

# Physical Therapy Entry-level Education and Post-professional Training in Saudi Arabia: A Comparison of Perceptions of Physical Therapists from Five Regions

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**Abstract.** [Purpose] The goal of this study was to examine potential differences in physical therapists' perceptions of content areas for the new entry-level Doctor of Physical Therapy (DPT) curricula and specialties for post-graduate residency and fellowship programs among five geographical regions in Saudi Arabia. [Subjects and Methods] All physical therapists in Saudi Arabia were invited to participate in this cross-sectional study, which was conducted via a web-based survey. The first domain queried the importance of introducing 10 content areas into future DPT curricula. The second domain concerned the importance of developing residency and fellowship programs in nine subspecialties. Descriptive statistics were generated, and an analysis of variance with a post hoc Tukey's HSD test was used to evaluate the significance of differences in the physical therapists' perceptions across the geographical regions. [Results] In total, 148 participants responded to the survey. Significant differences were found among respondents in different geographical regions for 4 of the 10 skills and 3 of the 9 subspecialties. [Conclusion] Understanding the variations between the five regions would be helpful in developing a new model for future DPT and post-professional programs that addresses potentially unique needs perfectly. Future research is needed to confirm the findings in a wide range of stakeholders.

**Key words:** Physical therapy education, Saudi Arabia, Curriculum

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## INTRODUCTION

The Doctor of Physical Therapy (DPT) program has increasingly become the entry-level physical therapy (PT) curriculum in some countries such as the United State of America (USA)<sup>1, 2)</sup>. While the Saudi Arabia (SA) Physical Therapy Association is calling for educational reform of the entry-level PT program from a five-year bachelor's program to a 6 year DPT program<sup>3)</sup>, clinician opinions about the new course content are important for curriculum development<sup>4, 5)</sup>. Education reform in Saudi Arabia has recently resulted in professional programs to emphasize advanced training for jobs in response to the increasing SA population; however, political and societal challenges remain<sup>6)</sup>. Assessing the perceptions of physical therapists (PTs) from all geographical regions in the country may lend support to education reforms with regard to the entry-level DPT curriculum and post-professional training such as residencies and fellowships.

To date, no studies have investigated the opinions of PTs regarding the content areas that should be developed for entry-level education and post-professional training in the developing world<sup>7, 8)</sup>. Increasing emphasis is being placed on comparing the perceptions of PTs in assessing entry-level education and post-professional training, as particular PT populations pursue various academic and nonacademic activities. Assessment of the perceptions of PTs in five geographical regions in SA could significantly influence the determination of the content areas that should be developed for the new entry-level DPT curriculum and specialties for the post-graduate residency and fellowship programs in SA<sup>9)</sup>. In SA, PT is a vital patient care profession that is utilized in health-care settings<sup>10)</sup>. The PT program requires four years of full-time study with an additional 1 year of internship. After successful completion of the internship year, all PT graduates register with the Saudi Commission for Health Specialties (SCFHS), which is a national licensing agency for all health-care professionals<sup>11)</sup>. Currently, there are twelve PT bachelor's programs along with one DPT program in the central region of SA.

Professional entry-level education and post-professional training vary markedly by country<sup>3)</sup>. A minimum of 4 years of training is the universal educational requirement for PTs, as recommended by the World Confederation for Physical Therapy (WCPT)<sup>12)</sup>. Minimal information is available re-

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garding entry-level education and post-professional training in various regions of the world<sup>3</sup>). In fact, the information on global entry-level education and post-professional training that has been gathered by the WCPT is either incomplete or needs to be updated<sup>13</sup>). In the USA, the Commission on Accreditation in Physical Therapy Education (CAPTE) will require all programs to offer the DPT degree effective December 31, 2015, although very few programs currently offer this program<sup>12</sup>). After completing a DPT program, the new PT graduate may continue his or her training in post-graduate residency and fellowship programs<sup>14</sup>).

A residency program in physical therapy is a post-professional program that a graduate physical therapist participates in after obtaining their license to practice. It advances a physical therapist's knowledge and skills in patient/client management or nonclinical aspects focused on advancing a PTs career outside of their clinical duties<sup>15</sup>). A residency is a continuation of PT education with evidence-based training and functions to equip the resident for patientcare<sup>16</sup>). Residencies may involve community service, research, patient education, teaching opportunities, and the supervision of other health-care providers<sup>17</sup>). A fellowship program is a post-professional planned learning experience in a focused advanced area. A fellowship provides greater quality and evidence-based knowledge in a specialty or subspecialty<sup>18</sup>). To gain acceptance into a fellowship program, a PT must have one or more of the following qualifications: 1) completion of a residency, 2) board specialty certification, and 3) clinical skills within a particular specialty area<sup>8, 15</sup>).

