Research and Publication model for Undergraduate Competency-based Medical Education

Need:

With the advent of Competency based Medical Education (GMER amendment 2019), the undergraduate curriculum need to be strategized towards attainment of 36 global competencies for realization of five roles of an Indian Medical Graduate (IMG) viz Clinician, Leader and member of Health care team, Professional, Communicator and Life long learner. Out of the five roles, the role of Clinician, Life long learner and Professional comprise of global competencies that necessitate the inclusion of knowledge and experience of generating and utilizing and evidence for better patient outcomes as stated below (table 1);

Roles	Global competency
Clinician	**Demonstrate** familiarity with basic, clinical and translational research as it applies to the care of the patient
Life long Learner	**Demonstrate** ability to search (including through electronic means), and critically evaluate the medical literature and apply the information in the care of the patient
Professional	**Demonstrate** a commitment to the growth of the medical profession as a whole

Table 1 : Global competencies against three roles of IMG that necessitate inclusion of Research in UG curriculum

As depicted in the table above, an IMG must be able to **DEMONSTRATE** these global competencies. The above mentioned competencies do not find place within the syllabi while dealing with the curriculum of respective subjects areas and hence they remain unaddressed or inadequately addressed. Therefore, there is a perceived need to introduce undergraduate research with scientific publication within the CBME curriculum and according it due credence in academic progression of the learner.

Specifics of the Model :

Since the related competencies are expected to be of the level of '**Shows How'**, instructional strategies should be focused towards active, **experiential** learning that can be best addressed by ;

1. Sensitizing the students about research methodology during Foundation course in first professional year.
2. Hands on experience for research projects and scientific publications during all professional years and internship period.

Undergraduate Research and Publication model

1st professional	Second Professional	Third Professional	Electives (between third and final prof)	Final year	Internship
Sensitisation: Foundation course **Hands - on** : i. Research : STS , Intramural research ii. Publication in the form of review article / STS/Case reports	**Hands - on** : i. Research : STS , Intramural research ii. Publication in the form of review article / STS/Intramural research article	**Hands - on** : i. Research : STS , Intramural research ii. Publication in the form of Case report/ STS/Intramural research article	1st Block elective on research methodology with hands on in any ongoing research project.	**Hands - on** : i. Research : STS , Intramural research ii. Publication in the form of Case report/ STS/Intramural research article	**Hands - on** : i. Research : Commu ity based research project ii. Publication in the form of article of Community project

Continuous Monitoring and Evaluation

Professional year	In class	Experiential (outside classroom)
1st Professional Year Foundation course	4 hours	5 - 6 hours
IInd Professional Year	4 hours	6-10 hours
IIIrd Professional Year	4 hours	10 - 15 hours
Electives	One month 40 Hrs	One month 60 hours
IVth Professional Year	4 hours	10 - 15 hours
Internship		30 hours

Implementation , Monitoring and Evaluation :

UNIT/MODULE/COURSE	LEARNING OUTCOMES (unit/module/course-level)	TEACHING-LEARNING ACTIVITIES	ASSESSMENT ACTIVITIES
1st Professional Year Foundation course	Sensitization 1. Basics of research skills 2. Literature search 3. Writing a research proposal 4. Computer skills – Excel Hands on : 1. ICMR – STS projects 2. Scientific paper writing – Review articles/ Case reports	Lecture Discussion Hands-on : writing a project proposal for ICMR-STS, review article & case reports	Internal assessment Log book (depicting research and publication milestones)
IInd Professional Year	Sensitization : Research Methodology Part I – Need analysis, Research question, writing objectives & hypothesis, Study designs Hands on : 1. ICMR – STS projects 2. Scientific paper	Lecture Discussion Narrate steps of research process followed from examples of published studies Hands-on :	Internal assessment Log book (depicting research and publication milestones)

	writing – Review articles / Case reports/ original articles	writing a project proposal for ICMR-STS, review article , case reports and original articles	
IIIrd Professional	Sensitization : Research methodology Part II –Sampling, Data collection & Analysis, Writing a research protocol Hands on : 1. ICMR – STS projects 2. Scientific paper writing – Review articles / Case reports/ original articles	Lecture Discussion Hands-on : writing a project proposal for ICMR-STS, review article , case reports and original articles	Internal assessment Log book (depicting research and publication milestones)
	Electives in Biostatistics and Data Analysis (Quantitative & Qualitative Studies)	Blended mode of onsite and recorded lectured with embedded exercises. Experiential learning by including in any ongoing funded project.	Log book (depicting research and publication milestones)
IV Professional	Sensitization : Critical review of published research Evidence Based Medicine Hands on : 1. ICMR – STS projects 2. Scientific paper writing – Review articles / Case reports/ original articles	Journal club Hands-on : writing a project proposal for ICMR-STS, review article , case reports and original articles	Internal assessment Log book (depicting research and publication milestones)
Internship	Community Based		Log book (depicting

	research project Publication of the project		research and publication milestones)

a. Implementation :

The model can be suitably place within the curriculum as stated below;

1. A research methodology sensitization and workshop of 15 hrs during **Foundation course**.
2. Research support - as already in vogue
3. Publication :
    - Interaction of Student & R&D/Research convener once a month during pre-specified **Self Directed Learning** hours (SDL) in the time table.
    - Continuous **One on one mentoring** through preceptorship program

The list of activities and responsibility is proposed as stated below;

Sr. no	Activity	Responsibility
1	Sensitization during Foundation course	R&D team (Annexure 1)
2	Research support (STS & Intramural)	• Respective guides & Student welfare team • Research Guidance clinic
3	Publication support	• One on one mentoring through preceptor ship program • Research conveners of respective Institute/ R&D • Research Guidance clinic (Annexure 1)

Monitoring :

Sr. no	Activity	Responsibility
1	Sensitization during Foundation course *	College Curriculum Committee (CCC)

2	Research (STS & Intramural) *	• Research convener of respective Institute • R&D
3	Publication *	R&D

*** should be depicted in log book of all professional years.**

Evaluation indicators :

1. Student attendance in sensitization session of foundation course.
2. Number of STS and intramural UG projects.
3. Logbook inclusions and related attestations.
4. Number and quality of review articles published in 1st MBBS.
5. Number and quality of case report/review articles published in IInd – Final MBBS.
6. Interaction logs of student preceptor (preceptor diary & discussion on virtual platforms).
7. Number of students opted for Research - Electives in block 1.

Internal Quality Assurance cell , DMIMS (DU)