

Using multiple research methods to develop a tailored eye health leaflet for young adults with type 2 diabetes

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Background

- Young adults with type 2 diabetes (T2D, aged 18-39 years) are at high risk of diabetic retinopathy¹, a leading cause of blindness in working age adults².
- Retinal screening is essential for early detection of diabetic retinopathy, reducing the risk of vision loss². Despite this, young adults with T2D are three times more likely not to attend eye examinations, compared to older adults with T2D³.

Aims

1. To identify individual-level, social-cognitive factors associated with retinal screening.
2. To develop an evidence-based eye health leaflet tailored to young adults with T2D, to increase knowledge and motivate retinal screening uptake.

Methods (Aim 1)

In-depth qualitative interviews

- An interview guide was developed to explore individual factors influencing retinal screening.
- Recruitment was conducted over a 6-month period via social media, state-based diabetes organisations, and in community healthcare settings.
- 10 young adults with T2D (Table 1) participated in semi-structured telephone interviews (mean duration: 56 min). Data were analysed using NVivo 10.

Nationwide online quantitative survey

- A 53-item online survey was developed to investigate social-cognitive factors influencing retinal screening uptake.
- Invitations were posted to 7,344 eligible National Diabetes Service Scheme registrants; 129 young adults with T2D participated in the online survey (Table 1).
- Using SPSS 22, independent samples t-tests (two-sided) were conducted to compare participants who had and had not had retinal screening on social-cognitive factors.

Results (Aim 1)

In-depth qualitative interviews

- Screening facilitators included the importance of social comparison with others who had experienced vision loss, and concern for the impact of vision loss on the family unit.
- Screening barriers included lack of time and financial resources, eye health misconceptions, unrealistic optimism and perceived invulnerability to diabetic retinopathy.

Nationwide online quantitative survey (Table 2)

- Participants who had engaged in screening had:
 - higher knowledge of diabetic retinopathy and the screening procedure
 - higher intention to engage in the behaviour
 - stronger beliefs of others' approval
 - more positive attitudes toward the behaviour
 - greater concern or regret if screening was missed
 - stronger perceptions of control in both overcoming barriers and ensuring future screening
- Perception of personal risk was low for both groups.

Methods and Results (Aim 2)

- 5 retinal screening determinants were identified from qualitative and quantitative data: Knowledge, Intention, Normative beliefs, Attitudes, Behavioural skills.
- 16 behaviour change techniques (theory-based methods used to change behaviour) were mapped to each determinant.
- 40 persuasive psychoeducational messages were developed (Table 3) and incorporated into the 'Who is looking after your eyes?' leaflet.
- The tailored leaflet was subject to comprehensive review and was well received by stakeholders.

Table 2: Social-cognitive factors by retinal screening behaviour

Social-cognitive factor	Range	Previous retinal screen		p
		No (n=33)	Yes (n=96)	
Knowledge (diabetes/vision loss)	0 – 2	1.86 ± 0.36	1.99 ± 0.11	.065
Knowledge (diabetic retinopathy)	0 – 11	5.50 ± 2.30	6.80 ± 1.96	.003
Knowledge (retinal screening)	0 – 3	1.09 ± 0.46	1.60 ± 0.63	.000
Intention	3 – 21	13.22 ± 6.97	20.24 ± 2.16	.000
Risk perception	4 – 28	13.58 ± 4.46	12.50 ± 4.34	.238
Normative beliefs	2 – 14	11.77 ± 3.43	13.77 ± 1.02	.003
Attitudes	11 – 55	40.71 ± 8.42	48.03 ± 4.26	.000
Anticipated regret	6 – 42	22.61 ± 7.02	25.33 ± 6.04	.040
Perceived behavioural control	6 – 30	18.87 ± 5.44	25.63 ± 3.75	.000
Recognising/overcoming barriers	5 – 25	16.03 ± 4.88	20.80 ± 3.49	.000

Mean ± SD, Independent samples t-tests (two sided)

Table 1: Participant characteristics

Demographic variable	In-depth interviews N = 10	Online survey N = 129
Age (years)	33.4 ± 2.6	34.1 ± 4.5
Gender (female)	5 (50)	77 (60)
Country of birth		
Australia	6 (60)	84 (65)
Asia (West & SE Asia)	3 (30)	31 (24)
United Kingdom	0 (0)	5 (4)
Other	1 (10)	9 (7)
Diabetes duration (years)	3.7 ± 5.1	1.5 ± 2.0
Previous retinal screen	5 (50)	96 (74)

N (%) or Mean ± SD

Table 3: Examples of leaflet content linked to retinal screening determinants

Determinant	Behaviour change technique ⁴	Leaflet content
Knowledge	Information on behaviour-health links	Have a diabetes eye health check when diabetes is first diagnosed and then at least every 2 years (more often if recommended by your optometrist)
	Information about health consequences	Diabetic retinopathy is caused by having high blood glucose levels over a long time. Other things that increase your risk of diabetic retinopathy are high blood pressure and high cholesterol
Intention	Information about social and environmental consequences	What can I do to protect myself from diabetic retinopathy and prevention vision loss? 1. Have a diabetes eye health check
Attitudes	Social comparison	Jenny's advice: "Don't wait to be told and don't wait until you notice changes - book an eye health check now"
	Information about likely emotional consequences	Quote from Jenny's story: "...the thought that I can control this gives me real peace of mind"
	Anticipated regret	Lucas quote: "I didn't know that I was at risk. I'm a busy person and my family depend on me"
Behavioural skills	Vicarious consequences	Jenny's story "It was actually quite fun; I don't know why I put it off. I was really scared going in there, but definitely not now - I'm not fazed by it at all"
	Instruction on how to perform the behaviour	You can book an appointment directly with an optometrist. When you do, be sure to tell them you have diabetes

Conclusion

- This study provides much needed data regarding an under-researched group at high risk of diabetic retinopathy.
- Social influence, social comparison, knowledge, time and resource constraints all play influential roles in retinal screening behaviour among young adults with T2D.
- Many of the factors influencing retinal screening behaviour are modifiable and can be targeted at the individual level.
- This study illustrates a successful process of developing tailored, evidence-based messages and incorporating them into an engaging, easily accessible resource.

References

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