Level of Reflective Thinking Among Final Year Doctor of Physical Therapy Students in Pakistan

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Abstract:

Background: Reflective thinking is increasingly described as essential attributes of competent health care professionals and is a kind of thinking that is purposeful, logical, goal directed, and outcome focused.

Objectives: The objective of the present study was to explore the current level of reflective thinking among the future graduates from public and private sector institutes in order to determine the effectiveness of this upgraded curriculum in promoting Reflective Thinking.

Method: This cross-sectional analytical study was conducted at public and private institutions offering Doctor of Physical Therapy (DPT) at undergraduate. Final years students meeting the eligibility criteria (n=234) were enrolled after taking written informed consent. The validated and reliable Likert type "Questionnaire of Reflective Thinking (QRT)" was used for the measurement of reflective thinking of students with clinical practice as the part of their curriculum.

Results: Descriptive statistics was used for the key variables i.e., age, gender, evaluation of QRT and comparison of subconstructs of QRT in public/private institutes by estimating the coefficient of alpha ($P \leq 0.05$).

Conclusion: Curriculum approved by Higher Education Commission (HEC); Pakistan for the Doctor of Physical Therapy (DPT) is effective in producing reflective practitioners. Further modification in curriculum and more task-oriented approaches will improve critical approaches of students.

Key Words: Reflective Thinking, Reflective Practice, Critical Reasoning and Reflection in Physical Therapy.

INTRODUCTION

The concept of reflection was first defined by john Dewey in 1933 as ''Reflection is an active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends''[1]. Later Boud describe reflection as a new understanding and appreciation as a result of engagement of individuals in intellectual and affective activities to explore their own experiences[2]. Reflection is cognitive process useful to solve a relatively complex or unstructured concepts, which otherwise have not an apparent solution. The idea deducted from these definitions is that the reflection means purposeful critical analysis of knowledge and experience, in order to achieve deeper understanding of the situation or problem[3].

Reflective thinking, is a kind of thinking that is purposeful, logical, goal directed, outcome focused and used for problems solving, interpretations, and

making decisions. Thus in clinical practice it not only detect and endorsing what is going in the right directions but also explores what is not working well or required a change[4].

The concept of reflective thinking is not new as far as medical education is concerned. It is a core component for problem solving and professional development and also commented that Reflective Thinking is not only associated with a deeper learning based on existing knowledge and skills and helps in bringing the meaningful change in personal and professional growth but also essential to solve a variety of problems related to personal and professional development[5]. It is a crucial component for effective clinical reasoning and efficient clinical decision-making skills so that synthesis and analysis of information related to the disease process, the patient, the signs and symptoms, interventions, values, and outcomes will done quickly, accurately and in efficient manner. The question arises, "how to assess reflective thinking"[6].

There are four stages of reflective thinking to assess ability of critical reasoning that are habitual action, understanding, reflection, and critical reflection. Habitual action is an involuntary, mechanical, and automatic behavior and activity with little conscious thought. Understanding is learning and reading having no relation with other situations. Reflection is a continuous and conscious reconsideration of our assumption or beliefs. Critical Thinking is the topmost in hierarchy of level of reflective thinking that represent our actions, which are more informed and based on perception and feeling. This means that the cohorts represented is of increasing depth of reflective thinking and having a simple to complex structure and each of the level described above represents the more complex the next [7].

Reflection and reflective practice are essential attributes of competent health care professionals and the nature of professional practice is difficult to predict on the basis of professional education courses only rather a procedural approach is needed, which uses reflective thinking to become reflective practitioner in order to solve complicated problems and find the unique solution. The concept of ''Reflective Practitioner'' was also presented as one who uses reflection as a tool for revisiting experience both to learn from it and for solving the complicated problems of professional practice [8]. He further added that reflective procedure means not only to re-consider problems and view them from various perspectives but also highlights various alternatives before arriving to the conclusions to combat uncertainty[9].

