

TRENDS OF PHYSIOTHERAPY SERVICES, STAFFING AND MODALITIES AT PHYSIOTHERAPY CENTERS OF FAISALABAD

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Abstract

Background: Physiotherapy is an essential element of modern health care system. Physiotherapists around the globe work in various sectors, their roles are well established and distinguished from all other medical professionals.

Objectives: The aim of this study was to provide evidence on the trends of Physiotherapy services, staffing, electro and exercise modalities at physiotherapy centers of Faisalabad. In the context of given objectives awareness will be provided to government to establish physiotherapy accredited body; to ensure standardized physiotherapy practices.

Methodology: Descriptive, Cross-sectional survey was conducted. A self – designed questionnaire in the perspective of guidelines issued by University of health sciences was filled by twenty two perspective physiotherapy centers of Faisalabad.

Results: The results show Private hospitals (63.64%)

are playing the major role in providing physiotherapy services in the city, Majority (59.1%) of centers offer services for 6 – 8 hours, Daily patient load is 10 – 20 patients at 50% centers, 81.82% centers work in a multidisciplinary environment while number of qualified physical – therapist at 72.73% centers is “One”. Commonly available electromodalities include: Transcutaneous electrical stimulation, ultrasound, Infrared radiation and short wave diathermy. Laser therapy units, Mechanical tractor and compression therapy were rarely available. Exercise equipments and adjunct tools were not commonly available, moderately common tool include exercise balls, shoulder wheels and boards (wobble and wedge). Moreover, (out of eighteen cases) most frequent cases in physiotherapy centers of Faisalabad are shoulder pathologies, Back pain, Neck pain, Developmental delays, stroke and sports injuries respectively.

Conclusions: Physiotherapist-population ratio of 3rd largest city of Pakistan is 1:168926. There is a dire need of Physical therapists; the role of physical therapists in Intensive care units, geriatric and pediatric departments and industries is badly neglected, availability of physiotherapy equipments was not well established. In this regard formation of a physiotherapy regulatory body is the need of the hour for the sake of patient’s health and the dignity of profession.

Keyword: Physical therapy, services, electrotherapy, availability trends, common cases, manual therapy, home plan, common cases, physiotherapy centers, acute care, chronic cases, manual therapy, manual thera-

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py, exercise equipments, regulatory bodies, physiotherapist – patient ratio.

Background

Policy statement of World confederation of Physical therapy (*WCPT, 2011, p. no 11*) states that “Physical therapy provides services to individuals and populations to develop, maintain and restore maximum movement and functional ability throughout the lifespan.” Physical – therapist work to restore functional movement which can be effected by injury, diseases, amputations, ageing, congenital problems and accidents.

According to (*Struber, 2003*) Physiotherapists (PT) are qualified professionals who work to restore movement and mobility .In the context of *American physical therapy association (2012)* physical therapy assistant (PTA)are qualified but they are not involved in diagnostic procedures and planning treatments. *Knight, et al. (2004)* stated that PTA work under the supervision of PT in performing tasks like mobility, dressing, washing and assistance in performing activities of daily living by the patient as *Schmidt (2013)* concluded that PTA lack supervisory skills.

Physical therapist uses various electrical modalities (*Cameron, 2009*) for managing patient’s symptoms i.e. to reduce pain, inflammation, promote healing of tissues and muscle stimulations including; therapeutic ultrasound (*Draper. et al, 2010*), infrared radiation (*Enwemeka. et al, 2002*), short wave diathermy (*Draper, 2004*), microwave diathermy(*Rabini. et al, 2012*), Pulsed electromagnetic radiation (*Giusti . et al, (2013)*), LASER therapy (*Hegedűs. et al, 2009*), Intermittent Compression therapy (*Kakkos. et al, 2005*), Long wave diathermy(*Moretti. et al, 2009*), Transcutaneous Electrical Nerve stimulator (*Atamaz. et al, 2012*), Electrical Muscle stimulator (*Maffiuletti. et al, 2013*) and Interferential therapy unit (*Zambito, et al. 2006*) Physical therapists use various manual maneuvers (*Kisner & Allen, 2007*) for the testing, diagnosing and treatment purposes; which includes Active range of motion, Passive range of motion (*Boyles. et al, 2011*), Resisted exercises (*Hunt, M. A., 2013*), Stretching, (*Field, et al. 2000*) Strengthening (*Bang and Deyle, 2000*) Mobilization/manipulations (*Bronfort, et al. 2004*) and pulmonary rehabilitation (*Bellona, 2000*). Moreover, physical therapist uses various exercise equipments for treating patients according to their conditions more effectively. Exercise / CP balls (*Vera-Garcia, 2000*), parallel bars (*Yang, et al. 2012*), shoul-

