

Pharmacology Written Questions of One Decade: Evaluation of Curricular Objectives and Content Coverage

Johora F¹, Abbasy AA², Mahboob S³, Jeenia FT⁴, Ferdoush J⁵, Rahman MS⁶

Abstract

Undergraduate pharmacology education has always been a topic of intense excitement and debate. This descriptive cross-sectional study was conducted to analyze the pharmacology written question papers (SAQ) of MBBS curriculum in last 10 years (January 2010 to November 2019). Total 131 question papers were collected, and reflection of curricular objectives and content coverage of pharmacotherapy of diseases of high burden were evaluated. Objective regarding factual knowledge (pharmacological effects, mechanisms of action, pharmacokinetic characteristics and adverse reactions of drugs) occupied about 80 percent of the questions throughout the last decade. Medicines used in diseases of high burden received very little weightage, which is consistent throughout the decade.

Keywords: *Pharmacology written questions, curricular objectives, disease burden, medical education*

1. Dr. Fatema Johora, Associate Professor, Department of Pharmacology & Therapeutics, Army Medical College Bogura, Bogura
2. Dr. Asma Akter Abbasy² Associate Professor, Department of Pharmacology & Therapeutics, Brahmanbaria Medical College, Brahmanbaria
3. Dr. Sabiha Mahboob, Major, Medical Officer, CMH Bogura, Bogura
4. Dr. Fatiha Tasmin Jeenia, Assistant Professor, Department of Pharmacology & Therapeutics, Chattogram International Medical College, Chattogram
5. Jannatul Ferdoush, Associate Professor, Department of Pharmacology & Therapeutics, BGC Trust Medical College, Chattogram
6. Md Sayedur Rahman, ⁶Professor and Chairman, Department of Pharmacology, Bangabandhu Sheikh Mujib Medical University, Shahbag, Dhaka

Address of correspondence : Fatema Johora, ¹Associate Professor, Department of Pharmacology & Therapeutics, Army Medical College Bogura, Bogura

Introduction

Medical education is a dynamic process and continuously being changed since the famous Flexner Report¹. The goal of medical education is to prepare graduates who are competent enough to serve the fundamental purposes of medicine,

prescribing safely and effectively. It is expected that medical curriculum should prepare the students (future doctor) with required knowledge, attitude and skills². Systematic understanding of pharmacology is needed for effective pharmacotherapy and prescribing³. World Health Organization advocates exercise on

selection of p-drug in order to educate future physicians more on real life situation with problem solving skill rather than theory⁴. However literatures around the world showed growing concerns about inadequacy of pharmacology education to equip future physicians as rational prescribers⁵⁻⁷.

A curriculum is generally regarded as a document containing formal plan of course content, objectives, learning outcomes, educational strategies and experiences. That also includes assessments to be used for achievement of learning, teaching and evaluation. Planning of the curriculum is a continuous, dynamic and never-ending process and represents the expression of educational ideas in practices⁸⁻¹⁰. In any curriculum, a seamless synchronization between instructional objectives, methods and assessment procedures are expected¹¹. Objectives describe the end-points of the curriculum that guide the assessment method and prepare learners for the educational activity and the standard by which their performance will be measured¹²⁻¹³. The objectives should be measurable and level of competence being delineated. The assessment methods measures whether the objectives are achieved or not through formative and summative examinations which ultimately drive the learning priorities and efforts¹⁴⁻¹⁵. The utmost foundation of medical curriculum is built around assessment, which often shapes the curriculum of medical schools and graduates. Measuring their progress through the curriculum by series of examinations becomes a motivating factor for them to learn¹⁶.

In 1988, Center for Medical Education developed a national undergraduate medical curriculum, the first documented curriculum ever developed in Bangladesh¹⁷. This was later extensively

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reviewed and the revised curriculum was implemented in 2002-2003 session¹⁸. After a decade, MBBS curriculum was again reviewed in 2012, which attempted to respond to the need of the learners and of the community, and was implemented from session 2012-13¹⁹. Studies were conducted to evaluate pharmacology curriculum, textbooks and question papers through different perspectives. Discrepancy between allocated teaching times and weightage given in written exam, missing the spirit of the curriculum, lack of questions on evaluating problem solving skill, less focus on issues related to antimicrobial resistance and absence of factors influencing prescribing e.g. ethics, moral values, pharmaceutical promotion and critical appraisal were revealed in previous studies^{7,20-24}. In this backdrop, current study was an attempt to illustrate the reflection of curricular objectives, content coverage and national health priorities in the Pharmacology written question papers of last 10 years.