Reflection is not only recognized as a tool for learning in higher education but also considered essential to professional practice, because it provides a link between observations, past experiences, and judgments, which are considered, the essential component of effective clinical decision making. This means reflection brings sometimes new knowledge, new understanding, or both. Thus, the outcome of reflection is either preparation for change, confirmation/rejection of a theory or improvement in practice skills [10].

Reflective practice increases the understanding of positive and negative aspects of practice and also assist for better informed decisions to be made in the future, resulting in improved quality of life and health outcomes for the patient and with the passage of time, enables practitioners to become expert. Thus, Reflective Practice is been considered is a way of promoting experience to learn from mistakes, to identify skills and strengths, develop options and actions for change and future success because it not only required for professional development but also provides connection between reflection

and action together, to promote critical thinking for new knowledge and understandings necessary for lifelong learning and development [11].

Physical therapists being the expert in rehabilitation provide safe and high-quality rehabilitation services to promote, prevent, and treat individuals, communities, and populations, for various conditions. The scope of Physical Therapy has progressed towards an autonomous practice in almost 44 out of 52 states of United States of America (USA) through legislation that allows independent Physical Therapy Practice[12]. Fundamental element of professional autonomy is clinical reasoning, which means, thinking and decision-making processes associated with clinical practice. The application of principles of professional autonomy in physical therapy permits physical therapists to make decisions, acts independently and is responsible and accountable for these decisions and actions [13].

American Physical Therapy Association (APTA), developed Vision 2020, whose major elements includes: the doctor of physical therapy (DPT) degree, lifelong education, autonomous physical therapist practice, direct access, evidence-based practice, practitioner of choice, and professionalism [14]. Physical Therapy profession doing its best to reach these goals, more stress is being placed on the process of clinical decision making (CDM) and professional development, while using evidence and reflection to guide clinical decisions. Therefore, reflection and reflective thinking gaining importance in physical therapy education, where evidence-based physical therapy and patient centered care, required the physical therapy students and practitioners to analyze best evidence for the sake of effective and efficient clinical decision making for assessment, diagnosis, prediction of prognosis, intervention, and patient-family education[15].

Reflective Practice or Clinical reflection is been considered as a powerful tool in developing clinical reasoning skills and professional growth through metacognition, which means awareness or analysis of one's own learning or thinking process and is associated with refinement of clinical reasoning strategies [16]. Clinical reasoning is the decision-making process that enhances the quality clinical practice and service delivery. Physical therapists are autonomous practitioner. Both attributes make them a reflective practitioner. They also stressed that clinical reasoning is essential for the development of ability of reflective thinking so that physical therapists develop the habit of learning from their experiences and able to apply in future situations. Reflective thinking is bridge between the clinician knowledge and ability to synthesize relevant information and personal awareness, self-monitoring and reflective processes, or metacognition[17]. It is essential for Physical Therapist to engage them in learning the concept of reflective thinking especially for those who are new to these concepts by providing them necessary education to begin and develop reflective practitioners which are more proficient in practice[18].

The fundamental expectation from healthcare professionals is the development of excellent clinical reasoning and reflecting on practice in order to improve experience[19]. To be a reflective practitioner, is an essential life skill not only for student practitioner but also for graduate physical therapists as it enable them to think about and critically analyze their experiences and helps them in becoming more proficient in practice[20]. The current professional practice in Physical Therapy has achieved the legitimate rights and responsibilities of autonomous practice in most states of United States of America[21]

Thus, the expectations from Physical therapy professionals to deliver

harmless and superior quality health services on which patients can trust have increased. Therefore, it is essential that the physiotherapy programs must include the courses that prepare students for the responsibilities of professional autonomy on qualification. This preparation includes developing the knowledge, skills, understanding and attributes necessary to accept this responsibility. Therefore, for the development of individual skills and expertise, it is vital that physical therapists must be a skilled reflective learner early in an individual's professional career[22].

