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Background

Digital health interventions (DHI) have enormous potential as tools to improve health and healthcare delivery by improving effectiveness, efficiency, accessibility, safety and personalization. However, not much have been reported about their effectiveness.

Objective

We aimed to evaluate the clinical effectiveness of DHI in self-management and control of diabetes and its outcomes.

Methodology

We searched PubMed database using well-defined search strategy to identify clinical studies assessing the clinical effectiveness of DHI in the management of diabetes mellitus (DM) from 2014 onwards. (Fig.1)

The registers of current and ongoing trials, and gray literature were also searched. Outcomes of interest included improvement in glycated hemoglobin (HbA1c).

Observational studies, review articles, case reports/studies, and case-control studies were excluded.

Results

Of the 573 studies identified from searches, 78 (14%) met the eligibility criteria. Three major categories that were identified across the spectrum of DHI included Mobile apps, text messages and smart sensor devices. All the study and patient characteristics are reported in Table. 1. Results are presented in figures from Fig.2 to Fig.4.

Most of the included studies reported HbA1c reduction from baseline within app intervention group ranging from 0.12% to 0.9% over the course of 6 months across all types of diabetes but 1 publication reported a significant reduction of 1.52% from baseline to 1 year in T2DM group.

Beneficial effects were also observed in patients’ physical-behavioral performance, especially in medication adherence.

Patients also had a 1.5% to 2.4% reduction in weight from baseline.

Table. 1 Baseline characteristics

Characteristics	
Study related (No. of studies): 78	
Study design:	
	RCT
	Non-RCT
	Systematic reviews of RCTs
Study location reported:	
	Africa & Middle East
	Asia-Pacific
	Canada & USA
	Europe
DHI assessed:	
	Mobile apps
	Text messages
	Smart sensor devices
Diabetes Type:	
	T2DM
	Non-T2DM
	Mixed