Materials & Methods

The study was designed to assess the reflection of curricular objectives, content coverage, and national health priorities in the written question papers (SAQ) of MBBS Professional Examination on Pharmacology in Bangladesh. This was a descriptive cross-sectional study and the ethical approval was granted by the Institutional Review Board (IRB) of Combined Military Hospital (CMH) Bogura, Bangladesh. The study included written question papers of all universities (Bangladesh University of Professionals, University of Dhaka, University of Chittagong, University of Rajshahi, Shahjalal University of Science and Technology, University of Science and Technology, Chittagong and Gono

Bishwabidyalay) offering MBBS degree in Bangladesh for a period of one decade extending from January 2010 to November 2019. After the implementation of curriculum 2002, Pharmacology had been assessed in 2nd professional exam since January, 2007 (January and July session) and in curriculum 2012, it has been assessed in 3rd professional exam since May, 2017 (May and November session). Researchers tried to collect question papers of January and July session for the period of 2010-2016, and May and November sessions for the period of 2017-2019 of all seven universities. Question paper of one session (January/July/May/November) was counted as one. Total collected question papers of Bangladesh University of Professionals (BUP), University of Dhaka (DU), University of Chittagong (CU), University of Rajshahi (RU), Shahjalal University of Science and Technology (SUST), University of Science and Technology, Chittagong (USTC) and Gono Bishwabidyalay (GB) were 20, 20, 20, 20, 19, 16 and 16 respectively. Total 131 question papers were collected for review.

The number of objectives mentioned in the MBBS Curriculum of 2002 and 2012 were 10 and 11 respectively. However, the essence of both curricula was same despite little linguistic differences. A panel of

Results

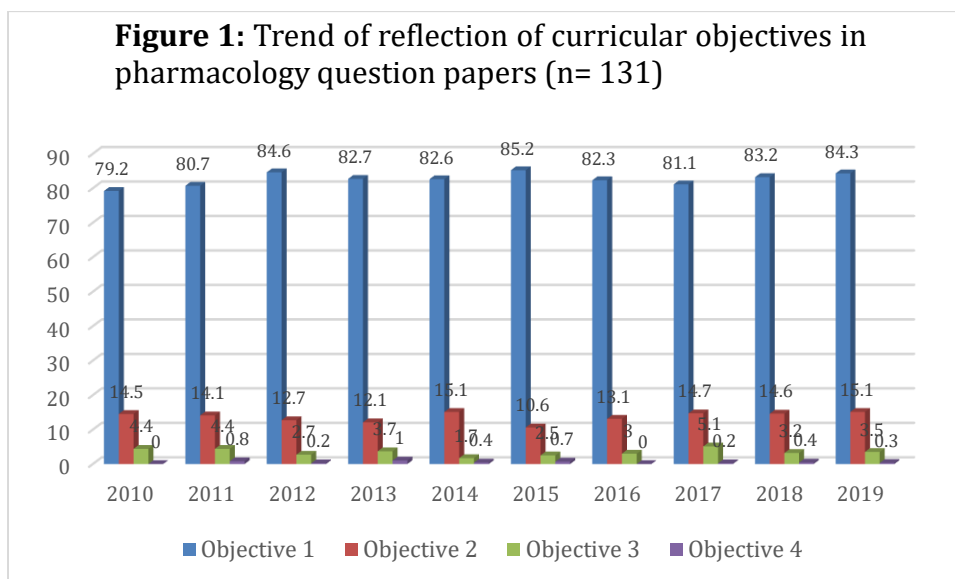
Total 131 SAQ papers of undergraduate pharmacology written question papers dated from January 2010 to November 2019 were analyzed.

Figure 1 showed reflection of different curricular objectives in pharmacology

experienced pharmacologists categorized the objectives on the basis of their priority in the Curriculum as well as suitability to be assessed through written questions. Then a directory of probable questions for selected objectives were formulated and endorsed by the same panel. In pharmacology SAQ question paper, there are four groups and each group contains six questions. Weightage was calculated on 84 marks as the SAQ part of the written question papers contain total 84 marks, though students could answer a maximum of 70 marks. The question papers were thoroughly searched, and every question was then reviewed, matched and labelled as reflecting the specific objective of curriculum and were analyzed for weightage received.

The reflection of health care needs of the community was assessed by calculating allocation of marks on pharmacotherapy of selected diseases of high burden²⁵. For that purpose, a list of diseases with high burden was prepared in consultation with the epidemiologists and probable questions for pharmacotherapy on those diseases was prepared with a panel of experienced pharmacologists. The questions were then reviewed thoroughly to identify the questions on related pharmacotherapy of selected diseases in order to evaluate the weightage.

written question papers during the study period. First objective consistently received 80 percent or more weightage and the remaining objectives collectively received the rest, of which 6 objectives received negligible or no weightage.



