

## Cardiac Autonomic Functions May be Influenced by Body Weight

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### To the Editor,

I read the paper by Silva et al.<sup>1</sup> entitled “Sensitivity, Specificity and Predictive Value of Heart Rate Variability Indices in Type 1 Diabetes Mellitus” published in *Arquivos Brasileiros de Cardiologia* in March 2017. They aimed to compare Heart Rate Variability (HRV) indices and evaluate their sensitivity, specificity, and predictive value in young type 1 diabetic patients and healthy volunteers. It was showed a decrease in sympathetic and parasympathetic activities, as well as overall variability of autonomic nervous system in the diabetic group. I would like to congratulate Silva et al.<sup>1</sup> for their valuable effort in this study. I also have a few comments to do.

The indices of HRV give us valuable numeric data about cardiac autonomic nerve system by processing RR

interval variability beat-to-beat. A decrease in HRV implying an impaired autonomic cardiac function is one of the independent risk factors related to sudden cardiac death<sup>1-4</sup>. Several variables such as age, sex, obesity, drugs, ischemic heart disease, hypertension, hyperlipidemia, insulin resistance, might have effect on HRV indices<sup>1-4</sup>.

Body mass index is one of the most important influential factors on HRV indices<sup>3</sup>. Recently, a research reported decreased HRV because of inflammatory processes in the obese population<sup>4</sup>. In the study by Silva et al.<sup>1</sup> it is clearly seen that there is a statistically significant difference between the healthy group and the diabetic group in terms of body mass index. In addition, the blood lipid levels of the study population are not available in the study by Silva et al.<sup>1</sup>. In my opinion, the results of the study by Silva et al.<sup>1</sup> might be more powerful if influential factors such as body mass index, blood lipid levels would have been considered. It would be more acceptable to make a comparison between the groups in which there was no statistically significant difference in terms of various influential factors such as body mass index. Thus, we could understand clearly the exact role of type 1 diabetes mellitus on the heart rate variability, which has prognostic importance in the sudden cardiac death.

### Keywords

Heart Rate; Diabetes Mellitus, Type 1; Young Adult; Risk Factors; Adolescents.

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## Reply

Initially we thank you for your interest in our article<sup>1</sup> and the comments related to it. In fact, as pointed out, obesity exerts an important influence on autonomic cardiac modulation. Several studies published by our group, using heart rate variability (HRV) as a form of analysis, pointed out alterations in autonomic modulation in children<sup>2-4</sup> and young obese.<sup>5</sup> These studies demonstrate a reduction of parasympathetic, sympathetic and global activity, as well as a reduction in fractal correlation properties of heart rate<sup>3</sup> in these individuals.

In this context, we understand the concern raised regarding the inclusion of individuals with high body mass index in the data set evaluated and we agree that this is an aspect that should be taken into account in the HRV analyzes. As can be seen in table 2 of the article,<sup>1</sup> the data referring to HRV indices analyzes were adjusted for both body mass index and casual blood glucose. In this way, we can affirm that although there were significant differences for the body mass index and random blood glycemia between the groups, these did not influence the results obtained in our article.<sup>1</sup>

It is also important to note that of the 82 individuals evaluated, only six had a high body mass index ( $> 30 \text{ kg/m}^2$ ) and although the body mass index had a statistically significant difference between the groups, the mean values were within the normality range and below those considered for both obesity and overweight.<sup>6</sup>

Regarding lipid measurements, unfortunately these data were not evaluated in our study, so it would not be appropriate to make any comments about it. We hope to have clarified the aspects raised and encourage further studies with this population addressing the limiting factors of our study.

Sincerely,

Anne Kastelianne França da Silva  
Diego Giuliano Destro Christofaro  
Aline Fernanda Barbosa Bernardo  
Franciele Marques Vanderlei  
Luiz Carlos Marques Vanderlei

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