

A cumulative physiotherapy education program assessment in Jazan university: Need for a healthy society in Saudi Arabia. A retrospective study

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ABSTRACT

The morbidity, co-morbidity and mortality rate is horrendously high in Saudi Arabia where road traffic accident (RTA) being the major cause. In the last 2 decades 7% population results in permanent disabilities. Due to this towering rate of RTAs, they suffer with physical, mental, socio-economic stress. For respective community needs focused Physical Therapy educational programs are constructed to reduce physical and economic impact on them also purpose of freedom from disability and improving the quality of life became of prior importance. This study is a retrospective study conducted collectively of students in the Physical Therapy department, Jazan University from 2009 to 2019. Data was collected and filtered on various criteria using Microsoft Excel to make it appropriate for the study Measure of Central Tendency (Mean Score) was used to calculate Highest and Lowest GPA for male and female students. Ratio analysis was done at the end to check the male and female faculty staff ratio and to analyze any significant differences between them. The Physical therapy graduate students from Jazan university the society by providing service at various hospitals, health care institutions, rehabilitation centers for the handicapped, defense establishment, special need & physically disabled children and community health centers

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INTRODUCTION

Over the last 2 decades, the road traffic accidents (RTAs) have rang the alarm bell for procuring a high number of casualties approaching around 86,000 and more than 611,000 injured victims with 7% of them sustaining permanent disabilities (Barrimah Iet al., 2012, Ghaffar et al., 2015). Following these, individuals suffer from various disabilities (physical, mental, socio-economic) which plant unwarranted burden on personal and Kingdom's economy. To reduce these impacts and improve the overall quality of life Physical therapy (PT) being a cost and efficient mode of treatment became a need of time for which PT teaching program became necessary which ascended in different universities all over Saudi Arabia. King Saud University, Riyadh commenced PT program around 33 years ago (Threlkeld 2007). The PT program was started late in Saudi Arabia when compared to other nations (Alghadir 2015, Threlkeld , 2007 and Hager-Ross 2007)

Since then, over the years many universities (mainly governmental) are running successfully PT program across the kingdom. Among universities in Saudi Arabia, lays a key university in the southern part named "Jazan University" which started PT program in the year 2009-2010, which has been operational since its commencement and running successfully in terms of theoretical teaching, hands on practical, mode of examinations, student development and research activities. The study was commenced with the aim to draw attention to the existing and future needs for a professional educational program in the southern part of Saudi Arabia to reduce sufferings from various physical, mental, social and economic disabilities by means of Physical therapy (PT). So, an education program to serve this purpose of freedom from disability and improving the quality of life became of prior importance, (Chahal et al., 2018).

The study was commenced with the aim to draw attention to the existing and future needs for a professional education program in the southern part of Saudi Arabia to reduce sufferings from various physical, mental, socio-economic disabilities occurring following RTAs etc. by means of Physical therapy (PT)

MATERIALS AND METHODS

This study was conducted in the Physical Therapy department, Jazan University as a retrospective study since the actual commencement of the program in 2009 till 2019. Students were not included in the study as individuals but rather as students' batches enrolled in the program, hence the study included 20 batches of male and female students collectively. Mean number of students enrolled in each level per semester was 47.23 ± 20.44 for male

students and 62.79 ± 24.53 for female students. Different parameters of students' performance have been collected, scrutinized, analyzed and narratively presented in the form of tables and paragraph description. The data was obtained from e-register of Jazan University. E-register is username and password accessible webpage, through which many academic processes and/or information are applied or available. Teaching timetable must be registered through this website which show list of courses and sections (i.e., if a single course have two separate theoretical groups as well as three separate practical groups, each of which is called section) offered during this semester, with reference to the course name, code, maximum number allowed to be enrolled in each section, actual number enrolled at the commencement of the semester, time of the lectures (i.e., day, time of start, time of end of each lecture and/or lab), staff member assigned to teach this session and venue.

After registering the timetable on this website, multitude of information and reports could be obtained from this website, like, student's information (e.g., personal information, study plan, courses cleared, courses being currently studied, remaining courses to be cleared, courses studied in other university that match and equalize one of our courses, his marks obtained in previous semesters, percentage of attendance during the current and previous semesters, semester he joined the university, total period of study in the university, warnings conferred, Grade Point Average (GPA), transcript). Information about the classrooms and labs also can be obtained through this website, i.e., course being allocated every hour, course code and staff member assigned, percentage of classroom utilization, etc. In addition to the above, information about staff members, their teaching load, as well as their schedules can be obtained from this website. List of students enrolled in the current as well as previous semesters along with their GPA can be obtained from this website. Few days before commencement of the semester, the timetable and available course (and different sections of the course) are published by this website to all concerned students who can register the courses they are interested in and or choose their suitable practical session in terms of day and time allocation. The staff members as well can see the list of students enrolled in their course and record their attendance through this website.

