

Analysis of Model Undergraduate Physiotherapy Curriculum of India and Six Developed Countries

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Abstract: *Physiotherapy students opt for higher studies and job opportunities to countries like USA, Canada, UK, Australia, New Zealand and Singapore which are primarily English-speaking countries. The physiotherapy curriculum of India in the form of education and qualification should be substantially equivalent to the curriculum of the above countries in order to complete the credentialing process to be able to study in the country or work thereto as a trained healthcare professional. Hence the under graduate physiotherapy curriculum of the universities and organizations of these six developed countries available online were downloaded and analysed for content Inclusion. All the curricula are characterized by a progression from learner of foundational knowledge, clinical sciences and clinical practice to competent practitioner of the physiotherapy profession.*

Keywords: Curriculum, Physiotherapy, India, Canada, USA, UK, Australia, New Zealand, Singapore

1. Introduction

Developing technologies has brought the world closer and has resulted in its transformation into a global village. As a result of withering out of geographical boundaries new avenues have opened for Indian students. The country wise number of Indian students currently studying in foreign countries is 92383 For Australia, Canada 215720, New Zealand 30000, Singapore 1500, UK 55465, USA 211930 has been answered by MEA GOI to QUESTION NO.396 on DATA BANK OF INDIAN STUDENTS STUDYING ABROAD on July 22, 2021 in RAJYA SABHA¹.

To follow higher studies and to practice in any country the first step is credential evaluation. Credential evaluation is the comparison of academic and professional degrees of one country as compared to other country in order to match the competencies of the two countries. It is used by universities, educational institutes and employers around the world to compare the academic records of foreign graduates. The curriculum of any profession should therefore match the standards that are required for a global recognition.

The curriculum of a profession also defines the profession of that country. In the context of a physiotherapy education program, it identifies the academic and professional learning components upon which the practice of physiotherapy is based².

Ministry of Health and Family Welfare Government of India Allied Health Section 2017 has designed the Model Curriculum Handbook of Physiotherapy for creation of Indian national guidelines for education and career pathways of allied and healthcare professionals, with a structured curriculum based on skills and competencies. This was done with an aim to reduce the variation in education by having a standardized curriculum and career pathways for physiotherapy profession in India³.

The Entry-to-Practice Physiotherapy Curriculum is intended to prepare the entry-to-practice physiotherapist (PT) in Canada to be an autonomous, effective, safe and compassionate professional, who practices collaboratively in a variety of health and social service settings and is responsive to the current and future needs of the Canadian health care system².

Physiotherapy students opt for higher studies and job opportunities to countries like USA, Canada, UK, Australia, New Zealand and Singapore which are primarily English-speaking countries. The Indian curriculum in the form of education and qualification should be substantially equivalent to the curriculum of the above countries in order to complete the credentialing process to be able to study in the country or work thereto as a trained healthcare professional. The World Confederation of Physical Therapy (WCPT) recognizes that there is considerable diversity in the social, economic, cultural, and political environments in which physical therapist education is conducted throughout the world. The education should therefore also respond to the demand for national and international mobility by introducing students and physical therapists to the challenge of meeting a diverse range of license to practice requirements³.

Therefore, this study would look into the proposed model curriculum for undergraduate physiotherapy education in India from the point of view of its inclusions and further compare it with the curricula in these English-speaking countries.

2. Methods

Aim: The purpose of the study was to analyse the model undergraduate physiotherapy curriculum of India, with those of Six developed countries viz. Canada, USA, UK,

Australia, New Zealand and Singapore for content inclusions.

Procedure: The Under graduate physiotherapy curriculum of the following universities and organizations available online were downloaded.

Model undergraduate Curriculum Handbook of Physiotherapy (An Intellectual property of Health and Family Welfare) Government of India

Entry-to-Practice Physiotherapy Curriculum Canada 2009,

DPT, Entry level Doctor of Physical Therapy, Loma Linda University, School of allied Health Professionals, Physical Therapy CA USA,

Physiotherapy BSc, University of Nottingham UK, BSc Physiotherapy, Curtin University Australia, BPhy Bachelor of physiotherapy, University of Otago New Zealand and

BSc physiotherapy SIT Singapore.

