



Abstract ID:25545

# The Effectiveness of Fire Response Capabilities of New Staffs in Residential Long-Term Care Institution Through the Integrated Fire Response Plan

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# Background

- The most basic element of residential long-term care institutions for older adult is to provide a safe and secure living environment.
- The study institution is a nursing home attached to a regional hospital in Taipei City, Taiwan, with **a total of 49 beds**. The staffs include 6 nurses and 22 nurse aids.
- Most of the residents in the institution are elderly people with limited mobility and **91.5% are completely dependent**.
- Fire safety relies on the cooperation of all staff of the institution to assist in evacuation.



# Objective

This study arm to improve the fire response capabilities of new staff in residential long-term care institution through "Integrated Fire Response Plan."



# Methods 1

## Design the content of the fire response cognition and skills and conduct pre-test and post-test.

### Multiple choice questions on hospital fire response awareness and skills (pre-test)

1. When a fire occurs in a hospital, the first step should be:

- A. Try to extinguish the fire
- B. Call 119 to report
- C. Run away
- D. Inform the patients

+

2. In the RACE principle, the "R" stands for:

- A. Report
- B. Rescue
- C. Remove
- D. Respond

+

3. The correct order for using a fire extinguisher is:

- A. Aim at the fire, pull the pin, press the handle, sweep
- B. Pull the pin, aim at the fire, press the handle, sweep
- C. Sweep, pull the pin, aim at the fire, press
- D. Press directly

+

4. The priority for evacuation during a fire should be:

- A. Healthcare staff
- B. Critically ill patients
- C. Other patients
- D. Staff

+

5. The main function of evacuation routes within a hospital is:

- A. To provide rest areas
- B. To ensure safe evacuation of personnel
- C. To store medical equipment
- D. To perform medical procedures

+

6. Which of the following is a common fire safety device in hospitals?

- A. Medical instruments
- B. Fire hydrants
- C. Lighting fixtures
- D. Nursing carts

+

7. If a fire is discovered, one should immediately:

- A. Run away
- B. Extinguish the fire
- C. Raise the alarm
- D. Call a doctor

+

8. What is the primary purpose of fire drills?

- A. To enhance fire safety knowledge
- B. For recreational activities
- C. To monitor equipment
- D. To reduce the number of patients

+

9. When should a fire extinguisher be used in a hospital?

- A. When the fire is large
- B. When the fire is small and manageable
- C. When smoke is filling the area
- D. When evacuation is not possible

+

10. Under which circumstance should the elevator be used immediately?

- A. When stairs cannot be used
- B. When a fire occurs
- C. When the elevator is malfunctioning
- D. When there are no patients to evacuate

+

11. How can it be ensured that all patients can evacuate safely?

- A. Ignore the patients' reactions
- B. Organize orderly evacuation
- C. Evacuate quickly
- D. Contact family members

+

12. After a fire drill in the hospital, one should:

- A. Perform unnecessary clean-up
- B. Summarize and provide feedback
- C. Leave immediately
- D. Not discuss

+

13. When smoke is detected, the first action should be:

- A. Avoid breathing
- B. Open the windows

- C. Continue walking
- D. Shout loudly

+

14. During evacuation, one should avoid:

- A. Covering the mouth and nose with a wet towel
- B. Following the escape signs
- C. Taking the nearest route
- D. Using the elevator

+

15. The main function of a fire alarm system is:

- A. To test equipment
- B. To send alarm signals
- C. To provide medical support
- D. To ensure patient safety

+

16. During fire drills, emphasis should be placed on:

- A. Efficiency
- B. Safety and accuracy
- C. Speed
- D. Following commands

+

17. If trapped by smoke in a hospital, one should:

- A. Stay calm and crawl to escape
- B. Endure and wait for rescue
- C. Shout loudly
- D. Leave quickly

+

18. The escape route signs in a hospital are primarily used for:

- A. Decoration
- B. Guiding evacuation routes
- C. Providing information
- D. Monitoring patients

+

19. How should emotionally distressed patients be handled?

- A. Pull them away directly
- B. Comfort and guide them
- C. Ignore them
- D. Let them act on their own

20. During a fire, healthcare personnel should follow:

- A. Ensure their own safety first
- B. Evacuate patients first
- C. Ensure equipment safety
- D. Contact external rescue services



