

Aviation Medical First Responder Simulation training for unexpected responders:



High-Fidelity Simulation for In-Flight Emergencies

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Retrieval and Transfer medicine

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Background

- Commercial in-flight medical emergencies are increasing with rising passenger numbers. Recent global data indicate that in-flight medical events occur at a rate of approximately 39 per million passengers—equating to around 100,000 incidents annually worldwide—of which about 7% constitute true medical emergencies requiring advanced intervention or aircraft diversion.
- Clinical management is complicated by confined spaces, equipment limitations, and unique aviation physiology.
- The AvMFR course was launched to bridge this training gap, providing **immersive simulation onboard a decommissioned Boeing 737 training aircraft**.

•Domains Covered:

- Aviation physiology & operational context
- Prolonged field care
- In-flight medical emergency management
- Communication, human factors, crew dynamics
- Safety, equipment, and fire/smoke management
- Legal, ethical, and reporting responsibilities



Objectives

- Objective: Evaluate whether high-fidelity simulation improves preparedness and confidence of healthcare professionals and remote/austere medics for a medical emergencies in a commercial aviation environment.
- Deliver realistic training in aviation-specific clinical, operational, and safety domains.
- Assess participant confidence and preparedness before and after high-fidelity scenarios.
- Capture qualitative feedback to refine future course design and delivery.

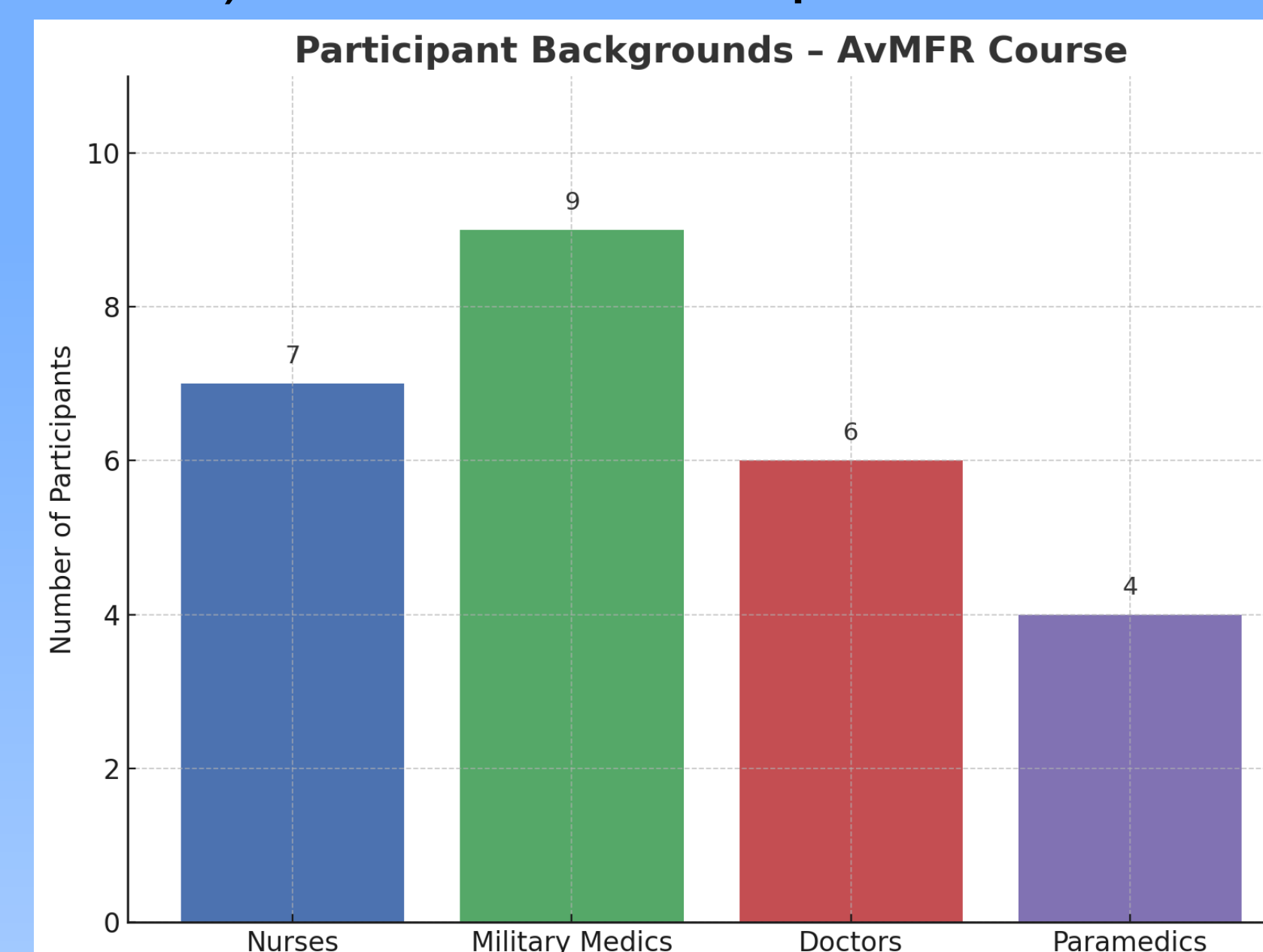
Simulated Scenarios

1. Anaphylaxis
2. Acute Coronary Syndrome
3. Stroke
4. Meningitis
5. Choking



Methods

- **Participants:** Multidisciplinary cohort (clinicians paramedics, expedition medics, aircrew, military/security).
- **Evaluation:** Post-course survey (n=26) using Likert scales (quantitative) and free-text responses (qualitative).