The curriculum was reviewed. The subjects in the Curriculum of each country were tabulated Year wise/ Semester wise and reviewed for content inclusion.

3. Results

Table 1: BPT Model Curriculum Handbook of Physiotherapy India

<p>First semester Human Anatomy, Human Physiology, Biochemistry, Sociology Foundation course: Introduction to health care delivery system in India, basic computer and information Science, English, Communication and soft skills, Introduction to Yoga PBL/Assignment/ICT learning, Community Orientation and Clinical visit</p>
<p>Second Semester General and Clinical Psychology, Basic principles of Biomechanics, Foundation course: medical Terminology and Record Keeping PBL/Assignment/ICT learning/Integrated seminar Clinical observation</p>
<p>Third semester Pathology, Microbiology, Pharmacology, Biomechanics and Kinesiology, Foundation of Exercise Therapy and Therapeutic Massage Foundation course: Introduction to quality and patient safety Clinical Observation</p>
<p>Fourth semester Exercise Therapy, Bio physics, Electrotherapy (LMHF & Equipment care) Foundation course: Medical/ Physiotherapy Law and Ethics Clinical Education</p>
<p>Fifth semester Clinical Orthopedics & Traumatology, General Surgery including Burns and Plastic Surgery & Obstetrics and Gynecology, General Medicine, Pediatrics & Psychiatry, Community Medicine, Evaluation methods & Outcome Measures, Diagnostic Imaging for Physiotherapist Clinical Education</p>
<p>Sixth semester Physiotherapy in Orthopedics & Sports, Physiotherapy in General Medicine and General Surgery, Clinical Neurology & Neurosurgery, Professionalism and Values Clinical Education</p>
<p>Seventh semester Physiotherapy in Neurology & Psychosomatic Disorder, Biostatistics & Research Methodology Health Promotion and Fitness, Clinical Cardiovascular & Pulmonary, Principles of Management, Critique Inquiry, Case Presentation and Discussion Clinical Education</p>
<p>Eighth semester Physiotherapy in Cardiovascular, Pulmonary & Intensive Care, Community Physiotherapy, Clinical reasoning & Evidence based Physiotherapy, Administration and Teaching Skills, Research Project Clinical Education</p>
<p>Ninth Semester Internship</p>

Table 2: Entry-to-Practice Physiotherapy Curriculum: Canada 2009

<p>Biological and Basic Sciences • Human Anatomy • Human Physiology • Pathology • Immunology and Endocrinology • Genetics • Pharmacology • Medical and Adjunct Therapies • Biological Theories of Lifespan Development • Physics • Movement Sciences • Environmental Science</p>
<p>Psychosocial Sciences cultural anthropology, psychology, social science, psychological theories of lifespan development and learning and education</p>
<p>Professionalism and Ethics Professional roles, Professional Competencies and Responsibilities, Foundational Ethics and Legislation and Regulation.</p>
<p>Scientific Inquiry Research, Scientific Communication and Knowledge Transfer/Exchange.</p>
<p>PT Movement Sciences Biomechanics and Ergonomics, Motor Control and Learning, Exercise,</p>
<p>PT Therapeutics</p>

