: The analysis of the positive SRCOPE (PSRCOPE) showed a low / medium score (3.3 ± 0.7), whereas for the negative SRCOPE (NSRCOPE) it was low (2.0 ± 0.7), and the use of the total SRCOPE was considered high (3.7 ± 0.4), the NSRCOPE/ PSRCOPE ratio was 0.7 ± 0.2 , demonstrating a predominance of PSRCOPE in relation to NSRCOPE. The organizational, non-organizational and intrinsic religiosities presented a correlation with PSRCOPE and total SRCOPE. Only intrinsic religiosity showed a significant correlation with anxiety and depression.

Conclusion: It was found that non-organizational and intrinsic religiosity had a high index. The obtained score for positive and negative SRCOPE showed a PSRCOPE predominance. There was significant correlation, between the scores of religiosity and coping. The next step is to evaluate the impact of these findings in clinical practice.

Keywords: Religiosity, type 1 diabetes mellitus, spiritual/religious coping

1. Introduction

Diabetes Mellitus (DM) is a metabolic disorder characterized by hyperglycemia, resulting from a deficiency in insulin production and/or its action, which can cause chronic micro and macrovascular complications (Sociedade Brasileira de Diabetes, 2019).

Actually 537 million adults (20–79 years) are living with diabetes - 1 in 10. This number is predicted to rise to 643 million by 2030 and 783 million by 2045. Diabetes is responsible for 6.7 million deaths in 2021 - 1 every 5 seconds (International Diabetes Federation, 2021).

When not well controlled, over the long term, can cause damage to many of the body's organs, leading to disabling and life-threatening health complications such as cardiovascular diseases (CVD), nerve damage (neuropathy), kidney damage (nephropathy), lower-limb amputation, and eye disease (mainly affecting the retina) resulting in visual loss and even blindness, complications considered chronic (Sousa, Zauszniewski, Musil, Price Lea, & Davis, 2005, International Diabetes Federation, 2021; Sociedade Brasileira de Diabetes, 2019).

According to the Diabetes Control and Complications Trial Research Group (DCCT), and the United Kingdom Prospective Diabetes Study Group (UKPDS), glycemic control reduces complications (Diabetes Control and

Complications Trial Research Group, 1993; UK Prospective Diabetes Study (UKPDS) Group, 1998; King, Peacock, & Donnelly, 1999). The International Diabetes Federation (IDF) carries out a series of actions around the world, seeking advances in treatment, services and education that improve the outcomes of patients with diabetes, as well as promote the prevention of diabetes and its complications.

As much as science and technology help to improve glycemic control, it is still difficult to define how the patient will face and adhere to the treatment of a chronic disease that will accompany him throughout the entire period of life, since Type 1 Diabetes Mellitus (T1DM) manifests itself abruptly, completely altering the patients' lifestyle, who present psychological reactions, including anger and depression that can make self-care practices difficult. With the help of family members and healthcare professionals, the course can change, and prevent or delay complications (Roy & Lloyd, 2012; Johnson, Eiser, Young, Brierley, & Heller, 2013; Gilsanz et al., 2018).

It is time to accept that health care combined with increasingly advanced technologies used in the treatment of diabetes are not enough to reduce the prevalence and complications of the disease. Knowing that approximately 90% of the world's population is involved in some spiritual/religious practice and this dimension plays a relevant role in life (Moreira-Almeida, Lotufo Neto, & Koenig, 2006) we sought to assess the role of spirituality and religiosity (S/R) in glycemic control.

Thus, this study aims to assess the profile and relevance of the indices: religiosity, Spiritual-Religious coping and levels of depression, anxiety and stress in adult patients with T1DM, and the implications of these metabolic control variables. Some authors have reported that S/R are associated with improvements in coping skills (Spiritual-Religious Coping - SRCOPE). Increases health-related quality of life (even during terminal illnesses) and longevity. It decreases the rate of anxiety and depression, showing that the recognition and support of patients' spiritual needs would be a treatment path, especially for chronic diseases, which require long-term care (Mueller, Plevak, & Rummans, 2001; Rovner, Casten, & Harris, 2013).