RESULTS AND DISCUSSION

Data was collected and filtered on various criteria using Microsoft Excel to make it appropriate for the study. Data was exported into SPSS version 20.0 to make further analysis. Initially descriptive statistics (frequency distribution) was used to analyze but on later stages for

Table 1. Number of seats allocated in PT program per year.

Year	Number of seats allocated
2009-2010	60 (male section) 40 (female section)
2010-2011	100 (male section) 100 (female section)
2011-2012	100 (male section) 100 (female section)
2012-2013	100 (male section) 100 (female section)
2013-2014	100 (male section) 100 (female section)
2014-2015	100 (male section) 100 (female section)
2015-2016	100 (male section) 100 (female section)
2016-2017	100 (male section) 100 (female section)
2017-2018	100 (male section) 100 (female section)
2018-2019	100 (male section) 100 (female section)

detail enquiry cross tabulation was used to categorize the data under various categories and Chi square test have been applied to check the significant differences between categories of data. Measure of Central Tendency (Mean Score) was used to calculate Highest and Lowest GPA for male and female students. Ratio analysis was done at the end to check the male and female faculty staff ratio and to analyze any significant differences between them.

Table 1 shows evidence for total number of seats allocated in PT program from the year 2009-2010 till 2018-2019. The year 2009-2010 consist of fewer seats when compared to later years as the program was started in the second half of 2009-2010 year with only 1 semester in action. For over the years, the number of seats has been kept consistent due to higher enrollment of students in the program to meet the growing demand of PT professionals.

The above table depicts evidence for total number of students enrolled in each semester and mean of students enrolled in each level per semester. During the first 6 levels of program conduction, the number of levels being taught had gradually increased till reaching the maximum number (six levels per semester) in the first semester of the academic year 2012-2013.

The above table shows the number of male and female expatriates working in PT program. Initially, the program started with few teachers, which increased to nearly double fold as the strength of students increased in following years. In current, the PT program has sufficient man force to run the program in a smooth and efficient manner.

The above table represents the number of Saudi faculties (male and female) incorporated in the PT program.

Table 2. Number of students enrolled in each semester, and mean number of students enrolled in each level per semester.

Semester	Male		Female	
	Per semester	Mean no. in each level/semester	Per semester	Mean no. in each level/semester
First Semester 2009-2010	80	80	113	113
Second Semester 2009-2010	83	41.5	120	60
First Semester 2010-2011	107	35.66	169	56.33
Second Semester 2010-2011	123	30.75	218	54.5
First Semester 2011-2012	169	33.8	277	55.4
Second Semester 2011-2012	189	37.8	312	62.4
First Semester 2012-2013	223	37.16	311	51.83
Second Semester 2012-2013	252	42	348	58
First Semester 2013-2014	276	46	369	61.5
Second Semester 2013-2014	307	51.16	397	66.16
First Semester 2014-2015	362	60.33	427	71.16
Second Semester 2014-2015	386	64.33	456	76
First Semester 2015-2016	384	64	477	79.5
Second Semester 2015-2016	404	67.33	488	81.33
First Semester 2016-2017	413	68.83	485	80.83
Second Semester 2016-2017	402	67	491	81.83
First Semester 2017-2018	386	64.33	474	79
Second Semester 2017-2018	338	56.33	429	71.5
First Semester 2018-2019	277	46.16	365	60.83
Second Semester 2018-2019	268	44.66	362	60.33

Table 3. Total number of expatriate as faculties.

Year	Male faculties	Female faculties	Total
2009-2010	7	6	13
2010-2011	7	8	15
2011-2012	13	11	24
2012-2013	18	10	28
2013-2014	18	10	28
2014-2015	18	10	28
2015-2016	17	11	28
2016-2017	18	12	30
2017-2018	16	9	25
2018-2019	16	7	24

Table 4. Total number of Saudi faculties.

