The use of a multi-component app-based intervention to build health literacy skills: An Australian feasibility study

The SUCCESS app **S**

Presented by Jennifer Isautier

Sydney School of Public Health

Research Team: Stephanie Zwi; Kelly Lambert; Heather Shepherd; Kirsten McCaffery; Nicole De La Mata; Kamal Sud; Emma O'Lone; John Saunders; Na Liu; Somarjun Chandolu; Jinman Kim; Aphra Robbins; Angela Webster; Danielle Muscat
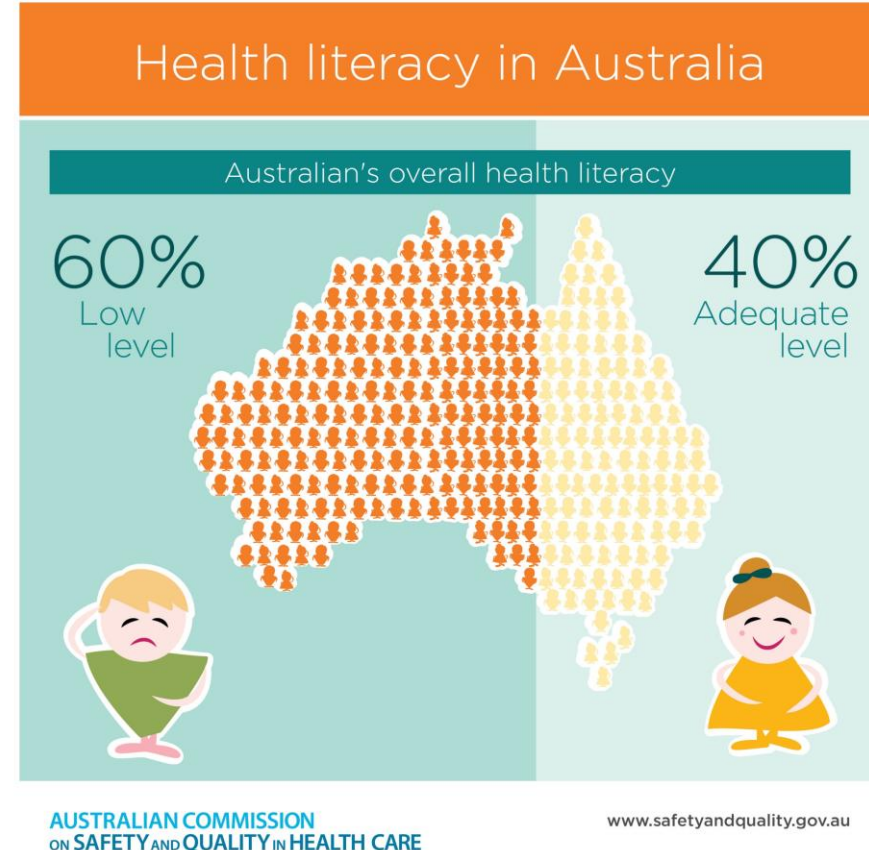
THE UNIVERSITY OF SYDNEY

Sydney Health Literacy Lab

Background: Health Literacy

"…the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health." (WHO, 1998)

Health literacy in Australia

Australian's overall health literacy

60% Low level

40% Adequate level

AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTH CARE

www.safetyandquality.gov.au

Background: Chronic Kidney Disease

- Chronic kidney disease affects 10% of Australians[1]

- 27% of people receiving haemodialysis have limited health literacy[2]

- Low health literacy is independently associated with:[3,4]
    - ↑ emergency department visits and hospitalisations
    - ↑ cardiovascular events
    - ↑ mortality
    - missed dialysis sessions
    - poorer quality of life

Systematic Review

Readability of Written Materials for CKD Patients: A Systematic Review

Suzanne Morony [1], Michaela Flynn [2], Kirsten J McCaffery [1], Jesse Jansen [1], Angela C Webster [3]

Affiliations + expand

Abstract

Background: The "average" patient has a literacy level of US grade 8 (age 13-14 years), but this may be lower for people with chronic kidney disease (CKD). Current guidelines suggest that patient education materials should be pitched at a literacy level of around 5th grade (age 10-11 years). This study aims to evaluate the readability of written materials targeted at patients with CKD.

