

BACKGROUND

As part of the annual digitalization and technology report in diabetes, we surveyed people with diabetes in Germany, Austria and Switzerland about their use of, experiences with and attitudes towards diabetes technologies. Automated insulin delivery (AID) systems are becoming increasingly popular among people with type 1 diabetes (pwtd). It is estimated that about 30% of people with type 1 diabetes use an AID system in Germany, and slightly higher proportions in Austria and Switzerland (about 35%). In this analysis we wanted to investigate how people with type 1 diabetes perceive the consequences of AID use for the clinical care of type 1 diabetes.

METHODS AND MATERIAL

Between November 1 and December 22, 2023, we conducted an online survey among people with diabetes about their experiences with diabetes technology in Germany, Austria, and Switzerland. This survey was distributed through national diabetes associations, online panels, and advertisements in journals and newsletters. Specifically, we asked adults and parents in three countries (Germany, Austria and Switzerland) if they thought the AID system would lead to the following consequences in the future:

- More education needed
- People with diabetes becoming more independent
- Many people with diabetes cannot cope with this
- Less contact with diabetes care teams
- Makes treatment more risky
- Diabetes teams become unnecessary

Participants were asked to rate their level of agreement on a 5-point Likert scale (1=strongly disagree – 5=strongly agree).

FINANCIAL DISCLOSURES

This study was supported by Abbott Diabetes Care, Ascensia, Dexcom, Roche Diabetes Care, Sanofi and Ypsomed (all Germany).

RESULTS

The last annual survey in 2023 included 1920 adults with type 1 diabetes and 210 parents of children/adolescents with type 1 diabetes (see Table 1 for some characteristics). The majority of people with type 1 diabetes were using AID therapy (44% and 60% of adults and children/adolescents, respectively). Respondents reported a rather low A1c <7.0%. Severe hypoglycemia and ketoacidosis were more frequently reported by parents of children and adolescents.

Table 1: Sample characteristics

	Adults with type 1 diabetes	Children/Adolescent with type 1 diabetes	p
Age (± SD) yrs.	53.7 ±15.1	10.1 ±4.9	<0.001
Sex:			0.308
female n (%)	961 (47.1)	99 (47.1)	
male n (%)	965 (50.1)	110 (52.2)	
divers	2 (0.1)	1 (0.5)	
Country:			0.070
Germany n (%)	1544 (78.9)	175 (85.2)	
Austria n (%)	273 (13.9)	18 (8.6)	
Switzerland n (%)	41 (7.2)	13 (6.2)	
Diabetes duration (± SD)yrs	29.1 ±16.1	3.8 ±0.25	<0.001
Treatment:			
MDI n(%)	693 (35.9%)	33 (15.7)	
CSII (without AID) n (%)	387 (20.0%)	50 (23.8)	
AID (%)	851 (44.1%)	127 (60.5)	
HbA1c (± SD) %	6.8 (± 0.7)	6.9 (±0.7)	0.002
Hypoglycemia (third party assistance during last year n (%))	127 (6.5)	23 (11.0)	0.022
Ketoacidosis treated in hospital during last year n (%)	35 (1.8)	22 (10.5)	<0.001

Most participants agreed that AID provides greater autonomy for its users. There were fewer concerns that AID would increase risk, make the diabetes team unnecessary, or reduce personal contact with the diabetes team. The participants also did not expect that many people would not be able to cope with the system. However, there was agreement that more training is needed for AID systems, and there were no major differences between participants from the three countries (Figure 1).

Interestingly, parents of children and adolescents with type 1 diabetes had a slightly more positive view of AID systems in

terms of higher autonomy expectations. They also see fewer risks or need for training associated with AID use than adults with type 1 diabetes (Figure 2). AID naive respondents reported slightly more skepticism about AID systems than experienced AID users (Figure 3).