There has been expansion in education for health-care professions in SA, while there is scarce data about the practical need for the DPT program and subspecialties in physical therapy. The goal of the present cross-sectional study was to examine potential differences in the perceptions of PTs with regard to content areas for the entry-level DPT curriculum and specialties for the postgraduate residency and fellowship programs among five geographical regions in SA.

## SUBJECTS AND METHODS

The target participants included all PTs from the five geographical regions of SA (central, western, eastern, southern, and northern). A quantitative cross-sectional study that utilized a validated web survey was delivered by Fluid Surveys. Before the study website (<http://ptstudy.ksu.edu.sa>) was launched, two pilot studies were conducted to examine the content validity and test-retest reliability of the questionnaire, which facilitated its further amendment. The final questionnaire was tested for internal consistency and reliability using Cronbach's alpha, which yielded a value of 0.67<sup>19</sup>).

A recent report by the Saudi Ministry of Health (MOH) estimated that there are approximately 415 PTs in five geographical regions of SA and that approximately 80% of the PTs (331) work in the MOH organization<sup>20</sup>). From December 2010 to March 2011, an invitation to participate in the study was uploaded to the Saudi Physical Therapy Association (SPTA) website, and an individual invitation was e-mailed

to each member of the association. E-mails were sent to all PTs in the five geographical regions of SA inviting them to participate in the study. Three reminder e-mails were sent on the 7th, 14th, and 21st days after the first e-mail to increase the number of participants, and a generic invitation was sent by fax to all PTs in the five geographical regions of SA. In total, 148 PTs completed the survey (Appendix 1: online only). The estimated overall response rate was 27%.

All PTs in SA were invited to answer a web-based survey that consisted three sections: socio demographics (10 items), content areas to the DPT curricula (10 items), and subspecialties for post-professional training programs (9 items). The socio demographic variables included age, gender, nationality, number of years since receiving a PT degree, the highest degree earned, the area of PT expertise, registration with the SCFHS, employment and clinical work settings, and geographical regions. The five geographical regions of SA were represented in this study as follows: A=the central region, B=the western region, C=the eastern region, and D=the southern and northern regions (the southern and northern regions were combined to achieve a flexible sample size that was commensurate with the other SA regions).

The second section concerned the importance of introducing 10 main content areas to the DPT curricula in the future. These content areas were radiology, pharmacology, pathology, evidenced-based practice, differential diagnosis, exercise physiology and prescription, manual therapy, women's health, prevention and health promotion (wellness), and health-care systems, which included 6 subitems (administration, documentation and quality issues, ethics, legal issues, medical informatics, and insurance and finance issues). This section of the survey was adopted from a published study conducted by Brudvig and Colbeck (2007)<sup>21</sup>).

The last section was aimed at assessing the participants' perceptions on developing residency and fellowship programs in nine common subspecialties in physical therapy. These subspecialties were cardiovascular/pulmonary, clinical electrophysiology, geriatrics, manual therapy, neurology, orthopedics, pediatrics, sports physical therapy, and women's health.

The participants were asked to rank each of these items (the first and second sections) on a five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree). This study was approved by the ethical research committee of the College of Applied Medical Sciences, King Saud University.

Descriptive statistics were generated, and analysis of variance (ANOVA) with a post-hoc Tukey's HSD test was performed to compare the means of the scores of PTs' perceptions in the four geographical regions. To confirm the results, a nonparametric test, the Kruskal-Wallis test (analogous to the ANOVA), was performed because the data were derived from a Likert scale<sup>22</sup>). All the analyses were performed using the SAS version 9.2 software (SAS Institute, Cary, NC, USA). Significance was accepted for values of  $p < 0.05$ .

## RESULTS

In total, 148 PTs completed the web survey, and the characteristics of the respondents are listed in Table 1. Approximately 50% of the respondents were between 20 and 29 years of age, while 76 (51.3%) were females and 72 (48.7%) were males. The majority of the respondents (approximately 65.5%) were Saudis. Of the PTs, 72 (48.6%) had a bachelor's degree, 50 (33.8%) had a master's degree, and only 13 (8.8%) had a PhD. Nearly 81% of the PTs who responded had a valid registration with the SCFHS. The majority of the PTs worked in an MOH hospital (33.8%) and/or university/college (24.8%). The PT respondents were more likely to be from the central region of SA, but the respondents were proportionally representative of the five regions of SA.