der wheels (*Mohamady, 2013*) mobile posture mirror, wobble boards (*Oqaya, Ikezoe and Ichihashi, 2011*), exercise stairs (*Crossley, et al. 2005*). This study aims to explore the available physical therapy services in Faisalabad, to fill the gap in literature and inform about:

- Staffing at physiotherapy centers.
- Manual techniques used for the diagnosis and treatment.
- Duration of physical therapy services provided per day.
- To explore the electro-modality availability trend in physiotherapy centers of Faisalabad.
- To find out the availability of exercise equipment and other supplies in centers.
- To find out the common cases in physiotherapy centers of Faisalabad.

Methodology

This study’s type is cross-sectional descriptive survey. A questionnaire was designed in the perspective of guidelines issued about “Requirements recommended for physiotherapy teaching departments” by University of Health Sciences (UHS). Eligible to participation were; All Physiotherapy centers which gave consent to participate in study, were located in Faisalabad city and were offering multiple types of physiotherapy services, (i.e. treating various conditions, for instance they are not offering specialized physiotherapy services such as provided by Faisalabad institute of Cardiology).

Study population was 25 physical-therapy centers in Faisalabad. Three centers refused to participate in the study, thus with a drop-out ratio of 12%, study was conducted in below mentioned physiotherapy centers.

Physiotherapy Teaching Hospital

- Madina Teaching, Hospital.
- ### Public Hospitals
- District Head Quarter Hospital (Civil).
 - Allied Hospital.
- ### Private Hospitals
- National Hospital.
 - Faisal Hospital, Executive Clinics.
 - Khatoon-e-Jannat Trust Hospital.

- Prime Care Hospital.
 - Nawaz Medi-Care.
 - Mian Muhammad Trust Hospital.
 - Al-Noor Hospital.
 - Chiniot Hospital, Jinnah Colony.
 - Chiniot General Hospital, Sargodha Road.
 - Yaseen Hospital.
 - Al-Shifa Hospital.
 - Azam-Majeed Medical Complex.
 - Al-Aziz Fatima Hospital.
 - Independent University Medical College, Physical Therapy Department.
 - Imran Medical Center.
- Private Clinics**
- Pain Care Center.
 - Al-Mumtaz Physiotherapy and Rehabilitation Centre.
 - Bin-Inam Physiotherapy Centre.
 - Physio-Medics, D-Ground.

Results

Distribution of services revealed that private hospitals (63.64%) are the highest stake – holder in providing physical therapy services in Faisalabad, followed by Private clinics (22.73%), public hospitals (9.09%) and teaching hospital (4.55%). Results show that **duration** of majority (59.1%) centers offer daily services for 6 – 8 hours, followed < 3 hours, 3 – 5 hours, 8 – 10 and > 10 hours by 18.2%, 13.6% , 4.5% , 4.5% centers respectively.

50% physiotherapy centers have a **daily patient load** of 10 – 20 patients. < 10, 20 – 30, 30 – 40 and > 50 patients visit daily at 0.09%, 0.227%, 0.045% and 0.09% centers daily. Moreover, 40.9% physical – therapist in Faisalabad recommends **home – plan** verbally, 13.6% in written form and 45.5% both verbally and in writing. 100% Physical therapist practice **manual therapy** techniques in Faisalabad. 81.82% physical therapist work with **multi-disciplinary** team approach. 72.73% centers there was only **one qualified physical therapist** available to offer services and at only 4.55% centers there were five and more physical–therapists recruited to offer physiotherapy services. **One PTA** present in 40.91% centers while in 27.27% no physiotherapy assistant (PTA) was available. Figure 3 shows the distribution of most frequent cases.

Table 1: Shows the trends of exercise tool at physiotherapy centers of Faisalabad.

