

# Enhancing Water Safety and Reducing Drowning Incidents Among Young Adults in Sri Lanka: A Study on the Adoption of Personal Flotation Devices

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**Abstract—** Drowning is a critical public health issue worldwide, with Sri Lanka facing a disproportionately high rate of drowning incidents, particularly among young adults. This research focuses on addressing the problem of unintentional drownings by promoting the adoption of personal flotation devices (PFDs), particularly life jackets. Through a multi-method qualitative approach, the study investigates the barriers to PFD adoption and explores opportunities for design innovation that align with socio-cultural and practical needs.

The research begins by examining the underlying causes of unintentional drowning and the current challenges associated with adopting life jackets. Semi-structured interviews, participatory design sessions, and field observations were employed to gain insights from diverse stakeholders, including young adults, fishermen, and water safety professionals. The findings reveal significant barriers, such as discomfort, affordability, and socio-cultural stigma, which discourage the use of life jackets in Sri Lanka. Figure 1 summarises the frequency of water-related activities and highlights the risks faced by the target demographic.

Building on these insights, the study proposes a design framework aimed at enhancing the adoption of PFDs. This framework prioritises three key aspects: comfort, affordability, and cultural sensitivity. By incorporating ergonomic design principles, lightweight materials, and adaptable sizing, the proposed life jacket designs address comfort concerns. Additionally, the study explores cost-effective production techniques to ensure affordability for low-income users. Cultural sensitivity is embedded into the design process by considering local aesthetic preferences and addressing social stigma through educational campaigns.

The research further evaluates the effectiveness of participatory design in addressing water safety challenges. By engaging end-users in the design process, the study ensures that the proposed solutions are practical, user-friendly, and widely acceptable. The design process also incorporates feedback from fishermen who frequently encounter difficulties using life jackets due to their restrictive fit and limited durability (see Figure 2).

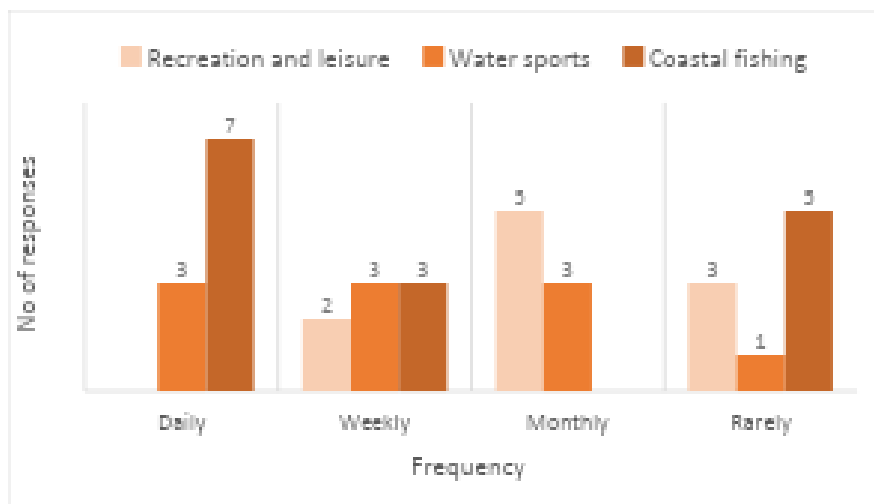
The results demonstrate the potential of innovative life jacket designs to reduce drowning incidents and improve water safety in Sri Lanka. The proposed designs not only enhance usability but also align with global safety standards, as outlined by the International Maritime Organization (IMO) and ISO guidelines for PFDs. Figure 3 compares the new designs with conventional models, illustrating their superior adaptability and user acceptance.

This study contributes to the broader discourse on water safety and drowning prevention by emphasizing the importance of context-specific interventions. By addressing the unique challenges faced by Sri Lankan communities, the research advocates for a holistic approach that integrates design innovation, community engagement, and policy advocacy. The findings underscore the transformative potential of participatory design in creating sustainable, culturally appropriate solutions to pressing public health challenges.