Discussion and Conclusion

- Impact:** AvMFR demonstrates that high-fidelity simulation in a real aircraft environment is feasible and highly valued.
- Transferability:** Equips healthcare professionals and expedition medics with unique skills applicable both in-flight and in austere settings.
- Balance of Content:** Feedback highlighted the need to adjust the weighting between safety drills (aircrew focus) and medical scenarios (clinician focus).

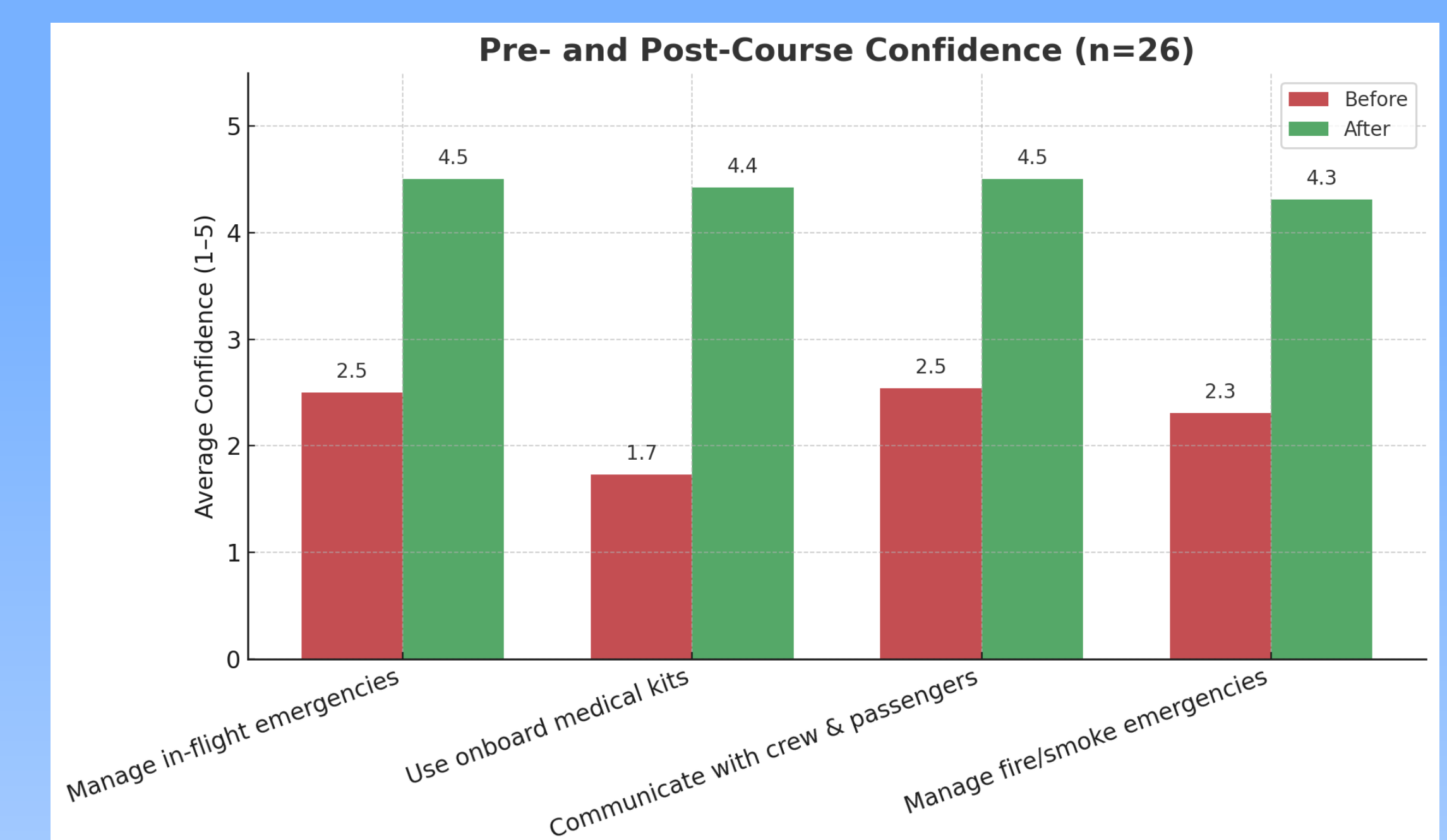
Limitations:

- The evaluation was limited by the small sample.
- Access to specialist simulation facilities, equipment, and faculty incurs financial cost, which may limit scalability.
- For NHS staff, rota pressures and financial constraints restrict release time for multi-day training, influencing attendance.

Results

Self-reported confidence improved significantly across all domains, rising from an average of 2.0–2.8 before to 4.3–4.6 after training, with the largest gains in onboard medical kit use and fire/smoke management.

Qualitative feedback emphasised the realism of scenarios, approachable instructors, and improved teamwork and confidence. Suggestions included extending the course, expanding equipment, and adding complex scenarios such as mass casualty and burns.



References

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