



# Falling below the waterline: A systematic review of drowning prevention interventions for adults, 1990-2012.

J E Leavy<sup>1</sup>, G Crawford<sup>1</sup>, L Portsmouth<sup>1</sup>, J Jancey<sup>1</sup>, F Leaversuch<sup>2,3</sup>, L Nimmo<sup>4</sup>, & K Hunt<sup>1</sup>

<sup>1</sup>. Western Australian Centre for Health Promotion Research, Curtin University. <sup>2</sup>. School of Public Health, Curtin University. <sup>3</sup>. The Royal Lifesaving Society. <sup>4</sup>. Royal Lifesaving Society Western Australia Inc. (Presenter)

## Background

In 2011, drowning was the third leading cause of unintentional injury internationally, resulting in an estimated 359,449 deaths.<sup>1</sup> Evidence based interventions to prevent adult drowning are needed to reduce deaths on a global scale. Currently there is a lack of robust, evaluated interventions published in the peer reviewed literature. The aim of this review was to identify and analyse the evidence base for adult focused drowning and near drowning interventions.

## Methods

A systematic search was undertaken for peer-reviewed articles published in English between 1990-2012 with an adult focus and describing a drowning intervention. Identified studies were quality appraised using a purposively tailored checklist for interventions adapted from NICE<sup>2</sup> and Joanna Briggs.<sup>3</sup> A total of six studies were included for review.

## Results

- All studies were conducted in high income countries.
- 4 prospective interventions, 2 retrospective intervention analyses.
- Prospective duration range of 10 days to 5 years; retrospective duration range from 6 to 21 years.
- 2 incorporated behaviour change theory 2 incorporated formative evaluation.
- Prevention strategies: education (n=4), technology (n=1) and environmental (n=3).
- The 4 prospective interventions all reported positive changes in short term effects.
- A mixed effect was observed in the retrospective studies.

Author	Country/ Design	Behavioural theory	Strategy			Evaluation design			Positive outcome effect
			Education	Technology	Environmental	Formative	Process	Impact/ Outcome	
Moran (2011). <sup>7</sup>	NZ/ Prospective	N	Y	N	N	✓	-	✓	✓
Treser, Trusty & Yang (1997). <sup>9</sup>	US/ Prospective	N	Y	N	Y	-	-	✓	✓
Howland et al. (1998). <sup>6</sup>	US/ Prospective	N	N	N	Y	-	-	✓	X
Schwebel, Lindsay & Simpson (2007). <sup>8</sup>	US/ Prospective	Y	Y	N	N	-	-	✓	✓
Hatfield et al. (2012). <sup>4</sup>	Aus/ Retrospective	Y	Y	Y	N	✓	-	✓	✓
Cummin, Mueller & Quan (2011). <sup>5</sup>	US/ Retrospective	N	N	N	Y	-	-	✓	✓

## Conclusion

This review found:

- 1) There to be minimal peer reviewed literature documenting the systematic evaluation of drowning prevention interventions.
- 2) The intervention studies that were reviewed reported mixed findings for the overall design, delivery and effectiveness of studies.
- 3) There was minimal use of conceptual theories and formative evaluation as part of the design of interventions.
- 4) Drowning prevention designs and evaluation measures need to be more robust if the level of observed evidence is to influence policy makers.

There is an acute need for:

- 1) More adult drowning interventions to be subject to quality, long term evaluation, using valid and reliable measures, with larger representative samples.
- 2) Greater collaboration between researchers and community based organisations to enhance research dissemination.

**Drowning must be recognised as a serious health issue and receive the same attention and evaluation of preventative measures as other public health priorities.**

References  
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