UNDERGRADUATE MEDICAL RESEARCH AT REHMAN MEDICAL COLLEGE PESHAWAR: ESTABLISHMENT, IMPLEMENTATION & EXPERIENCE

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ESTABLISHMENT

Rehman Medical College (RMC) was established in 2010 as a project of the Rehman Medical Institute (RMI), a tertiary care hospital in the private sector, based in the city of Peshawar, Khyber Pakhtoonkhwa (KP), Pakistan. The college is commissioned and recognized to impart the five-year MBBS program, as per guidelines of the Pakistan Medical & Dental Council (PM&DC); currently MBBS programs for years 1–5 are being conducted.

The Vision of RMC regarding undergraduate medical education revolves round the concept of producing physicians of excellence who shall demonstrate humane and empathetic behavior to their clients, sick or otherwise.

The Mission of RMC is to train students through a research-intensive, student-based curriculum that shall promote leadership, collaborative discoveries and innovation. This mission will improve community health though their graduates who shall be cognizant of the needs of the community, hence, acting as good role models.

In line with the mission statement, a Department of Medical Research (DMR) was commissioned in March 2010 with the main task of introducing a research culture at the undergraduate (UG) level. Additional responsibilities were to facilitate Postgraduate research and to work towards creation of a Medical Research Center with broad ranging research facilities and further evolution over time to a degree awarding institute.

The Department started with a fledgling staff of one Director and a Research Officer with no permanent offices or location. In December 2013, it shifted to its permanent location and gradually increased the staff by addition of one Senior Research Officer and one Research Officer.

IMPLEMENTATION

- Students of all MBBS are divided into research teams of 5-6 students each, keeping a rational ratio of gender, scholastic abilities and motivation. Total 18 teams were made. A team leader is elected / nominated by each team to supervise the team activities.
- Selected faculty members are designated as Research Supervisors for each research team. Their job is to ensure that research teams carry out research projects according to standard research guidelines and to provide counseling / mentoring, as and when needed. They also coordinate and report research activities of their teams to the DMR.
- Team leaders and team members are provided guidelines by DMR and Research Supervisors for conducting team-based research work. The team leaders supervise members’ research activities, allot tasks, give deadlines and coordinate with Research Supervisors.
• Research projects are allotted to students, either by their own team selection or from a list of topics suggested by the DMR and/or Research Supervisors.

• To provide academic support, a structured & tiered five-year curriculum of undergraduate research training is formulated with a ‘bottom-up’ approach.

  o Year 1: The year one theme is “All about Data” with the objective of familiarizing students with the fundamental need of research i.e., collecting, analyzing and interpreting data meaningfully. Students undertake projects of a basic nature from among their colleagues or from hospital based patient records. Topics covered include:
    ▪ Introduction to research
    ▪ Criteria for project selection
    ▪ Literature search
    ▪ Research proposal development
    ▪ Questionnaire development
    ▪ Types of data
    ▪ Descriptive biostatistics (including the normal curve)
    ▪ Data analysis with SPSS
    ▪ Writing the research report

  o Year 2: In year 2, the theme of “Research Methodology” is covered in depth with the objective of imparting concepts and logic of research. Students select projects where comparisons of different groups are essential to arrive at meaningful inferences. Topics covered are:
    ▪ Study designs
    ▪ Bias and confounding
    ▪ Sampling techniques
    ▪ Sample Size calculations
    ▪ Inferential statistics (including Standard Errors & Confidence Intervals)
    ▪ Hypotheses
    ▪ Hypothesis testing procedures
    ▪ Writing a research article (including references)

  o Year 3: The year 3 theme is “Clinical Research” with the objective of understanding the role of research in hospital based settings. Students are encouraged to undertake hospital based research projects on different diseases and their management. Topics included are:
    ▪ Hospital based research
    ▪ Clinical Trials
    ▪ Evaluating diagnostic procedures / techniques
    ▪ Evidence Based Medicine
    ▪ Cochrane databases
    ▪ Ethical review and IRBs

  o Year 4: For year 4, the theme is “Community Research” with the objective of understanding the role of research in prevention of disease at the community level. Students undertake projects on different aspects of community health and disease to gain first-hand knowledge of community health needs. Topics included are:
    ▪ Epidemiology
    ▪ Surveys
    ▪ Trends of disease
    ▪ Monitoring & Surveillance of disease
    ▪ Community intervention programs
    ▪ Vital statistics and health indices

  o Year 5: The final year theme is “Patient Care” with the objective of identifying workplace health issues of patients and research-based approaches to problem solving. Students are encouraged to participate in supervised clinical research projects with the clinical faculty. Topics covered include:
    ▪ Identifying clinical health problems
Planning clinical research studies
Practice based research studies
Planning ethical interventions
Monitoring short- and long-term outcomes of interventions
Complicated and Chronic diseases
Rehabilitation of patients
Performing meta-analysis
Performing survival analyses

