Best Practices in BME in Low and Middle Income Settings

IFMBE Council of Societies

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Introduction

IFMBE has a wide range of activities, and multiple best practices have been developed. These are mostly performed within the Divisions, Working Groups and Committees. The challenge is how the individual members of the members societies can receive access to this information.

An initiative was made in the CoS meeting in Prague, 2018, to improve communication and connectivity, and to collect best practices in BME. Four themes were identified:

- Ethics in BME
- Gender Issues in BME
- BME in LMI Settings
- Support of Young Researchers

BME in LMI Settings

Theme: Best Practices on BME in LMI Settings

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Collecting and supporting the expansion of best practices in the BME field can constitute a transformative strategy towards better health, through universal health coverage and more equitable and accessible medical technologies, especially in LMI settings.

Four aspects for best practices were recognized:

1. Technologies. Existing low-cost, reliable, easy-to-use medical devices and medical settings applicable for low and middle income (LMI) context.
2. Development. Development of appropriate medical technologies using local resources and skills available in the LMI settings.

3. Education. Online and self-learning platforms and materials as well as best practices on BME/BMET education.
4. Services. Examples of successful establishment of clinical engineering services.

Recommended sources of BME/BMET training, education and development:

IFMBE HTAD e-learning platform, https://www.htad-ifmbe-elearning.org/

IFMBE CED training materials, https://ced.ifmbe.org/resources.html

UBORA infrastructure for creating medical devices [1], including also materials on Regulations, Standards & Design, https://platform.ubora-biomedical.org/

A round table on Open technology towards health equity, organized on March19, 2022, is available at https://fb.me/e/2nv7KapJg

Survey on BME in LMI settings

A global survey was conducted to identify weaknesses and strengths of the scientific, technological, socio-political, regulatory and educational landscape in BME in LMI resource settings. A full report will be available in the IUPESM journal Health & Technology [2].

Best practices can be drivers of change, and they may involve multiple dimensions. The current state-of-the-art was analyzed through six dimensions considered fundamental for advancing quality and equity in healthcare:

1. Relevant technologies
2. Emergent technologies
3. New paradigms in medical technology development
4. Innovative BME education
5. Regulation and standardization for novel approaches
6. Policy making

In order to evaluate and compare their *impact*, *maturity*, and *implementation challenges*, these dimensions were assessed through a questionnaire distributed via multiple channels. A total of 100 professionals from 35 countries with recognized experience in the field of BME and its application to LMI settings responded.

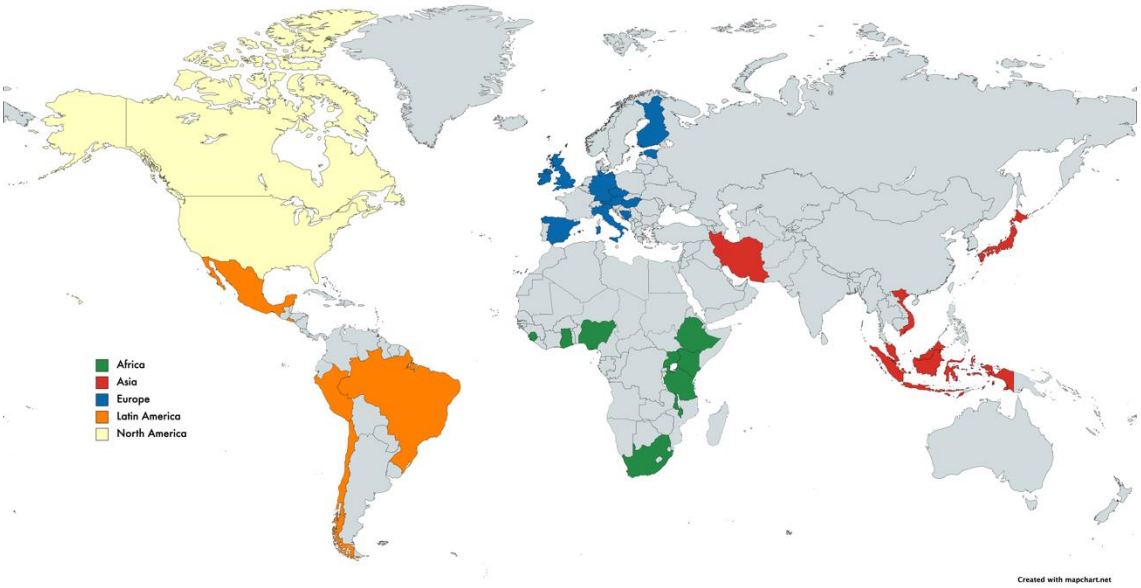

Figure 1. Geographical distribution of respondents to the BME in LMI survey (adopted from [2])

Key challenges for action were recognized, where local lobbying and international promotion of best practices is necessary:

1. BME/BMET education and human resources
2. Capacity building and availability of technological resources
3. Harmonization of regulations and standards
4. International cooperation and definition of common good practices

The study identified areas where even minimal efforts are required to make big changes in global health, including medical technologies for child/maternal health and for sterilization, e-health and m-health, sharing e-platforms for co-design with engineers and healthcare professionals, open educational resources and capacity building for educators, standards addressing the new co-design methodologies and the specificity of LMICs, and cross border actions both in monitoring health issues and the potential of new technologies. [2]

References

[1] De Maria, C., Di Pietro, L., Díaz Lantada, A. et al. (2020) The UBORA E-Infrastructure for Open Source Innovation in Medical Technology. MEDICON2019, Coimbra. IFMBE Proceedings 76. https://doi.org/10.1007/978-3-030-31635-8_106

[2] De Maria, C., Díaz Lantada, A., Jämsä, T. et al. (2022) Biomedical Engineering in Low- and Middle-Income Settings: Analysis of Current State, Challenges and Best Practices. Health and Technology. https://doi.org/10.1007/s12553-022-00657-8