# Methods 2

Fire education training is held every quarter

數位學習資訊服務平台

課程清單

序號	類別	教研分類	課程代號	課程名稱	課程大綱	講師	上課日期 (課程日期)	報名截止	時數	認證 人員單位	排定上課
1	課後	其他-消防講習	TPECH11301804	防災、震災準備(專業救護中區區隊隊員113 研習)、滅火器、車下半年消防教育訓練、消防水龍操作...		湯秉鈺	1131030	1131030	2	職業安全衛生	報名中
2	線上	其他-消防講習	TPECH113082916	仁愛院區全民防災講習-如何制作滅火抗救防火海你海我		楊家松	1130828~1141231	N/A	1	教學研究科	上線中
3	線上	其他-消防講習	TPECH113073033	住宅防火(用火、用電)安全_20240704		林志興	1130704~1140704	N/A	1	教學研究科	上線中
4	線上	其他-消防講習	TPECH113051410	20240501醫院消防安全及災害應變訓練		黃漢輝	1130501~1131231	N/A	1	教學研究科	上線中 (已獲得排定)
5	線上	其他-消防講習	TPECH113030813	陽明院區113年消防講習數位學習課程		消防講習	1130308~1133129	N/A	2	職業安全衛生	上線中 (已獲得排定)
6	線上	其他-消防講習	TPECH112103109	1.火災避難逃生 2.用 中區院區112年下半年防火教育訓練-消防講習			1121031~1131231	N/A	2	職業安全衛生	上線中 (已獲得排定)

臺北市立聯合醫院  
Taipei City Hospital

數位學習資訊服務平台  
學習證明(數位課程)

