

DEEMA WAFIC RAHME

PhD (Epidemiology) · Pharm.D · M.Sc. Pharmacoepidemiology & Clinical Pharmacy

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ORCID: 0000-0003-4245-9699 · Associate Member, INSPECT-LB · Ambassador, AMR Insights

PROFESSIONAL PROFILE

Clinical pharmacist, epidemiologist and academic with over twelve years of continuous university teaching and hospital practice. Awarded a **PhD in Epidemiology with the highest distinction** from the Doctoral School of Sciences and Technology, Lebanese University, in July 2025, for a multicenter thesis on the management of community-acquired pneumonia and urinary tract infections in Lebanese hospitals. Research program centered on **antimicrobial resistance (AMR), antimicrobial consumption and antimicrobial stewardship**, spanning hospital, community and population levels. Author of 29 peer-reviewed publications in international journals — first author on 10 and senior author on one — with collaborations across Lebanon, the Gulf, North Africa, Europe, South Asia and global research consortia spanning more than 100 countries.

RESEARCH PROFILE AT A GLANCE

Principal research focus — Antimicrobial resistance and antimicrobial use

- **14 of 29 peer-reviewed publications** address antimicrobial resistance, antibiotic prescribing, antimicrobial consumption or antimicrobial stewardship — including **first authorship on 8** and senior (last) authorship on a further multi-regional AMR study.
- Research spans the full AMR chain: national consumption trend analyses (antibiotics and antifungals), community and household antibiotic practices, community-pharmacy prescribing, hospital guideline adherence, resistance surveillance in clinical isolates, and clinical outcomes of inappropriate therapy.
- Doctoral work produced the first national-scale evidence on inpatient management of UTI and CAP in Lebanon, including the first Lebanese data on CAP etiology and the first contemporary multi-hospital comparison of uropathogen susceptibility against the national baseline.

Multinational and international research

- **Lancet Global Health (2026)** — co-author on a prospective cohort study of surgical safety and equity across **109 countries**, using cholecystectomy as a tracer procedure.
- **Antibiotics (2025)** — co-author on a multinational study of household knowledge, storage and disposal of leftover antibiotics across **seven developing countries**.
- **Frontiers in Public Health (2024)** — second author on a community stroke-awareness intervention conducted across **four Arab countries**.
- Hospital Lead, Lebanese Hospital Geitaoui, for two global prospective cohort studies: the **GECKO** study (cholecystectomy knowledge and outcomes) and the **HIPPO** study (inguinal hernia pathways and planetary outcomes).
- Co-authors and collaborating institutions across Lebanon, Saudi Arabia, Jordan, Cyprus and international research consortia.

Multidisciplinary reach

- Published across **infectious diseases and clinical microbiology, epidemiology, clinical pharmacy and pharmacoepidemiology, health services research, health policy, neurology, psychiatry and mental health, women's health, surgery, and health professions education**.

- Journals span 12 distinct publishers and disciplines, including The Lancet Global Health, PLOS One, Antimicrobial Resistance & Infection Control, Antibiotics, International Journal of Infectious Diseases, BMC Psychiatry, BMC Neurology, BMC Women's Health and BMC Medical Education.
- Methodological breadth: multicenter retrospective cohorts, cross-sectional surveys, simulated-patient (mystery shopper) studies, ATC/DDD consumption trend analysis, bibliometric analysis, scale validation and mediation modelling.

EDUCATION

- PhD in Epidemiology**, Doctoral School of Sciences and Technology, Lebanese University *July 2025*
 Thesis: *Management of Community-Acquired Pneumonia and Urinary Tract Infections in Lebanese Hospitals*.
 Defended 7 July 2025 before an eight-member international jury and awarded **the highest distinction (with honors)**.
 Supervised at the Lebanese University; multicenter study across five university hospitals covering Beirut, Mount Lebanon, North and South Lebanon.
- M.Sc. in Pharmacoepidemiology and Clinical Pharmacy**, Lebanese University *November 2016*
- Doctor of Pharmacy (Pharm.D.)**, Beirut Arab University *2012*
 Awarded with distinction — Very Good grade (GPA 3.59 / 4.00).
- B.Sc. in Pharmacy**, Beirut Arab University *2010*
 Excellent grade (GPA 3.92 / 4.00). **Jamal Abdul Nasser Award** for first rank across the five years of the pharmacy program.
- Secondary Education**, Al Hoda High School, Riyadh, Saudi Arabia
 Second rank nationally in the high school examination, Kingdom of Saudi Arabia.