Some forms of coping have been evaluated in patients with T1DM, but there are few studies on SRCOPE in these patients (Karlsen & Bru, 2002; Sultan, Epel, Sachon, Vaillant, & Hartemann-Heutier, 2008; Tercyak et al., 2010). Based on the fact that in SRCOPE, individuals use faith as a source of strength, comfort, hope and as positive strategies that lead to personal empowerment helping to overcome stress and depressive symptoms (Koenig, Pargament, & Nielsen, 1998), we will use this tool in our study. Considering the gaps in the literature regarding these strategies that could be used in patients with T1DM, this study aims to evaluate the SRCOPE of adult patients with T1DM.

2. Methods

This work was approved by the Ethics Committee of the Federal University of the Triângulo Mineiro (UFTM), protocol number 2048287.

The study sample consisted of 56 patients with T1DM, who regularly attend the outpatient clinic, two or three times a year.

Patients were selected according to the inclusion criteria that were:

Have been in T1DM treatment for at least 3 years, a period considered long enough to assimilate the experiences related to the treatment and control of the disease; be regularly monitored in the Diabetes outpatient clinics of the UFTM Endocrinology and Metabolic Department; be over 24 and under 67 years of age; have cognitive conditions to fill in the questionnaires.

2.1 Questionnaires and instruments

Patients completed the following instruments:

- 1). Regarding the collection of sociodemographic and general data, containing sex, age, and how long time they have had diabetes;
- 2). The Socioeconomic Classification Questionnaire was based on the criterion of Economic Classification of Brazil, which is constructed from the possession of goods and household utensils and schooling of the head of the family (Associação Brasileira de Empresas de Pesquisa, 2016);
- 3). The Index of Religiosity of the University of DUKE (DUREL); developed in 1997, translated into Portuguese in 2008, and validated in 2012 (Koenig, Parkerson Jr, & Meador, 1997; Moreira-Almeida, Peres, Aloe, Lotufo Neto, & Koenig, 2008; Koenig & Büssing, 2010; Lucchetti et al., 2012; Taunay, et al., 2012). It is a five-item scale, which measures three of the major dimensions of religious involvement related to health outcomes. Organizational Religiosity (ORA), item 1: attendance to private religious services (religious, cults, spiritist centers, study or

prayer groups, etc). Non-Organizational Religiosity (NORA), item 2: Praying, reading books, watching religious television programs. Intrinsic Religiosity (RI), item 3-5: full experience of religiosity, feeling of ultimate meaning of life, in which the person seeks to harmonize their needs and interests with their beliefs, striving to internalize and follow them completely.

4). The brief SRCOPE, which assesses how individuals use their faith to deal with stress in coping with adverse situations. The brief SRCOPE was based on the North American scale SRCOPE (Pargament, Koenig, & Perez, 2000). It was translated, adapted and validated for the Brazilian population by Panzini and Bandeira in 2005. The scale has 49 items, divided into four main indices, two dimensional: positive SRCOPE (PSRCOPE) and negative SRCOPE (NSRCOPE); and two general indices that integrate all the information provided by the scale, relating the first two measures, pointing to the interaction between the basic measures, showing a profile on the set of behaviors performed / evaluated. The two general indices are the total SRCOPE and NSRCOPE/PSRCOPE ratio.

The PSRCOPE consists of 34 items and 7 factors, while the NSRCOPE is composed of 15 items and 4 factors. The answers are in a Likert -like scale of 5 points: (1) not at all; (2) a little; (3) more or less; (4) enough; (5) very much. Since the two dimensions have an inverse direction, the simple average between positive and negative strategies could not be measure. Then, the calculation of the total SRCOPE was do with the inversion of the NSRCOPE, and the higher the total SRCOPE, the greater the total use of SRCOPE by the evaluated person. About the NSRCOPE/PSRCOPE ratio, where the lower the relation, the greater the positive confrontation. The scale also allows the evaluation of 7 PSRCOPE factors and 4 NSRCOPE factors. Factor P1: transformation of self and / or life; Factor P2: search for spiritual help; Factor P3: offer of help to the other; Factor P4: positive attitude in relation to God; Factor P5: search for the other institutional; Factor P6: distance through God / Religion / Spirituality; Factor P7: search for spiritual knowledge. Factor N1: negative reassessment of God; Factor N2: negative attitude towards God; Factor N3: dissatisfaction with the other institutional; Factor N4: negative reassessment of meaning.