課程代碼: TPECH113030813

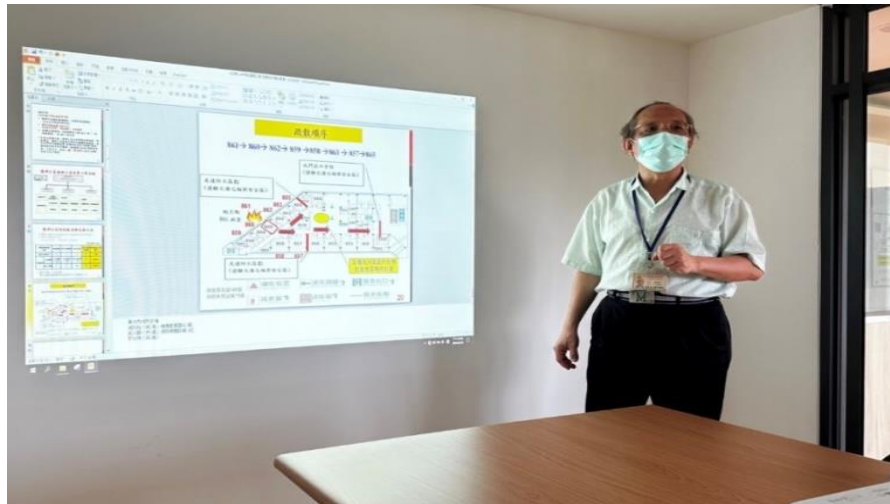
茲證明  員編:  身分證字號:  279  
選修該課程, 成績合於規定

數位學習  
資訊服務平台認證

課程名稱: 陽明院區113年消防講習數位學習課程

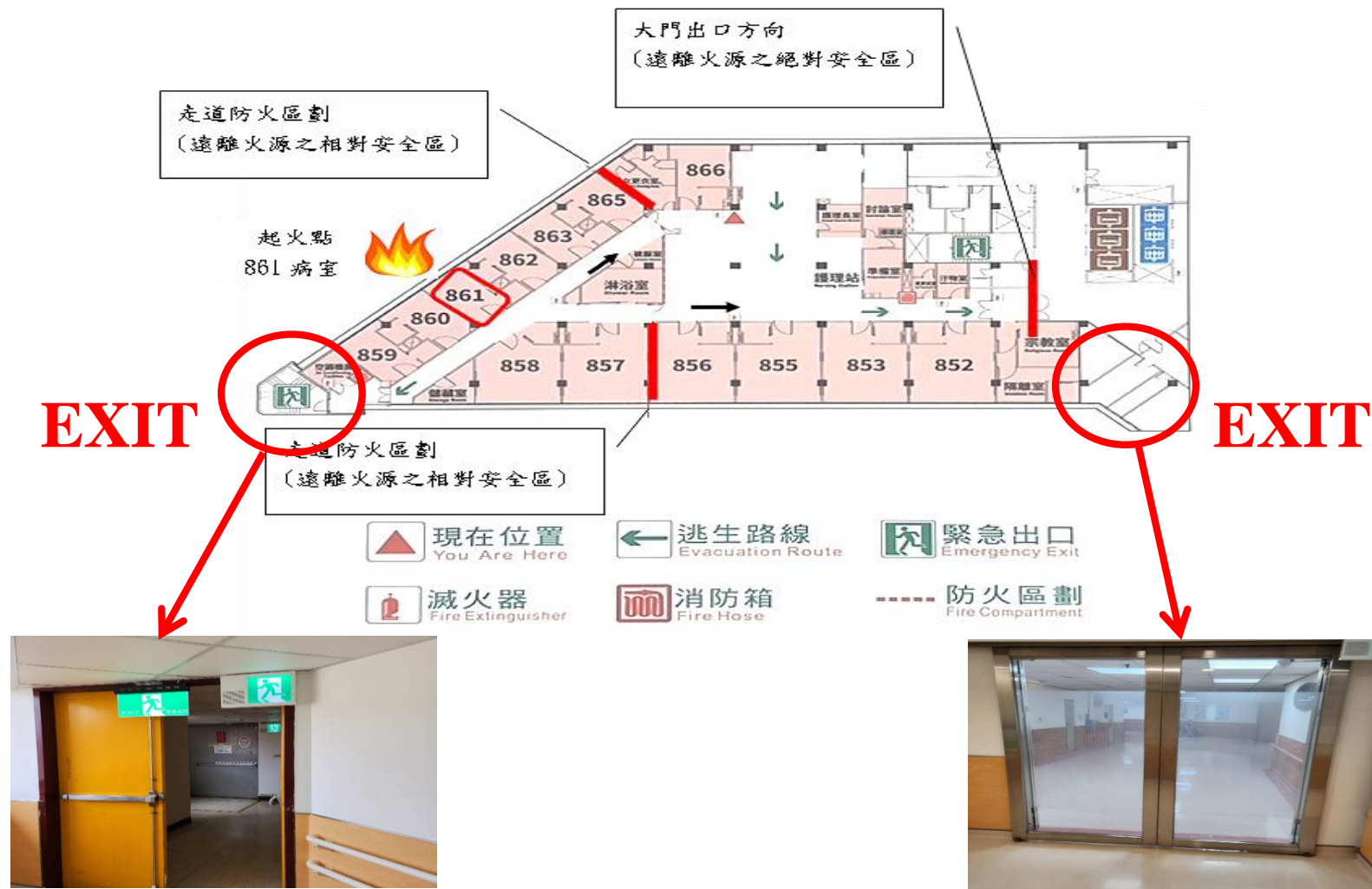
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認證時數: 02小時  
完成日期: 113年08月04日 21:25:32  
列印時間: 113年10月20日 00:58:04

臺北市立聯合醫院



# Methods 3

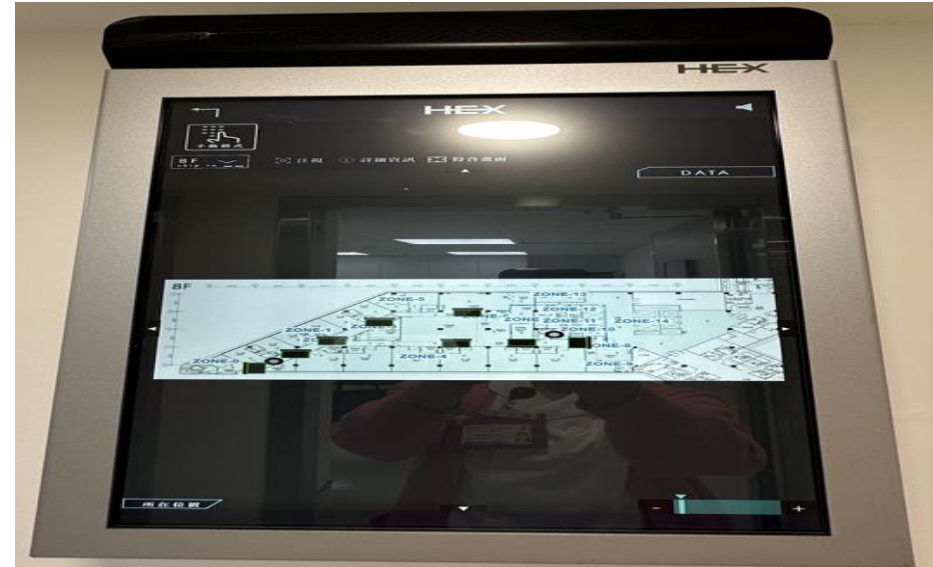
Improve hardware equipment, design and improve escape route planning