ACADEMIC AND PROFESSIONAL APPOINTMENTS

- Clinical Assistant Professor**, Faculty of Pharmacy, Beirut Arab University *Feb 2022 – present*
- Clinical Lecturer**, Faculty of Pharmacy, Beirut Arab University *Sept 2013 – Jan 2022*
 Teaching lecturer and clinical preceptor at Rafic Hariri University Hospital; continuous academic service at Beirut Arab University since September 2013.
- Clinical Pharmacist**, Dr. Soliman Fakeeh Hospital, Jeddah, Saudi Arabia *Apr 2012 – Jul 2013*
 JCI- and ACHSI-accredited tertiary hospital. Antimicrobial stewardship focus: promoted optimal antimicrobial selection, dosing, duration and route to maximize efficacy, minimize toxicity and cost, and limit emergence of resistant organisms. Developed and implemented antimicrobial use policy based on IDSA guidance, generated and analyzed quantitative antimicrobial consumption data, served on the Pharmacy & Therapeutics Committee, provided clinical consultations, and precepted pharmacy clerkship students.
- Community Pharmacist**, Ras Beirut Pharmacy and Victoria Pharmacy, Lebanon *2011 – 2012*

PEER-REVIEWED PUBLICATIONS

29 peer-reviewed articles. Publications marked:

- ▲ form the doctoral research program
- address antimicrobial resistance, antimicrobial use or stewardship.

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Doctoral research program — Management of CAP and UTI in Lebanese hospitals

1. ▲ Rahme D, Nakkash Chmaisse H, Salameh P. Clinical outcomes in hospitalized patients with community-acquired pneumonia: A comprehensive analysis of associated factors. *PLOS One* 2026;21(3):e0344171. doi:10.1371/journal.pone.0344171
2. ▲ Rahme D, Nakkash Chmaisse H, Salameh P. Appropriateness of empiric antibiotic therapy for community-acquired pneumonia: A multicenter cross-sectional study. *Exploratory Research in Clinical and Social Pharmacy* 2025;20:100669. doi:10.1016/j.rcsop.2025.100669
3. ▲ Rahme D, Nakkash Chmaisse H, Salameh P. Unraveling the length of hospital stay for patients with urinary tract infections: Contributing factors and microbial susceptibility. *Antibiotics* 2025;14(4):421. doi:10.3390/antibiotics14040421
4. ▲ Rahme D, Nakkash Chmaisse H, Hallit R, Salameh P. Evaluating compliance with national guidelines for urinary tract infection treatment in Lebanese hospitals: A multicenter cross-sectional study. *Clinical Epidemiology and Global Health* 2025;33:102032. doi:10.1016/j.cegh.2025.102032