Study design: Systematic review.

Setting & population: Patient information materials aimed at adults with CKD and written in English.

Search strategy & sources: Patient education materials designed to be printed and read, sourced from practices in Australia and online at all known websites run by relevant international CKD organizations during March 2014.

Analytical approach: Quantitative analysis of readability using Lexile Analyzer and Flesch-Kincaid tools.

Results: We analyzed 80 materials. Both Lexile Analyzer and Flesch-Kincaid analyses suggested that most materials required a minimum of grade 9 (age 14-15 years) schooling to read them. Only 5% of materials were pitched at the recommended level (grade 5).

Qualitative Study

Beyond dialysis decisions: a qualitative exploration of decision-making among culturally and linguistically diverse adults with chronic kidney disease on haemodialysis

Danielle Marie Muscat [1], Roshana Kanagaratnam [2], Heather L Shepherd [3], Kamal Sud [4] [5] [6], Kirsten McCaffery [7] [3] [8], Angela Webster [2] [6]

Affiliations + expand

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Abstract

Background: To date, limited research has been dedicated to exploring the experience of decision-making for chronic kidney disease (CKD) patients who have initiated dialysis and have to make decisions in the context of managing multiple illnesses. Evidence about the experience of decision-making for minority or disadvantaged groups living with CKD (e.g. culturally and linguistically diverse adults; those with lower health literacy or cognitive impairment) is also lacking. This study aimed to explore the experience of healthcare decision-making among culturally and linguistically diverse adults receiving in-centre haemodialysis for advanced CKD.

Methods: Semi-structured interviews with English or Arabic-speaking adults recruited from four large haemodialysis units in Greater Western Sydney, Australia using stratified, purposive sampling. Interviews were audio-recorded, transcribed verbatim, and analysed using the Framework method.

Results: Interviews were conducted with 35 participants from a range of cultural backgrounds (26 English-language; 9 Arabic-language). One quarter had limited health literacy as assessed by the Single Item Literacy Screener. Four major themes were identified from the data, highlighting that participants had limited awareness of decision-points throughout the CKD trajectory (other than the decision to initiate dialysis), expressed passivity regarding their involvement in healthcare decisions, and reported inconsistent information provision within and across dialysis units. There was diversity

The SUCCESS App Development

Supporting patients to be involved in decisions about their health and care: Development of a best practice health literacy App for Australian adults living with Chronic Kidney Disease

