

## PEER-REVIEW REPORT

**Name of journal:** *World Journal of Diabetes*

**Manuscript NO:** 86689

**Title:** Characteristics of glucose change in diabetes mellitus generalized through continuous wavelet transform processing: A preliminary study

**Provenance and peer review:** Unsolicited manuscript; Externally peer reviewed

**Peer-review model:** Single blind

**Reviewer's code:** 05418714

**Position:** Peer Reviewer

**Academic degree:** Doctor, MD, PhD

**Professional title:** Assistant Professor, Attending Doctor

**Reviewer's Country/Territory:** China

**Author's Country/Territory:** Japan

**Manuscript submission date:** 2023-07-02

**Reviewer chosen by:** Geng-Long Liu

**Reviewer accepted review:** 2023-07-28 05:37

**Reviewer performed review:** 2023-07-28 10:56

**Review time:** 5 Hours

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|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Scientific quality                          | <input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Very good <input type="checkbox"/> Grade C: Good<br><input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish |
| Novelty of this manuscript                  | <input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair<br><input type="checkbox"/> Grade D: No novelty                                                 |
| Creativity or innovation of this manuscript | <input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair<br><input type="checkbox"/> Grade D: No creativity or innovation                                |

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| <b>Scientific significance of the conclusion in this manuscript</b> | <input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair<br><input type="checkbox"/> Grade D: No scientific significance                                         |
| <b>Language quality</b>                                             | <input type="checkbox"/> Grade A: Priority publishing <input checked="" type="checkbox"/> Grade B: Minor language polishing <input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection |
| <b>Conclusion</b>                                                   | <input type="checkbox"/> Accept (High priority) <input type="checkbox"/> Accept (General priority)<br><input checked="" type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection          |
| <b>Re-review</b>                                                    | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                                                                                                                                                                          |
| <b>Peer-reviewer statements</b>                                     | Peer-Review: <input checked="" type="checkbox"/> Anonymous <input type="checkbox"/> Onymous                                                                                                                                                  |
|                                                                     | Conflicts-of-Interest: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                                                                                                   |

## SPECIFIC COMMENTS TO AUTHORS

Through the observation of blood glucose fluctuation in type 1 and type 2 diabetes, this paper found that continuous wavelet transform is a novel tool for characterizing glucose fluctuation in type 1 diabetes mellitus. This study has good innovation, but there are still some issues: T1DM and T2DM have different etiology, age, and course of disease, and should be corrected when comparing them.

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**Peer-review model:** Single blind

**Reviewer's code:** 02602042

**Position:** Editorial Board

**Academic degree:** MD, PhD

**Professional title:** Associate Professor, Dean, Deputy Director, Research Scientist

**Reviewer's Country/Territory:** China

**Author's Country/Territory:** Japan

**Manuscript submission date:** 2023-07-02

**Reviewer chosen by:** Geng-Long Liu

**Reviewer accepted review:** 2023-07-31 03:07

**Reviewer performed review:** 2023-07-31 03:34

**Review time:** 1 Hour

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|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Scientific quality                          | <input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Very good <input type="checkbox"/> Grade C: Good<br><input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish |
| Novelty of this manuscript                  | <input checked="" type="checkbox"/> Grade A: Excellent <input type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair<br><input type="checkbox"/> Grade D: No novelty                                                 |
| Creativity or innovation of this manuscript | <input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair<br><input type="checkbox"/> Grade D: No creativity or innovation                                |

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|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Scientific significance of the conclusion in this manuscript</b> | <input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair<br><input type="checkbox"/> Grade D: No scientific significance                                         |
| <b>Language quality</b>                                             | <input type="checkbox"/> Grade A: Priority publishing <input checked="" type="checkbox"/> Grade B: Minor language polishing <input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection |
| <b>Conclusion</b>                                                   | <input type="checkbox"/> Accept (High priority) <input checked="" type="checkbox"/> Accept (General priority)<br><input type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection          |
| <b>Re-review</b>                                                    | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                                                                                                                                                                          |
| <b>Peer-reviewer statements</b>                                     | Peer-Review: <input checked="" type="checkbox"/> Anonymous <input type="checkbox"/> Onymous                                                                                                                                                  |
|                                                                     | Conflicts-of-Interest: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                                                                                                   |