Antimicrobial resistance, antimicrobial use and stewardship

5. ● Hijazi S, Domiati S, Al Halabi K, Ayash Z, El Charif M, Maatouk B, Rahme D. Erosion of empirical therapy: A multi-regional cross-sectional study of antimicrobial resistance in community-acquired urinary tract infections in Lebanon. *International Journal of Infectious Diseases* 2026;170:108828. doi:10.1016/j.ijid.2026.108828
6. ● Iskandar K, Kotb R, Cherfane M, Yeretian J, Bou Dib J, Chahine B, Hallit S, Amin R, Bahloul M, Fekih-Romdhane F, Hamed F, Helmy M, Irfan M, Murugaiyan J, Naser AY, Taybeh EO, Pavlović N, Rahme D, Akl M, Salameh P, Tomas A, Van Dongen M. Household knowledge of clinical risks, storage, and disposal of leftover antibiotics: A multinational study in seven developing countries. *Antibiotics* 2025;14(12):1212. doi:10.3390/antibiotics14121212
7. ● Rahme D, Al Mordaa B, Hijazi S, Domiati S. Combatting antimicrobial resistance amidst the era of economic crisis: Public perceptions and antibiotic practices in Lebanon. *Journal of Public Health Research* 2025;14(4):22799036251388586. doi:10.1177/22799036251388586
8. ● Hajj A, Sacre H, Ounsi M, Nasser M, Mohsen Meame S, Hazime H, Al-Hajje A, Rahme D, Lahoud N, Safwan J, Akel M, Zeenny RM, Iskandar K, Salameh P. Antimicrobial research productivity in Lebanon: A PubMed-based bibliometric analysis. *New Microbes and New Infections* 2025;68:101642. doi:10.1016/j.nmni.2025.101642
9. ● Saadeh W, Chaccour S, Rahme D, Lahoud N, Saleh N. The hidden dangers lurking at home: Unveiling the prevalence of leftover antibiotics and its associated factors among Lebanese households. *Public Health in Practice* 2024;7:100485. doi:10.1016/j.puhip.2024.100485
10. ● Itani R, Khojah HMJ, Karout S, Rahme D, Hammoud L, Awad R, Abu-Farha R, Mukattash TL, Raychouni H, El-Lakany A. *Acinetobacter baumannii*: Assessing susceptibility patterns, management practices, and mortality predictors in a tertiary teaching hospital in Lebanon. *Antimicrobial Resistance & Infection Control* 2023;12(1):136. doi:10.1186/s13756-023-01343-8
11. ● Rahme D, Ayoub M, Shaito K, Saleh N, Assaf S, Lahoud N. First trend analysis of antifungals consumption in Lebanon using the World Health Organization collaborating center for drug statistics methodology. *BMC Infectious Diseases* 2022;22(1):882. doi:10.1186/s12879-022-07883-5
12. ● Lahoud N, Rizk R, Hleyhel M, Baaklini M, Zeidan RK, Ajaka N, Rahme D, Maison P, Saleh N. Trends in the consumption of antibiotics in the Lebanese community between 2004 and 2016. *International Journal of Clinical Pharmacy* 2021;43(4):1065–73. doi:10.1007/s11096-020-01218-7
13. ● Yaacoub SG, Koyess V, Lahoud N, Rahme D, Francis N, Saleh N, Maison P. Antibiotic prescribing for acute uncomplicated cystitis in Lebanese community pharmacies using a simulated patient. *Pharmacy Practice* 2019;17(4):1604. doi:10.18549/pharmpract.2019.4.1604
14. ● Yaacoub SG, Lahoud NA, Francis NJ, Rahme DW, Murr TH, Maison PF, Saleh NG. Antibiotic prescribing rate in Lebanese community pharmacies: A nationwide patient-simulated study of acute bacterial rhinosinusitis. *Journal of Epidemiology and Global Health* 2019;9(1):44–9. doi:10.2991/jegh.k.190305.001

Global health, health services and health policy research

15. NIHR Global Health Research Unit on Global Surgery and the GlobalSurg Collaborative (Rahme D, collaborator). Safety and equity in scaling minimally invasive surgery worldwide in 109 countries using cholecystectomy as a tracer procedure: A prospective cohort study. *The Lancet Global Health* 2026;14(2):e199–e212. doi:10.1016/S2214-109X(25)00476-0

