

Supplementary Table 3. Clinical evidence of DIY closed-loop system in type 1 diabetes mellitus

Year	Country	System	Design	No. Participants	Setting	Duration	Intervention	Control	Outcome (intervention vs. control)
2016 [124]	USA	Open-APS	Cross-sectional, online survey	18 Adult	Home	Online survey	DIY APS	Before DIY APS	TIR 80–180: 81% vs. 58%, $P=NA$; HbA1c: 7.1% to 6.2%, $P=NA$ Sleep quality improvement: 56%
2017 [125]	USA	Night-scout	Cross-sectional, online survey	1,157 Child to Adult	Home	Online survey	Nightscout	Non-Night-scout	HbA1c: 6.8% vs. 7.6% (adult); 7.1% vs. 8.1% (13–17 years); 6.9% vs. 7.8% (6–12 years); 7.2% vs. 8.0% (0–5 years), $P=NA$
2018 [126]	Australia	DIY (Various)	Cross-sectional, online survey	68 ≥ 10 years	Home	Online survey	DIY APS	CSII or MDI	More time in target glucose range (100%), better sleep (79%), less frequent hypoglycemia (74%), improved HbA1c (68%)
2019 [127]	USA	Open-APS	Qualitative ethnography analysis	328 NA	NA	2 years	DIY APS	NA	Users reported a reduction in diabetes related burden or distress Range of HbA1c: 4.9%–6.8%
2019 [128]	Germany	Open-APS	Case report	1 Adult	Hospital (acute cholecystectomy)	4 days	DIY APS	NA	TIR: 99% (preoperative and perioperative period)
2019 [129]	UK	Open-APS	Case report	3 Adult, Child (11 months)	Home	Up to 1 year	DIY APS	Before DIY APS	Achieved TIR: 80%–90% (2 adults) HbA1c: 6.1% vs. 7.4% (in 6 months)
2019 [130]	Switzerland, USA	Open-APS	Retrospective record analysis	34 Adult	Home	Mean 8 months	DIY APS	SAP	Estimated HbA1c: 6.2% vs. 6.6%, $P<0.01$ Mean glucose: 133 mg/dL vs. 144 mg/dL, $P<0.01$
2019 [131]	Various	DIY (Various)	Cross-sectional, online survey	209 3–20 years	Home	Online survey	DIY APS	Before DIY APS	TIR 70–180: 80.7% vs. 64.2%, $P<0.01$ HbA1c: 6.27% vs. 6.91%, $P<0.01$
2020 [132]	Germany	Open-APS	Case report	1 Adult	Exercise (Half marathon)	2 days	DIY APS	NA	TIR 70–180: 100% (during Half Marathon race), 95.8% (race day and the following day)

The unit of TIR and TBR target is mg/dL.
DIY, do-it-yourself; APS, artificial pancreas system; TIR, time in range; NA, not available; HbA1c, glycosylated hemoglobin; CSII, continuous subcutaneous insulin infusion; MDI, multiple daily insulin injection; SAP, sensor augmented pump.