Table 2 summarizes the perceptions of the responding PTs regarding the entry-level DPT curriculum for 10 examination skills in SA. Regarding the health-care system, administration and legal issues were more likely to be suggested by the western and central region PTs, respectively, as content areas to be added to the entry-level DPT curriculum. The difference in the rating of administration was significant ( $p=0.011$ ) between the western region and the southern and northern regions, and legal issues were perceived differently, with statistical significance ( $p=0.0016$ ) between the central region and the southern and northern regions and between the western region and the southern and northern regions. Manual therapy and women's health were more likely to be suggested as content areas for emphasis in the DPT curriculum by the western region PTs. A significant difference in ratings of manual therapy ( $p=0.027$ ) between the western region and the southern and northern regions was detected. The highest mean score was reported in the western region (4.69,  $SD = 0.47$ ) followed by the central region (4.44,  $SD = 1.02$ ). Ratings for women's health were significantly different (0.0085) between the central region and the southern and northern regions and between the western region and the southern and northern regions. The highest mean score was reported in the western region (4.21,  $SD = 0.87$ ) followed by the central region (4.09,  $SD = 1.14$ ), eastern (3.78,  $SD = 1.21$ ), and northern and southern regions (3.30,  $SD = 1.3$ ) respectively.

Table 3 summarizes the comparison of the perceptions of PTs about developing post-professional training (residency and fellowship) programs in nine subspecialties. Of the nine subspecialties, neurology, pediatrics, and women's health were rated differently between certain geographical regions. Ratings for neurology were significantly different ( $p=0.007$ ) between the central region and the western region, between the western region and the eastern region, and between the western region and the southern and northern regions. The pediatric and women's health subspecialty ratings were significantly different between the central region and the southern and northern regions ( $p = 0.009$ ) and between the eastern region and the southern and northern regions ( $p = 0.0038$ ), respectively. The highest mean score for pediatric was reported in the eastern region (4.44,  $SD = 0.84$ ) followed by the central (4.41,  $SD = 1.04$ ) and western

**Table 1.** Characteristics of the respondents (N = 148)

Variables	n	%
Age (years)		
20–29	65	43.9
30–39	49	33.2
40+	34	22.9
Sex		
Female	76	51.3
Male	72	48.7
Nationality		
Saudi	97	65.5
Non-Saudi	51	34.5
Highest degree earned		
Bachelor	72	48.6
Other graduate degree	13	8.8
Master	50	33.8
PhD	13	8.8
Specialty		
Orthopedics	54	36.5
Pediatrics	26	17.5
Neurologic	40	27
Other	28	19
Saudi Commission for Health Specialties Registration		
Yes	120	81
No	28	19
Clinical or academic PTs		
Clinical PTs	112	75.6
Academic PTs	36	24.4
Years of practice		
<5	50	33.8
5–10	40	27
>10	58	39.2
Employment		
Ministry of Health	50	33.8
Other governmental position	42	28.4
University/college	29	19.6
Private	27	18.2
Geographical region		
Central	54	36.5
Western	35	23.7
Eastern	32	21.6
Southern	15	10.1
Northern	12	8.1

regions (4.31,  $SD = 1.05$ ), respectively. However, for women health, the highest mean score was reported in the central region (4.09,  $SD = 1.14$ ) followed by the eastern (3.94,  $SD = 0.98$ ) and western regions (3.66,  $SD = 1.24$ ), respectively.