Year	Male faculties	Female faculties	Total
2009-2010	NIL	NIL	NIL
2010-2011	1	NIL	1
2011-2012	2	NIL	2
2012-2013	NIL	NIL	NIL
2013-2014	3	5	8
2014-2015	3	2	5
2015-2016	4	2	6
2016-2017	3	3	6
2017-2018	2	4	6
2018-2019	3	7	10

As universities in Saudi Arabia follow international standards for recruiting faculties, a minimum of master degree is required for appointment of lecturer while bachelor degree in PT for a demonstrator. As time passed by, the department saw an increase in recruitment of Saudi faculties after completion of their master program. "VISION 2030" is a plan aiming to the achievement of an ever advancing health care, educational, social, cultural and economic investments and improvement.

The above table portrays changes and improvements in terms of curriculum implementation and student developments. The major changes performed were drafting of the program, addition of prerequisites, modifications in the course specification for Electrotherapy I and

Exercise therapy II for level II and III. A major transformation was made in the mode of examinations, wherein method of 2 midterm exam (theory and practical) and 1 final (theory and practical) was modified to 2 quiz (theory only), 1 midterm (theory and practical) and 1 final exam (theory and practical). In 2016, we were enthralled to update the study plan in an attempt to upgrade the quality of our outcomes (i.e., students' capabilities and skills) to match the international standards and benchmarks. The department received suggestions to update the program study plan (i.e., sequence of courses) as well as courses' contents and structure from an expert from one of the highly esteemed universities in USA, (Plack 2014).

Table 5. Significant changes in curriculum and student development.

Year	Significant changes in curriculum and student developments
2009	Drafting of PT program
2010	Addition of prerequisites: As all Saudi Universities entertain an American credit hour system, the whole program is arranged into semesters or levels (level 1 to level 8), each of which include number of courses. Each course has a specific name with individual code that represents its sub-specialty affiliation and its sequence in this sub-specialty. Each course (e.g., course B) requires the clearance of a pre-requisite (e.g., course A), which means that the student must clear course A before he/she registers for course B. He/she may register a course from any level provided that the student clears all pre-requisites of that course, but within the maximum credit hours allowed for him/her to register based on the attained GPA.
2011	Changes in course specification for Electrotherapy I and Exercise therapy II
2012	NIL
2013	Changes in mode of examination from (2 mid-term+1 final = 3 exams) to (2 quiz+1 mid-term +1 final = 4 exams)
2014	NIL
2015	NIL
2016	a) Updating course specification perform in subjects for all levels. b) Received suggestions to update the program study plan (i.e., sequence of courses) as well as courses' contents and structure from an expert from one of the highly esteemed universities in USA.
2017	NIL
2018	NIL

Year	Highest GPA score among male students	Highest GPA score among female students
2009-2010	3.82	4.65
2010-2011	4.55	4.68
2011-2012	4.58	4.74
2012-2013	4.51	4.77
2013-2014	4.53	4.64
2014-2015	4.65	4.81
2015-2016	4.84	4.83
2016-2017	4.87	4.90
2017-2018	4.87	4.93
2018-2019	4.88	5.00

Table 6 denominates the highest GPA scores among male and female students. By looking at the table it can be said that the GPA score has been on a gradual increase among both male and female students respectively from 2009-2010 till 2018-2019, except in 2012-2013 for male and 2013-2014 for the female students where there was a narrow decrease in GPA when compared to earlier years. Interestingly, female students have scored higher GPA score in all years from 2009-2010 till 2018-2019 in contrast to their male counterpart except in 2015-2016 where males score higher GPA than females, wherein the difference in score just being 00.01 which can be considered negligible. According the authors, this can be attributed to few factors. Firstly, it's a general trend seen all over the world that females devote more sitting hours when it comes to academics. Secondly, female students had higher attendance in college which reflects their keenness towards studies. Thirdly, as per the mid-

Year	No. of male scholars	No. of female scholars	Total no.
2009-2010	4	NIL	4
2010-2011	5	NIL	5
2011-2012	5	NIL	5
2012-2013	5	NIL	5
2013-2014	4	NIL	4
2014-2015	4	3	7
2015-2016	4	6	10
2016-2017	6	5	11
2017-2018	7	4	11
2018-2019	6	1	7

Year	No. of male	No. of female	Total
2009-2010	NIL	NIL	NIL
2010-2011	NIL	NIL	NIL
2011-2012	NIL	NI	NIL
2012-2013	10	NIL	10
2013-2014	NIL	10	10
2014-2015	NIL	10	10
2015-2016	NIL	NL	NIL
2016-2017	NIL	NIL	NIL
2017-2018	NIL	NIL	NIL
2018-2019	NIL	NIL	NIL

dle eastern culture, males are requested to attend to more outdoor responsibilities than females during the afternoon time that might affect their concentration and attention during their study, which give female students more privilege over male students and provide them with extra time for studying at home. Finally, female students are putting great efforts in learning the subject to get a job hence, to make them financially independent.