16. Haddad C, Sacre H, Safwan J, Rahme D, Hajj A, Elia J, El Ghawi J, Haidar L, Dimachkieh L, Nasrallah M, Basma S, Salameh P. Understanding the mediating role of pharmaceutical policymaking attitudes between personal attributes and public service motivation. *Exploratory Research in Clinical and Social Pharmacy* 2026;22:100722. doi:10.1016/j.rcsop.2026.100722
17. Hajj A, Sacre H, Haddad C, Elia J, El Ghawi J, Haidar L, Dimachkieh L, Nasrallah M, Safwan J, Rahme D, Basma S, Salameh P. Research self-efficacy in early-career pharmacists: Tool validation and correlation with personal attributes. *Exploratory Research in Clinical and Social Pharmacy* 2026;21:100693. doi:10.1016/j.rcsop.2025.100693
18. Haddad C, Sacre H, Safwan J, Rahme D, Hajj A, Elia J, El Ghawi J, Haidar L, Dimachkieh L, Nasrallah M, Basma S, Salameh P. Young pharmacists as tomorrow's decision-makers: Tool validation and perceptions of pharmaceutical policymaking in Lebanon. *Journal of Pharmaceutical Policy and Practice* 2025;19(1):2600242. doi:10.1080/20523211.2025.2600242
19. Rahme D, Saade D, Sacre H, Haddad C, Tawil S, Merhi S, Aoun R, Hajj A, Sakr F, Safwan J, Akel M, Zeenny RM, Salameh P. Perceived effects of accreditation on education quality and health-related job outcomes: Scales validation and correlates in Lebanon. *BMC Medical Education* 2025;25(1):886. doi:10.1186/s12909-025-07448-5
20. Iskandar K, Rahme D, Salameh P, Haddad C, Sacre H, Bahlol M, Darwish RM, El Khatib S, Safwan J, Sakr F, Rahhal M, Hosseini H, Cherfane M. Evaluating the influence of a 3-min online video on the community knowledge of stroke in four Arab countries. *Frontiers in Public Health* 2024;12:1342490. doi:10.3389/fpubh.2024.1342490
21. Rahme D, Dabbous M, Malaeb D, Hallit S, Obeid S. The mediating effect of body appreciation between muscle dysmorphia and bulimia nervosa among Lebanese adolescents. *BMC Psychiatry* 2023;23(1):275. doi:10.1186/s12888-023-04772-2
22. Itani R, Khojah HMJ, Karout S, Abu-Farha R, Mukattash TL, Rahme D, Housary K, El Achi H, Safar AO, Karam Al Hajj I, El-Lakany A. Oral contraceptive pills shortage in Lebanon amidst the economic collapse: A nationwide exploratory study. *BMC Health Services Research* 2023;23(1):520. doi:10.1186/s12913-023-09523-3
23. Rahme D, Itani R, Karout S, Khojah HMJ, El-Lakany A. Community pharmacists' commitment to preventive measures during the COVID-19 pandemic in light of the economic crisis in Beirut, Lebanon: A simulated client study. *BAU Journal – Health and Wellbeing* 2023;5(2):Article 5. doi:10.54729/2789-8288.1191
24. Kamal H, Assaf S, Kabalan M, El Maissi R, Salhab D, Rahme D, Lahoud N. Evaluation of stroke pre-hospital management in Lebanon from symptoms onset to hospital arrival and impact on patients' status at discharge: A pilot study. *BMC Neurology* 2022;22(1):494. doi:10.1186/s12883-022-03018-0
25. Itani R, Soubra L, Karout S, Rahme D, Karout L, Khojah HMJ. Primary dysmenorrhea: Pathophysiology, diagnosis, and treatment updates. *Korean Journal of Family Medicine* 2022;43(2):101–8. doi:10.4082/kjfm.21.0103
26. Barake S, Tofaha R, Rahme D, Lahoud N. The health status of Lebanese community pharmacists: Prevalence of poor lifestyle behaviors and chronic conditions. *Saudi Pharmaceutical Journal* 2021;29(6):497–505. doi:10.1016/j.jsps.2021.04.005
27. Itani R, Khojah HMJ, Jaffal F, Rahme D, Karout L, Karout S. Provision of pharmaceutical care to suspected high-risk COVID-19 patients through telehealth: A nationwide simulated patient study. *BMC Health Services Research* 2021;21(1):997. doi:10.1186/s12913-021-07014-x
28. Karout S, Soubra L, Rahme D, Karout L, Khojah HMJ, Itani R. Prevalence, risk factors, and management practices of primary dysmenorrhea among young females. *BMC Women's Health* 2021;21(1):392. doi:10.1186/s12905-021-01532-w
29. Rahme D, Lahoud N, Sacre H, Akel M, Hallit S, Salameh P. Work fatigue among Lebanese community pharmacists: Prevalence and correlates. *Pharmacy Practice* 2020;18(2):1844. doi:10.18549/pharmpract.2020.2.1844

Conference presentation

30. Rahme D. Adherence to antihypertensive therapies in the Lebanese population. *8th International Scientific Researches Conference, Çukurova, April 2022*. Oral and technical presentation.

RESEARCH LEADERSHIP, EDITORIAL AND PROFESSIONAL ROLES

- **Editorial Board Member, PLOS ONE** — peer review and editorial assessment for a Q1 multidisciplinary international journal.