Danielle Marie Muscat [1], Kelly Lambert [2], Heather Shepherd [3], Kirsten J McCaffery [1], Stephanie Zwi [1], Na Liu [4], Kamal Sud [5][6], John Saunders [7], Emma O'Lone [8], Jinman Kim [4][9], Aphra Robbins [1], Angela C Webster [10]
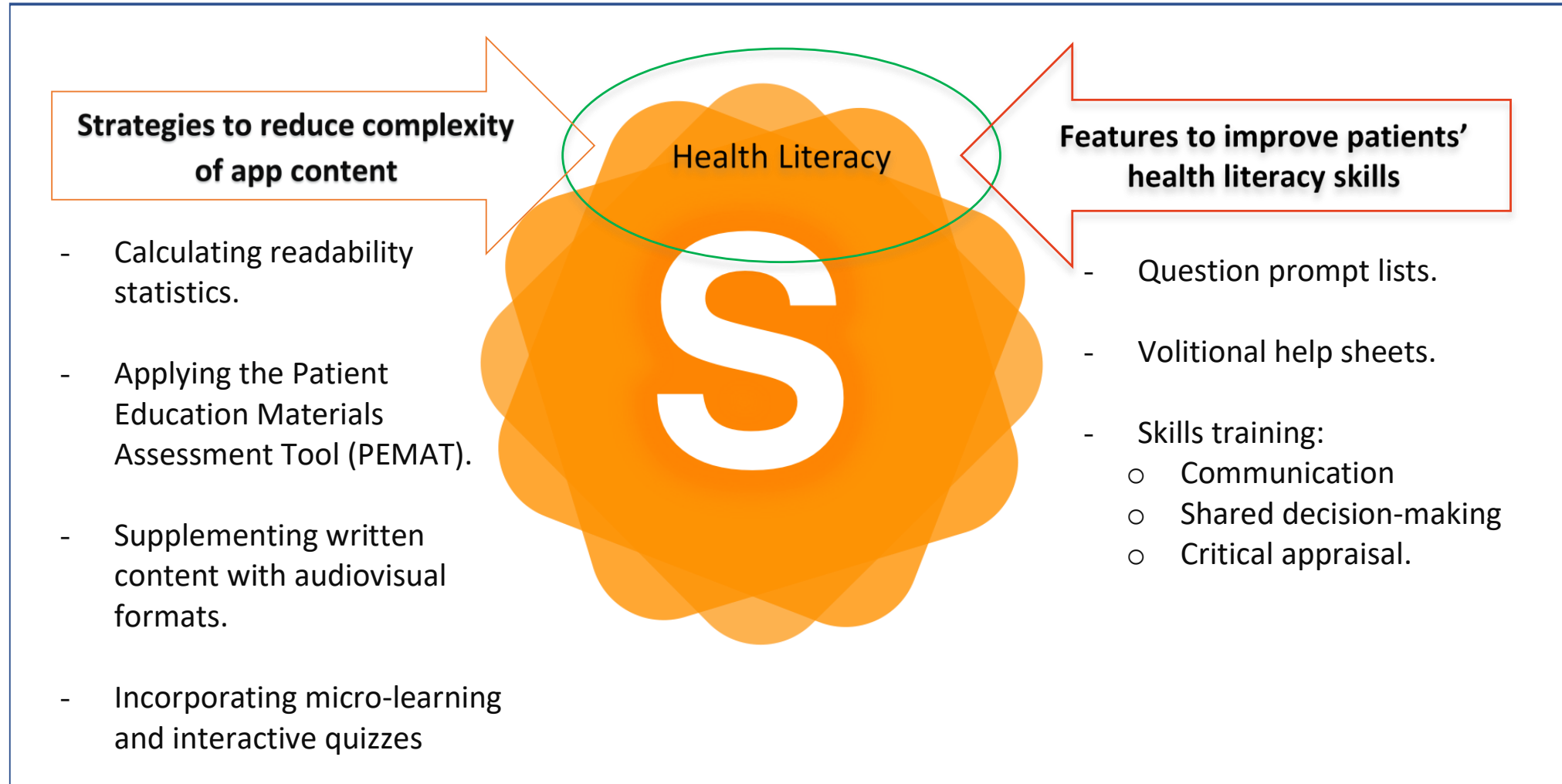
Affiliations + expand

Abstract

Issue addressed: Inadequate health literacy is common in those with chronic kidney disease (CKD), especially among culturally and linguistically-diverse groups. Patient information for people with CKD, including those with kidney failure requiring dialysis, is often written beyond their literacy level, and many CKD-related apps are not accurate or evidence-based. These represent important barriers to healthcare decision-making and equity in access to healthcare.

Methods: We developed a cross-platform application (the 'SUCCESS app') to support Australian adults with kidney failure requiring dialysis to actively participate in self-management and decision-making. App content was informed by health literacy theory which recognises the importance of reducing the complexity of health information as well as equipping consumers with the skills necessary to access, understand and act on this information. The development team comprised members of diverse backgrounds and expertise, including nursing, allied health, psychology, epidemiology, nephrology and IT, as well as consumer representatives.

Results: Content areas included diet, fluids, medicine, physical activity, emotional wellbeing and supportive care, chosen as they represent important decision-points in the CKD trajectory. To support functional health literacy, a four-step process to simplify written content was used including calculating readability statistics, applying the Patient Education Materials Assessment Tool,

The SUCCESS app

Strategies to reduce complexity of app content

- Calculating readability statistics.

- Applying the Patient Education Materials Assessment Tool (PEMAT).