Electro-modalities	Availability Percentage
Short wave diathermy	95.5%
Microwave diathermy	27.3%
Long wave diathermy	13.6%
Pulsed electromagnetic energy	36.4%
Laser therapy	22.7%
Interferential	40.9%
Electric muscle stimulator	81.8%
Trans cutaneous nerve stimulator	95.5%
Intermittent compression therapy	18.2%
Mechanical tractizer unit	36.4%
Ultrasound therapy	90.9%
Infrared radiations	90.9%

Table 2: Shows the brief summary of availability trends of various electro-modalities at Physiotherapy center.

Exercise Tools	Availability Percentage
Shoulder wheels	63.63%
Parallel bars	31.8%
Exercise balls	68.18%
CP balls	50%
Wedge and wobble board	68.18%
Exercise stairs	31.81%
Walking aids	36.36%
Wheel chairs	81.81%
Exercise spring pull	54.54%
Paraffin was unit	22.7%
Electric heat packs	27.27%
Moist heat packs	45.45%
Ice packs	63.63%

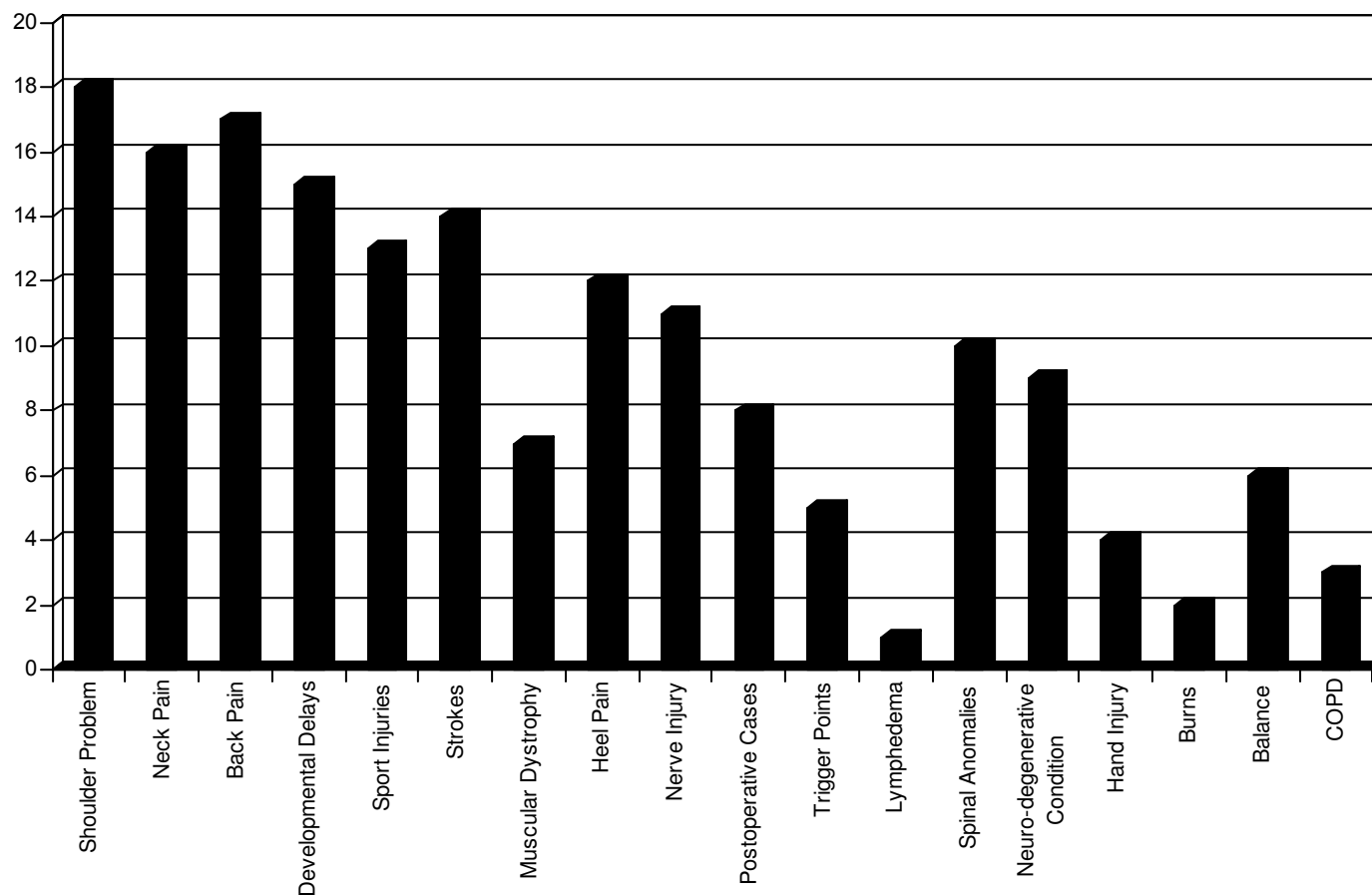


Figure 1: Distribution of most common cases in physiotherapy centers in Faisalabad.

