



Original Article

Physical Therapist's Knowledge and Use of Medical Imaging in Clinical Practice: A Cross-Sectional Survey

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ABSTRACT

Medical imaging plays an important and vital role in diagnosis and management of intervention during clinical practice. The ability to refer patients directly for diagnostic imaging could promote more efficient delivery of care. This study focuses on the confidence of the therapist to interpret diagnostic imaging and also how often do they refer for medical imaging. **Objective:** The aim of the current study was to measure the physical therapist's knowledge and use of medical imaging in their clinical practice. **Methods:** This is a cross-sectional study and was conducted in Faisalabad in which 100 practicing physical therapists filled self-constructed questionnaire. SPSS 20 sheet for statistical analysis. **Results:** According to results 92.8% Therapists reported that they find significant for Medical Imaging in making clinical diagnosis, 90.1% Therapists reported that Medical Imaging is included in clinical diagnosis. Ninety six Therapists reported that no extra certifications for Medical Imaging is needed and 29.7% reported that they attended Continuous Professional Development (C.P.D) Programs Half of the Therapists said that their Source of knowledge on Medical Imaging is academic program and other half said that their knowledge is job exposure. **Conclusions:** This study concluded that Therapists find Medical Imaging significant in making clinical diagnoses. The majority of therapists indicated that they did not need additional Medical Imaging certifications. Half of the therapists said their main source of knowledge about Medical Imaging was academic programs, while the other half said job exposure.

INTRODUCTION

The vision 2020 APTA was formed for physical therapists' autonomous practice [1] Progress towards professional aims requires competencies knowledge advancement in areas like diagnostic imaging surgical and pharmacology. For all the aspects of patient care the clinicians have

assumed that they have increased levels of responsibility of patient's health. This is due to the changes in the clinical practice environment. Whether there is a direct access or a non-direct access to the physiotherapist, the therapist cannot assume that the patient coming to his clinic or

hospital is thoroughly screened or have a correct diagnosis before he was referred to him. In most of the case the patient that has come to the physiotherapist have a condition that require screening and diagnosis before, during and after intervention for a better clinical decision making as well as for monitoring the progress of disease. To be a practicable practitioner a physiotherapist should always make his efficiency his priority in the provision of care [2]. For physiotherapist it is of great advantage to have knowledge and confidence in interpreting radiographic pattern of injury that are mostly being dealt in clinical practice. Acute visual perception is required to interpret these diagnostic imaging as specific characteristics are linked with given disease, so one must know that diagnostic imaging only offers hypothetical diagnosis. Most of the research related to physiotherapist use of medical imaging show concern for direct access to order diagnostic imaging. Diagnostic imaging has been considered useful by physiotherapists in their practice, however lack of confidence in interpreting these images have been shown by most of them [3]. Differential diagnosis is a trait of being a good clinical practitioner especially in our field therefore musculoskeletal differential diagnosis becomes a lot convenient through radiographic imaging. Greater diagnostic responsibilities are being assumed by physical therapists that are working in direct access roles. Within the practice setting availability of diagnostic studies to physical therapist vary due to several factors [4]. As the physiotherapy practice has been emerging from traditional under cover practice referral system to self-referral method now for physiotherapist extended horizon of their practice for global health care ongoing is of great importance, it is important to appreciate the skills of health care professional who can interpret imaging technique, as building trust on radiographic imaging and involvement of first contact practice in allied health professional [5, 6]. The accessibility of symptomatic investigations to physiotherapists changes across nations (Practice Acts) and practice settings [2, 7]. In Nigeria, the Medical Rehabilitation Therapists Act, M9 LFN 2004, does not forbid physiotherapists from the usage of MI in clinical practice (1). Thus, physiotherapists are at present using MI in Australia, Canada, the United Kingdom (UK), the Netherlands, Norway, South Africa, and a few pieces of the US [8]. However, the MI referral-right fluctuates across training settings in Nigeria. It appears to be that private foundations award more MI referral-right to physiotherapists than government foundations [9]. In general, physiotherapists in Nigeria have unhindered admittance to MI reports and radiologists' reports in the patient's case envelope and can incorporate the outcomes into their clinical diagnosis. Simultaneous with the