## DISCUSSION

In this report, the importance of reforming and developing entry-level DPT curricula and post-professional train-

**Table 2.** Comparison of the physical therapists' perceptions regarding the content areas to be added or emphasized in the entry-level Doctor of Physical Therapy curriculum (N = 148)

	A Central region N = 54	B Western region N = 35	C Eastern region N = 32	D Southern and Northern regions N = 27
1. Radiology	4.35 (0.83)	4.34 (0.8)	4.22 (0.83)	4.07 (0.87)
2. Pharmacology	4.06 (0.86)	4.06 (0.97)	3.94 (0.95)	4.22 (0.8)
3. Pathology	4.30 (0.79)	4.23 (0.84)	4.16 (0.77)	4.22 (0.89)
4. Health-care systems:				
4.a. Administration (BD*)	3.69 (1.21)	3.94 (1.06)	3.34 (1.04)	3.01 (1.39)
4.b. Documentation and quality issues	3.81 (1.33)	3.71 (1.36)	3.44 (1.13)	3.26 (1.1)
4.c. Ethics	4.04 (1.36)	3.49 (1.34)	3.72 (1.11)	3.59 (1.05)
4.d. Legal issues (AD*, BD*)	4.01 (1.12)	3.83 (0.98)	3.47 (1.14)	3.04 (1.09)
4.e. Medical informatics	3.91 (0.98)	3.89 (1.11)	3.5 (1.05)	3.81 (0.74)
4.f. Insurance and finance issues	3.61 (1.07)	3.71 (1.02)	3.06 (1.11)	3.52 (1.16)
5. Evidenced-based practice	4.48 (0.97)	4.09 (1.09)	4.41 (0.91)	4.44 (0.97)
6. Differential diagnosis	4.52 (0.77)	4.46 (0.66)	4.16 (1.11)	4.44 (0.8)
7. Exercise physiology and prescription	4.61 (0.56)	4.66 (0.48)	4.41 (0.87)	4.30 (0.78)
8. Manual therapy (BD*)	4.44 (1.02)	4.69 (0.47)	4.28 (0.96)	3.96 (1.22)
9. Women's health (AD*, BD*)	4.09 (1.14)	4.21 (0.87)	3.78 (1.21)	3.30 (1.3)
10. Prevention and health promotion (wellness)	4.15 (0.94)	4.03 (1.01)	4.01 (1.02)	3.96 (0.94)

\*Statistically significance difference between regions ( $p < 0.05$ , Tukey-Kramer multiple-comparison test)  
 Values are means (SD) based on scale of 1 (strongly disagree) to 5 (strongly agree to). The results were reanalyzed and confirmed by using the Kruskal-Wallis test.

**Table 3.** Comparison of the physical therapists' perceptions regarding developing post-professional training (residency and fellowship) programs in the following subspecialties (N = 148)

	A Central region N = 54	B Western region N = 35	C Eastern region N = 32	D Southern and Northern regions N = 27
Cardiovascular/ pulmonary	4.44 (0.79)	4.44 (0.82)	4.06 (0.84)	3.96 (1.19)
Clinical electrophysiology	3.83 (1.11)	3.89 (1.13)	3.94 (1.29)	3.85 (0.82)
Geriatrics	3.96 (0.91)	3.86 (0.77)	3.78 (1.01)	4.07 (0.83)
Manual therapy	4.43 (1.09)	4.09 (1.12)	4.63 (0.83)	4.19 (1)
Neurology (AB*, BC*, BD*)	4.76 (0.58)	4.34 (0.8)	4.78 (0.49)	4.78 (0.58)
Orthopedics	4.48 (1.06)	4.29 (1.05)	4.69 (0.47)	4.74 (0.81)
Pediatrics (AD*, CD*)	4.41 (1.04)	4.31 (1.05)	4.44 (0.84)	3.56 (1.65)
Sports physical therapy	4.13 (1.17)	4.4 (0.77)	4.19 (1.18)	4.15 (1.17)
Women's health (AD*, CD*)	4.09 (1.14)	3.66 (1.24)	3.94 (0.98)	3.07 (1.47)

\*Statistically significance difference between regions ( $p < 0.05$ , Tukey-Kramer multiple-comparison test)  
 Values are means (SD) based on scale of 1 (strongly disagree) to 5 (strongly agree). The results were reanalyzed and confirmed by using the Kruskal-Wallis test.

ing programs (residency and fellowship) from the viewpoint of PTs from five geographical regions in SA was described. The perceptions of the entry-level DPT curriculum and residency and fellowship subspecialty programs were generally positive in all the geographical regions in SA. The western region PTs gave overall higher evaluation scores than the PTs in the other geographical regions.

