The Influence of Psychosocial Factors on Interest in and Use of Automated Insulin Delivery Systems: Perspectives of Adults with Type 1 Diabetes and Partners

Sakinah Suttiratana[2, 3], Diana Naranjo[1], Korey Hood[3], Lori Laffel[5], Jill Weissberg-Benchell[6], Katharine Barnard[4]

Objective: To explore the influence of psychosocial factors on interest in and uptake of automated insulin delivery among adults with type 1 diabetes and partners of people living with type 1 diabetes .

Background and Methods: Automated insulin delivery systems will be more available and accessible in coming years. In order to optimize future uptake, we conducted a qualitative study, consisting of semi-structured interviews and focus groups, to understand patient and partner perspectives on whether and why they would try such automated systems. Across four sites in the United States and United Kingdom, 113 adults (mean age: 39.5 years (18-77 years), mean A1c: 7.5% (5.0-11.8%)) with type 1 diabetes and 55 partners participated. Reported current pump use for the person diagnosed with type 1 diabetes was 72.6% for adults and 83.6% by partners. Data were transcribed verbatim and analyzed for content and themes.

Results: Adults and partners were most concerned about the accuracy, adaptability, features, and algorithm quality of these systems alongside expectations that systems would stabilize blood glucose levels and reduce long-term complications. Concerns revolved around device safety, system trust, and sharing device control with a system for adults; while partners were relatively more concerned about the potential disappointment associated with devices, given past device experiences. Invasiveness in life generally and specifically in social situations were raised by both groups.

Themes by Participant Type	
Adults with type 1 diabetes	**Partners**
Concerns	
• Device accuracy • Concerns about device control & safety • Potential for user complacency • Device size and invasiveness	• Potential for user complacency • System learning curve • Logistics of device management • Worry about device error
Desirable Device Characteristics	
• Waterproof • Wireless • Discreet device • User override & input possible	• Waterproof • Discreet or small device • Learning algorithms • Customizable alarms
Expectations	
• Device does everything automatically • Adapts to lifestyle & physical activity • Developing trust is a process	• Device does everything automatically • Developers should learn from past device problems
Hopes	
• Reduced mental burden • Blood sugar stability • Improved long term health • Fewer monitoring & management tasks • Reduce human error in management	• Reduced mental burden • Blood sugar stability • Time savings • More “normal” social interactions • Improved nighttime

Conclusion: Incorporating stakeholder perspectives on use of automated insulin delivery may improve uptake and promote sustained use of devices while optimizing health outcomes and quality of life indicators among persons with diabetes. Efforts are needed to set realistic expectations and provide education on device safety and component features. Continued attention should be paid to psychosocial factors of system use and the people affected, including those diagnosed with type 1 diabetes and their family members.

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[1] Department of Psychiatry, Stanford University School of Medicine, Stanford, CA; [2] Department of Social and Behavioral Sciences, University of California, San Francisco, San Francisco, CA; [3] Department of Pediatrics, Stanford University School of Medicine, Stanford, CA; [4] Bournemouth University, Bournemouth, UK; [5] Joslin Diabetes Center, Harvard Medical School; [6] Department of Psychiatry and Behavioral Sciences, Ann and Robert H. Lurie Children’s Hospital of Chicago, Northwestern University’s Feinberg School of Medicine, Chicago, IL

Bournemouth University

Ann & Robert H. Lurie Children’s Hospital of Chicago

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