Discussion

For a city populated with **35 Lac 47 thousand, 4 hundred and 46 people** (*National Database and Registration Authority, NADRA. 2013*); there are less than 30 physiotherapy centers. Total 25 centers were identified initially, out of which 3 centers refused to participate in the survey. Physiotherapist-population ratio of 3rd largest city of Pakistan is **1:168926**. These figures not only highlight the lack of qualified physiotherapist available in the city but also raise questions on the health sector infrastructure.

Physiotherapist – population ratio around the world is markedly different; for instance a report prepared by Dr. Celia Tan, president of *Singapore physiotherapy association (2009)* revealed that Singapore has a population – physiotherapist ratio of **1:7500**. Moreover Canadian Institute for health information (*CIHI*) presented a report i.e. *Physiotherapy in Canada (2009)* which shows that physiotherapist population ratio in

New Brunswick (Canada) 60:100,000. In Quebec (Canada) there are 48 physiotherapist per 100,000 population, In Ontario (Canada) there 49 physiotherapists per 100,000 population. At 72.73% centers only one qualified physiotherapist was available to offer services. These results highlight the lack of qualified physiotherapist in Faisalabad. For instance, comparing Singapore’s physiotherapist to population ratios; one physical therapist in Faisalabad is doing the job of 23 physical therapists in Singapore and 92 physical therapists in Canada.

Similarly physical therapy assistants were not widely available. Most of the centers (40.91%) don’t have a qualified assistant, as proper qualifications of a physical therapy assistant is offered at only one institute in Punjab i.e. “College of Para-medics”; Resultantly, various other skilled professionals including technicians are recruited as PTA at physiotherapy centers, Such PTAs are trained by PT in using various modalities and other duties.

Physiotherapy is still a developing profession, unlike other countries, in Pakistan there is no unanimous, actively working to regulate physiotherapy services in the region; while in other countries where physiotherapist – population ratios is high, they have well established and functioning accredited bodies to register physiotherapist. There membership ensures that registered physiotherapist will not only move forward in career but will also be eligible to receive benefits including job opportunities, adequate wages, discounts in conferences / publications / continuing education opportunities, readily available resource material, promotes physical therapist’s expertise and evidence based practice. (*American Physical Therapy Association, 2013*).

This study reflects that physiotherapist in Faisalabad are rendering clinical services in only 4 sectors; including public hospitals, private hospitals, teaching hospitals and private clinics and only 9% physiotherapy centers offer services for > 8 hours. Internationally physiotherapists are recruited in multiple sectors; For instance internationally physiotherapists are recruited in Industries to manage industrial accidents, Intensive care units, with various sports teams, geriatrics, pediatric departments and in various other fields. However, in Faisalabad 63.64% physiotherapy departments are in private hospitals. There is a low patient turn – over in most of physiotherapy centers; daily patient – turnover at 11 centers is between 10 – 20 patients and most of the centers with fewer patients per day are private set-ups, while the patient turnover in public hospitals is high. These results reveal this high cost of physiotherapy services in the region due to deficient public and low – cost hospital.

Most of the physical therapist work with multi-disciplinary team approach (81.82%) and majority of physical therapist prefer to recommend home care plan in both written and verbal form, which is an effective method. In addition to this all physiotherapists in Faisalabad use manual techniques widely, In fact it was explored in our study that 100% physiotherapist prefer and use manual maneuvers to treat patients. A study conducted in 2003 highlights the cost-effectiveness of manual therapy comparing it to other physiotherapy maneuvers and cost of general practitioner for neck pain. (*Korthals. et al, 2003*) Neck pain is 3rd most common condition for seeking physiotherapy in Faisalabad. Results of this study showed that using manual techniques reduces pain intensities and improve quality of life. Thus, high usages of manual tech-

niques are a positive trend in physiotherapy practice around Faisalabad.