Keeping in view the importance of Reflective Thinking, the concept of reflection, Reflective practice and reflective practitioner has been introduced in physical therapy books and literature [23-25].Higher education Commission (HEC), Pakistan took the initiative and revised the curriculum of Physical Therapy and improved the status from 4-years B.Sc.(Hons) in Physical Therapy to a 5-year Doctor of Physical Therapy Program and included the core subjects required for Reflective Thinking such as Clinical Decision Making, Differential Diagnosis, Professional Practice (Law, Ethics and Administration), Evidence-based Physical Therapy, Primary Care in Physical Therapy and Emergency Procedures to improve the level of Practice of Physical Therapy in Pakistan[26].

Refelective practice is crucial component of health care profesional. This study was planned to evaluate the level of reflective thinking among the final year students of DPT program to determine the effectiveness of this program in promoting Reflective Thinking through education in order to develop future graduatses of Physical Therapy as reflective practioners in Pakistan.

METHODS

Study Design

This was a cross-sectional analytical study

Sampling Techniques

Non probability purposive sampling technique was used to collect data from targeted population.

Settings

Public Sector Institutes	Private Sector Institutes
Allama Iqbal College of Physical Therapy, (AIMC), Lahore.	Lahore College of Physical Therapy, (LMDC) Lahore.
The School of Allied Health Sciences, children Hospital, Lahore.	Fatima Memorial Institute of Allied Health Sciences, (FMH), Lahore.
Rawalpindi medical University, Rawalpindi	Rashid Latif Medical & Dental College, Lahore.
School of Physiotherapy, King Edward Medical University, Lahore.	Multan Medical and Dental College, Multan
Sheikh Zayed Medical college, Rahim Yar Khan.	

Sample Size

The sample size was calculated by using online Rao soft sample size calculator according to following formula. The level of significant was 5% and level of confidence was 95%. [27]

$$x = Z(^{c}/_{100})^{2} r(100\text{-}r)$$

The sample of 234 students of final year Doctor of Physical Therapy from above mentioned institutes were taken

Duration of Study

Study was planned to be completed in 26 weeks after approval of synopsis by research ethics committee of University of Health Sciences, Lahore.

Sample Selection Criteria

Inclusion criteria

- Final year student of Physical Therapy
- Public/private sector institutes
- Age 18-25 years
- Both male and female

Exclusion criteria

- Not willing to participate
- Incomplete forms

Data Collection Procedure

Total 234 final year students of Doctor of Physical Therapy meeting the eligibility criteria were included in this study. Consent was taken from them and provided all the information to them that their data was not misused, and their personal and institutional data was kept in privacy. The instrument used for data collection was a Likert's type scale called the **"Questionnaire for reflective thinking (QRT)",** developed by Kember [28]. The QRT is used to assess or measure the level of reflective thinking i.e. actions and modes of thinking comprises of four constructs [29].

1. **Habitual action (HA).**
2. **Understanding (U).**
3. **Reflection (R).**
4. **Critical reflection (CR).**

These four constructs cover a broad spectrum of reflective thinking. Habitual action and understanding represent modes of thinking related to well-structured tasks or problems and considered as involving problem solving while reflection and critical reflection represent those modes of thinking which are relatively unstructured and place much greater emphasis on problem posturing.

Each constructs containing four items and collectively these items feature as 16 statements about actions and modes of thinking. The developers found alpha levels for the four sub-scales, ranging between 0.62 and 0.76. The response and corresponding score will be recorded on a Likert's scale consisting of five options such as: 5 - Definitely Agree, 4 - Agree only with reservation, 3 - Only to be used if a definite answer is not possible, 2 - Disagree only with reservation and 1 - Definitely Disagree.

Each question computed score from 1 to 5. Minimum score "1" means definitely disagree and maximum score "5" means agree. Q1, Q5, Q9 and Q13 comes under the heading of habitual action, Q2, Q6, Q10 and Q14 comes under understanding, Q3, Q7, Q11and Q15 comes under reflection and critical reflection contain Q4, Q8, Q12 and Q16. Hence, the minimum total scores for each construct could range from 4 (definitely disagree) to maximum total score 20 (definitely agree). The version of the questionnaire completed by the students will not include the scale headings nor separate the items into the scale groupings. Items appeared in the order given by the item numbers [30].