#### SPECIFIC COMMENTS TO AUTHORS

This article has an interesting topic. Authors explored whether continuous wavelet transform could detect glucose fluctuations in type 1 diabetes mellitus. The study results showed that CWT could represent the character of glucose fluctuation in type 1 diabetes mellitus using continuous glucose monitoring data. The study has delivered a promising clinical message and should be of great interest to the readers. It can cause us to realize the new method for valuing the glycemic fluctuation in diabetes. The submission is worthy of publication.

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**Peer-review model:** Single blind

**Reviewer's code:** 05426937

**Position:** Peer Reviewer

**Academic degree:** MD

**Professional title:** Doctor, Professor

**Reviewer's Country/Territory:** China

**Author's Country/Territory:** Japan

**Manuscript submission date:** 2023-07-02

**Reviewer chosen by:** Geng-Long Liu

**Reviewer accepted review:** 2023-07-18 22:57

**Reviewer performed review:** 2023-07-31 22:05

**Review time:** 12 Days and 23 Hours

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|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Scientific quality                          | <input type="checkbox"/> Grade A: Excellent <input type="checkbox"/> Grade B: Very good <input checked="" type="checkbox"/> Grade C: Good<br><input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish |
| Novelty of this manuscript                  | <input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair<br><input type="checkbox"/> Grade D: No novelty                                                 |
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| <b>Scientific significance of the conclusion in this manuscript</b> | <input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair<br><input type="checkbox"/> Grade D: No scientific significance                                         |
| <b>Language quality</b>                                             | <input type="checkbox"/> Grade A: Priority publishing <input checked="" type="checkbox"/> Grade B: Minor language polishing <input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection |
| <b>Conclusion</b>                                                   | <input type="checkbox"/> Accept (High priority) <input checked="" type="checkbox"/> Accept (General priority)<br><input type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection          |
| <b>Re-review</b>                                                    | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                                                                                                                                                                          |
| <b>Peer-reviewer statements</b>                                     | Peer-Review: <input checked="" type="checkbox"/> Anonymous <input type="checkbox"/> Onymous                                                                                                                                                  |
|                                                                     | Conflicts-of-Interest: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                                                                                                   |

## SPECIFIC COMMENTS TO AUTHORS

Recently, the continuous wavelet transform (CWT) method was utilized for the analysis of oscillating data obtained from clinical diagnostic tools, such as those produced by electroencephalography, electromyography, electroretinography, phonocardiography, ultrasound sonoelastography, electrocardiography including a longitudinal wave, etc. This type of processing has an epochal merit for simultaneously exploring the time and frequency domains, although Fourier transform is unable to analyze a time domain. This study investigated whether continuous wavelet transform may identify signals of blood glucose fluctuation in T1DM using CGM data. The present evaluation of 356-day glucose data demonstrated that CWT processing could detect the specific glucose wave form of T1DM with regard to the onset time and time cycle in the contour map. It revealed that the P1 signal wave length was broadly distributed during a 17–24-min interval at midnight. This finding indicated that the cycle of glucose change in T1DM was irregular and involved different waves around a 19-min interval at midnight. Although there were some limitation that in the present study, it was not possible to remove the effects of medications on glucose fluctuation. To exclude such influence, data from a large

number of patients are required. Glucose fluctuations differ between days. And this analysis could not determine the amplitude of the target wave form, although the duration of a wave period was obtained because CWT could not reverse original data after processing. The content of this manuscript is interesting. This study was the first to attempt and the results showed that continuous wavelet transform is a novel tool for characterizing glucose fluctuation in type 1 diabetes mellitus using continuous glucose monitoring data. In the future, large-scale multi-center clinical studies are needed to confirm the results of this study. Therefore, I recommend accepting and publishing this manuscript.