# Improve hardware equipment



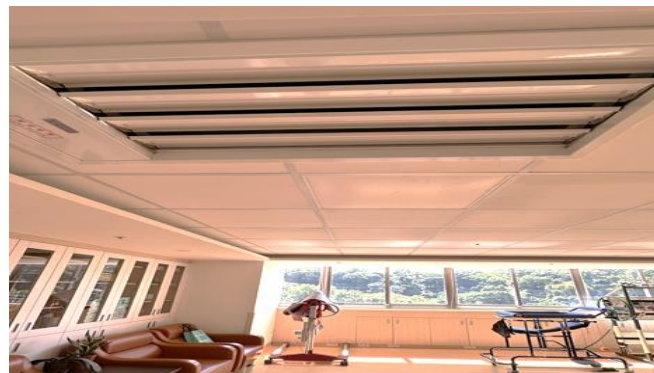
**Fire alarm control panel and auto call to fire station**



**Dynamic escape guidance system**



**Smoke detector**



**Smoke Extraction System**



**Automatic Fire Sprinkler System**

# Design and improve escape route planning



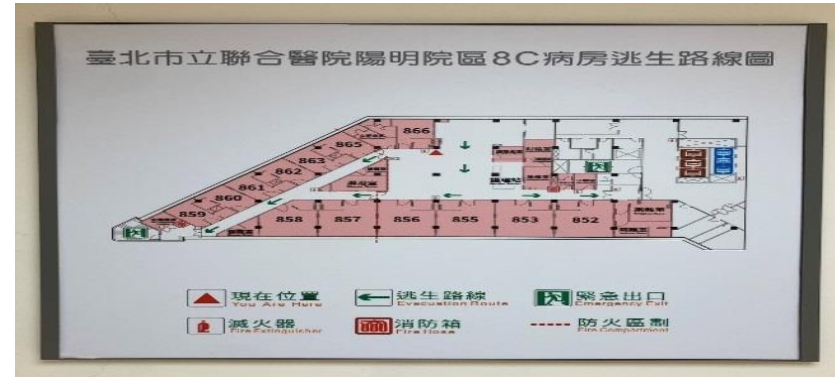
**Automatic bidirectional fire door, don't need a key**



**Ensure that there are no obstacles with in 1.5 meters around stairwells, corridors, emergency exits, and fire doors**



**Emergency lighting and exit signs**




**Each patient room is an independent fire compartment**



# Methods 4.

Public security protection drill, onsite emergency response fire drill

  
 臺北市立聯合醫院陽明院區  
 火災應變計畫  
 (112年版)  
  
 修訂日期：112年3月21日

臺北市立聯合醫院陽明院區 112年度火災應變計畫修訂對照表			
編號	修訂內容	修訂日期	修訂說明
1	增加「112年度火災應變計畫」	112年3月21日	配合112年度火災應變計畫修訂
2	增加「112年度火災應變計畫」	112年3月21日	配合112年度火災應變計畫修訂
3	增加「112年度火災應變計畫」	112年3月21日	配合112年度火災應變計畫修訂
4	增加「112年度火災應變計畫」	112年3月21日	配合112年度火災應變計畫修訂



# Methods 5.

New employees are required to complete fire response education training and pass the assessment