The questionnaire was completed by each student of final year of DPT program from each institute mentioned above, upon their consent. The return rate depends on the attendance of the students on that particular day or if any student voluntarily was giving consent to participate in the study. The score on each scale is computed simply by adding the response score for each of the four items.

DATA ANALYSIS PROCEDURE

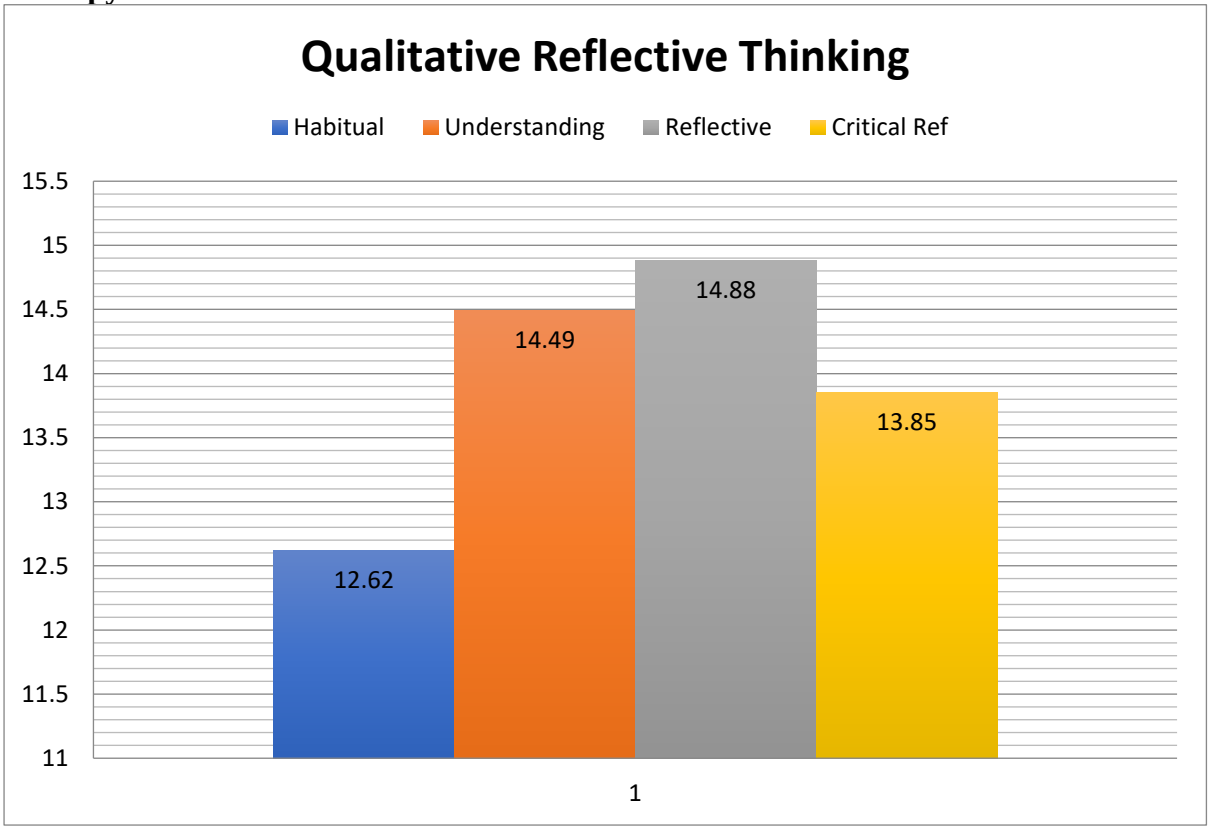
The analyses were done through statistical package for social sciences SPSS (Version-25). Categorical variables were presented in frequency tables and charts and numerical variables were presented in Mean± SD. The independent sample t test was used to compare the Reflective thinking mean of private and public sector students of final year Physical Therapy and male/female students. The Association was measured by Pearson's Chi-square (X_2) The statistically significant value was $P \leq 0.05$.