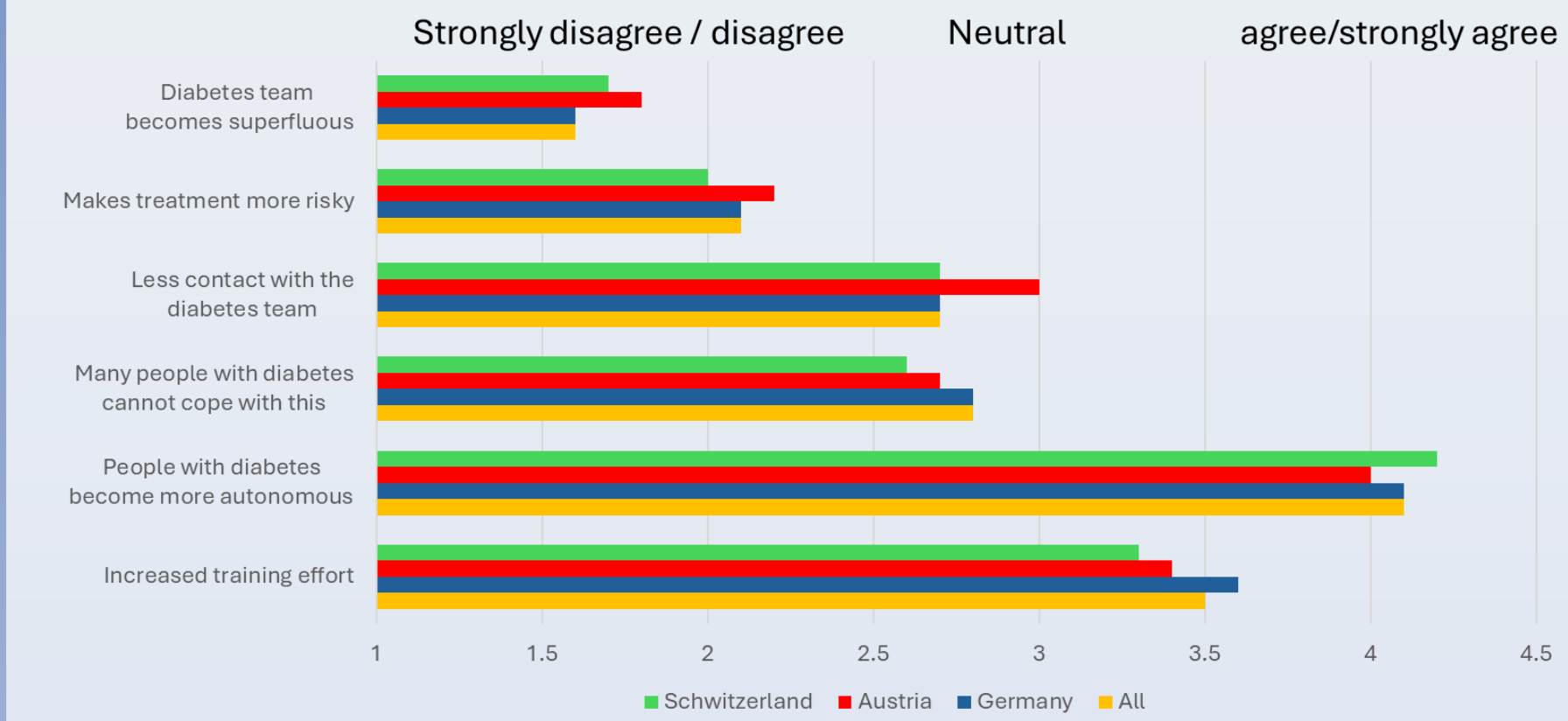


Figure 1: AID expectations in Germany, Austria and Switzerland