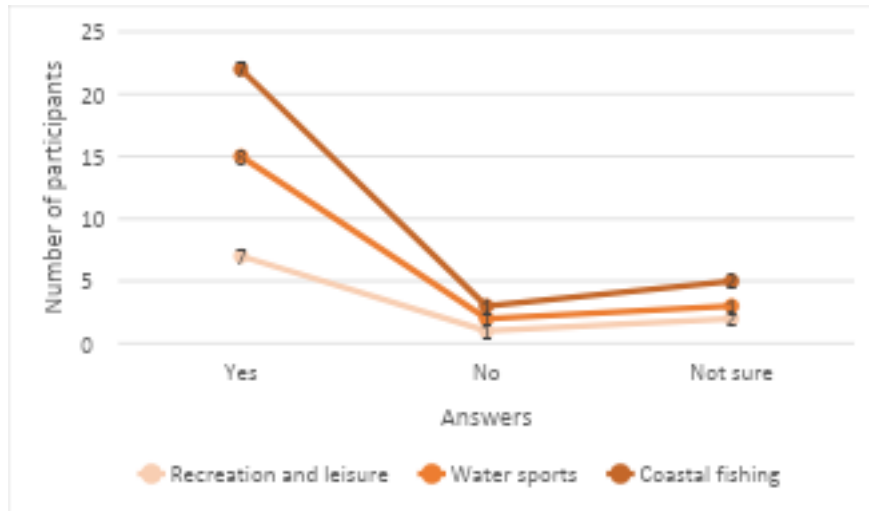
Ultimately, this research provides a roadmap for reducing unintentional drownings through the adoption of improved PFDs. It highlights the critical role of design in addressing public health issues and fostering a culture of safety. As Sri Lanka continues to confront the devastating impact of drowning, this study offers a meaningful contribution toward building a safer, more resilient society.

**Keywords:** Drowning prevention, personal flotation devices, life jackets, water safety, participatory design, Sri Lanka

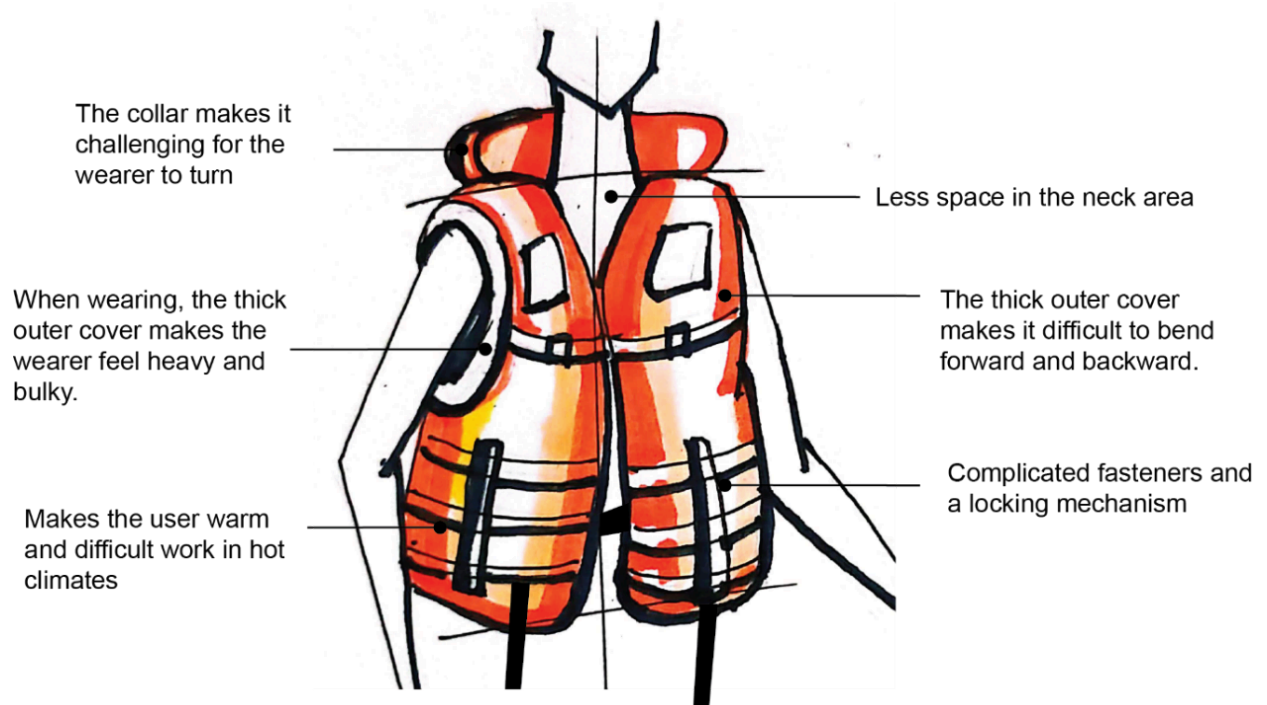
**Figure 1**  
Table Frequency of engaging in water-related activities



**Figure 2**  
 Table Understanding the effectiveness of life jackets



**Figure 2**  
 Difficulties and restrictions faced by fishermen in using life jackets



Note. Created by the author

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