Maximizing ventilation and perfusion, Superficial soft tissue (primarily skin) management, Soft tissue mobilization techniques, Electrophysical Agents e. g., Electrical, Light Thermal, Hydrotherapy Mechanical energy, Movement Interventions and Therapeutic Exercise, Physical Handling techniques, Education
Cardiorespiratory PT Indicator Conditions Cardiovascular, Respiratory, Neurological, Musculoskeletal, Endocrine, Integumentary
Musculoskeletal PT Indicator Conditions Pain, Traumatic, Insidious Onset / Degenerative, Congenital & Genetic, Inflammatory & Immunologic, Integumentary & Wound Healing, Neuro-Vascular, Neoplastic/Oncology, Infectious, Other
Neuro PT Indicator Conditions Congenital and Acquired Brain Disorders, Neurodegenerative (Central Nervous System), Peripheral Neuropathies and Myelopathies, Spinal Cord, Mental Health
Physiotherapy Professional Interactions Professional and ethical practice, Client-PT interaction and Interprofessional practice.
Context of Practice Health Care Environment, Health Care Models and Frameworks, Practice Management, Services Management and Practice Settings.

Table 3: DPT Loma Linda University CA USA

First Year Human Gross Anatomy, Wholeness Portfolio I, Integrated Clinical Experience, Exercise Physiology, PT Communication and Documentation, Biophysical Agents, Kinesiology, Therapeutic Procedures, Manual Muscle Testing, Histology, Locomotion Studies, Orthopedics 1A, Therapeutic Exercise, Integrative Physiology, Pediatrics, Research I. II. III, Pathology, Integrative Neuroanatomy, Clinical Neurology, Short Clinical Experience, Orthotics and Prosthetics, Ethics for Allied Health Professionals, Whole Person Care, Adventist Heritage and Health.
Second Year Wholeness Portfolio, Neurology I, II, III, Integrated Clinical Experience, incorporates didactic education into practical application, Clinical Orthopedics, Clinical Psychiatry, Movement Science, Aspects of Health Promotion, Orthopedics 1B, II, III, General Medicine, Cardiopulmonary I, II, Therapeutic Exercise II, Soft Tissue Techniques, Concepts of Acute Care, Medical Screening, Pediatrics II, Geriatrics, Physical Therapy Administration, Orthopedics IV, Pharmacology, Clinical Imaging, Specialized Interventions in Physical Therapy, World Religions and Human Health
Third Year Neurology IV, Short Clinical Experience II, Orthopedics V, Long Clinical Experience I, II, III

Table 4: Physiotherapy BSc University of Nottingham UK

Year 1 Developing Evidence based Practice Pathology 1 and 2 Musculoskeletal Disorders and Disease Neuromusculoskeletal Studies 1 and 2 Personal and Professional Development
Year 2 Management of Neurological Conditions (year long) Management of Long term and Complex Conditions (year long) Personal and Professional Development 2 Research methods and Project proposal (spring) Management of Musculoskeletal Conditions (semester three only) Management of Cardiovascular Conditions (semester three only)
Year 3 Select modules based on student study interests. Pediatrics, pelvic health, adult learning disabilities, mental health, sports, oncology, rheumatology, Neuro rehabilitation, Combined Rehabilitation of Spine 1 and 2, Analysis of Human Movement, Sports medicine and Injuries, Cardio-Respiratory, Physical activity for Health, Exercise Science and Therapy COMPULSORY Personal and Professional Development 3 Physiotherapy Project

Table 5: BSc (Hons) Physiotherapy Curtin University Australia

Year 1: Semester 1: Foundation of professional health practice, Introductory Physiotherapy practice, Human structure and Function, Applied Anatomy
Year 1 Semester 2: Evidence informed Health practice, Introduction to clinical Anatomy, Indigenous Cultures and Health Behaviours, Foundations Of Pathophysiology.
Year 2 Semester 1: Orthopedic Musculoskeletal Science, Physiotherapy Applied Clinical Science, Anatomy and Pathology, Communication in Physiotherapy, Movement Sciences

