

Fellowship Trainee Research Activities of a Faculty of Bangladesh College of Physicians and Surgeons: Analysis of 30 years Dissertation Work and Recommendation for Further Improvements

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Abstract:

Physical Medicine and Rehabilitation (PMR) is a diverse specialty with principal focus on disability evaluation and functional restoration of an individual. The PMR Faculty at Bangladesh College of Physicians and Surgeons (BCPS) was established about 30 years ago. As a medical specialist of 21st century, at this point of time, it is important to know and evaluate the spectrum of research activities performed by the trainees of the faculty.

Objectives of the study was to make an in-depth analysis of the dissertations completed by the PMR fellow trainees of BCPS since the inception of the Faculty. It was also aimed to discuss the strengths and insights of shortcoming of the research areas and topics with directives for further improvement of the future trainees and faculties ultimately to initiate a dialogue among the stake holders and other specialties.

This was an observational mixed method study. Information was gathered from the BCPS webpage, Faculty office and published materials, which was further strengthened with a small group discussion, online literature search and a telephone interview of the PMR fellows to learn their experience that they gained during the dissertation works.

A total of 167 (n=167) dissertation topics were available for statistical analysis submitted by the trainee fellows from 1992 to 2021, a period of 30yrs. More than half (50.9%) of the submitted titles were on effectiveness or comparative study of rehabilitation therapy modalities which include therapeutic-electrophysical-agents (TEA), exercises, occupational therapy or orthotics. Musculoskeletal (MSK) and rheumatological disorders constituted (17.4%), neurological disorder 7.1%,

risk factor assessment or etiological pattern of MSK conditions (7.2%), disability and functional outcome assessment (5.4%), interventions for regional pain management (4.8%) and other category (7.2%). The initial decade trend was on MSK, which later shifted to TEA and on interventions respectively. Overall, TEA modalities were the predominating titles in all 3 decades. Considering the other category of titles, there were interesting topics which include COVID-19, variation in body mass composition, assessment of drug effects, diagnostics and effectiveness of educational booklet. Of the 09 dissertations approved during the most recent year (2021), 34% were with interventional pain management. In the process of doing a dissertation, a number of opportunities and challenges were identified by the fellows for fellow trainee researchers.

There was a clear trend of dissertation titles on MSK pain management and interventions with less attention to rehabilitation procedure and appliances. Identified opportunities include cooperative attitude of the trainers and mentors in the department and there were wide research areas with vast sample population. Time allocation and funding were the biggest barriers for research works during training period. BCPS to support on research methodology, fund placements and to catalyze with other institutes to ensure a reasonable level comfort for research works.

Keywords: Fellowship trainee, Bangladesh College of Physicians and Surgeons, Faculty, Physical Medicine and Rehabilitation, Dissertation, Thesis.

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Introduction:

Physical Medicine and Rehabilitation (PMR) was established as a faculty of the Bangladesh College of Physicians and Surgeons (BCPS) in 1990, and its PMR Fellows are working with good reputations at home and abroad. Adequate training with submission of a dissertation as a part of research activity is a prerequisite for the fellowship final examination at BCPS (1). It is known that Physical medicine and rehabilitation (PMR) in Bangladesh is a very popular and fast-growing specialty (2), at the same time one may ask about the need based quality production from the factory over the period of time. It is accepted that participating in research sharpens skills, creating better doctors with improved knowledge of current literature. (3) The trainee while performing thesis work develops the ability to interpret potential risk in an individual case, as well as professional skills for team-working, mentoring, and communication—the essentials in rehabilitation medicine.

This research work was done to make an in-depth analysis of the dissertations completed by the PMR fellow trainees of BCPS since the inception of the faculty at BCPS. It was also aimed to discuss the strengths and insights of the shortfalls of the research areas and topics with directives for further improvement of the future trainees and faculties, ultimately to initiate a dialogue among the stake holders responsible for research and training.

