

# User retention and engagement in a digital type 2 diabetes self-management education programme



Leicester Diabetes Centre  
Committed to Growing International Research, Education & Innovation



M Barker<sup>1,2</sup>, R Chauhan<sup>1</sup>, MJ Davies<sup>1,3</sup>, C Brough<sup>3</sup>, A Northern<sup>3</sup>, B Stribling<sup>3</sup>, S Schreder<sup>3</sup>, K Khunti<sup>1,3</sup>, M Hadjiconstantinou<sup>1</sup>.

1. Diabetes Research Centre, University of Leicester, UK; 2. Unit of Integrative Epidemiology, Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden; 3. Leicester Diabetes Centre, University Hospitals of Leicester NHS Trust, UK

**Background:** Digital health interventions, have the potential to improve the physical and psychosocial health of people living with type 2 diabetes. However, research investigating the long-term ( $\geq 1$  year) retention and engagement of users within these programmes is limited.

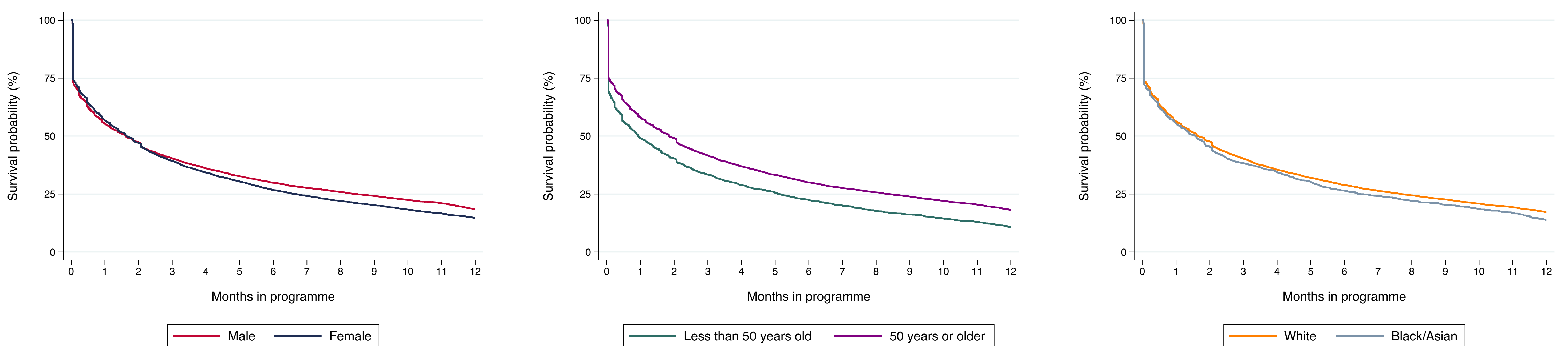
**Aim:** To evaluate long-term user retention and engagement in a digital-based self-management programme (myDESMOND), using real world data.

**Methods:** User retention was defined as the period between a user registering onto myDESMOND and their last date of access. The primary engagement outcome was defined as the total number of logins to the programme per user. The associations between retention/engagement and sociodemographic factors (age, sex, ethnicity) were tested using Cox regression models and Wilcoxon rank sum tests (Table 1).

**Results:** Retention was significantly higher among older users (Figure 1); the adjusted hazard ratio (representing the risk of users leaving the programme within the first year) among users aged  $\geq 50$  years, compared to those aged  $< 50$  years, was 0.80 (95% Confidence Interval: 0.75-0.85). In total, users logged into myDESMOND 8 (IQR: 4-18) times, however, engagement was significantly higher among older users, and users from a White ethnic background.

	Duration in programme (weeks)	Total number of logins	Total time spent on programme (mins)	Estimated time spent per login (mins)	Logins per week
<b>Total</b>	7.57 (0.00-36.43)	8 (4-18)	63.74 (20.87-191.80)	5.35 (2.22-11.80)	0.77 (0.32-1.84)
<b>Sex</b>					
Male	7.00 (0.00-36.86)	8 (4-20)	75.74 (24.45-221.17)	5.82 (2.60-12.57)	0.80 (0.35-1.89)
Female	7.14 (0.14-28.57)	8 (5-18)	82.55 (28.80-232.43)	6.82 (3.07-14.00)	0.89 (0.41-1.93)
P value	.37	.76	<.05	<.01	.06
<b>Age</b>					
<50 years	4.00 (0.00-22.14)	7 (4-15)	62.33 (20.33-161.58)	5.53 (2.35-12.38)	0.88 (0.36-2.17)
$\geq 50$ years	8.00 (0.29-36.29)	9 (5-20)	86.10 (28.53-245.23)	6.53 (2.98-13.64)	0.84 (0.38-1.87)
P value	<.01	<.01	<.01	<.01	.13
<b>Ethnicity</b>					
White	7.14 (0.14-33.43)	9 (5-19)	81.75 (28.0-227.85)	6.40 (2.88-13.53)	0.86 (0.38-1.97)
Black/Asian	6.86 (0.00-28.14)	7 (4-17)	70.40 (20.85-223.33)	5.80 (2.50-13.28)	0.80 (0.35-1.75)
P value	.07	<.01	<.01	<.05	<.05

**Table 1:** Retention and engagement metrics by sex, age, and ethnicity  
Data presented as median (IQR). Excludes users who spent less than one week using the myDESMOND programme.



**Figure 1:** Kaplan-Meier curves showing the time to users stopping using the myDESMOND app after the course of a year for A) users stratified by sex B) users stratified by age range ( $< 50$  years,  $\geq 50$  years) C) users stratified by ethnicity

## Characteristics

- > A total of 9,522 myDESMOND users were included.
- > Gender: Male (41.7%); female (40.4%).
- > Age:  $< 40$ s (5.5%);  $< 50$ s (17.8%);  $50$ s $>$  (64.4%)
- > Ethnicity: White (68.0%); Black/Asian (12.0%); Other/Mixed (1.8%); Missing data 18.2%
- > 56% remained using myDESMOND for at least a month
- > 18% remained on the programme for at least one year.

**Conclusion:** Retention and engagement were found to be high. These findings highlight the need for age- and cultural-specific implementation strategies and content adaptations, in order to improve retention and engagement among users of digital programmes.