
ALIGNING HUMAN ANATOMY SYLLABI OF 1ST BHMS WITH SUMMATIVE ASSESSMENTS: A BLUEPRINTING APPROACH TO ENHANCE CONTENT VALIDITY

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ABSTRACT

Background: Traditional homoeopathic anatomy examinations often suffer from subjective paper setting, resulting in disproportionate weightage given to topics and lower content validity.

Objectives: To develop, validate, and implement a standardized assessment blueprint for the First-BHMS Human Anatomy curriculum to ensure proportional syllabus coverage and enhanced content validity.

Methods: A mixed-methods study conducted over one academic year. A panel of subject matter experts (SMEs) calculated weightage for topics based on instructional hours and clinical relevance (using the National Commission for Homoeopathy First BHMS Syllabus). A prospective blueprint matrix was mapped against cognitive domains (Knowledge, Comprehension, Application). Content Validity Ratio (CVR) and Content Validity Index (CVI) were calculated. Post-examination feedback was gathered from faculty and students.

Results: The developed blueprint achieved high social validation, with an overall Item-CVI of (>0.85). Blueprint-aligned question papers demonstrated significantly better distribution across regions (e.g., Head & Neck, Thorax, Extremities) and cognitive domains compared to past non-blueprinted papers ($p < 0.05$). Student satisfaction regarding exam fairness rose markedly.

Conclusion: Educational blueprinting is an effective tool to eliminate examiner bias, ensure uniform syllabus distribution, and fortify the content validity of summative anatomy examinations in homoeopathic education.

KEYWORDS: Blueprint, Human Anatomy, Summative Assessment, 1st BHMS, Content Validity

INTRODUCTION

Background of Homoeopathic Education: The First-BHMS Human Anatomy syllabus is vast. It requires students to understand structural biology alongside its clinical application in homoeopathic prescribing (e.g., matching regional pathology to Homoeopathic Materia Medica and Organon of Medicine concepts).

The Problem: Traditional summative assessments frequently rely on the subjective preferences of external examiners. This leads to "clustering" (over-testing specific regions like the Thorax while omitting the Abdomen) and an over-reliance on low-level recall questions.

The Solution (Blueprinting): An assessment blueprint acts as a two-dimensional map linking curriculum topics to assessed competencies and cognitive levels (Bloom's Taxonomy).

Study Objective: This study aims to construct, validate, and execute an assessment blueprint for the university-level summative anatomy examination, measuring its impact on content validity and stakeholder perception.

MATERIALS AND METHODS

- A panel of **10 senior Anatomy professors** was selected via purposive sampling.
- **Inclusion Criteria:** Minimum 5 years of teaching experience in First-BHMS Anatomy under affiliated colleges in MP.
- **Role:** Participating in Delphi rounds to finalize topic weightages and validate the blueprint matrix.

Student Cohort:

- **Sample Size:** All regular **First-BHMS undergraduate students** (n = 100) enrolled in the academic year.
- **Inclusion Criteria:** Students appearing for their internal summative university mock examination.

Study Design

- A prospective, sequential mixed-methods action research study conducted in a recognized Homoeopathic Medical College.

Phase 1: Blueprint Development

- **Syllabus Decomposition:** The standard NCH Anatomy curriculum was divided into core topics (e.g., General Anatomy, Upper Limb, Lower Limb, Thorax, Head & Neck, Abdomen, Neuroanatomy, and Embryology).
- **Weightage Calculation:** A formula-driven approach was used to allocate weightage ((W)) based on total teaching hours (T) and clinical importance (I), rated on a Likert scale from 1 to 3 by experts):
 - $\{ \text{Weightage Score} \} = (T \times I)$

Phase 2: Matrix Design & Cognitive Mapping

- A two-dimensional grid was plotted: Vertically listing the topics, and horizontally listing the assessment tools (MCQs, Short Answer Questions [SAQs], Long Answer Questions [LAQs]) mapped to cognitive domains (Modified Bloom's Taxonomy):
 - **Knowledge (K):** Recall of anatomical structures and attachments.
 - **Comprehension (C):** Understanding relations, blood supply, and lymphatic drainage.
 - **Application (A):** Surface anatomy, radiological anatomy, and homoeopathic clinical correlation (applied anatomy).