The study results indicate that 4 of the 10 skills (40%) were ranked with significant differences among the PTs

from the five geographical regions in SA who assessed the entry-level DPT curriculum, and these four skills were administration in the health-care system, legal issues in the health-care system, manual therapy, and women's health. No significant differences between the PTs' ratings of the other six skills were noted among the geographical regions. Ratings for inclusion of administration skills in health-care systems were significantly different between the western region and the southern and northern regions, and ratings

for inclusion of legal issues in the health-care system were significantly different between the central region and the southern and northern regions (4.01, SD = 1.12, vs. 3.04, SD = 1.09) as well as between the western region and the southern and northern regions (3.83, SD = 0.98, vs. 3.04, SD = 1.09). Ratings for inclusion of manual therapy in the program were significantly different between the western region and the southern and northern regions, whereas ratings for inclusion of women's health were significantly different between the central region and the southern and northern regions as well as between the western region and the southern and northern regions.

Elias Tsepisand and Gioftsos<sup>23)</sup> and Schafer et al.<sup>24)</sup> reported findings that were similar to those of our study. Administration and legal issues are clearly very important for future DPT graduates in order to guide students from their roles as observers in school to eventual clinical practice. These results also suggested that manual therapy and women's health are important components of the entry-level DPT curriculum in all major health areas in which physical therapy is involved. Constantine and Carpenter<sup>25)</sup> provided evidence for the applicability of practice of the knowledge and skills gained in manual therapy through Master's education. Mueller et al.<sup>26)</sup> found that regarding entry-level professional education, PTs in public and private settings hold entry-level professional education to be important for effective clinical practice.

With respect to the residency and fellowship programs, only three (33.3%) of nine subspecialties were ranked differently by PTs between the geographical regions, and these three subspecialties were neurology, pediatrics, and women's health. No significant differences with regard to development of education programs for the other six subspecialties were noted between the scores from PTs from the five geographical regions.

Our study illustrates that the PTs' perceptions of post-professional training (residency and fellowship) programs were significantly different for the neurology subspecialty between the central region and the western region, the western region and the eastern region, and the western region and the southern and northern regions. Ratings for inclusion of the pediatric and women's health subspecialties were significantly different between the central region and the southern and northern regions and between the eastern region and the southern and northern regions, respectively. Landers et al.<sup>27)</sup> found that survey respondents (38%) from 7 states in the United States rated neurology and pediatric subspecialties as mandatory for developing post-professional training (residency and fellowship) programs.

In this study of the perceptions of PTs regarding the DPT curriculum and residency and fellowship programs, no significant differences in ratings were observed for 6 of 10 skills and for 6 of 9 subspecialties with respect to assessment by geographical region of SA. Such results have been noted by other researchers, such as Vargese<sup>28)</sup> and Sizer<sup>29)</sup>, who described curricular analysis and development in physical therapy education. The few differences that were observed in the evaluation scores from different regions may reflect the necessity for the findings to be incorporated

into the PT curriculum, particularly regarding the skills and sub-specialties.

In the present investigation, we used a number of techniques recommended by Tracy and Colbeck<sup>30)</sup> to increase the number of assessors recruited from the five regions of SA. The number of respondents was only 148; approximately one-third of the PTs in SA. We used the SPTA website techniques to advertise the study, e-mail group lists, social networking websites like Twitter and Facebook, and individualized invitations to all the major hospitals in the five geographical regions of SA. Also, we encouraged participation by organizing a raffle with mobile phones as prizes for two random participants.

There are several limitations in this study. First, the study sample was convenient, and this could affect the generalizability of the study findings. The sample, however, represented one-third of all PTs from five geographical regions of SA. Second, the study had a low response rate (27%); hence the findings may be subjected to response bias in which those who responded may be systematically different from those who did not<sup>31)</sup>. This limitation may also affect the generalizability. Third, data were collected, by inviting PTs via email to complete the web-based questionnaire, but this method has not been widely used in SA. Finally, several studies in SA have recently been conducted using web-based questionnaire services, such as Survey-Monkey<sup>19)</sup>. This method of administering a questionnaire, found to be more efficient in protecting data and preventing its loss and to be more convenient for respondents than any other method<sup>31, 32)</sup>.

In conclusion, the present study was descriptive and exploratory, and the findings highlight the need for physical therapy educational reform in all the geographical regions of SA. In the current era of globalization and advancement in health sciences, Saudi PT cannot afford to be left behind in developing national action strategies. A national strategy is needed to establish DPT and post-professional programs for preparing new physical therapists. New Saudi graduates need to have the competency to meet the international standards and requirements of the profession and the flexibility to adapt to constantly changing health service delivery models and workplaces, as well as to this century's demands for evidence-based and client-centered practice and the social demands for greater accountability.

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