The parameters for descriptive analysis of averages SRCOPE was: 1 to 1.5 very low; 1.5 to 2.5 low; 2.5 to 3.5 average; 3.5 to 4.5 high and 4.5 to 5.0 very high.

2.2 Analysis of Results and Statistics

The data were organized and stored in spreadsheet in Excel® program, with double typing and validation. Statistical Package for Social Science (SPSS), version 23.0, was choose for statistical analysis.

A preliminary descriptive analysis of categorical variables was performed using absolute and relative frequency distributions and, for quantitative variables, measures of central (mean) trend and variability (amplitude and standard deviation). The Kolmogorov Smirnov test used verified the behavior of the variables regarding the distribution of normality. The association between the scales used was assessed by the Pearson correlation coefficient considered significant if $p < 0.05$.

3. Results

The included participants characteristics was presented in Table 1. The median age was 38.5 years (minimum: 24; maximum 67 years), the majority were women (73.20%), aged below 35 years (39.3%). In relation to the profession, 42.9% the income was between 1.5 and 3 minimum salaries (46.4%). As for the Socioeconomic Class (SE), there was a class C (46.4%) predominance. More than half had 12 years or more of study (58.9%). With regard to religious belief, the vast majority referred to Christian (96.4%) The predominance of Catholic affiliation (64.3%), the spiritism and evangelical in the same proportion (16.1%). The time of diagnosis of diabetes was the majority in ≤ 15 years (57.1%).

Table 1. Sociodemographic characterization of adult patients with T1DM, attended at the UFTM diabetes outpatient clinic

Variables		n	%
Sex	Male	15	26.80
	Female	41	73.20
Age	< de 35 years	22	39.3
	≥ 35 and < 50 years	18	32.1
	≥ 50 years	16	28.6
Job	Retired	6	10.7
	Liberal professionals	13	23.2
	Unemployed	11	19.6
	CLT	24	42.9
	Public Servant	2	3.6
Income	< 1.5 minimum salaries	5	8.9
	≥ 1.5 e < 3 minimum salaries	26	46.4
	≥ 3 minimum salaries	25	44.6
Schooling	< 12 years	23	41.1
	≥ 12 years	33	58.9
Belief	Christian	54	96.4
	Non Christian	2	3.6
Religion	Catholic	36	64.3
	Spiritism	9	16.1
	Evangelical	9	16.1
	Non Christian	2	3.6
SE class	A (1)	6	10.7
	B1+B2 (2)	21	37.5
	C1+C2 (3)	26	46.4
	D+E (4)	3	5.4
Diagnostic time	≤ 15 years	32	57.1
	> 15 years	24	42.9

SE: Socioeconomic.

Source: The author, 2019.

The data regarding ORA, NORA and IR were obtained through the evaluation of religiosity by the DUREL Scale and classified according to standardized parameters, considering low <4 and high ≥ 4, and IR, low <10 and high ≥ 10. The sample found a low OR (3.9 ± 1.5), high NOR rates (4.5 ± 1.5) and IR (13.2 ± 2.2), shown in Table 2.

Table 2. Results of the religiosity assessment (ORA / NORA / IR), through the means in adult patients with T1DM, attended at the UFTM diabetes outpatient clinic

Variables	Mean	SD	Minimum	Maximum
ORA	3.9	± 1.5	1	6
NORA	4.5	± 1.5	1	6
IR	13.2	± 2.2	6	15

SD: Standard deviation; ORA: Organizational religiosity; NORA: Non-organizational religiosity; IR: Intrinsic Religiosity.

Being that: ORA: < 4 : Low; ≥ 4 : High; NORA: < 4 : Low; ≥ 4 : High; IR: < 10 : Low; ≥ 10 : High.

Source: The author, 2019.

The SRCOPE was apply in all participants, and the data obtained were relate to PSRCOPE, NSRCOPE and total SRCOPE.