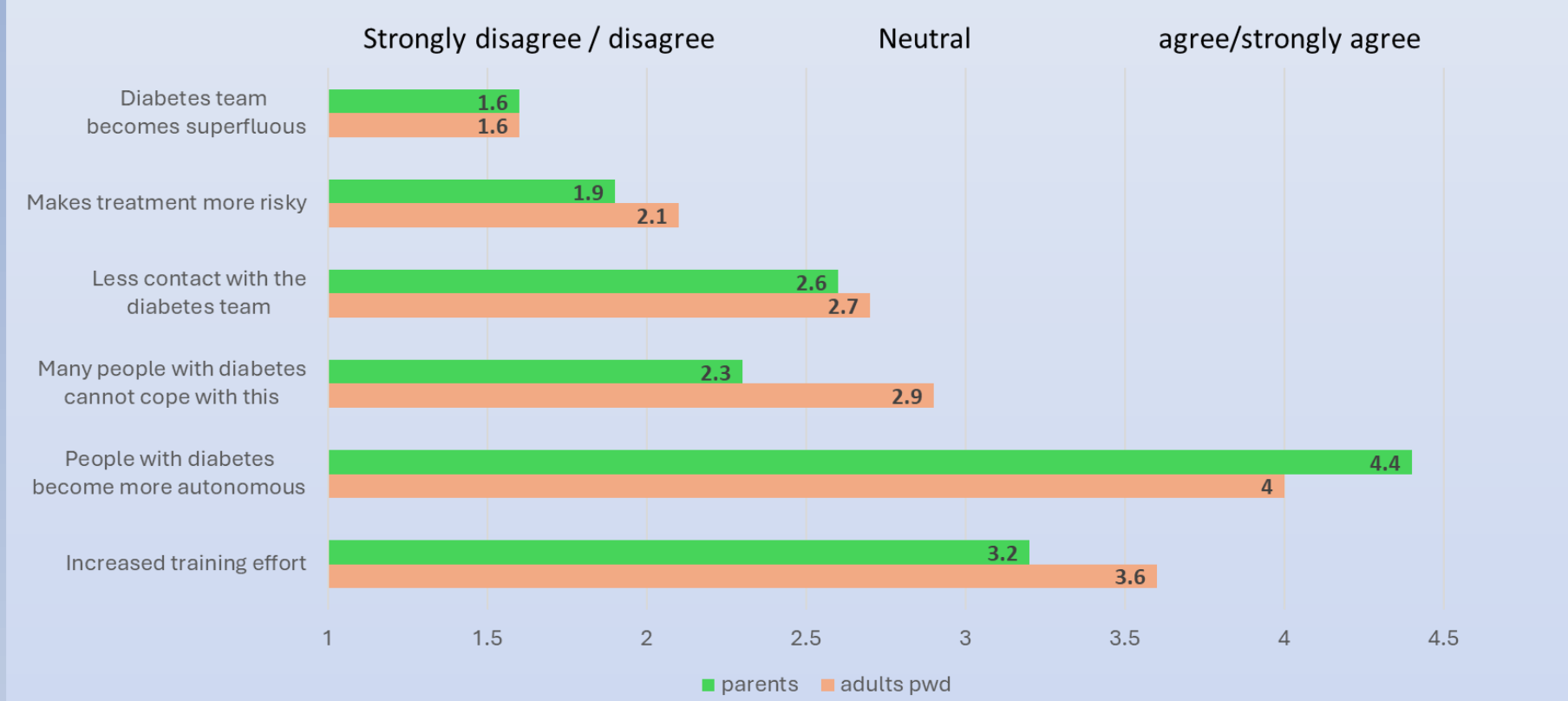


Figure 2: AID expectations in adults and parents of children/adolescents with type 1 diabetes