RESULTS

Physiotherapy profession is crucial part of health care system for promoting community health. This study was conducted to measure the level of reflective thinking among final year students of Physical Therapy that developed throughout their course. The comparison was made in male and female, public sector and private students. The public sector students were 102(43.59%) and private sector students were 132(56.41%). The total numbers of male

participated in this study were 47(20.09%) and female were 187(79.91%). The mean age of public sector students were 23.58 ± 0.91 years and private sector students were 23.33 ± 0.87 year. The mean difference in age of public and private sector students were statistically significant (P≤ 0.03). The mean difference in male and female of public and private sector students were also statistically significant (P≤ 0.07).

Figure 1; Qualitative Reflective Thinking in final year students of Doctor of Physical Therapy



The final year students of Physical Therapy were found reflective thinker. They have good reflection and understanding but they need more time and appropriate clinical reasoning to improve habitual action and critical reflection.

Table1: Comparison of QRT in final year DPT students of Public and Private sector institute

Steps of Reflective Thinking	Public Sector Institutes Mean ± SD n (102)	Private Sector Institutes Mean ± SD n (132)	*t-test*	P ≤ 0.05
Habitual Action	12.55±3.03	12.67±3.17	-0.28	0.78
Understanding	14.85±3.56	14.21±3.92	1.29	0.20
Reflection	15.00±3.37	14.78±3.46	0.49	0.62
Critical Reflection	14.29±3.49	13.50±3.67	1.66	0.10

Table 1; n=number of participants, %= percentage, SD= standard deviation, t= t test, P coefficient of alpha

Table 2: Gender based comparison of qualitative reflective thinking in final year students of DPT

Steps of Reflective Thinking	Male Mean ± SD n (47)	Female Mean ± SD n (187)	*t*	P ≤ 0.05
Habitual Action	12.60 ± 3.13	12.63 ± 3.11	-0.07	0.95
Understanding	15.02 ± 3.81	14.36 ± 3.77	1.08	0.28
Reflection	15.63 ± 3.81	14.70 ± 3.30	1.71	0.09
Critical Reflection	14.66 ±4.18	13.65 ± 3.44	1.72	0.09

Table 2; n=number of participants, %= percentage, SD= standard deviation, t= t test, P coefficient of alpha

Table 3: The Association of QRT among the male students of public and private sector institues

Steps of Reflective Thinking	Public Sector Institutes Mean ± SD n (26)	Private Sector Institutes Mean ± SD n (21)	X_2	P ≤ 0.05
Habitual Action	13.00±3.17	12.09±3.08	17.98	0.08
Understanding	15.96±2.90	13.85±4.50	9.18	0.76
Reflection	16.61±3.11	14.42±4.29	10.57	0.65
Critical Reflection	16.11±3.55	12.85±4.25	22.13	0.08

Table 3; n=number of participants, SD= standard deviation, R= Pearsons Chi-Square, P coefficient of alpha

Table 4: Reflective thinking among female students of public and private sector institutes

Steps of Reflective Thinking	Public Sector Institutes Mean ± SD n (76)	Private Sector Institutes Mean ± SD n (111)	X_2	P ≤ 0.05
Habitual Action	12.40±2.99	12.78±3.18	6.37	0.97
Understanding	14.47±3.70	14.27±3.82	17.72	0.34
Reflection	14.46±3.30	14.85±3.30	8.38	0.91
Critical Reflection	13.67±3.27	13.63±3.56	16.78	0.40

Table 4 n=number of participants, SD= standard deviation, r = Pearson's Chi-Square, P coefficient of alpha

DISSCUSSION

This study presented the level of Reflective Thinking among the final year students of Physical Therapy. This was necessary to determine the effectiveness curriculum in promoting reflective thinking throughout course duration to develop physical therapist as future reflective practioners in Pakistan. Critical reasoning is fundamental key attribute of effective clinical decision making. Multiple courses such as evidence based practice, research methodology, clinical decsion making and diffrential diagnosis were added in curriculum of physical therapy by higher education comission (HEC) to promote reflective thinking. Ziebart C, and MacDermid JC [31] conducted a scoping review to map the reflective practice and reflection in physical therapy field. Reflection was considered as key component for practice In our study students were good in self-reflection and critical reasoning but more time, appropriate trigger and strategies to manage uncertain situations are required to become a good reflective practitioner. It is also required to develop the involuntary habitual action.

