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EDITORIAL

Upcoming Challenges in Physiology in Bangladesh

By any measure, Bangladesh is at a physiological crossroads. The country is transitioning from a dominantly infectious-disease profile to the "double burden" of noncommunicable and climate-sensitive illnesses—while medical education, laboratories, and research funding race to keep up. For physiologists—teachers, researchers, and clinicians alike—the next decade will be defined by how effectively we align training and research with these shifting realities.

1) From pathogens to pressure: redefining priority systems

Noncommunicable diseases (NCDs) now shape morbidity, mortality, and household economics, demanding deeper emphasis on cardiovascular, respiratory, metabolic, neuro-endocrine, and renal physiology in both curricula and research. Recent analyses underscore how NCDs strain families with long-term medication costs and productivity losses, amplifying inequity.

At the same time, vector-borne diseases remain volatile. Large dengue waves and off-season transmission patterns require applied work on host–vector–environment interactions, endothelial permeability, hemodynamic instability, and immune kinetics—areas where physiologists should lead translational studies with public health partners.

2) Heat, humidity, and the climate physiology agenda

Pre-monsoon and urban heat events are becoming hotter and more frequent across South Asia, with Bangladesh among the most exposed. This translates into real-world physiology: thermoregulation failure, dehydration, renal stress, pregnancy risks, and performance limits for outdoor workers. We need locally grounded research on heat tolerance thresholds, hydration/ electrolyte strategies, cardiorespiratory load, and early-warning biomarkers—plus integration of heat-health into MBBS and allied health training.

3) Curriculum is evolving—practice must catch up

Bangladesh has adopted a community-oriented, competency-based MBBS curriculum with detailed learning objectives for physiology. The challenge now is implementation: reliable lab time, case-based integration across organ systems, and assessment that rewards reasoning over recall. Simulation, bedside physiology, and point-of-care measurement literacy (e.g., spirometry, ABG interpretation, autonomic testing) should become routine, not enrichment.

4) Labs, logistics, and the research squeeze

Sustained physiology research needs animal ethics capacity, cell and tissue culture, electrophysiology, and biostatistics support. Yet Bangladesh's gross R&D spending remains low by global standards—recent official estimates place GERD at roughly 0.30% of GDP—and universities face tight operating budgets. Competitive UGC grants and new oversight efforts are welcome, but program continuity, mentorship pipelines, and

shared core facilities will matter more than one-off projects.

5) Data deserts and the measurement problem

Physiology thrives on measurement. However, national science statistics (e.g., researchers per million, field-specific outputs) remain patchy, complicating planning for human resources and equipment. Bangladesh needs a transparent, regularly updated STI dashboard—linking UGC, BMDC, DGHS, and universities—so curriculum seats, lab investments, and postgraduate positions are driven by evidence rather than guesswork.

6) Antimicrobial resistance and diagnostic physiology

Strengthening AMR surveillance and laboratory capacity is now a WHO-flagged priority. Physiologists can add value beyond microbiology: host–pathogen interaction, fever regulation, drug pharmacodynamics in altered physiology (e.g., sepsis), and the cardiopulmonary consequences of severe infections—all critical to rational therapy and clinical trials.

7) Talent density and brain-gain strategies

The sheer number of medical colleges and MBBS seats has grown rapidly, but faculty depth in core physiological sciences hasn't kept pace. Nationally coordinated fellowships, protected time for research-active teachers, and international co-supervision models can improve both teaching quality and output—especially if linked to centers of excellence and shared instrumentation hubs.

8) Digital, AI, and point-of-care physiology

Bangladesh should leapfrog with low-cost digital labs and AI-assisted tools—virtual frog muscles are cheaper than chronic equipment outages. Priorities: (i) affordable data-acquisition kits for teaching labs; (ii) standardized repositories of normal values in Bangladeshi populations; (iii) clinical decision support that embeds physiological reasoning (e.g., shock pathways, acid–base). This is feasible if procurement and maintenance are centralized, and if faculty development includes coding, statistics, and open-science practices.

What to do next—five concrete steps

1. Name the agenda. Establish a national "Physiology for Bangladesh 2030" roadmap that ties curriculum, research themes (heat–work–heart; NCD integrative physiology; infection–immunity), and funding.
2. Back the basics. Ring-fence a portion of UGC/ministerial grants for core physiology labs, shared facilities, and technical staff across universities and medical colleges.
3. Measure what matters. Publish annual indicators: physiology faculty-to-student ratios, lab uptime, funded projects, and outputs—linked to incentives.
4. Teach at the bedside. Mandate integrated physiology "immersion weeks" with medicine/surgery/OBGYN to connect mechanisms to patients.
5. Climate-proof health. Build a national heat-health physiology consortium with DGHS and city corporations to translate lab findings into workplace and school protections.

Bangladesh has already modernized its curriculum and expanded medical training capacity. If we now invest in measurement, mentorship, and mission-driven labs, physiology can move from lecture halls to leading roles in the country's health transition.

References

1. Islam MT, et al. BMC Health Services Research (2025): Utilization patterns for NCD care in Bangladesh, highlighting system strain.

2. Chowdhury NMRA, et al. Exploring the effects of catastrophic health expenditure due to NCDs in Bangladesh (2025).

3. DGHS Dengue Dashboard (accessed Aug 31, 2025).

4. Outbreak News Today. “Bangladesh dengue cases top 30,000 for 2025” (Aug 2025).

5. Patwary MM, et al. Urban heat stress and perceived health impacts in Bangladesh (2025).

6. World Weather Attribution via AP News: Asia heatwave attribution findings (2024).

7. Bangladesh Medical & Dental Council—MBBS Curriculum (Front matter, 2020/21 update).

8. BMDC Physiology Syllabus PDF (Curriculum 2021).

9. Bangladesh Bureau of Statistics via The Business Standard: GERD 0.30% of GDP (FY2020–21) (May 27, 2024).

10. New Age: Public university budget and research line updates (FY2024–25).

11. Dhaka Tribune: UGC steps to monitor research funds at private universities (2025).

12. The Daily Star: Growth in medical colleges and MBBS seats (2024).

13. WHO Country profile, Bangladesh (2024–25): AMR/lab capacity priorities.

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