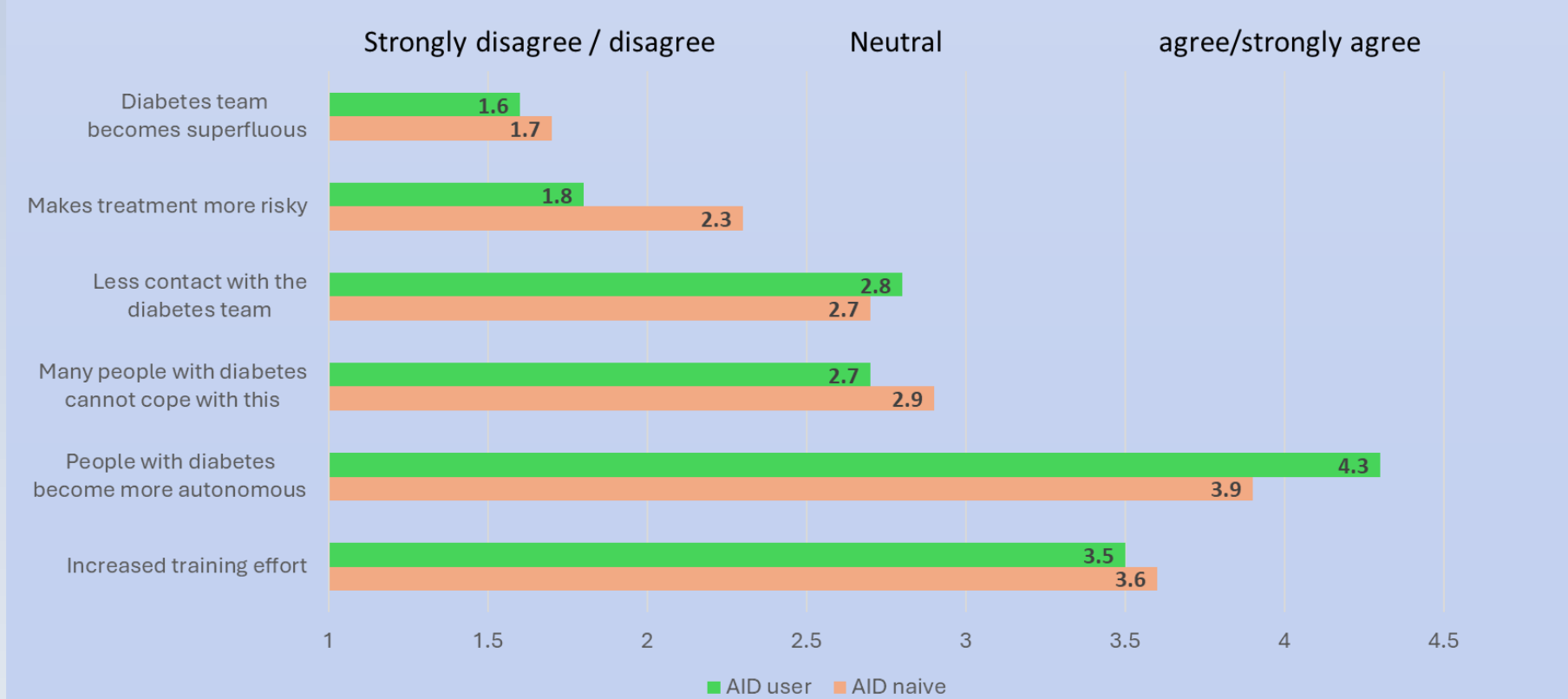


Figure 3: AID expectations in AID naive persons and AID users

Figure 4 presents results of a multivariate binary logistic regression analysis with AID use (yes vs. no) as the dependent variable and all these expectations and attitudes, as well as age and sex as predictors. When the predictors were controlled for each other, AID use was 77% more likely in children/adolescents than in adults. Greater autonomy from AID systems made their use 36% more likely. Expecting lower risks from AID systems made it 43% more likely to use such an AID system. Female participants were 23% more likely to use an AID system.

