

# 6ER-035 - Implementation Of Antimicrobial Resistance Education In Medicine, Pharmacy And Nursing Undergraduate Curricula – A National Cross-sectional Survey

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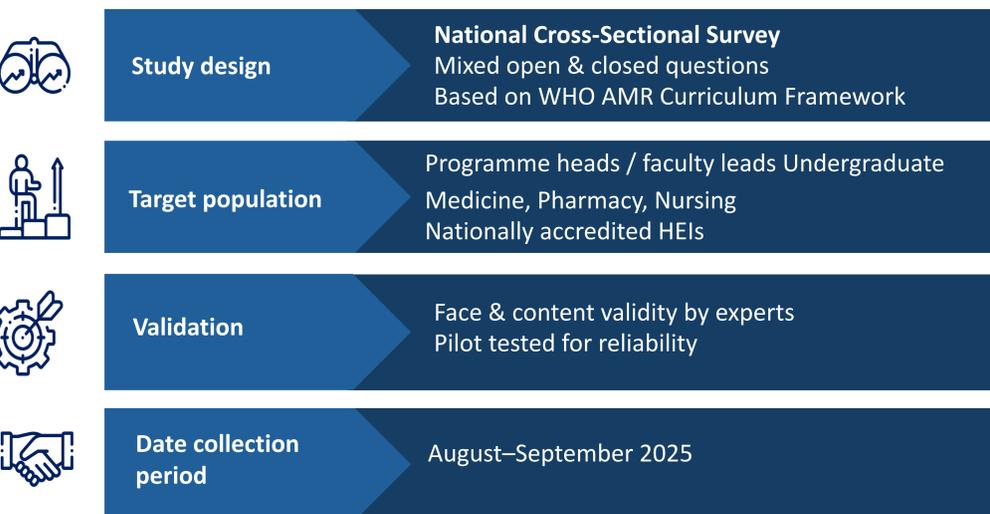
## Background

Antimicrobial resistance (AMR) represents one of the most significant threats to global public health, making it essential that future healthcare professionals are adequately prepared to combat this challenge. Despite the publication of the World Health Organization (WHO) curricula guide for training and education of health workers in AMR, there is currently a limited understanding of how AMR education is integrated within healthcare curricula across Higher Education Institutions (HEIs)<sup>1-4</sup>.

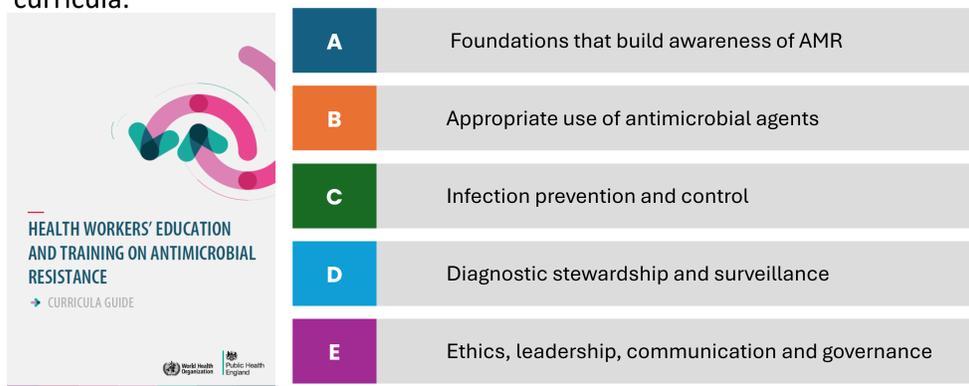
## Aim

This study aims to explore the current state of integration of AMR education in undergraduate medicine, pharmacy and nursing curricula across HEIs.

## Methodology

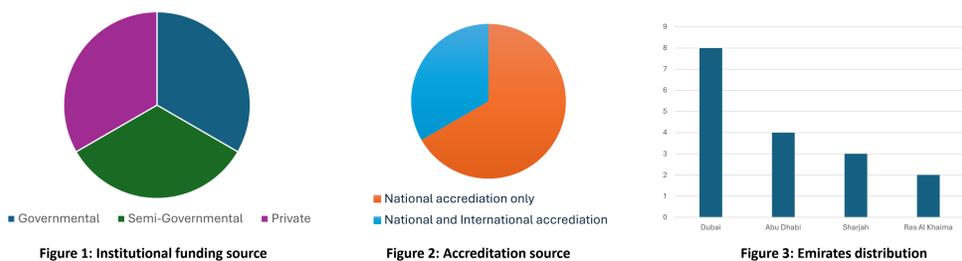


**Date Collection tool – composed of four sections:**  
 (1) contextual information, (2) Curriculum Content (WHO guide five domains), (3) Teaching strategies, assessment, resources and students' feedback and (4) Barriers to the integration of AMR in undergraduate curricula.