developing first contact, broadened scope, progressed physiotherapy rehearses, and indicative referral rights [4, 10, 11], numerous nations have begun growing their entrance level 5 physiotherapy educational plan to line up with winning guidelines in physiotherapy instruction and practice [2, 11, 12]. The physiotherapy program accreditation principles in the US and the base section level benchmark in Nigeria presently incorporate explicit standards identified with symptomatic imaging [2, 4, 9]. Physiotherapy preparing establishments are answerable for setting up their understudies with information on MI for clinical practice [1, 7] Preparing in MI modalities, for example, radiography (X-beam), registered tomography (CT) examine, attractive reverberation imaging (MRI), scintigraphy, ultrasound filter (USS), and double vitality X-beam absorptiometry (DEXA) is applicable for section level physiotherapy program considering the rising first-contact practice [2, 4]. Barr suggested that physical therapists assess imaging reads for signs of decrease movement, disability, or functional weakness, since radiologists don't routinely address those regions in their radiographic reports. In any case, the utilization of pictures to demonstrate practical aggravations must be tempered by the constrained proof of the capacity of imaging studies to anticipate musculoskeletal capacity. Moreover, physical specialists could utilize imaging investigations of musculoskeletal conditions so as to help set treatment objectives or include understanding into confinements that may apply to treatment [13]. To the authors' knowledge, no study has reported on the physical therapist's knowledge and use of medical imaging in clinical practice. Therefore, this study aims to report on the physical therapist's knowledge and use of medical imaging in clinical practice.

METHODS

The study design is cross-sectional study and conducted through survey by different practicing physical therapists of Faisalabad from January 2020 to September 2020. A total of 100 Physical therapists, both males and females, who work in clinical settings and have a DPT or postgraduate degree, as well as physiotherapists from both private and government hospitals and clinics, were included in this study using purposive sampling technique. The sample size was calculated using online Epi Tools software. The study did not include physical therapy students, technicians, interns, or non-practicing Physiotherapists. Physiotherapists were selected from different hospitals and clinics of Faisalabad Demographics data will be obtained about physiotherapists. Informed consent was obtained from each physiotherapist before the start of data collection. Physiotherapist's

confidentiality will be taken into consideration. Self-structured questionnaire was used to report demographics data of the participants and physical therapist's knowledge and use of medical imaging. Descriptive statistics is basically the description of data in a study, confidence levels of the respondents were calculated using SPSS version 22.0. Descriptive statistics were first derived using frequencies, to produce the population frequencies. A p-value of <0.05 was used for all analyses for determining statistically significant differences.

RESULTS

In the current study, nineteen (17.1%) participants were male therapists and 92(82.9%) were female Therapists. DPT was education of 91 (82.0%) therapists, 13 therapists were MS/M.Phil. and 7(6.3%) therapists were qualified in other fields. Most of the therapists (73.9%) had clinic experience less than one year and 29(26.1%) therapists had experience greater than one year (Table 1).

Table 1: Demographic information study participants

Variables	N (%)	Mean± S.D
Gender		
Male	19(17.1%)	
Female	92(82.9%)	
Age (years)		
20-22	25(22.5%)	24.13±3.051
23-25	66(59.5%)	
>25	20(18.0%)	
Qualification		
DPT	91(82.0%)	
MS/M.Phil.	13(11.7%)	
Others	7(6.3%)	
Clinic Experience		
<1	82(73.9%)	1.20±1.67
>1	29(26.1%)	
Work Setting		
Government Hospital	37(33.3%)	
Private Hospital	36(32.4%)	
Private Clinic	38(34.2%)	
Employment status		
Part Time	78(70.3%)	
Full Time	33(29.7%)	
Departments		
Physical Therapy	87(78.4%)	
Other than Physical Therapy	24(21.6%)	

One hundred three (92.8%) Therapists said that they find significant for Medical Imaging in making clinical diagnosis, 100 (90.1%) Therapists said that Medical Imaging is included in clinical diagnosis. Ninety-six Therapists said that no extra certifications for Medical Imaging is needed. Only thirty-three (29.7%) Therapists said that they attended Continuous Professional Development (C.P.D)

Programs, 99(89.2%) Therapists said that they refer patients for Medical Imaging, (Table 2).

Table 2: Responses of Therapists about Medical Imaging

Statements	No	yes
	N (%)	N (%)
Do you find any significance of Medical Imaging in making clinical diagnosis	8(7.2%)	103(92.8%)
Medical Imaging included in your clinical diagnosis	11(9.9%)	100(90.1%)
Any extra certifications for Medical Imaging	96(86.5%)	15(13.5%)
Continuous Professional Development (C.P.D) Programs attended	78(70.3%)	33(29.7%)
Do you refer patients for Medical Imaging	12(10.8%)	99(89.2%)

Half of the Therapists said that their Source of knowledge on Medical Imaging is academic program and other half said that their knowledge is job exposure (Table 3).

Table 3: Responses of Therapists about Source of knowledge on Medical Imaging

Statements	Academic Program	Job Exposure
Source of knowledge on Medical Imaging	54(48.6%)	57(51.4%)

CT Scan was the most frequently (77.5%) requested for assessing patients, while 11(9.9%) Therapists used X-Ray and only 1.8% PTs requested MSK ultrasound for assessment of MSK conditions. (Table 4).

Table 4: Responses of Therapists about Medical imaging most frequently requested for assessing patients

Medical imaging most frequently requested for assessing patients	
Medical imaging	N (%)
X-Ray	11(9.9)
MRI	6(5.4)
CT Scan	86(77.5)
Bone Scan	4(3.6)
MSK Ultrasound	2(1.8)

Moreover, findings of the study reported that 84(75.7%) of the PTs were with confident to perceive Medical Imaging, (Table 5).