- **Ambassador, AMR Insights** — international network dedicated to combating antimicrobial resistance; contributes to advocacy for responsible antimicrobial use, awareness raising and knowledge exchange with global AMR experts. (amr-insights.eu)
- **Associate Member, INSPECT-LB** (Institut National de Santé Publique, d'Épidémiologie Clinique et de Toxicologie – Liban) — a multi-university, multidisciplinary national research institute with a portfolio exceeding 700 publications, spanning public health and epidemiology, clinical epidemiology, health economics, clinical pharmacy and pharmacoepidemiology, nutrition, health professions and mental health.
- **Hospital Lead, Lebanese Hospital Geitaoui — GECKO Study** (Global Evaluation of Cholecystectomy Knowledge and Outcomes), a multinational prospective study; coordinated site activities, data collection and liaison between the global research team and clinical staff.
- **Hospital Lead, Lebanese Hospital Geitaoui — HIPPO Study** (Hernias, Pathways and Planetary Outcomes for Inguinal Hernia Surgery), a global prospective cohort study; oversaw consecutive patient enrolment and protocol adherence from January 2023.

ANTIMICROBIAL STEWARDSHIP AND PUBLIC HEALTH ENGAGEMENT

- **Antimicrobial Awareness Campaign**, World Pharmacists Day, Beirut Arab University, 2019 — designed campaign activities, posters and leaflets, and supervised participants counselling the public on the consequences of irrational antibiotic use, antimicrobial resistance and collateral damage.
- **Hospital antimicrobial monitoring** — routine monitoring of antimicrobial use in selected infectious diseases to verify compliance with disease-management guidelines, conducted alongside clinical teaching at Rafic Hariri University Hospital.
- **Live television interview, Al Dhafr TV**, 30 October 2023 — addressed WHO concerns on emerging and re-emerging infectious diseases, proactive surveillance systems, international collaboration and information sharing, investment in diagnostics and therapeutics, infection control and global health security.
- **23rd Conference of the Lebanese Society of Infectious Diseases and Clinical Microbiology** — "The Evolving Pandemic", Beirut, 15 September 2023.
- **Developed clinical toolkits** distributed to affiliated hospitals to support evidence-based practice, including *Guideline for the Management of Sepsis and Septic Shock* (2014), *Diabetes Management in Hospitalized Patients* (2017) and *Hospital Management of ACS* (2018).

TEACHING AND ACADEMIC CONTRIBUTION

Course coordinator, main instructor or clinical lecturer across the pharmacy practice and therapeutics curriculum at Beirut Arab University, including *Integrated Case-Based Learning I and III* (infectious diseases, endocrine, respiratory, GIT and musculoskeletal conditions), *Pharmacotherapeutics IV–VI* (endocrinology, CNS disorders, oncology), *Pharmacy Practice I, IV and V* (ethics and professional communication, drug literature evaluation, medication errors), and *Pharmacy Practice Experience I–V*. Clinical preceptor in internal medicine and the cardiology care unit at Rafic Hariri University Hospital, supervising senior students in care-plan development, medication reconciliation, patient counselling and discharge education.

- Contributed to the design, development and delivery of didactic and experiential clinical courses within the Pharmacy Practice Department.
- Developed and organised the Objective Structured Clinical Examination (OSCE), a graduation requirement for senior students.
- Interprofessional Education (IPE) facilitator; recognised for contribution to the interprofessional learning experience (BAU, Spring 2014).
- Presented Faculty achievements and best practices during cyclic Canadian Council for Accreditation of Pharmacy Programs (CCAPP) site visits.
- Student academic advisor; contributor to staff seminars, open days and Pharmacy Day events.

INVITED PRESENTATIONS AND SESSION CHAIRING

- **Session Moderator**, "Thrombosis Risk Assessment in Hospitalized Patients", Pharmacy Day Conference, Lebanese Hospital Geitaoui, 12 October 2023.
- **Oral presentation**, "Healthy Ageing: Navigating Medication Management in Geriatrics", *Insights into Geriatric Care & Healthy Ageing*, BAU Tripoli Campus, 20 April — under the patronage of the Middle East Academy of Medicine of Ageing and the International Institute on Ageing.
- **Oral presentation**, Diabetes Mellitus management and updates, Order of Malta training workshop, 31 January 2024.
- **Oral presentation**, Osteoporosis management updates, Order of Malta training workshop, 14 February 2024.
- **Hospital-wide lecture**, Immunization Update in Adults and Children, Dr. Soliman Fakeeh Hospital, 30 January 2013, attended by consultants and pharmacists.
- **Invited speaker**, two lectures (Clinical Pharmacy; Pharmacovigilance), 3rd Annual Pharmaceutical Symposium, 26–27 June 2012.