*1st Objective: The students on graduation will be competent to describe the pharmacological effects, mechanisms of action, pharmacokinetic characteristics and adverse reactions of drugs in order to be able to prescribe safely and effectively

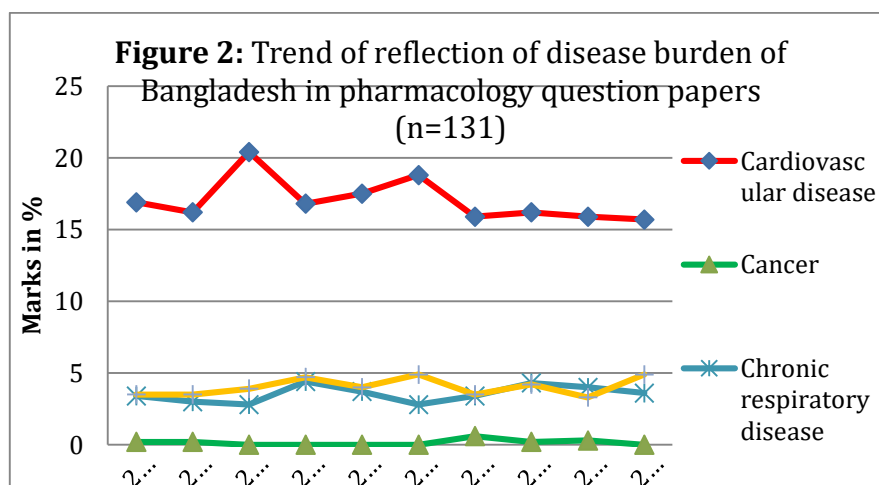
*2nd Objective: The students on graduation will be competent to describe the basic principles and concepts considered essential for rational (effective, safe,

suitable and economic) prescribing and use of medicines in clinical practice

*3rd Objective: The students on graduation will be competent to understand the principles of rational prescribing and the basis of utilizing the principles of rational evaluation of therapeutic alternatives

*4th Objective: The students on graduation will be competent to recognize, manage and report the adverse drug reactions (ADRs) and drug interactions

Figure 2 revealed the trend of reflection of pharmacotherapy of diseases of high burden in pharmacology written question papers throughout the last ten years. There was consistent low trend of questions on selected diseases of high burden over the years.



Discussion

Assessment drives learning and therefore it is important to formulate the right questions. In order to ensure that assessments are consistent with curricular objectives, it is important that assessments be developed according to a well-thought-out plan²⁶. This study was conducted to analyze pharmacology question papers of MBBS professional examinations of different universities to evaluate the reflection of curricular objectives and content coverage of the national health priorities.

Among the curricular objectives, first objective received about 80 percent weightage, while three others received the rest. The remaining six objectives received no attention. The first objective reflect recall knowledge domain and higher proportion of questions from recall domain was also observed in previous studies conducted in Bangladesh^{20,22}. Traditionally, existing pharmacology course has focused more on factual information with little or no emphasis on practical aspects. Consequently, this course is perceived inadequate to meet the requirements of clinical practice. In practice, physicians have to choose medicine among therapeutic alternatives through analyzing factual knowledge. Pharmacology education is expected lay the foundation to enable graduates to appraise new medicines and develop the habit of rational prescribing throughout their professional career³⁻⁴. In recent study conducted among pharmacology teachers revealed their satisfaction about present coverage of recall type questions²⁷. There is evidence that junior doctors self-rated their prescribing competencies as insufficient²⁸, which suggests that changes are urgently required in undergraduate pharmacology education. This change also revealed the necessity of

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the realization of the pharmacologists about the shifting of teaching-learning activities of future prescribers²⁹.

Bangladesh has been facing a dual burden of existing infectious diseases and escalating rise of non-communicable diseases (NCDs) like diabetes, heart disease, stroke, cancer and chronic respiratory disease²⁵. Less emphasis on national health priorities in pharmacology question papers was revealed in earlier studies done in our country²⁰⁻²². Current study found that trend of reflection of disease burden in written examination was almost consistent in last 10 years. According to disease burden of country, medicines used in cardiovascular disease, cancer chemotherapy and chronic respiratory disease should get more weightage in the pharmacology examinations.

Conclusion

The present study revealed that in last decade, the written evaluation mostly emphasized on one curricular objective and covered little of the pharmacotherapy of high disease burden or national health priorities.

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