EXPERIENCES

INITIAL PHASE

In 2010-11, the new pioneer batch of year 1 students enthusiastically embraced the UG research program despite the fact that they had no prior research interaction in their school and college education. Most of the students participated actively in understanding the research process as well as conducting research projects. There was effective cooperation between team leaders and team members so that projects were developed and conducted in defined and structured phases with frequent meetings among team members, research supervisors and the DMR staff. Essentially most of the deadlines were met, so that by the end of the academic year, 12 out of 18 projects had been completed, the remaining being in pre-terminal or terminal stages of completion. It is noteworthy that even though the time table did not contain any protected slots for research activities other than lectures, the students used their break times or after-college hours to hold meetings and carry out research assignments and projects.

A few negative aspects deserve mention, particularly as these pertain not to the attitude of students, but those of other faculty members of medical departments. Instead of encouraging students to do research and help them in the process, quite a few faculty members tried to dissuade and discourage students from research activities. Their plea was that research activities would detract and distract students from regular classes and curricular activities, resulting in poor examination results. At an extreme level, students were prevented from going to the DMR for research activities. This caused quite a disturbance in the minds of students and many of them became confused as to whether they were doing the right thing in pursuing research projects during their UG years.

To resolve this issue, the DMR had to counsel students in groups and individually on many occasions to emphasize that textbook knowledge was derived from research activities and not just a fictional work of some author(s). Moreover, it was made clear to them that the modern doctor was recognized on the basis of research output and publications, rather than mere routine teaching and clinical work, so that their future professional life would be closer to that of true medical scientists as compared to empirical domains of alternate medical practitioners. In addition, their job market value would increase if they had already published a few articles at the UG level. Luckily, most of the students saw through the ruses of the faculty members who were bent on merely strengthening their role as teachers, rather than looking after the interests of students.

The DMR then started to hold workshops on various aspects of research methodology, biostatistics and medical writing for the RMC faculty members as part of the human resource capacity building. This caused a gradual change of mindset towards research as a feasible and desired activity rather than an off-limits or high-level prohibitive effort. It also caused the UG research supervisors to polish their research skills and allowed the DMR to recruit additional faculty as research supervisors. Thus UG research came to be an acceptable, if not highly preferred activity for both students and faculty.
In 2012, six UG research projects were selected to be presented at the Khyber Medical University (KMU) Annual Health Research Conference held in February. This was a first ever presentation by students and it was widely appreciated by the KMU and the RMC. Presenters and all team members were given appreciation certificates by the DMR.

In February 2013, five papers and four posters were presented by students at the KMU Annual Health Research Conference, out of which three papers and two posters won first prizes in overall competition. A similar achievement was exhibited in February 2014 and February 2015 when ten and twelve papers were presented respectively, and the RMC student team won the overall Best Undergraduate Paper award.

INTERIM / CURRENT PHASE
The UG Research program has achieved a measure of stability and acceptance, though several issues remain to be addressed. The program is now in its final year, with 40 out of 54 projects completed by students of three MBBS years. The year 4 students completed 12 projects (in teams of 8) of Community Health Sciences (CHS), as it is a requirement of their year 4 MBBS examination. The department of CHS and the DMR are jointly supervising the teams’ activities and projects.

Due to a grudging acceptance of the UG research program by RMC faculty, the DMR is unable to implement the UG research program in the most optimal and desirable form. This would require commitments from the RMC administration and faculty for protected time for research activities during the college hours in the form of time slots to carry out consultations, literature searches, data collection, data analysis, article writing, etc. all of which are currently being done by students at their convenience. This not only leaves a major chunk of their research work unsupervised but also causes multiple visits for revising and rewriting assignments that could otherwise have been completed in one supervised sitting in the college. Hence a lower level of efficiency prevails regarding the research output by students. Ideally, each research team should have published a minimum of one research paper per year, which has not been realized so far.

Protected curricular time can be provided in the form of 2-3 hour slot per week for student teams to meet with each other, their Supervisors and/or with the DMR so that their projects are expedited. Additional options are to provide a curricular block of one week of intensive research activity every 2-3 months, where students from all MBBS years exclusively carry out research projects. In this connection, the current allocation by PM&DC of 50 hours for research in the PM&DC Syllabus (Revised 2011) is a small step in the right direction.

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