Ward Fire Emergency Response Training Assessment Form				
Item	Assessment Criteria	Scoring Standards	Score	Remarks
<b>I. Basic Knowledge of Fire Emergency Response</b>				
1. Basic Reactions During a Fire	Understand that when a fire occurs, one should immediately (based on the RACE principle: "Rescue, Alarm, Contain, Evacuate"), activate the 119 fire alarm system, and call the 5999 fire emergency hotline, and inform all personnel in the ward to evacuate.	1. Completely Correct 2. Partially Correct 3. Incorrect		
2. Location of Escape Routes and Evacuation Paths	Know the escape routes, evacuation paths, and assembly points in the ward and surrounding areas.	1. Completely Clear 2. Partially Clear 3. Unclear		
<b>II. Practical Operation Skills</b>				
3. Simulated Fire Response Drill	Participate in fire simulation drills and quickly execute response operations according to established procedures (conduct emergency disaster response drills twice a year).	1. Fully Compliant 2. Slight Delay 3. Non-Compliant		
4. Emergency Evacuation of Patients	Able to swiftly and effectively evacuate patients from the ward during a fire drill, especially critically ill patients.	1. Completely Correct 2. Partially Correct 3. Incorrect		
5. Fire Extinguisher Operation Skills	Able to quickly and accurately operate a fire extinguisher in a simulated fire situation to extinguish initial fires (mnemonic: Pull, Aim, Squeeze, Sweep).	1. Completely Correct 2. Partially Correct 3. Incorrect		
<b>III. Emergency Response Skills</b>				
6. Familiarity with Fire Safety	Familiar with the locations of fire safety equipment in the ward and understand	1. Fully Familiar 2. Partially Familiar 3. Not Familiar		

Equipment	how to use the equipment (e.g., fire hydrants, fire extinguishers, etc.).	2. Partially Familiar 3. Not Familiar		
7. Emergency Medical Response	Aware of emergency medical procedures that may be needed after a fire, such as smoke inhalation poisoning, burn first aid, etc.	1. Fully Mastered 2. Partially Mastered 3. Not Mastered		
8. Emergency Communication and Coordination Skills	Able to communicate effectively with other departments during a fire response (reporting personnel evacuation status to the on-site commander and fire chief, facilitating the transfer of command), and assist in completing evacuation and emergency response.	1. Fully Coordinated 2. Slight Delay 3. Not Coordinated		
<b>IV - Continuous Improvement Suggestions</b>				
9. Reflection on Fire Response Experience	Able to provide constructive suggestions for improving fire response processes or recommendations after training, enhancing the efficiency and safety of future fire responses.	1. Constructive Suggestions 2. Some Suggestions 3. No Suggestions		
<p>Summary of Scores</p> <ul style="list-style-type: none"> <li>Excellent: Above 90 points</li> <li>Good: 80-89 points</li> <li>Pass: 70-79 points</li> <li>Fail: Below 70 points, requires retraining</li> </ul> <p>Training Date: _____</p> <p>Assessor: _____</p> <p>Assessor's Name: _____</p>				



# Bedside Patient Card

Bed Number:852-3

Tube: (-)

Oxygen: (-)



Evacuation

Bed Number:852-1

Tube: NG

Oxygen:(-)



Evacuation

Bed Number:852-6

Tube: NG

Oxygen:(+)



Evacuation

Bed Number:857-7

Tube: NG 、 Tracheostomy

Oxygen:(+)



