Technoleg Iechyd Cymru
Health Technology Wales

Topic Exploration Report

Topic explorations are designed to provide a high-level briefing on new topics submitted for consideration by Health Technology Wales. The main objectives of this report are to:

1. Determine the quantity and quality of evidence available for a technology of interest.
2. Identify any gaps in the evidence/ongoing evidence collection.
3. Inform decisions on topics that warrant fuller assessment by Health Technology Wales.

Topic:	**Digital applications to educate healthcare professionals about pressure ulcers**
Topic exploration report number:	TER 277

Introduction and aims

Health Technology Wales researchers searched for evidence on educational applications (apps) for use by healthcare professionals to help raise awareness of, prevent and manage pressure ulcers. One such example of an app, submitted by the Topic Proposer, is 'Offload'. Whilst the 'Offload' app is noted to be suitable for patients and healthcare professionals, this literature search focused on use of educational apps by healthcare professionals. The Topic Proposer states that the app would mainly be used by professionals, particularly those in the care sector and tissue viability services in health boards.

A pressure ulcer is damage to the skin and the deeper layer of tissue under the skin because of pressure being applied to the same area of skin for a period of time and cutting off its blood supply. All patients are potentially at risk of developing a pressure ulcer, but they are more likely to occur in people with impaired mobility. Pressure ulcers may cause pain or mean a longer stay in hospital. Severe pressure ulcers can badly damage the muscle or bone underneath the skin and can take a very long time to heal.

One way to prevent a pressure ulcer is to reduce or relieve pressure on areas that are most likely to develop pressure areas: this is done by moving around and changing position (offloading). The 'Offload' educational app focuses on the prevention of pressure ulcers, including the physical aspects of offloading pressure, it also has a section on managing pressure ulcers. The Topic Proposer states that, although there are a range of websites available with different educational focuses on pressure ulcers, healthcare professionals could benefit from use of the 'Offload' app as it focuses on the physical aspects of offloading pressure and has been designed around the health professional and patient/carer interaction.

Summary of evidence

'Offload' and other smartphone/digital applications for pressure ulcer education are digital health technologies and were determined to be a Tier C technology according to the Evidence Standards Framework for Digital Health Technologies. Technologies within this classification guide treatment and allow people to self-manage their condition. For technologies of this classification, it is recommended that high-quality randomised controlled studies are produced to demonstrate effectiveness of the technology.

UK guidance

National Institute for Health and Care Excellence (NICE) clinical guideline (CG) 179 recommends that training should be provided to healthcare professionals on preventing a pressure ulcer, and that further training should be provided to healthcare professionals who have contact with anyone who has been assessed as being at high risk of developing a pressure ulcer. This training should include how to reposition.

Systematic reviews

Koepp et al. (2020) evaluated apps developed to identify, evaluate, treat, and/or prevent pressure ulcers in adults. All of the identified studies involved the initial phase of app development, and the review therefore concluded that the evidence for their use is currently too limited.

Suva at el. (2018) investigated pressure ulcer care-related education. They concluded that a lack of pressure ulcer assessment and management-knowledge by healthcare professionals was an overriding theme in the education literature. Some of the methods preferred for pressure ulcer education among nurses and physicians included information technology (e.g., e-learning) and the use of high-quality wound pictures. Smartphone/digital apps specifically were not mentioned in the review.

Primary evidence

A poster presentation by Swansea University reported on district nurse feedback on the 'Offload' app: over 90% of nurses stated they wanted to continue using the app, and there was strong agreement that continued use of the app would reduce pressure ulcer incidence. The poster reported that there was no effect on the number of pressure ulcer incidences during the 'Offload' app trial period but that the horizon was unlikely to be sufficient for any effects to be observable (Harris et al., 2017).

The poster presentation by Harris et al. (2017) reports that the average cost per pressure ulcer increases 7.6% inclusive of 'Offload' app costs, but that if the app can reduce resource usage, or prevent the number or severity of ulcers, savings of more than £800,000 for one health board could be realised. The Topic Proposer reported that cost savings to a single health board would be in the region of £50,000 to £150,000 per annum, based on health cost projections (Dealey et al., 2012) and an envisaged 1% reduction in prevalence of pressure ulcers.

Areas of uncertainty

HTW researchers did not identify any evidence for the 'Offload' education app, specifically, in the literature search. The limited clinical and cost-effectiveness evidence for the 'Offload' app comes from a poster presentation provided by the Topic Proposer. One systematic review was identified which evaluated apps developed to identify, evaluate, treat, and/or prevent pressure ulcers in adults, but it is unclear how similar these apps are to 'Offload' and the review did not report on effectiveness due to the apps being in the early stage of development. No evidence was found on how educational apps affect hospital admissions and length of stay, requirement for surgery, and staff time.