- Supplementing written content with audiovisual formats.

- Incorporating micro-learning and interactive quizzes

Health Literacy

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Features to improve patients' health literacy skills

- Question prompt lists.

- Volitional help sheets.

- Skills training:
  - Communication
  - Shared decision-making
  - Critical appraisal.

Aims

- Investigate the feasibility of implementing the SUCCESS smartphone app with adults with stage 5 CKD in haemodialysis centres

- Assess the impact of a multi-component app-based intervention on different domains of health literacy

Methods

Recruitment Strategy:

- 18 years and over with kidney failure requiring haemodialysis
- Able to read and speak English sufficiently well to respond to written questions without assistance
- Invited to use the SUCCESS app for 12 weeks

Baseline Measurements:

- Health Literacy Questionnaire

Outcome Measurements:

- Health Literacy Questionnaire
- mHealth app usability questionnaire
- Qualitative Interviews

Results: Recruitment

- Reached a diverse population (n = 57)
- 58.2% of participants completed the study
- 32% lost to f/up due to Covid-19 interuptions

Characteristics	Completed (%)	Lost to Follow up (%)	P
Participants (n)	57	53	
Age (years)			
<50	26.3	20.8	
50 - 59	28	22.6	0.21
60 – 69	29.8	20.8	
70 – 79	12.3	26.4	
≥80	3.5	9.4	
Gender (% Male)	56.1	64	0.23
ATSI	7	1.9	0.19
Country of birth (Australia)	56.1	56.6	0.96
Dialysis Vintage (years)			
<1	33.3	39.2	
1-5	42.1	31.3	
6-10	12.2	7.6	0.79
10 – 15	7.1	5.9	
>15	5.3	5.9	

Results: Health Literacy

Higher values indicate greater understanding or ability

Health Literacy Domain (range)	Pre-intervention Mean (SD)	Post-Intervention Mean (SD)	P
Having sufficient information to manage my health (4-16)	12.4 ± 2.3	12.6 ± 2.5	0.612
Understanding health information well enough to know what to do (5–25)	20.1 ± 3.8	20.6 ± 4.1	0.395
Ability to actively engage with healthcare providers (5-25)	19.7 ± 4.1	21.1 ± 3.5	**0.014**

Quote – From 50 year old Italian Male

"It's cool developing the ability to kind of self-care or manage your health. Getting people to think, um, you know, to be involved. Kind of empowering people to be more involved in their healthcare… um, than just accepting whatever is coming down the line for them."

Quote – From 56 years old Female

"…yeah, helps. You know, and… talk to your doctor and sort of work out a better plan. And with this app I think it helps you, it gives you the information…to work on."

The University of Sydney

Results: mHealth App usability Questionnaire

MAUQ; 7 point scale – 1: strongly disagree, 7: strongly agree	Median (IQR)
Would you recommend it to a friend?	7 (1.5)
Do you think the app is useful for your health and wellbeing?	6 (3)
Do you think the amount of time involved in using the app suits your lifestyle?	6 (3)
Would you use this app again?	6 (2.5)
Would you feel comfortable using this app in a social setting?	6 (2)
Overall, are you satisfied with the app?	6 (2)
Does the app help you manage your health effectively?	5 (3)
Does the app improve your access to healthcare services?	4 (3)

Conclusions

- It was feasible to use the SUCCESS app as an adjunct to healthcare in patients with kidney failure requiring dialysis.

- The SUCCESS app was acceptable and may help build some health literacy skills and may help participants to engage with their healthcare team.

Future directions:

- A randomised-controlled-trial is warranted to assess the impact of the SUCCESS App on patient reported psychosocial and clinical outcomes.

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Acknowledgments

Research Team

Stephanie Zwi

Kelly Lambert

Heather Shepherd

Kirsten McCaffery

Nicole De La Mata

Kamal Sud

Emma O'Lone

Patrick Kelly

John Saunders

Na Liu

Somarjun Chandolu

Jinman Kim

Aphra Robbins

Angela Webster

Danielle Muscat

Questions?

Please feel free to contact me at: jennifer.isautier@sydney.edu.au