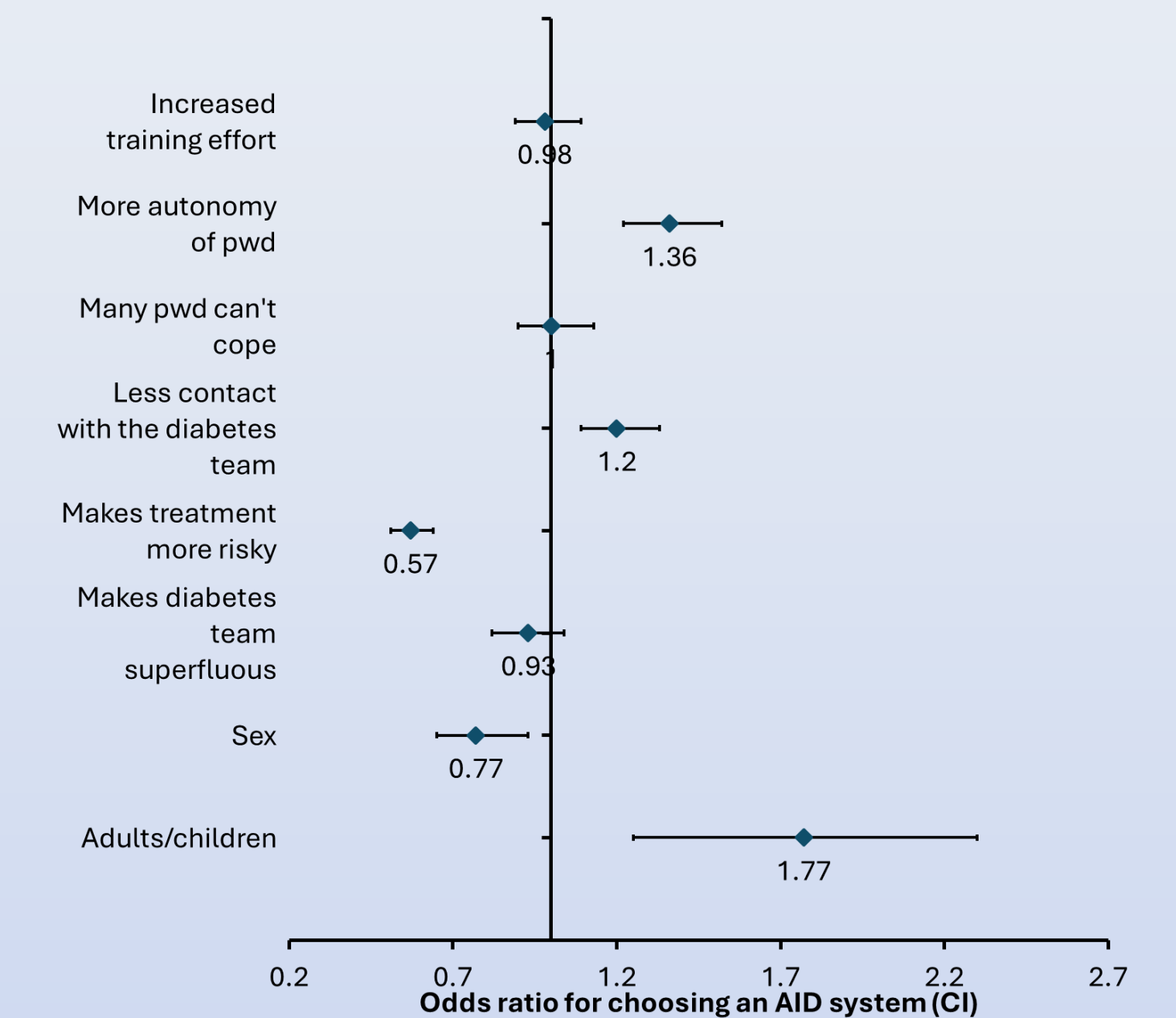


Figure 4: Results of logistic regression analysis of predictors of AID system use

CONCLUSION

Participants with type 1 diabetes expressed very positive expectations regarding the use of automated insulin delivery (AID) systems. They expect that AID systems will provide greater autonomy and reduce the risks associated with diabetes management. This optimism is particularly evident among women and children/adolescents, who seem more inclined to adopt this treatment. However, it is critical that these expectations are met in clinical care to avoid disappointment and provide optimal diabetes management.