Conclusions

The limited evidence that we identified suggests that there is room for improvement in educating healthcare professionals on pressure ulcer prevention and management. NICE guidance recommends that healthcare professionals are educated appropriately on preventing pressure ulcers but does not specify educational methods. Evidence for the 'Offload' app from a poster presentation suggests that it might be a useful educational tool for healthcare professionals and patients but noted that the trial period was unlikely to be sufficient and further cost-effectiveness research would be beneficial. We did not identify any published evidence or ongoing evidence for use of the 'Offload' app or any other educational pressure ulcer apps.

Brief literature search results

Resource	Results
HTA organisations	
Healthcare Improvement Scotland	We did not identify any relevant evidence from this source
Health Technology Assessment Group	Health Service Executive National Wound Guidelines (2018): https://healthservice.hse.ie/about-us/onmsd/quality-nursing-and-midwifery-care/hse-national-wound-guidelines-2018.html
Health Information and Quality Authority	We did not identify any relevant evidence from this source
EUnetHTA	We did not identify any relevant evidence from this source
International HTA Database	The Swedish Council on Health Technology Assessment (2014). Chronic ulcers in the elderly – prevention and treatment : https://database.inahta.org/article/13340 *Report states that substantial gaps in our knowledge exist regarding how the organisation of wound management, including education and training, impacts both the healing and recurrence of chronic ulcers* University of York. Centre for Reviews and Dissemination (2014). Effectiveness matters: preventing pressure ulcers: https://www.york.ac.uk/crd/publications/effectiveness-matters/preventing-pressure-ulcers/ *Recommends that ongoing education is one of the key components of successful pressure ulcer prevention initiatives.*
UK guidelines and guidance	
SIGN	Management of chronic venous leg ulcers (2010): https://www.sign.ac.uk/our-guidelines/management-of-chronic-venous-leg-ulcers/
NICE	Clinical guideline (CG179). Pressure ulcers: prevention and management (2014): https://www.nice.org.uk/guidance/cg179 *NICE CG179 recommends that training should be provided to healthcare professionals on preventing a pressure ulcer, including who is most likely to be at risk of developing a pressure ulcer, how to identify pressure damage, steps to take to prevent new or further pressure damage, who to contact for further information and further action.* *Further training should be provided to healthcare professionals who have contact with anyone who has been assessed as being at high risk of developing a pressure ulcer. Training should include: how to carry out a risk and skin assessment, how to reposition, information on pressure redistributing devices, discussion of pressure ulcer prevention with patients and their carers, details of sources of advice and support.*
Secondary literature and economic evaluations	
https://www.epistemonikos.org/en/	We did not identify any relevant evidence from this source
https://www.tripdatabase.com/	We did not identify any relevant evidence from this source

Cochrane library	We did not identify any relevant evidence from this source
Medline (via Ovid or Pubmed)	Koepp J, Baron MV, Hernandes Martins PR, Brandenburg C, Kira ATF, Trindade VD, Ley Dominguez LM, Carneiro M, Frozza R, Possuelo LG, De Mello Pinto MV, Mahlmann Kipper L, Pinheiro da Costa BE (2020). The Quality of Mobile Apps Used for the Identification of Pressure Ulcers in Adults: Systematic Survey and Review of Apps in App Stores. [Review]. JMIR MHealth and UHealth. 8(6):e14266: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7327590/ Suva G, Sharma T, Campbell KE, Sibbald RG, An D, Woo K (2018). Strategies to support pressure injury best practices by the inter-professional team; a systematic review. International Wound Journal, 15(4), 580-589: DOI: 10.1111/iwj.12901
Primary studies	
https://www.epistemonikos.org/en/	We did not identify any relevant evidence from this source
https://www.tripdatabase.com/	We did not identify any relevant evidence from this source
Cochrane library	We did not identify any relevant evidence from this source
Medline	We did not identify any relevant evidence from this source
Ongoing primary or secondary research	
PROSPERO database	We did not identify any relevant evidence from this source
Clinicaltrials.gov	We did not identify any relevant evidence from this source
Other	
Topic proposer	Dealey C, Posnett J, Walker A (2012). The cost of pressure ulcers in the United Kingdom. Journal of Wound Care, 21:6, 261-266: DOI: 10.12968/jowc.2012.21.6.261 Harris S, Cardew A, Kosnes L, Tasker L, Bowtell M. "Economic evaluation of mobile technologies in pressure ulcer care". Proceedings of Inspiring Innovation in Practice Conference 2017 Internal health board data and independent evaluation with Swansea University (unpublished)

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Concepts used:	Awareness/prevention/management/treatment pressure ulcers/bedsores/ pressure sores, digital application, offload, telehealth/telemedicine, education/training