Methods:

This was an observational mixed-method study. Information was gathered from the BCPS webpage (1), faculty office, and published materials, which was further strengthened with a small group discussion, an online literature search, and a telephone interview of the purposefully selected PMR fellows to learn about the experience that they gained during the dissertation work. The literature search was conducted on Banglajol, Google scholar, and PubMed using the key words “Dissertation”, “Thesis”, “Post Graduate Fellowship”, and “Fellowship research” during the period of 1st March to 30th April 2022.

A small group discussion was held at the BCPS campus in Dhaka, Bangladesh during the PMR Faculty meeting of March 2022. The meeting brought together the members comprising pioneer, senior, and junior faculties, with faculties from different institutes of the country. The small group discussion was of short duration, which

was moderated and the minutes of the meeting were recorded by the principal author. All participants were encouraged to share their experiences freely and express their concerns regarding the topics and research areas, methods, and challenges of research activities of fellow trainees. Participants were also asked to recommend possible solutions to the issues identified.

A brief telephone interview was conducted to learn about the personal experiences of PMR fellows that they gained during their dissertation research period. Participants were purposively selected to cover the 30 year time period, taking 10 participants (who were available on telephone call) from each decade. The contents of the interview were about: a) the process of selection of the title of dissertation and protocol development, b) opportunities and challenges he/she observed, and c) recommendations to improve. All the collected information was gathered in a structured questionnaire. Data was managed accordingly; statistical analysis was made and presented in the following sections. Discussion section was formulated based on collected data in a consensus of the authors.

Results:

A total of 171 PMR faculty dissertation titles were identified. Four dissertation titles were excluded from analysis because of pending, incomplete submissions or duplication. Finally, 167 (n = 167) topics were available for statistical analysis, submitted by the trainee fellows from 1992 to 2021, a period of 30 years. Details of dissertation titles covering the core areas of PMR specialty are presented in table 1.

More than half (50.9%) of the submitted titles were on effectiveness or comparative studies of rehabilitation therapy modalities, which include therapeutic-electrophysical-agents (TEA), exercises, occupational therapy, or orthotics. Titles on TEA and MSK together constitute 114 topics (Table 1), which constitute about 69% of the total dissertations approved so far. The rest of the titles were under regional musculoskeletal (MSK) and rheumatological disorders (17.4%), neurological disorders (7.1%), risk factor assessment or etiological pattern of MSK conditions (7.2%), disability and functional outcome assessment (5.4%), interventions for regional pain management (4.8%), and other categories (7.2%).