After evaluation of the scores, PSRCOPE was of 3.3 ± 0.7 , considered average; NSRCOPE of 2.0 ± 0.7 , considered low; total SRCOPE (PSRCOPE + NSRCOPEinv) of 3.7 ± 0.4 , considered high. The NSRCOPE/PSRCOPE ratio was 0.7 ± 0.2 , demonstrating a predominance of PSRCOPE in relation to NSRCOPE. These data are in Table 3. The PSRCOPE factor that presented high use by the patients was P4 - "Positive position against God" (4.4 ± 0.7). P7 factor - "Personal quest for spiritual knowledge" was the least used factor (2.2 ± 1.0). All negative factors had a low use score.

Table 3. Results of the evaluation of SRCOPE (PSRCOPE / NSRCOPE / total SRCOPE) and positive and negative factors, through means in adult patients with T1DM attended at the UFTM diabetes outpatient clinic

Variables	Mean	SD	Minimum	Maximum
Total SRCOPE	3.7	± 0.4	2.0	4.0
PSRCOPE	3.3	± 0.7	2.0	5.0
P1	3.5	± 0.9	1.3	5.0
P2	2.9	± 1.1	1.0	4.8
P3	3.2	± 0.9	1.0	4.8
P4	4.4	± 0.7	2.2	5.0
P5	2.9	± 1.0	1.0	4.7
P6	3.3	± 1.0	1.0	5.0
P7	2.2	± 1.0	1.0	5.0
NSRCOPE	2.0	± 0.7	5.0	3.0
N1	1.6	± 0.8	1.0	4.8
N2	2.4	± 1.0	1.0	4.3
N3	1.7	± 0.7	1.0	4.0
N4	2.3	± 1.1	1.0	4.7
NSRCOPE/PSRCOPE	0.7	± 0.2	0	1.0

SRCOPE: spiritual/religious coping; PSRCOPE: positive SRCOPE; NSRCOPE: negative SRCOPE; P: positive factor; N negative factor; SD: standard deviation; P1: transformation of self and / or life; P2: seeking spiritual help; P3: offer of help to the other; P4: Positive attitude towards God; P5: search of the other in institutions; P6: withdrawal through God, religion and / or spirituality; P7: personal quest for spiritual knowledge; N1: negative reassessment of God; N2: negative attitude against God; N3: dissatisfaction with the other in institutions; N4: negative reassessment of meaning.

Source: The author, 2019.

The SRCOPE scores were correlated with sociodemographic variables and with the time of diagnosis of T1DM,

and there was a significant inverse correlation between ORA and time of diagnosis, with inverse correlation; NSRCOPE, years of study and wage income; NSRCOPE/PSRCOPE and wage income. Positive Correlation between total SRCOPE and years of study and salary income. Data expressed in Table 4.

Table 4. Correlations between religiosity, SRCOPE and sociodemographic variables and time of diagnosis in adult patients with T1DM attended at the diabetes outpatient clinic, UFTM

Variables	Age		Years of schooling		Income		Diagnosis time	
	r	p	r	p	r	p	r	p
ORA	-0.100	0.463	0.132	0.333	0.035	0.796	0.380	0.004*
NORA	-0.020	0.881	0.037	0.789	0.077	0.575	0.062	0.641
IR	0.010	0.941	0.215	0.112	0.114	0.402	0.043	0.752
PSRCOPE	0.054	0.691	0.106	0.438	0.142	0.297	0.246	0.067
NSRCOPE	0.069	0.613	0.276	0.039*	0.377	0.004*	0.004	0.975
Total SRCOPE	-0.010	0.945	0.279	0.037*	0.380	0.004*	0.184	0.175
NSRCOPE/PSRCOPE	0.051	0.708	0.236	0.080	0.390	0.003*	0.136	0.318

Source: The author, 2019.

When the variables of religiosity correlated with each other, found that ORA and NORA showed a positive correlation with PSRCOPE and total SRCOPE, and inverse correlation with NSRCOPE/PSRCOPE ratio. The RI presented positive correlations with PSRCOPE and total SRCOPE and inverse with NSRCOPE and NSRCOPE/PSRCOPE ratio. Data represented in Table 5.

