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# The Development of Drowning Prevention Strategies Model in Malaysia: Need Survey Analysis



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**Abstract** | Drowning remains a significant public health concern in Malaysia, particularly among children. Despite ongoing efforts to mitigate this risk, there is a pressing need for a comprehensive drowning prevention model tailored to the Malaysian context. This study aims to develop a drowning prevention strategies model through an extensive need survey analysis among parents, educators, and community leaders. Therefore, the main purpose of this study was to know the scenario and the need for analysis of the drowning prevention model from the expert point of view. The study is based on the Develop and Design Research (DDR; Saedah, Muhammad & Rozaini, 2020). IBM Statistics (SPSS) is utilized as the main statistical analysis software. A total of 187 respondents ( $N = 187$ ) among units of Pasukan Penyelamat di Air (PPDA) under Jabatan Bomba dan Penyelamat Malaysia (JPBM) have purposively been selected. Based on the analyses, over 90% of agree was achieved for all statements in the survey. These findings provided a platform and systematic scholarly work on strategies for drowning prevention model development.

**Keywords:** *Drowning incidents, Drowning Prevention Model.*

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## I. INTRODUCTION

The drowning incident is one of the leading causes of accident-related deaths worldwide. According to the World Health Organization (WHO), drowning incidents are estimated to claim the lives of 372,000 [2]. Asia reported the highest risk drowning rates of childhood, approximately 30 per 100,000 children aged 1 to 4 years old [1]. According to statistics released by the *Jabatan Bomba dan Penyelamat Malaysia* (JPBM), there are 400 cases of drowning each year, and it should be taken seriously by the entire community [4].

## II. METHODS

In this research, a modified Design and Development Research (DDR) approach was used, Saedah Siraj [6], which involves three phases, including the crucial Needs Analysis Phase. The needs analysis phase is essential in model development [5], as it helps identify research questions and solutions for the target population. This statement was also supported by [3], who emphasised that it is crucial to identify the research questions generated in formulating models that will be developed primarily in the DDR approach. To gather expert opinions and consensus, a survey was conducted among 187 members of the *Pasukan Penyelamat di Air* (PPDA) from the Malaysia Fire and Rescue Department (JPBM) across Malaysia. The survey instrument questionnaires were used as the primary tool for this phase.

## III. RESULTS AND DISCUSSION

There are two findings reveals in this study consist of demographic data and need survey analysis findings.

### A. *Demographic Analysis of Respondents*

In Table 1, the data show that all participants were male, with most identifying as Malay. A minority (8.6%) represented other ethnicities, including Peranakan and foreign nationals living in Malaysia. Over half of the respondents (55.6%) had more than 10 years of experience in water rescue activities, making them the most experienced group. Participants with 5 to 10 years of experience made up 27.3%, while 17.1% had 1 to 5 years of experience.

TABLE I  
DEMOGRAPHIC DATA

Variables		Frequency	(%)
Gender	Male	187	100
	Female	-	-
Race	Malay	171	91.4
	Others	16	8.6
Experience	>1 year < 5 years	32	17.1
	>5 years <10 years	51	27.3
	>10 years	104	55.6

### B. Need Survey Analysis Findings

In this study, the needs survey analysis included three key questions. The first question was analysed using frequency and percentage, while the second and third questions were evaluated using a 5-point Likert scale, with each point on the scale representing different levels of agreement.

TABLE II  
NEED SURVEY ANALYSIS ITEM 1

Item 1: Have you ever known about the existence of Drowning Prevention Strategy Model in Malaysia?	
Yes (4.8%)	No (95.2%)

An analysis of item 1 reveals that most of the respondents ( $n = 178$ ) were not aware of the existence of the Drowning Prevention Strategy Model in Malaysia. Only ( $n = 9$ ) respondents stated that they were familiar with the existence of the Drowning Prevention Strategy Model in Malaysia. However, based on the findings, none of the models mentioned by the respondents align with the drowning prevention model.

TABLE III  
NEED SURVEY ANALYSIS ITEM 2

Item 2: Is it difficult to get a Drowning Prevention Model for guidance in designing outdoor recreation programs for water activities in Malaysia?			
	<i>N</i>	%	Percentage of agree
Strongly Agree	83	44.4	90.9%
Agree	81	43.3	
Moderately Agree	6	3.2	
Disagree	15	8	
Strongly disagree	2	1.1	
Strongly Agree	83	44.4	

The highest percentage was 'Strongly Agree' at 44.4 percent ( $n = 83$ ), followed by 'Agree' at 43.3 percent ( $n = 81$ ), 'Moderately Agree' at 3.2 percent ( $n = 6$ ), then, 'Disagree' at 8 percent ( $n = 15$ ) of the

responses and the least was “Strongly disagree” at 1.1 percent ( $n = 2$ ). The aggregate score pertaining to Item 3 amounts to 90.9 percent agreement. The analysis strongly indicates that a majority of survey participants agreed that it was difficult to get a Drowning Prevention Model for guidance in designing outdoor recreation programs for water activities in Malaysia.

TABLE IV  
NEED SURVEY ANALYSIS ITEM 3

<b>Item 3: Do you agree if progressive steps should be taken to build a Drowning Prevention Strategy Model in Malaysia</b>			
	<i>n</i>	%	Percentage of agree
Strongly Agree	101	54.0	
Agree	77	41.2	
Moderately Agree	6	3.2	
Disagree	1	0.5	98.4%
Strongly disagree	2	1.1	
Strongly Agree	101	54.0	

The highest frequency was ‘Strongly Agree’ with 54 percent ( $n = 101$ ), followed by ‘Agree’ with 41.2 percent ( $n = 77$ ), followed by ‘Moderately Agree’ with 3.2 percent ( $n = 6$ ) responses, then ‘Disagree’ with 0.5 percent ( $n = 1$ ), and the lowest ‘Strongly disagree’ with 1.1 percent ( $n = 2$ ) responses. The overall score for Item 4 was 98.4 percent agree. The analysis recommended that the majority respondents agreed that progressive steps should be taken to build a Drowning prevention Strategy Model in Malaysia.

The survey analysis of expert responses highlights an urgent need for a drowning prevention strategy model in Malaysia. The country has seen a significant rise in drowning incidents, with approximately 90% of cases reported to the fire and rescue department resulting in fatalities, totalling 245 nationwide [4]. Alarmingly, no follow-up actions have been implemented to prevent future incidents at sites where drownings have occurred. As a result, drownings continue to happen in the same areas, involving new victims. These findings strongly suggest the necessity of developing a drowning prevention strategy model to effectively reduce drowning cases in Malaysia.

#### IV. CONCLUSIONS

In summary, the survey results reveal a strong consensus among respondents on the need for drowning prevention models. The data is particularly valuable because the respondents are experienced trainers from *Pasukan Penyelamat di Air* (PPDA) with over five years of experience in water and rescue activities in Malaysia. This ensures that the data is both relevant and significant to the study’s objectives

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