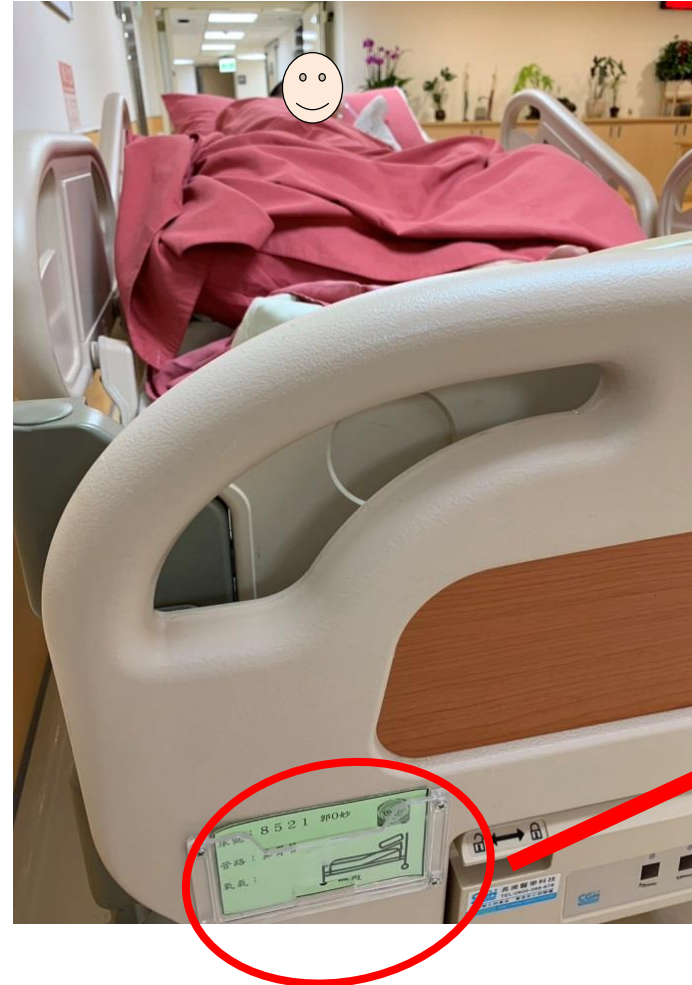
Evacuation

# Bedside Patient Card

Before



After



**Bed Number: 852-1**

**Tube: NG**

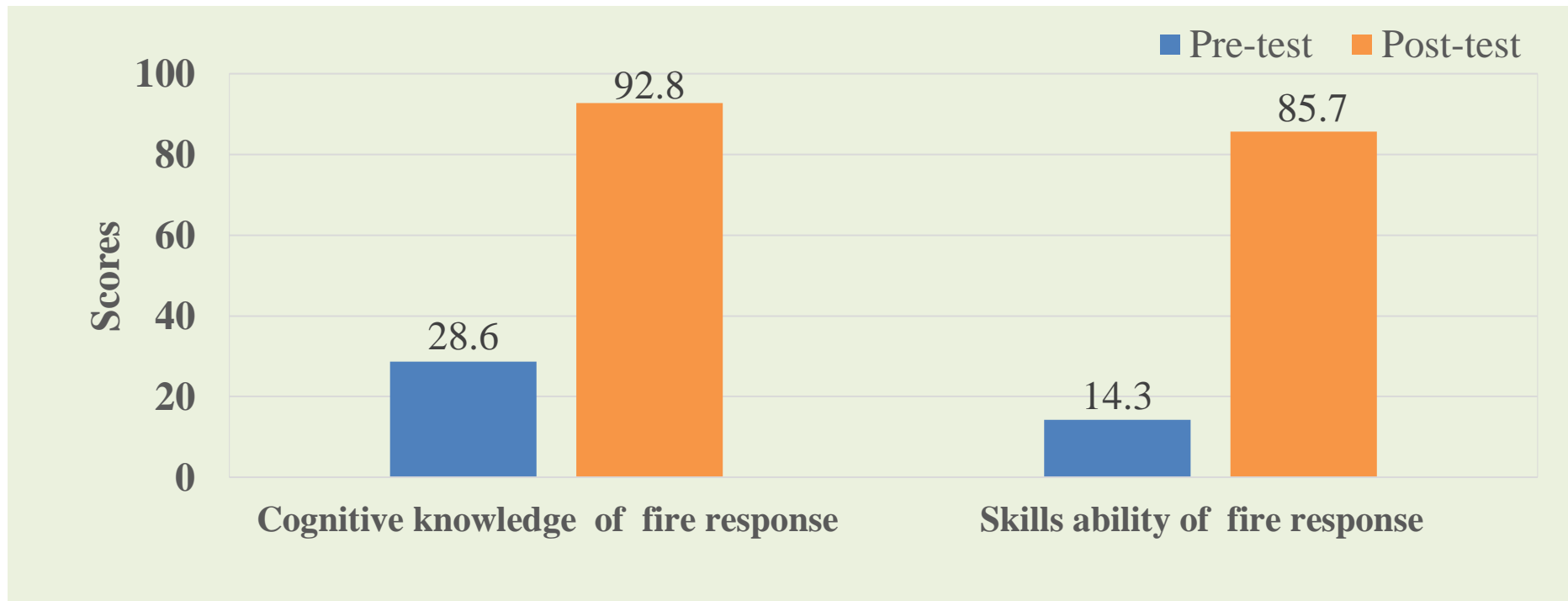
**Oxygen:(-)**



**Evacuation**

# Results

From September 2023 to May 2024, a total of 14 new staffs were counted. **The fire response cognitive knowledge** audit score increased from **28.6% to 92.8%** and **the fire response skills ability** increased from **14.3% to 85.7%**.



The staff's feedback indicates that onsite emergency response fire drill can best improve their fire prevention skills.



# Conclusion

According to our study data shows that integration of integrated fire response plan can indeed improve the fire response awareness and skills of new staffs, **thereby improving the fire response capabilities of staffs.**





*Thank you for listening*