Physiotherapy Modalities Trend

Electro-modalities

Trend of Electro-modalities in Faisalabad was also studied. Internationally out – dated modalities were less – widely available in Faisalabad too; including Long wave diathermy (available in 13.6% center), Microwave diathermy (present in 27.3% centers) and pulsed electro-magnetic energy (availability frequency 36.4%). A systematic review revealed that microwave diathermy availability is on decline from 1990 – 2009 (*Shah and Farrow, 2012*)

In addition, some electro-modalities which are widely available in Faisalabad are commonly available and used globally too. These include Short-wave diathermy, Ultrasound therapy, Trans-cutaneous electrical nerve stimulation, Electrical muscle stimulator available 95.5%, 90.9%, 95.5% 81.8% centers respectively. A Systematic review also revealed that Short – wave diathermy, Ultrasound therapy and Trans-cutaneous electrical nerve stimulation are most commonly available modalities in Australia, United Kingdom and republic of Ireland. (*Shah and Farrow, 2012*. Moreover, case ranking of physiotherapy patients reveals that at first, second, third, fourth, fifth, sixth, eighth rank are patients of shoulder pathologies, back – pain, neck – pain, developmental delays, stroke, sports injuries, peripheral nerve injuries respectively. In all these most prevalent conditions, high availability of these



Left: Trans-cutaneous electrical nerve stimulation and Electrical Muscle stimulator. Right: Mechanical Tractizer unit.

(commonly available) modalities is critical. TENS is effective in managing knee Osteoarthritis symptoms. (Davis and MacKay 2013). Ultrasound – facilitated electrical stimulation of thoracic spine trigger point greatly improves chronic neck and shoulder pain (Waschl, S., 2014). In stroke patients; EMS effectively prevents the chances of disuse atrophy (Hirose, 2013).

Furthermore, few less frequently available electrotherapy agents include Laser therapy, Mechanical motorized cervical and lumbar tractor unit, Intermittent compression therapy, and Interferential-current therapy (IFC) absent in 77.3%, 63.6, 81.8%, 59.1% centers respectively. Traction units are highly effective for treating various types of back-pain (Fritz JM et al, 2007) (2nd most common condition in the Faisalabad) and various spinal anomalies. IFC is very effective treatment option for chronic low back pain (Fuentes, J., 2013). Lymphedema being ranked the least common condition in physiotherapy centers of Faisalabad, so is the very low availability trend of lympho-press in physiotherapy centers. Pneumatic compression therapy units effectively reduces edema and improve patient's quality of life (Muluk, 2013). However, sports injuries being ranked 5th most common condition in Faisalabad physiotherapy centers, the efficacy of compression unit in managing delayed onset muscle soreness is well – established by literature (Kraemer et al, 2001).

Moreover, Laser therapy is most effective in treating trigger points (Al-Shenqiti and Oldham, 2009) and various spastic conditions (ranked 14th and 4th common cases respectively) however its availability trend is very low in Faisalabad i.e. 22.7%.

In nutshell, these trends broadly classify electro-

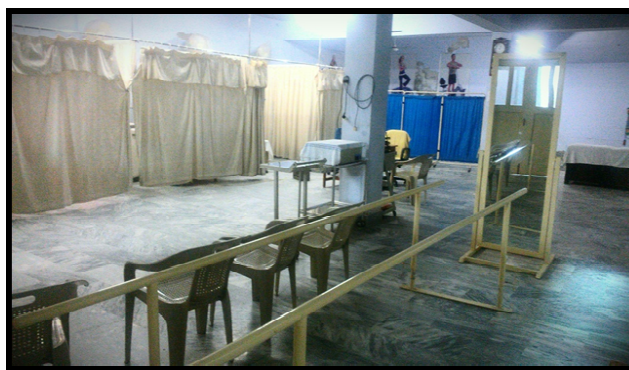


Right; Physiotherapist treating a patient with low level laser therapy. Left: walking aids (frames) available at private hospital in Faisalabad.

modalities **four categories**. First category is of **most commonly** available modalities which include Short wave diathermy, Trans-cutaneous electrical nerve stimulation, Infrared radiation and Ultrasound therapy. Second category is of **commonly available** modalities which includes Electrical muscle stimulator. Third category is of **rarely available** modalities including Pulsed electromagnetic energy, Mechanical tractor unit and Interferential therapy. Fourth category is of **very rarely available** modalities which consist of Laser therapy unit, intermittent compression therapy, Microwave diathermy and long wave diathermy.