Table 5. Correlations between religiosity, Spiritual-Religious coping, in adult patients with T1DM in the diabetes outpatient clinic, UFTM

Variables	ORA		NORA		IR	
	r	p	r	P	r	p
PSRCOPE	0.448	0.001*	0.375	0.004*	0.482	<0.0001*
NSRCOPE	-0.071	0.604	-0.090	0.509	-0.328	0.014*
Total SRCOPE	0.390	0.003*	0.349	0.008*	0.602	<0.0001*
NSRCOPE/PSRCOPE	-0.292	0.029*	-0.295	0.027*	-0.632	<0.0001*

Source: The author, 2019.

4. Discussion

To our knowledge, this is an unprecedented study of religiosity and coping with the disease by a group of patients with T1DM using the DUREL scale and the short SRCOPE scale, respectively. Both validated for the Portuguese language.

Being able to prevent the evolution of complications is a challenge for the care team, family members and for T1DM patients themselves (Lucchetti, Lucchetti, & Puchalski, 2012; International Diabetes Federation, 2021) and as many studies have shown associations between S/R and physical, mental and social health (Lucchetti & Lucchetti, 2014), and systematic reviews showed that most studies indicated some positive association in which S/R was a protective factor, we decided to evaluate the impact of S/R on glycemic control in T1DM patients (Koenig, 2012).

In the analysis of the three dimensions of the DUREL scale, the sample found elevated NORA and IR index and ORA in the transition from medium to high, demonstrating that faith and the presence of the “divine” are fundamental. Participants have a preference for devoting themselves to religiosity at home, exercising it through prayer, which could be associated with the feeling of seeking to harmonize their needs and Personal interests to

their beliefs, striving to internalize and follow them completely. The utilization rate of the ORA dimension shows that the frequency of religious services (religious, cults, etc) is a less used option by this group (Table 2). Considering the characteristics of the sample studied, we can attribute this behavior as result of specific needs of these patients as more rigorous glycemic monitoring, fear of self-exposure, feelings of social rejection, risk of hypoglycemia during meetings, taking into consideration any testimonies about own life, or in the context of depression secondary to the disease.

Meneses et al., in 2013, evaluated two spiritual dimensions, defined as vertical, associated with the practice of religion (beliefs), and horizontal, existentialist (hope/optimism), in groups of patients with six chronic diseases (including T1DM and Type 2 diabetes mellitus (T2DM)). They found a positive and significant correlation between spirituality and vitality, and between hope/optimism and quality of life indicators. There was a negative correlation between beliefs and physical disposition. Their findings suggested that quality of life and spirituality vary according to the disease, proposing the inclusion of spiritual components in the care provided to individuals with T1DM (Meneses et al., 2013). In the evaluation of SRCOPE, mean use of PSRCOPE, low utilization of NSRCOPE and a high use of total SRCOPE, strategies for spiritual religious coping in this sample of patients, shows a relevant result (Table 3).

Evaluating the use of SRCOPE factors individually, it was found among the positive factors, a predominance of coping related to the transformation of oneself/and or of its life (Factor P1). This directed to personal transformation, obtained by reviewing their own attitudes and resulting in modifications associated with behaviors more appropriate to the spiritual-religious precepts of their religious affiliation. The acceptance of the new life proposal, which could result in adaptation to new rules and direction, and, modification of their lifestyle, which would be desirable in the treatment of T1DM. Another factor widely used by the research participants was the positive position facing God (factor 4), where he accepts the situation, deals with her doing his part, trusts in divine protection and seeks strength in her. One of the least used factors (factor P7) "Personal Search for spiritual knowledge" could be justified by the large amount of essential basic care needed to control the disease, which require time, attention, good will, disposition and spending Financial resources (Panzini, 2004).