Brad Warren Willis et al.[34] There is need of explicit use of theoretical knowledge correlation with clinical preparation to improve the praxis of learning. While problem based clinical decision making and supervised clinical practice during the education tenure improved the students' abilities to manage uncertain situation.

A cross sectional study measured relationship between imaginative thought and students' critical thinking skills conducted by Ulger K [35]. This study concluded that creative reasoning and critical thinking capacities in low level students were positively correlated. Problem solving approach is a trigger to polish the reflective thinking abilities and innovative thoughts in this field. The reflection could be advanced through optimal implementation of relection, broader and deeper pool of reseach and conceptualization of reflective practice in physical therapy.

Greenberger SW[32] Reflection in students is essential method to generate learning situation and ensuring the learning outcomes that depends upon the experience, specific context and literature guided practice. A cross sectional study was conducted by Karnieli-Miller O et al. [33] measured the association between communication skill and reflective abilities of medical students. It was concluded that, high reflective abilities improve the communication skills. In particular, the ability to note explanations to patients will later increase the capacity to customize patient input and to empathize with emotions.

This present study measured the comparative level of reflective thinking among final year students of physical therapy from public and private sector institutions. There was no statistically significant ($P \leq 0.05$) difference in reflective thinking of students from different institution. Habitual action of students from both groups were $t=-0.28$($P \leq 0.78$). Involuntary involvement of cognitive system in critical reasoning required more trigger and problem-solving approaches. Greenfield BH et al. [36] used six themes to improve reflective practice early clinical experiences that are (I) clinical decision-making process (II) complexity and richness of interactions with clients (III) influence of practice environment on learning and patient care (IV) acquisition of administrative and clinical skills (V) value of clinical experiences to validate learning and (VI) development of learning strategies. In previously published literature Henderson Hurley M and Hurley D[37]concluded that, there are four stages habitual behaviors, perception, reflection, and

critical reflection to evaluate the critical reasoning and quality of reflective clinical practice.

A cohort longitudinal study was done by Ralston PA and Bays CL [38]. Critical thought was recognized as essential tool for academic achievement and successful career of professional students. A broad-spectrum approach to educate and evaluate the critical thought and skills still had challenges. The critical thinking skills from the beginner to senior year were improved considerably through the specific and strategic incorporation of critical thinking tasks.

CONCLUSION

Final year Physical Therapy students of both public and private institutes, male and female are equal reflective thinker. Habitual action and critical reflection required more task specific practice for effective clinical reasoning in uncertain situation. seem involved more in understanding the situation and trying to solve the complex situation after thinking critically & reflectively because of having better skills of understanding, reflective thinking, and critical reflection.

LIMITATIONS

Further researches should be conducted to explore optimal learning experience that challenges the student's skills in decision making. A qualitative analysis is recommended to evaluate the incorporation of reflection throughout the course of study in physical therapy students. Few students were confused while filling the questionnaire because they didn't cater the patients with unique problems during the study. This study only evaluated the patient centered level of critical reasoning and didn't address the other domains such as research, educators, policy making and development of courses to improve reflection. This study given the gender and institutions based comparative analysis; the sample size had remarkable difference.

Conflict of Interest: There is no conflict of interest between authors.

Disclaimer: This research paper is part from thesis of 1st author's degree "Master in Health Professional Education (MHPE)"

Ethical Approval: This study was conducted after taking written approval from the research ethics committee of "University of Health Sciences" Punjab, Pakistan.

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