

sive study investigating multiple factors associated with taste sensation in Sri Lankan patients with T2DM. Overall, the current findings indicated that the supra-threshold intensity ratings for the highest sucrose concentration was significantly associated with WC, HC and WHR while no associations observed with any other factor assessed. Observing an association for the highest sucrose concentration is a crucial finding, since most sweet foods such as cakes, biscuits and sugar sweetened beverages contain a high concentration of sucrose. Determining the factors that predict taste sensitivity is important when considering sweet food consumption.

Factors such as gender and age have been studied extensively in relation to sweet taste sensitivity. Yu et al.¹¹ showed that diabetic males are less sensitive to sucrose compared to the females. However, we did not observe a significant association between gender and sweet taste sensitivity in our group. The reason for this difference may be attributed to the difference in the psychophysical measure used in determining the taste sensitivity. Yu and co-authors¹¹ have used the detection threshold for sucrose, while we used the supra-threshold intensity ratings which gives a better estimation of the taste sensitivity. Another study by Mojet et al.¹² revealed that older men (60-75 years) were less sensitive to sucrose compared to younger counterparts (19-33 years). A review by Sergiet al.⁹ stated that, aging may coincide with a declining gustatory function that can affect dietary intake and elderly may prefer strong flavors leading to negative health consequences. In the present study, the participants belonged to a narrow age range of 35 -60 years which was probably not sufficient to demonstrate a significant association with taste sensitivity. The most likely reasons for these contradictory findings may be due to the differences in the technique of assessing psychophysics of taste and participant characteristics. In fact, most of these studies have been conducted with healthy individuals belonging to a wide age range and mostly used the detection/recognition thresholds to determine the taste sensitivity. Further, in our study, we have focused on multiple factors associated with sweet taste sensitivity rather than confining to a single factor. However, considering the previous findings, it is justifiable to consider gender and age as contributory factors that can alter sweet taste sensitivity in patients with diabetes especially when the dietary recommendations are planned. In addition, our cohort did not show a significant association between taste sensitivity and other factors such as duration of diabetes and glycemic control. Similar to our findings, Yu and co-authors¹¹ also reported that duration of diabetes and glycemic profile (Fasting blood glucose & HbA1c) were not associated with sweet taste sensitivity in T2DM.

The association between anthropometry and taste sensitivity has long been an area of interest, but with mixed scientific evidence. Observations on the relationship between sweet taste thresholds and obesity are contradictory. Donaldson et al.¹³ reported no significant difference in sweet taste thresholds in obese females compared to normal weight equivalents. It is observed that most of these studies have assessed the sweet taste sensitivity only in relation to BMI. However, unlike other studies, the present study highlights the association between sweet taste sensitivity assessed by supra-threshold intensity ratings for sucrose and multiple anthropometric parameters which includes WC, HC, WHR and WHtR. Umabikiet al.¹⁴ reported that there is an association between sweet taste sensitivity and serum leptin levels assessed in a group of obese females. The results showed a significant association between reduced levels of serum leptin and increased sensitivity to sweet taste. In addition, Yu et al.¹¹ showed that BMI and plasma triglyceride levels are positively correlated with detection threshold for sucrose in diabetics indicating less sensitivity. Thus, the mechanism for low sensitivity to sweet taste in obese may be attributed to high serum leptin levels. Even though we have not assessed the hormone levels, the findings in the present study have a major clinical implication suggesting that diabetics who are overweight/obese are likely to be less sensitive to sweet taste which may lead to over consumption of sweet taste foods.¹⁵ This may be a vicious cycle since increase in WC, HC and WHR may result in decreasing the sweet taste sensitivity which in turn increase the sweet food consumption which will lead to further alterations in the above anthropometric parameters in patients with diabetes.

Conclusion

To our knowledge, this is the first study to assess multiple factors associated with sweet taste sensitivity for sucrose in patients with T2DM in Sri Lanka. This investigation confirms that anthropometric parameters i.e. WC, HC, WHR are significantly associated with taste sensitivity for sucrose in T2DM patients. The findings simply that reduction of these parameters is likely to improve the sweet taste sensitivity in patients with diabetes and vice versa. Planning life style interventions to maintain anthropometric parameters within healthy limits may lead to better glycemic profile through increased taste sensitivity and good dietary practices.

Conflicts of interest

Authors declare that they have no conflicts of interest

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