Table-I*Detail Categories of Dissertation topics in 30yrs time period (n-167)*

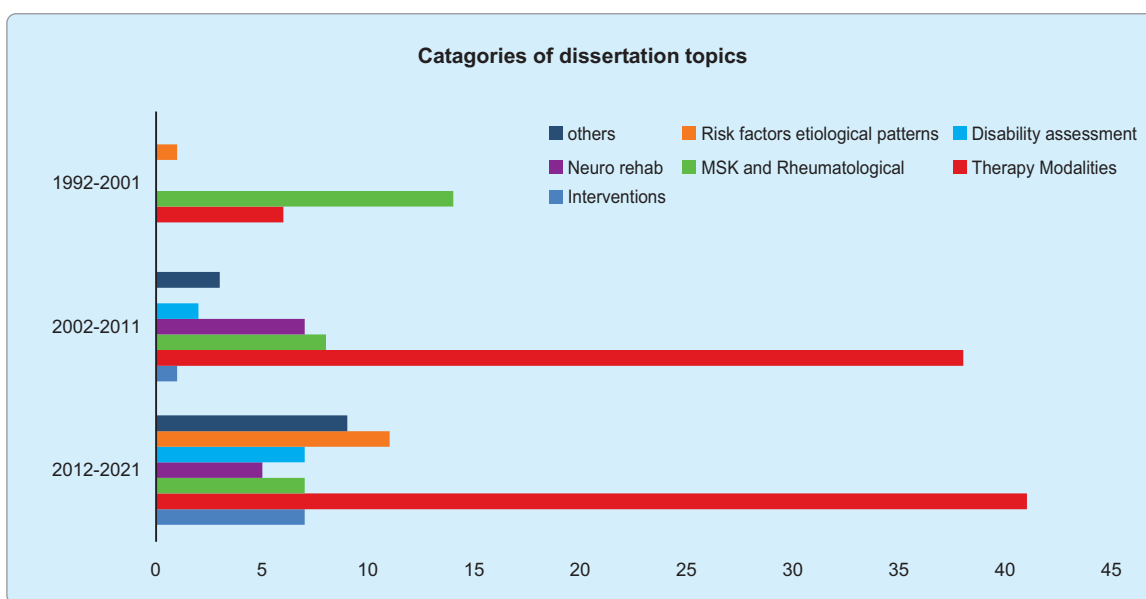
Year of submission and approval	Categories of Dissertation topics							Total
	Interventions	Therapy Modalities	MSK and Rheumatological	Neurorehab	Disability assessment	Riskfactors etiological patterns	Others	
2021	3	1		1	1	2	1	9
2020	1		2					3
2019		3	2		1		2	8
2018	2	2				3	1	8
2017		3	3		1	2	1	10
2016		2			1	1	2	6
2015		7		1	1	2	1	12
2014		6				1		7
2013	1	8		2			1	12
2012		9		1	2			12
2011	1	4	1				1	7
2010		6		2				8
2009		5		2			1	8
2008		10	2					12
2007		8		2	2			12
2006		3	1					4
2005		1					1	2
2004								
2003			2					2
2002		1	2	1				4
2001		1				1		2
2000			2					2
1999								
1998		2	2					4
1997								
1996		3	5					8
1995			2					2
1994			1					1
1993			1					1
1992			1					1
30yrs	08	85	29	12	09	12	12	167

Decade trends of dissertation topics were presented in Graph 1, initially the trend was on MSK, which was shifted to TEA and interventions, respectively (decade 1 (1992–2001), 2000–2011, 2012–2021).

Graph: 1 Decade trends of dissertation topics (n=167)

Overall, TEA modalities were the predominating titles in all 3 decades. There was no intervention topic till the year 2010, no disability assessment topics till the year

2006 and had one dissertation on risk factor assessment in the earlier 2 decades. Considering the other categories of titles, there were interesting topics, which included COVID-19, variation in body mass composition, assessment of drug effects, diagnostics, and effectiveness of educational booklets. Of the 09 dissertations approved during the most recent year (2021), 34% were on interventional pain management.



Decade 1: 1992-2001, Decade 2: 2002-2011, Decade 3: 2012-2021

Discussion:

1. PMR Core Areas

In this study, the most favorite dissertation topics were on TEA modalities and MSK comprising about two-thirds of the total topics. The Physical Medicine and Rehabilitation core curriculum and competency were categorized by the International Society of Physical and Rehabilitation Medicine (ISPRM) education committee (4), American Board of PMR (5) and other sources (6) into following core areas presented in box-1

Recently, Bangabndhu Sheikh Mujib Medical University (BSMMU) passed a bill to have more specialized areas of physical medicine and rehabilitation into three major divisions, including musculoskeletal rehabilitation, neurorehabilitation, and sports rehabilitation. (7)

2. Opportunities for trainees for research in rehabilitation medicine

- a) Trainers and mentors were extremely eager to guide and undertake the research work.

Box-1: PMR core areas

- a) Epidemiology of Disability and General Rehabilitation Principles,
- b) Diagnostics (MSK ultrasonography, electromyography, nerve conduction studies-indications with interpretation of major findings),
- c) Functional assessment and outcome measures,
- d) Interventions (efficacy, indications, and side effects)
- d) Rehabilitation approach to disease-specific disabilities (for example, stroke, spinal cord injury, brain injury, multiple sclerosis, rheumatoid arthritis),
- e) Interrogative and clinical rehabilitation sciences (application of bioethical principles,

- administration and management, evidence-based medicine, PMR quality management),
- f) Therapeutic electrophysical agents (TEA), assistive technology, rehabilitation robotics
- g) Management of chronic pain, spasticity, etc. Sports medicine and post-traumatic disability, including geriatric and pediatric disability,
- h) Regional MSK disorders such as cervical spondylosis, shoulder, back, knee, and foot pain
- i) Cardiorespiratory rehabilitation, burn injury, cancer, amputation, and vascular disorders.