When we evaluated the low use of the NSRCOPE, the negative revaluation of God (negative factor 1 – Table 4), presented itself as the lowest score, demonstrating that despite the limitations, the challenges, the sorrows and difficulties, the majority of the research participants, Believe in God, trust in him, and do not blame him. This factor, very little used, usually happens accompanied by the expression of negative feelings, such as revolt, guilt, abandonment and sorrow. Negative factor 3 was also very little used, (factor dissatisfaction with the other institutional), suggesting that despite personal limitations, there was no predominance of feelings of dissatisfaction, disgust or sorrow with any institutional representative, either the frequenter, member, representative or leader of the religious institution. As for negative factors 2 (negative position against God) and 4 (negative revaluation of meaning), both were poorly used, demonstrating that religion had no negative influence, causing no apathy and delivery of the situation, due to lack of collaboration, and/ or self-responsibility (Panzini, 2004).

Studies have shown that PSRCOPE strategies showed a positive correlation with improved mental health (fewer depressive symptoms and better quality of life), spiritual growth and cooperativity (Koenig, Pargament, & Nielsen, 1998; Panzini, Rocha, Bandeira, & Fleck, 2007). Sultan et al., in 2008, in a longitudinal study evaluated coping, anxiety and glycemic control in adult patients with T1DM, used the CISS scale (Coping Inventory of Stressful Situations) and the State-Trait Anxiety Inventory (STAI-Y). Found an inverse correlation between glycosylated hemoglobin (HbA1c) and the use of social fun coping and a positive correlation of HbA1c with a trait of anxiety. The greater the use of positive coping, the lower the anxiety traits and the decrease in the levels of HbA1c (Sultan et al., 2008).

Correlations between demographic data such as age, income, time of study, time of diabetes and religiosity showed that the ORA had an inverse correlation with the time of diagnosis. This may represent that a prolonged period of the disease may hinder the frequency of the religious community to which it belongs by limitations that were not defined by the present study. On the other hand, indexes of use of the total SRCOPE showed a significant positive correlation with income and time of study that are factors that may be related to less stress, depression and financial comfort to the patient with T1DM, who would have more time to Meditations and internal strengthening. The NSRCOPE had a significant inverse correlation with income and years of schooling, again raising the hypothesis that is the effect of the best quality of life provided by these findings. The inverse correlation of the NSRCOPE/PSRCOPE ratio in relation to income, leads us to understand that more study is necessary for conclusion and clarification (Table 4).

By correlating the variables ORA, NORA and IR with SRCOPE, it was demonstrated the significance of

religiosity in positive coping. There was a positive and significant correlation of religiosities, with the PSRCOPE, total SRCOPE and inverse with the NSRCOPE/PSRCOPE, showing that the highest rates of religiosity, provide greater utilization of SRCOPE in the dimensions considered positive (Table 5).

Despite the few studies with T1DM patients, Ahola et al. in 2010 showed a correlation between depression, metabolic syndrome and T1DM.

Some different approaches in the present study suggest that primary care physicians are aware of the influence of S/R, considering the inclusion of questions about religiosity in routine clinical interviews, in order to enrich their Dialogue with diabetic patients in an attempt to stimulate better adherence to care and self-monitoring (Ben-Aryea, Schiff, Karkabi, Keshet, & Lev, 2011).

5. Conclusion

Patients with T1DM have a high rate of intrinsic and non-organizational religiosity, and they use this religiosity in coping with the disease. This knowledge can empower the team, and especially seek a form of approach that encourages the best adaptation of patients, with greater discipline with self-care and glycemic monitoring, for who knows, we can achieve a more adequate control and especially with a reduced incidence of complications. Knowing that many professional organizations already recognize that spiritual care is an important component of health, such as the World Health Organization (WHO), and other researchers on the subject (Lucchetti, Lucchetti, & Puchalski, 2012) we recommended the inclusion of S/ R in clinical care and education. It is now up to the multiprofessional team that cares for patients with T1DM to pay attention to these results and, during their follow-up, to make a brief history of their spiritual life to familiarize patients with religious beliefs related to decisions about medical care, understand the role that religion plays in coping with the disease and identifying spiritual needs that may require assistance.

6. Limitations

One of the limitations of the study was the difficulty in selecting patients with T1DM in adulthood, due to the proposed objectives, which limited the sample size. Another limitation was the completion of several instruments, especially the CRE-Brief scale for its extension, requiring acceptance and patience on the part of the patient to spend time filling in forms, interfering with their life routines.

Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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