Exercise Tools

This study showed that there is a serious deficiency of exercise tools required for rehabilitation purposes. Most of the centers in Faisalabad have inadequate equipments including; parallel bars, exercise stairs, postural mirrors, Exercise and CP balls, wobble boards, wedge boards, shoulder wheels and exercise spring pulls. Most frequent cases in physiotherapy centers are of shoulder problems while shoulder wheel (effective rehabilitation tool) was available in 14 centers.



Picture was taken at a Khatoon-e-Jannat Trust Hospital physiotherapy department; parallel bars and postural mirror.

There was a high non-availability of Parallel bars and postural mirrors and exercise stairs i.e. 68.18%, 72.72% and 68.18% respectively. Parallel bars are used to train ambulation in patients of stroke, children with congenital problems, developmental delays, post-operative and to train balance. These cases are in fact most frequent cases at physiotherapy centers in Faisalabad, still lack of equipments for such patients is a question mark on the quality of rehabilitation offered by these centers. Moreover, on the similar lines non-

availability of exercise tools, CP balls are absent in 50% of physiotherapy centers in Faisalabad. These balls are used to train balance, flexibility and improve motor skills in children with developmental delays. (Vera-Garcia, 2000). Similarly, exercise balls used to train aerobic exercise; fitness and strength training are present in 15 physiotherapy centers. Results of study suggest a low availability trend in of exercise equipments.



Left: Exercise ball. Right: Shoulder wheel

Accordingly equipments are divided in to **four categories**. First category is of **moderately common equipments** include cushions, moist heat packs, ice packs, wheel chairs, boards (wobble and wedge), exercise balls and shoulder wheels. Second category is of **rarely available equipments** which consist of Exercise spring pulls and CP balls. Third category includes **very rare equipments** which are Paraffin wax unit, parallel bars and walking aids. Fourth category is of **not available unit** i.e. there is no hydrotherapy unit and thus no aquatic therapy aids in any physiotherapy center of Faisalabad.

Conclusions

This study explored that public sector is playing a minor role in providing physiotherapy services in Faisalabad, major stake – holder in this regard are private hospitals and clinics; indicating the high cost of physiotherapy services in the region. Absence of any regulatory body, to monitor physiotherapy services in Pakistan; results in lack of standardized physiotherapy practice in city. This results in markedly uneven and diverse availability trend of major rehabilitative equipments. Physiotherapist’s scope in department like

Geriatrics, Pediatrics, Sports, Intensive care units and Industries is not recognized in Faisalabad.

Limitations of Study

This study is limited to the feedback provided by physical therapists. Lack of any similar study, or previous data regarding physiotherapy services and staffing in Pakistan resultantly we have no standard to compare our results with or use a previously formulated, more authentic questionnaire.

Physiotherapy services provided in home-visits were not included. Due to lack of time, physiotherapy services provided at different sectors were not compared, thus conclusions were not made regarding which centers are offering better services in the city. Only the availability trends of exercise and electro-modalities were studied while usage trends were not reported in this study.

Data regarding the most common cases in physiotherapy departments was collected from on-duty physiotherapist, who reported the cases randomly from memory, thus no previously recorded data was utilized to report the exact frequencies of different type of cases in physiotherapy departments.

Recommendations

It is recommended in the light of our study that formation of physiotherapy council to regulate physiotherapy services throughout the country is the need of the hour, to ensure patients receive standardized and safe physiotherapy services and to protect the dignity of profession.

Public sector must play its due role in providing physiotherapy services; this will not only create more job opportunities for graduate physiotherapists but will also have a positive impact on physiotherapist-population ratio in the region. This step will also ensure low – priced, more economical physiotherapy services discharged to patients.

Furthermore, similar studies should be conducted in other regions of the country and quality of services provided must be accessed following the enrollment of centers in Association of physical – therapy formed. In addition to this study must be conducted regarding trend of physiotherapy services offered at home-settings in Faisalabad.

Moreover, following the availability trends explored by our study, further studies must be conducted on the usage trends of electro-modalities and exercise tools in physiotherapy centers of Faisalabad and other parts of the country.

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