Table 5: Responses of Therapists about perception about Medical Imaging with confidence

Statements	Confident	Non- Confident
Do you perceive Medical Imaging with confidence	84(75.7%)	27(24.3%)

DISCUSSION

Various musculoskeletal and neurological conditions require the expertise of physical therapists for rehabilitation and management [14]. Their role does not typically include medical imaging, but they often work closely with other healthcare professionals who interpret medical images, such as radiologists and orthopedic surgeons [15]. Nevertheless, physical therapists' knowledge and use of medical imaging in clinical practice are desperately needed. According to the Character Society of Physiotherapy (CSP) shows the Physical

Therapists refer the patients for medical imaging [16]. Physical Therapists required Knowledge on medical imaging. The current study shows that 77% CT scan was used for assessing and diagnosis patients, only 11% Physical Therapists used X-Ray for diagnosis. According to the current study results the Plain Film is used most frequently ($M=3.83$, $SD=0.91$) and 2nd most frequently image MRI Reports is used and least image Bone scan is used. Many Physical Therapists use Musculoskeletal Ultrasound Imaging for the Muscular diagnosis, MSKUSI's are used to examine the intracellular and extracellular structures of the muscles of the body [11, 17]. The basis of evidence that examines musculoskeletal diagnosis. A scanning protocol are detailed and illustrate the suitability of the musculoskeletal tissues imaging process. Discussion relating to professional guidelines between the Chartered Society of Physiotherapy (CSP) and the Electro Physical Agents and Diagnostic Ultrasound Professional Network have not resulted in any publications to date. Physical Therapists that are practicing in different sectors have the different Level of confidence. The MRI scan is used to interpret the diagnosis the bone diseases. Many patients had referrals for images for multiples conditions across different time of care, and some patients had multiple referrals for images of the same condition. For example, repeat radiographs MRI scans that were referred for patients who has high chances of pathology that even did not appear at first time but appear after that. Most of the medical imaging or radiography referrals were for the hip/pelvis (33%) and ankle/foot (16%), whereas the lumbar spine was the body region most commonly imaged with MRI (36%) [11, 12, 17]. Clinical decision-making is supported by corrected educational patterns, marked by move from memorization to knowledge organization, as demonstrated by the emphasis on critical thought and the use of concept maps in medical education. In their assessment of imaging research, the Physical Therapists in this study used an intuitive and contextual process and did not follow systematic search to find for the most part [8, 13, 17]. Plain film radiography's are used to determine symptomatic areas and to check results seen with such modalities for imaging. Due to the low sensitivity not used in screening purposes [10, 13, 18]. The evidence indicates that Physical Therapists may use their good knowledge of anatomy and musculoskeletal examination expertise to determine correctly whether to order imaging tests, thus lowering imaging rates, without the patient experiencing an adverse outcome [19, 20]. Previous study shows that finding of pathology is improved and become easier when magnetic imaging is used in diagnosis. Physical health professionals find it easier in recognizing the anterior cruciate ligament injury when using magnetic resonance

imaging report. This has become a common clinical scenario finds it using MRI results. This study proves that making a clinical diagnosis it's a helpful procedure to prefer magnetic imaging and use it for diagnosis purpose. And physical therapist should have confidence in reading magnetic imaging [1]. In a survey medical imaging importance is indicated for physical therapists. As it was proved in a survey that mostly physical therapists use MRI and CT scan information for clinical diagnosis. Through this study participants follow up indicates that magnetic imaging plays an important role in the whole study of clinical scenario as in staging the disease, making plan of care, intervention for patients, improves communication about patient care, and prohibiting the tests which will worsen the patient condition. It was also suggested that physiotherapists should enhance their knowledge in studying medical imaging because not all physical therapists are confident in medical imaging study especially those graduated so entry-level physiotherapist programs should include information about medical imaging [2]. The fact that this finding of physiotherapist perceived insufficient ability was also common to the studies cited in the introduction of this study [1, 3, 13] evocate the need of worldwide physical therapists to "scale up their field" though many of the physical therapists of Faisalabad increase most of their ability on the job and that many of them reinforced their observing and interpreting of these medical images by reading the radiologist's report, recommends a level of interest to learn and determines a sense of professional responsibility.

CONCLUSIONS

Our study concluded that only a minority of Physical Therapists refer their patients for medical imaging. There are more Physical Therapists who have confidence in interpreting. Half of the therapists said their main source of knowledge about Medical Imaging was academic programs, while the other half said job exposure. In terms of assessing patients, CT scans were requested most frequently, followed by X-rays, and MSK ultrasounds. In addition, the study indicated that most PTs felt confident in their ability to perceive medical imaging.

Authors Contribution

Conceptualization: Q, TG, MK

Methodology: MTA, TG

Formal analysis: MAA, MK

Writing, review and editing: SW, SS, AMH

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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