<p>Year 2 Semester 2: Cardiopulmonary science, Applied Movement Science, Peripheral Musculoskeletal Science, Neuroanatomy and pathology, Basic Physiotherapy practice.</p>
<p>Year 3 Semester 1: Medical Cardiopulmonary Science, management of pain disorders, Spinal Musculoskeletal Science, Neuroscience physiotherapy, physiotherapy honors Research Preparation.</p>
<p>Year 3 Semester 2: Lifespan health Science, Acute care cardiopulmonary science, Neuroscience physiotherapy rehabilitation, Integrated clinical science, physiotherapy honors proposal.</p>
<p>Year 4 Semester 1 and 2: Physiotherapy Clinics 1, 2, 3, 4 and 5: managing clients in a particular setting or range of settings. Physiotherapy Leadership to develop key management and leadership competencies Physiotherapy honors Research and dissertation to develops skills to undertake quantitative and/or qualitative research.</p>

Table 6: Bachelor of Physiotherapy (BPhy) University of Otago New Zealand

<p>Year 1 Foundations of Biochemistry, Cell and Molecular Biology, The Chemical Basis of Biology and Human Health, Human Body Systems I, Human Body Systems II, Biological Physics, Population Health</p>
<p>Year 2 Anatomy, Physiology, Physiotherapy Rehabilitation Science, Physiotherapy Clinical Practice, a foundation for clinical practice Principles of assessment and management, Ethics, Hauora Māori, Communication and clinical reasoning, Behavioural science, Working with other cultures, Evidence-based practice There are three additional modules: Aquatic Physiotherapy, Sports medic training, Self-directed learning of common pathologies Physical Activity for Physiotherapy Practice</p>
<p>Year 3 Pathology, Physiotherapy Clinical Practice 2,</p>
<p>Year 4 Physiotherapy Clinical Practice 3, Physiotherapy Clinical Practice 4, Physiotherapy Clinical Practice 5, Physiotherapy Clinical Practice 6, Research for Physiotherapy, Physiotherapy Research</p>

Table 7: Physiotherapy, BSc (Hons) SIT Singapore

<p>Year 1 Trimester 1 Anatomy and Physiology, Psychological and Sociological Perspectives for Health Sciences, Health Systems-Singapore's Perspectives, Physics in Biology and Medicine, Trimester 2 Anatomy and Physiology 2, Kinesiology, Foundation of Physiotherapy, Trimester 3 Musculoskeletal Physiotherapy (Extremities), Exercise Physiology</p>
<p>Year 2 Trimester 1 Cardiopulmonary Physiotherapy, Health Promotion and Population Health, Neurobiology, Musculoskeletal Physiotherapy (Spine and Ergonomics), Research-Methods and Statistics Trimester 2 Pathophysiology and Pharmacology, Cardiopulmonary Rehabilitation, Chronic Disease and Rehabilitation, Enhancing Human Performance by Exercise, Neurological Physiotherapy 1 Trimester 3 Creative Thinking and Innovation in Health</p>
<p>Year 3 Trimester 1 Clinical Exercise Prescription, Physiotherapy across Lifespan (Child and Maternal Health), Scientific Writing and Investigation, Critical Care Physiotherapy, Clinical Decision Making in Patients with Complex Health Issues, Neurological Physiotherapy 2, Thesis Preparation, Trimester 2 Clinical Exercise Prescription, Physiotherapy across Lifespan (Child and Maternal Health), Scientific Writing and Investigation, Critical Care Physiotherapy, Clinical Decision Making in Patients with Complex Health Issues, Neurological Physiotherapy 2, Thesis Preparation Trimester 3 Physiotherapy across Lifespan (Older Adults), Thesis Preparation, Clinical Practice Education Isokinetic Testing and Rehabilitation</p>
<p>Year 4 Trimester 1 Thesis, Clinical Practice Education3, Trimester 2 Thesis, Clinical Practice Education Year 4</p>