- b) Extensive research areas with a large patient population
- c) There are dedicated faculties in the department for guiding the students' selecting the title and protocol preparation.
- d) Department of Public Health Informatics at BSMMU and the Bangladesh Medical Research Council (7) regularly offer an easy-access course on research methodology.
- e) The ability of the BCPS dissertation submission regulations are flexible for a guide and a trainee

3. Challenges for researchers

- a) For PMR fellows, the most significant barriers to research work during the training period and later stages of their careers are time and funding. About 90% of the respondents of the short telephone interview identified this issue and other studies of advanced institutes in developed countries like the Royal College Physicians (RCP) of London, UK. (8)
- b) Guides' and supervisors' work hours and attitudes
- c) There were online guidelines for synopsis and dissertation writing available in some neighboring colleges of physicians and surgeons (9, 10, 11) which were not found on the BCPS webpage. This included requirements for approval as supervisor, downloads for format, synopsis, and dissertation writing with suggestions for article publication.
- d) Difficulties in clinical trials and issues with community-based rehabilitation

4. Recommendations to improve and further development of the research work is provided in Box-2

BCPS has been a leader in providing post-graduate doctors in Bangladesh since the country's independence; need to develop an early career research platform. Rehabilitation is mostly conceptual rather than practical; taking into account the national and international focus on disability and rehabilitation (12), BCPS Faculty to identify priority and core research areas of the specialty so as to guide the early career researchers accordingly.

Box-2: Recommendations for further improvement

- a) Working in collaboration with other institutes, BCPS to develop a support system for early career platform it offers to trainees to provide guidance on research methodology, fund placements, and ensure availability of other logistical supports where the trainee will conduct research. (13)
- b) Faculty to identify priority and core research areas of the specialty, such as tools for evaluating disability and rehabilitation, rehabilitation team functioning (14), and ethics in rehabilitation at low resource settings(15). Other priorities include: cognitive rehabilitation, speech and language function, sports rehabilitation, brain injury (TBI) and spinal cord injury (SCI) rehabilitation, neurological rehabilitation, and musculoskeletal rehabilitation. It is critical for clinical evaluation and advanced interventions in robotics and rehabilitation engineering to ensure the rationale use of a sophisticated neurophysiologic basis of diagnosis.
- c) BCPS to catalyze the development of a research-friendly environment for students and trainees, identify authorities offering small grant schemes to facilitate quality improvement of research so that they can generate data and offer more dedicated research time.
- d) Development of a Young Researchers' Forum like other institutes (10)
- e) Easy and early ethical clearance of the trainee's dissertation and providing structured training of the supervisors and guides
- f) A 10 days duration residential dissertation training program is suggested and Title should be selected in this training period considering the focus on core and priority areas of the specialty.
- g) Dissertation works should be graded or scored for summative marks for the final fellowship examination and an annual "Dissertation Book /Early career Research issue of BCPS Journal" should be published by the BCPS

Conclusion:

There was a clear trend of MSK pain management and interventions with less attention paid to rehabilitation procedures, appliances and team functioning of the trainees research work. The trainers and mentors in the department were cooperative during the dissertation period and there were vast research areas. Time allocation and funding were the biggest barriers for research work during the training period and later stages of carrier life for PMR fellows. We recommend the PMR faculty of BCPS catalyze to identify the core priority areas of the specialty considering the national and international focus, provide guidance on research methodology, fund placements, and to facilitate to develop a trainee friendly environment in departments where they can conduct researches comfortably.

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