Fig.1 PRISMA flow chart

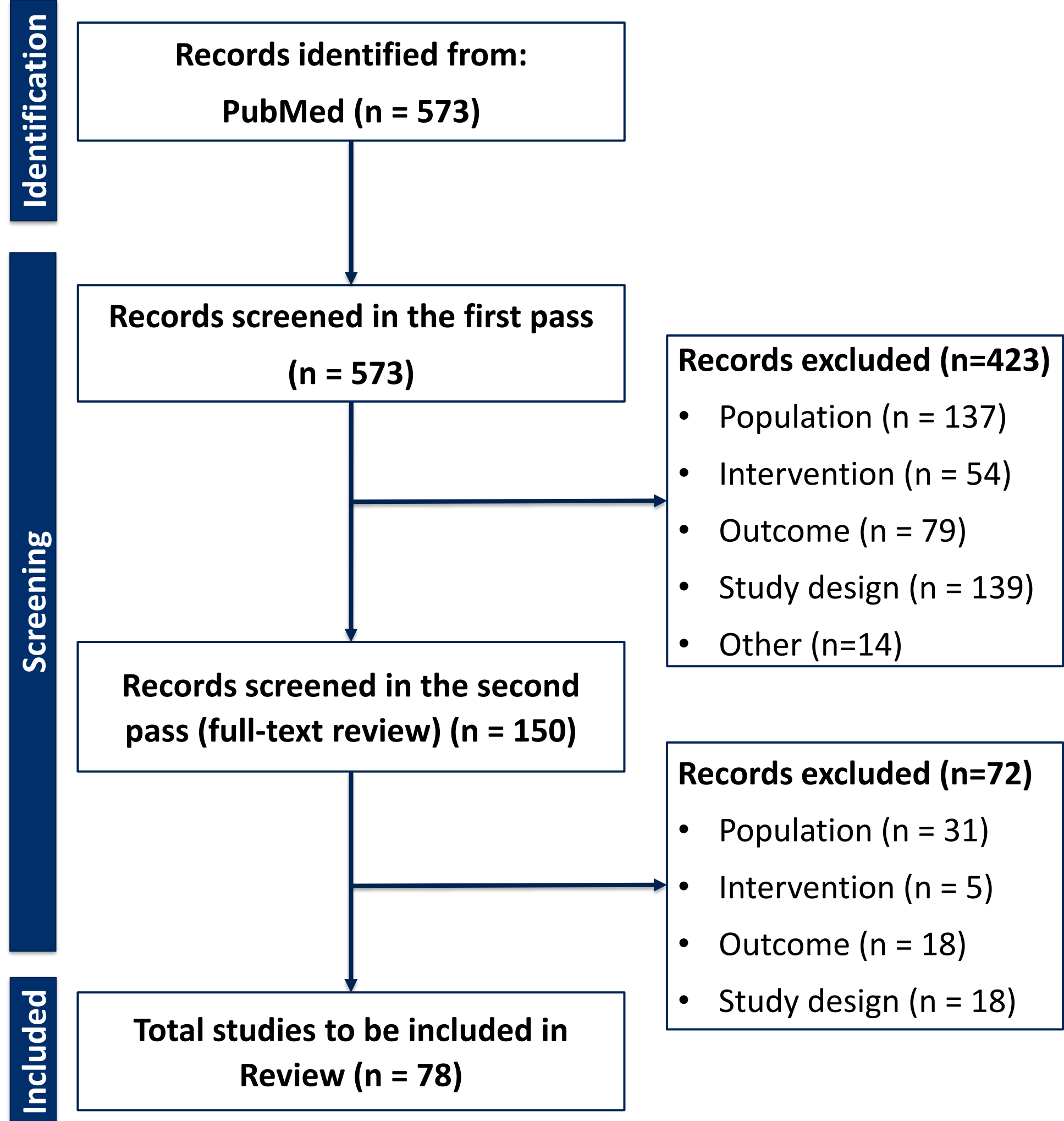


Fig. 2 Mean difference in HbA1C (%) values after 6 months of intervention¹⁻⁷

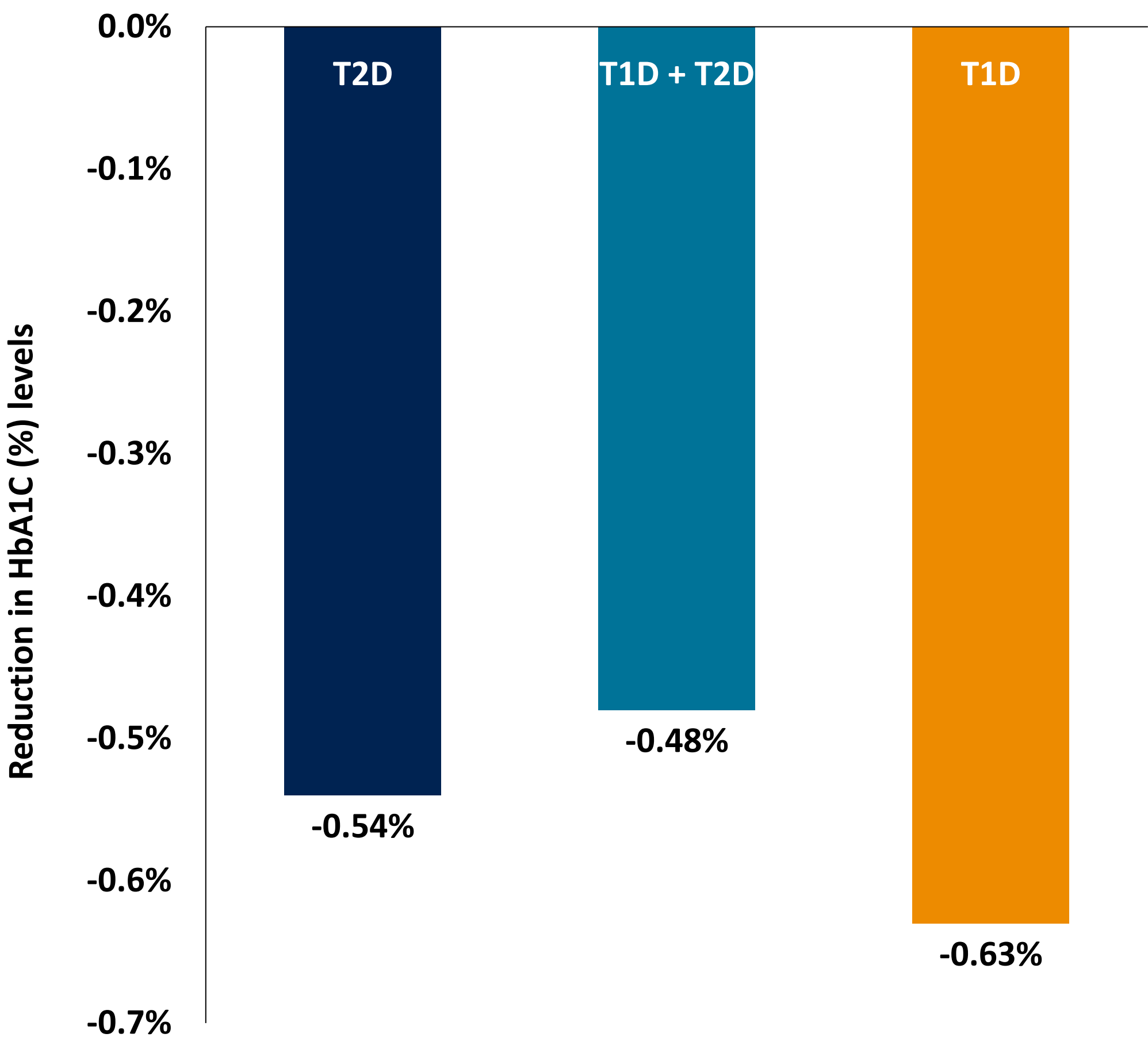


Fig. 3 Reduction from baseline in HbA1C (%) for age group of >=18 years old¹⁻⁷

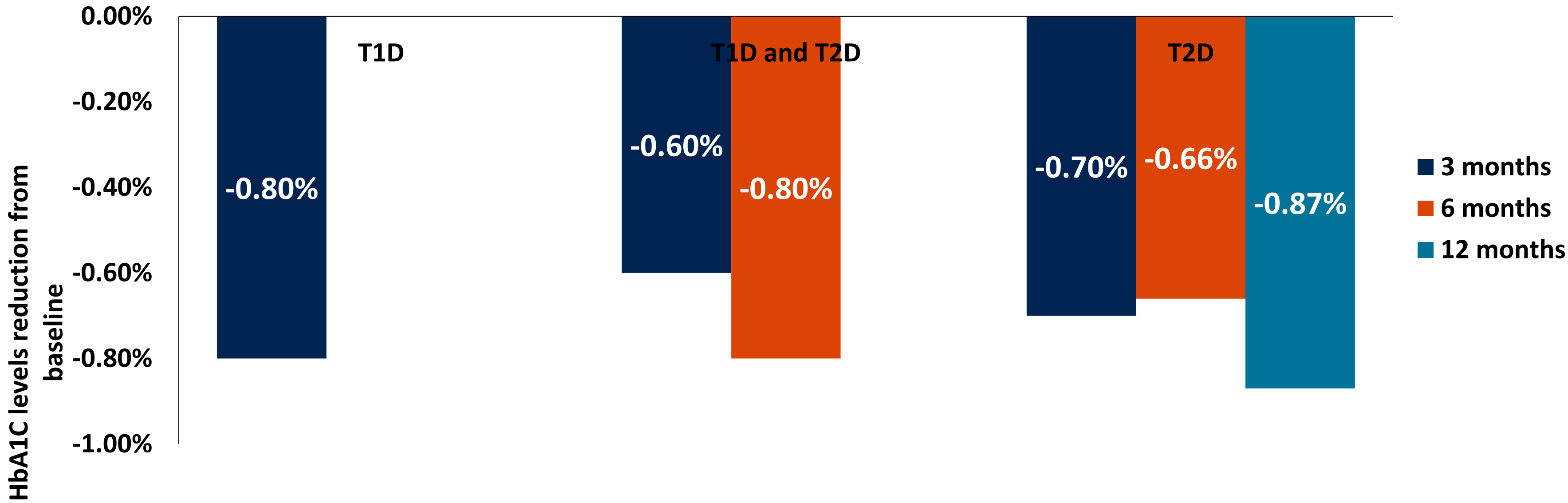
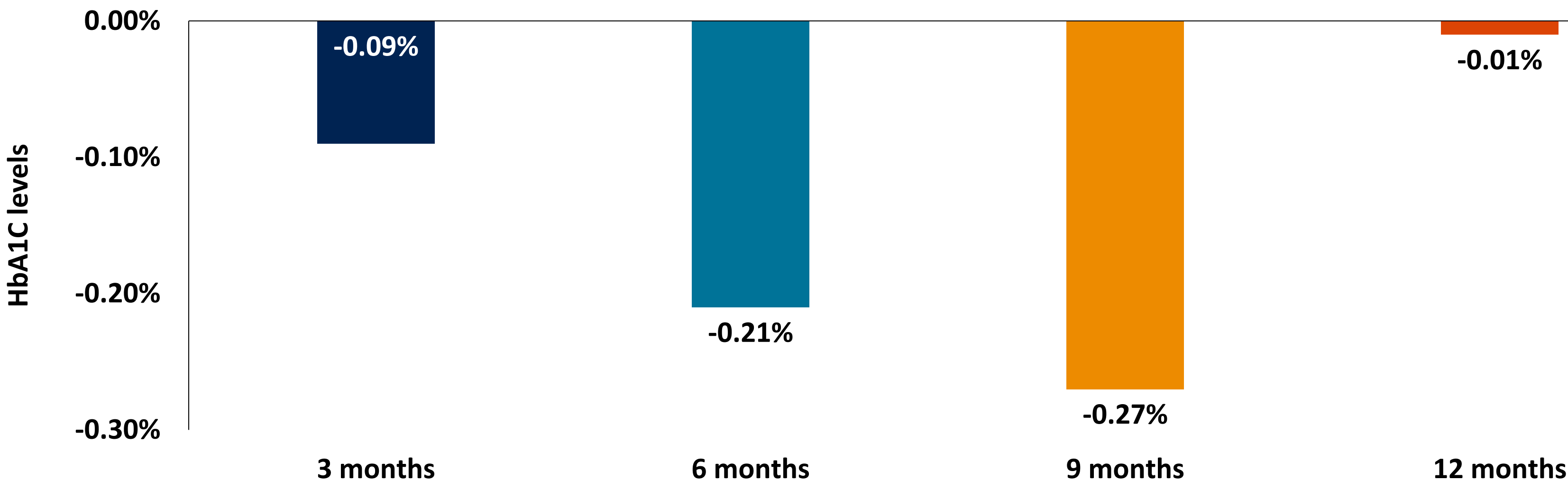


Fig. 4 Reduction from baseline HbA1C (%) in T1D population & age group of >=22 years old¹⁻⁷



Conclusion

This review showed that DHI improved the glycemic control by significantly reducing HbA1c levels and optimized the glycemic control in T2DM and mix patients. For T1DM, there is a need to create an engaging for self-management and compliance.

DHI can be considered as effective approach to optimize and improve health outcomes among those living with chronic diseases through enhanced symptom control.

Conflict of interest

Kalsey M, Bharucha H, Mandlik R, Pruthi J, Prasanna R, Gautam R, Rai MK are employees of EVERSANA India.

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