4. Discussion

While a curriculum has four important elements content, teaching and learning strategies assessment processes; and

evaluation processes ⁴ this study is restricted to analysis of curriculum content. Entry to practice physiotherapy of Canada uses the CanMEDS approach which proposes the Physiotherapy practice thresholds arrange key competencies

within seven integrated and thematic roles: Physiotherapy practitioner, Professional and ethical practitioner, Communicator, Reflective practitioner and self-directed learner, Collaborative practitioner, Educator and Manager/leader⁵. Although the Physiotherapy practice thresholds arrange key competencies within separate roles, the Physiotherapy practitioner role is central to physiotherapy practice in any context, and, as practitioners, physiotherapists integrate the other roles in the Physiotherapy practice thresholds with that central role as they apply to the context of the physiotherapist's practice. Professional and ethical practice, Client-PT interaction and Interprofessional practice are the domains emphasized in Professional interactions. Context of Practice dimension addresses curriculum in Health Care Environment, Health Care Models and Frameworks, Practice Management, Services Management and Practice Settings. The entry to practice curriculum also addresses the policy, legislation, funding, allocation and service delivery models for Canada health service as well as global health care system. Implementation of PT therapeutic interventions using dosage parameters that are based on Evidence based and ICF.

Loma Linda University emphasizes on Anatomy Cadaver based course. Impact on health workers while working on infectious diseases is emphasized. Developing a portfolio that illustrates the potential graduate ability to meet the student learning outcome. PT communication and Documentation is necessary. Orthotics and prosthetics are given due weightage. Ethics for Allied Health is important. Physical therapy Administration is an important part of curriculum.

BSc Physiotherapy University of Nottingham UK is 3 years course with focus on communication specifically written medical records in advance of clinical placement. Physiotherapy Project before completion is mandatory. Choice of subjects in select modules in third year is viewed as a flexible syllabus.

The emphasis of Australian curriculum is on Examination of differences in Australian and international health systems. Effective physiotherapy practice in urban and rural clinical settings is included in the professional and clinical practice including documentation, clinical reasoning, ethical behaviors in physiotherapy practice, professional communication across cultures. Physiotherapy Leadership competencies within Australian health care system is an important domain to be analysed for introduction in Indian syllabus. Physiotherapy Dissertation for completion of course is mandatory.

The New Zealand first year student's study Health Sciences First Year (HSFY) in Science College and Years 2 to 4 are undertaken at the School of Physiotherapy. They have Hauora Maori system of health care. It comprises taha tinana (physical wellbeing), taha hinengaro (mental and emotional wellbeing), taha Whanau (social wellbeing), and taha wairua (spiritual wellbeing). The Emphasis is also on clinical practice and Physiotherapy Research.

Singapore's SIT curriculum includes Aquatic therapy. Creative Thinking and Innovation in Health and Isokinetic

Testing and Rehabilitation which do not appear in other country curriculum.

The model physiotherapy undergraduate curriculum of India aims towards orientation of the students to National health care systems and has introduced Ayush health along with Yoga as a separate subject and applied yoga in various conditions. Biochemistry, Microbiology, Sociology and Clinical Psychology carry weightage as separate subjects. Clinical medical subjects form the core of fifth semester, with emphasis on medical and surgical interventions followed by Physiotherapy clinical practice subjects in 6th, 7th, and 8th semester. Diagnostic Imaging for Physiotherapy is introduced and is need of hour. Community Physiotherapy forms an important part of syllabus. Clinical Education is robust in every semester. During content analysis it is observed that curricular programs have overlapping topics those need to be reintroduced intertwined in a logical sequence. The sequence of activities determines the logical progression of concept development. Askey's remark that a "content analysis should consider the structure of the program, whether essential topics have been taught in a timely way," appears to be implemented in Indian curriculum.

5. Conclusion

India's Model undergraduate Curriculum matches with the content of the six developed countries. All the curricula are characterised by a progression from learner of foundational knowledge, clinical sciences and clinical practice to competent practitioner of the physiotherapy profession. Aquatic therapy, and creative thinking and innovation in health present in SIT Singapore are some of the inclusions that can be considered for the Indian Curriculum. Introduction of developing a portfolio that illustrates the potential graduate ability to meet the student learning outcome appears lucrative.

References

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