Jazan University has been a motivator and backbone for meritorious students who have performed excellence in their bachelor's programs after being recruited as demonstrators in the department. The university grants scholarship to these meritorious demonstrators to fulfill their dreams of pursuing master's program and Ph.D. provided that they acquire an approval for joining a well-structured program that is fulfilling the needs and goals of the department as well as the university and falls within the top 500 Universities all over the world as per Shanghai Ranking and being approved as an equivalent university by the Saudi ministry of education.

The above table displays number of students participated in foreign exchange program over the years in PT. As, Jazan University believes in quality education, to fulfill this approach it sent selected (based on their overall GPA performance), 10 male and 10 female students to Zuyd University, Heerlen, Netherlands under an exchange programs for 1 month every year. Both male and female students were accompanied with 1 male and 1 female faculty. The main objective of the exchange program was to upgrade their knowledge and acquaintance of new information and expose the students in terms of innovation and research technology to the field of PT. The exchange program was conducted for 3 consecutive years, but stopped due to some issues that falls beyond the capabilities of the department to solve or to sort out.

Current staff ratio:

Designation	Male	Female
Associate Professor	1	0
Assistant Professor	5	1
Lecturer	11	8
Demonstrator	1	4
Technicians	2	0

Saudi Arabia is one of the fastest growing economies in the world (Alghadir *et al* 2015). With time its requirement of manpower for PT has ascended (Awad Al-Omari *et al.*, 2015) As, Saudi Arabia is a large country by size, the government has setup universities instituted in all major cities. Jazan University is situated in the southern part of Saudi Arabia. As per today it is working at its best by creating employment and serving the society. But reaching to the current scenario was at a snail pace as there were few key issues involved in the early days while starting the PT program, like all necessary equipment needed for the conduction of practical sessions were not available, during the first year only one classroom was allocated for each section (male and female). Although being enough during the first year, more classrooms were needed during the following years. Only two labs were available for each section. The male laboratories had some deficiencies in electric supply for the first few months of conduction with lack of projectors or cupboards to hold tools. Cupboards were installed later during the first year. With increasing number of levels and students enrolled in each level, more laboratories were needed which took some time for delivery. Some allocated laboratories were undersized in area that did not suffice for the number of students supposedly allocated in this lab. Laboratories were allocated in different building other than that of the classrooms, which greatly affected the conduction of midterm exams that required the utilization of all available facilities. But, with the active support from the university's administrative, all these shortcomings were resolved. Hence as per today, the PT program at Jazan University is working in multifactorial dimensions and has been a shining star in the kingdom since it commenced in the year 2009-2010. The program has provided a 360 degrees competency with other programs running under Jazan University (Al Maghraby *et al.*, 2013 and Bithell 2007). The department as of today has sparkling staff members with degrees in doctorate and master's with specialties in Orthopedics, Cardio-respiratory, Neurology, Sports, Pediatrics and Basic sciences who impart both basic and advanced knowledge to students, (Ahmad *et al.*, 2015).

CONCLUSION

Students graduated from PT department are working in different setups like private clinics, rehabilitation centers, military hospitals, government universities, hospitals and sport teams in different locations of Saudi Arabia. This accomplishment of young Saudi male and females has developed a work force which is working for its citizens, enabling the kingdom to be self-efficient in terms of delivering health care and rehabilitation thus, achieving the target of 100 percent Saudization which is the main goal of "VISION: 2030". The take home message for others thinking of establishing the same curriculum in their university or individuals willing to work as a physical therapist is that, PT as a profession is of a great demand and importance in serving the society by providing relieve from pain and disabilities and improving the overall quality of life.

AUTHOR'S CONTRIBUTION

Aksh Chahal and Mohammed Qasheesh undertook formulation of the article, Amr Shalaby, Mohammad Abu Shaphe and Marwa Hanny collected data, Junaid Ahmed Kirmani and Rashid Ali performed typing work while Pooja Chaudhuri and Nitesh Malhotra actively participated in editing the article.

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