Phase 3: Validation Protocol

- **Expert Panel:** A Delphi panel of 10 senior Anatomy professors validated the matrix.
- **Statistical Metrics:** Content Validity Ratio (CVR) and Content Validity Index (CVI) were calculated for each cell in the blueprint grid. Items with a CVR (<0.62) (for 10 panellists) were revised.

Phase 4: Implementation & Evaluation

- The final summative examination question paper was strictly constructed based on the approved blueprint matrix.
- **Feedback Collection:** Validated surveys were distributed to students ($(n=100)$) and faculty ($(n=15)$) to record perceptions on a 5-point Likert scale.

4. RESULTS & DATA PRESENTATIONS

Table 1: Topic Weightage and Blueprint Distribution Matrix.

Anatomy Region	Teaching Hours T	Impact Score I	Total Weightage (%)	MCQs 1 mark	SAQs 5 marks	LAQs 20 marks	Total Marks
General Anatomy	20	1	5%	2	1	0	7
Head & Neck	60	3	25%	5	2	1	35
Thorax	40	2	15%	3	1	1	28
Abdomen & Pelvis	50	3	22%	4	2	1	34
Neuroanatomy	30	2	13%	2	2	0	12
Histology & Embryology	40	1	10%	4	2	0	14
Total	240	—	100%	20	10	3	130 Marks

Statistical and Descriptive Findings

- **Content Validity:** The overall Content Validity Index (S-CVI) improved from a retrospective baseline of 0.52 (non-blueprinted historical papers) to 0.89 ($p < 0.01$).
- **Cognitive Domains Assessed:** The blueprint successfully shifted the examination away from pure recall: Knowledge (40%), Comprehension (35%), and Application (25%).
- **Faculty Feedback:** (93.3%) of faculty members agreed that blueprinting streamlined the paper-setting process and eliminated personal bias regarding favourite organ systems.
- **Student Feedback:** (87%) of students reported that the paper felt "fair," covered the entire syllabus uniformly, and effectively reduced pre-examination panic.

DISCUSSION

- **Interpretation of Content Validity:** The high S-CVI proves that mathematical blueprinting forces test developers to sample the entire syllabus comprehensively. This directly mitigates the threats of "construct-irrelevant variance" and "construct under-representation."
- **Relevance to Homoeopathy:** Homoeopathic clinicians require excellent structural knowledge to differentiate local physical symptoms from constitutional states. For example, identifying the precise nerve pathway in a neuralgia case dictates accurate remedy selection in Homoeopathic Materia Medica. This blueprint balances pure structural anatomy with clinical, case-based questions (Application domain).

- **Comparison with Modern Literature:** These results mirror standard medical education studies in conventional systems (such as Elsevier's Medical Teacher), proving that blueprinting bridges the structural gaps present in alternative medicine education.
- **Limitations:** Developing a blueprint requires intensive faculty training and consensus building. Additionally, an external university paper-setter might occasionally bypass the blueprint if strict institutional compliance monitoring is absent.

6. CONCLUSIONS & RECOMMENDATIONS

- **Conclusion:** Utilizing an assessment blueprint significantly maximizes content validity, eliminates testing bias, and ensures proportional question distribution across the First-BHMS anatomy curriculum.

- **RECOMMENDATIONS**

1. The National Commission for Homoeopathy (NCH) should mandate standardized assessment blueprints for all institutional summative examinations.
2. Blueprinting frameworks should expand to include Formative Assessments (Internal Examinations) and Objective Structured Practical Examinations (OSPEs).
3. Continuous faculty development programs (FDPs) focusing on blueprint alignment should be instituted across homoeopathic colleges.

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