COMMUNITY SERVICE AND PUBLIC HEALTH CAMPAIGNS

- **Cancer Patient Empowerment Campaign** (February 2022) — launched at Rafic Hariri University Hospital in collaboration with the Lebanese Red Cross, the Lebanese Cancer Society and the Lebanese Pharmacy Students Association, focused on empowering patients affected by delayed care and medication shortages during the COVID-19 pandemic and economic crisis, with particular attention to lower-income populations.
- **COVID-19 national vaccination campaign** — supervised and guided fifth-year pharmacy students at Rafic Hariri University Hospital in vaccine preparation, including dilution and reconstitution of Pfizer vaccines, throughout the Ministry of Public Health campaign.
- **COVID-19 awareness campaign** — supervised pharmacy students in preparing public education on transmission and protection at the onset of the pandemic in Lebanon.
- **Diabetes Management campaigns**, World Pharmacists Day, BAU, 2017 and 2018 — designed activities, posters and patient education tools; secured measurement kits through industry liaison; screened high-risk groups and reviewed medication appropriateness for type 2 diabetes and cardiovascular protection.
- **Medication therapy management outreach** — provided MTM services to inpatients in internal medicine at the affiliated hospital, targeting irrational medication use, drug–drug interactions and cost-effective therapy.

RESEARCH TRAINING AND PROFESSIONAL DEVELOPMENT

- **How to Conduct Systematic Reviews and Meta-Analysis** — American University of Beirut, 13–16 November 2023.
- **Designing and Using Web-Based Surveys** — American University of Beirut, 23–26 October 2023; hands-on training in LimeSurvey covering questionnaire construction, question typology, skip logic and branching, sampling strategy, response-rate optimisation and data export and analysis.
- **Advanced Biostatistics** — Medical School, University of Nicosia.
- **Advanced statistics (Minitab)** — applied to monitoring controlled antimicrobial consumption and physician compliance with hospital policies.
- **Research grants series** — Building a Culture of Research and Grant Funding (June 2021); Planning and Setup of a Grant Administration Infrastructure (June 2021); The Benefits of Grant Writing and Sponsored Programs (July 2021).
- **Developing the SIR Model** — Imperial College London, April 2022.
- **Competencies in Health Profession Education** — BAU, 19–20 December 2014; Academic Staff Development Programme, 2013–2014; six workshops on the Enhancement of Staff Members' Teaching Skills, March 2014.

- **Seeking Excellence in Infection Control Practices** — Jeddah, 30–31 January 2013.
- **Additional clinical CPD** — parenteral nutrition, oncology and haematology (CLL), multiple sclerosis and neurology, heart failure therapeutics, and quality and patient safety (2012–2022).

PROFESSIONAL CREDENTIALS

- Professional Accreditation Certificate, Saudi Commission for Health Specialties.
- Basic Life Support (BLS) Provider, recognised by the Saudi Council for Health Specialties.
- Registered Pharmacist, Lebanon.

SKILLS AND LANGUAGES

Research methods: Multicenter observational study design, retrospective cohort and cross-sectional methodology, simulated-patient studies, ATC/DDD antimicrobial consumption analysis, bibliometric analysis, scale validation, systematic review and meta-analysis.

Statistical analysis: IBM SPSS (advanced), Minitab; multivariable logistic and linear regression, mediation modelling, survey design and analysis (LimeSurvey).

Clinical: Antimicrobial stewardship, pharmaceutical care and medication therapy management, medication reconciliation, clinical consultation, formulary and P&T committee work.

Technical: Microsoft Word, PowerPoint and Excel; reference management; web-based survey platforms.

Languages: Arabic — native. English — fluent (read, written, spoken). French — novice.

PERSONAL DETAILS

Date of birth: 20 July 1987

Place of birth: Riyadh, Kingdom of Saudi Arabia

Nationality: Lebanese