## Results

### Section 1 – Contextual information:



**References:**

- World Health Organization. Health workers' education and training on antimicrobial resistance: curricula guide. Geneva: World Health Organization; 2019.
- Mohamed Azmi Ahmad H, Ahmad Shafie A, Azhar Syed Sulaiman S, et al. Education on antibiotic resistance in medical and pharmacy schools: findings from curriculum survey in selected Southeast Asian universities. Malaysia: ReAct Group; 2011.
- Nasr ZG, Abbara DM, Wilby KJ. A Scoping Review of Antimicrobial Stewardship Teaching in Pharmacy Education Curricula. *Am J Pharm Educ.* 2021;85(6):8415.
- Castro-Sánchez E, Drumright LN, Gharbi M, Farrell S, Holmes AH. Mapping Antimicrobial Stewardship in Undergraduate Medical, Dental, Pharmacy, Nursing and Veterinary Education in the United Kingdom. *PLoS One.* 2016;11(2):e0150056. doi:10.1371/journal.pone.0150056

## Results

### Section 2 – Curriculum Content

Table 1: Comparative Integration of WHO AMR Curriculum Domains Across Undergraduate Health Programmes

WHO Domain	Medicine	Nursing	Pharmacy
A. Foundations that build awareness of AMR	██████████	██████████	██████████
B. Appropriate Use of antimicrobial agents	██████████	██████████	██████████
C. Infection prevention and control	██████████	██████████	██████████
D. Diagnostic stewardship and surveillance	██████████	██████████	██████████
E. Ethics, leadership, communication and governance	██████████	██████████	██████████

### Key Curriculum Patterns

- AMR competencies are nationally integrated across all WHO domains (A–E).
- Content is predominantly clustered in Years 3–4.
- Pharmacy demonstrates strongest stewardship alignment.
- Nursing shows earliest IPC integration.
- Diagnostic stewardship is a key area for strengthening.
- Ethics and governance competencies are broadly established across programmes.

Table 1 legends  
 Early (Years 1–2) ██████████  
 Intermediate (Years 2–3) ██████████  
 Senior (Years 3–5) ██████████

### Section 3 - Teaching strategies, assessment, resources and students' feedback

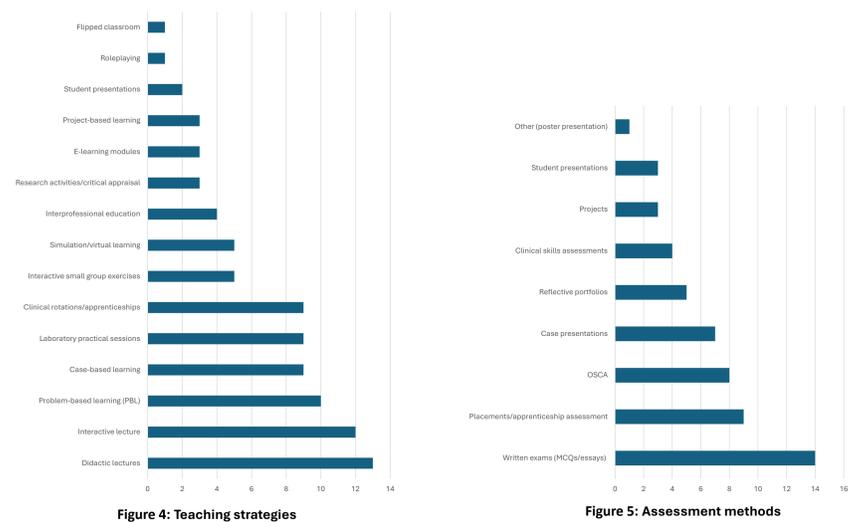


Figure 4: Teaching strategies

Figure 5: Assessment methods

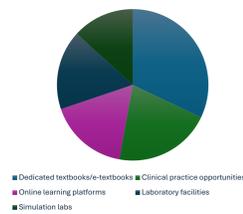


Figure 6: Resources



Figure 7: Students' feedback collection

### Section 4 - Barriers to the integration of AMR in undergraduate curricula.

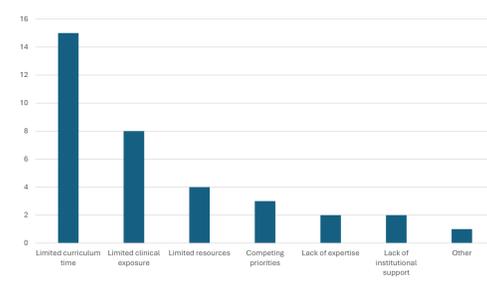


Figure 7: Barriers to integration in undergraduate curricula



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## Conclusion

AMR education is integrated across medicine, pharmacy and nursing programmes; however, variability remains in the depth of stewardship and diagnostic components. Curriculum time constraints represent the principal barrier to further expansion. Embedding AMR content within existing clinical courses, strengthening collaboration with hospitals, and supporting faculty development represent sustainable strategies to enhance preparedness of future healthcare professionals.