CASE STUDY

CHOOSING ALTERNATIVE AND AUGMENTATIVE COMMUNICATION FOR CHILDREN WITH AUTISM: A CASE STUDY

ABSTRACT

The triad of symptoms seen in autism, comprising impaired social skills, verbal and non-verbal communication, and stereotypical behaviors, may be severe enough to have a debilitating effect on a child's life which disturbs the child psychosocial behavior. This study discusses the usage of a low tech alternative and augmentative communication (AAC) system chosen for one such child (referred to as F.S.), having profound speech and language difficulties that interfered with her everyday communication, and hindered her participation in educational and social activities. AAC is one of the most recommendable and highly reliable tools to assess the children disability and the burden caused by it. AAC is a method of communication that utilizes all available modalities to help individuals with severe expressive language deficits. This AAC method was a (modified) picture exchange communication system (PECS), to maximize her current skills and introduce others.

It was seen after a period of six months that her language, communication and social skills had improved day by day. With the help of AAC, the subject was able to make requests, protest and fulfill her basic communicative requirements.

Keywords
Autism, Alternative Communication, Augmentative Communication, Communication, Speech, Language, PECS.

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INTRODUCTION

Autism Spectrum Disorder (ASD) and autism are terms that are used for a group of complex disorders of neurological development[1]. These disorders are characterized by difficulty in social interaction, communication, and repetitive behaviours.

The ASD umbrella comprises autism, Rhett's syndrome, childhood disintegrative disorder (CDD), pervasive developmental disorder - not otherwise specified (PDD-NOS), and Asperger's Syndrome.

Symptoms of autism are subject to individual differences, thereby making it a spectrum disorder [2]. For individuals with severe expressive language delays as a result of autism, Alternative and Augmentative Communication (AAC) is atherapeutic option.

The American Speech and Hearing Association (ASHA) defines AAC as an area of practice that attempts to compensate, either temporarily or permanently, individuals with severe expressive communication disorders[2]. It is multimodal and flexible, permitting individuals to use every mode possible to communicate. The prime purpose of AAC is to salvage the abilities of individuals and maximize communication through other media.

AAC can be unaided (use of own body to communicate e.g. eye contact, gestures, etc.) or aided (use of an external tool to communicate e.g. picture boards, diaries etc). AAC systems are modified to cater to individual needs.

METHODOLOGY

A cross sectional quantitative study was conducted in the clinical setting based on an intervention provided to an individual over a period of 6 months.

The sessions were structured, with a one- on-one approach where the clinician sat opposite to the client. Intervention relied on heavy tangible reinforcement through variable and intermittent reinforcement schedules. The data was collected by reported observations of two speech- language therapists, subjective and objective notes taken every session, and interviewing the mother.

The client attended 30 minute speech and language therapy (SLT) sessions thrice a week at Ziauddin College of Speech Language and Hearing Sciences (ZCSLHS) from February to August 2012.

CASE PRESENTATION

Fatima S. (F.S. henceforth - complete name was not provided to maintain privacy) is a seven year old female diagnosed with autism and developmental delay. She was referred to ZCSLHS to receive therapy, at six years of age.

F.S. was born with a bilateral cleft lip and palate, had seizures as a baby and had a history of ear infections, as well as other complications.

Speech and language milestones were profoundly delayed, since vowel vocalizations started at the age of six years.

A psychologist diagnosed F.S. with autism. The speech language therapist was unable to conduct standardized assessments to formally judge the levels of speech, language and communication during this study period.

The family and clinicians mutually agreed to provide F.S. with functional communication, i.e. communication relevant to her own environment. As she was unable to communicate through verbal means, AAC was taken into consideration. Therefore, PECS was selected. PECS[3] is an AAC method used to teach functional communication to individuals such as F.S, with limited speech and language.

Additionally, a visual schedule was introduced to familiarize her with her routine.through variable and intermittent reinforcement schedules. The data was collected by reported observations of two speech- language therapists, subjective and objective notes taken every session, and interviewing the mother.

The client attended 30 minute speech and language therapy (SLT) sessions thrice a week at Ziauddin College of Speech Language and Hearing Sciences (ZCSLHS) from February to August 2012.

As of August 2012, F.S. played alone, presented with attention, sensorial and behavioral issues, was unresponsive when called by name (4/6 times), and maintained fleeting eye contact when engaged in a one - on - one interaction. However, F.S. learnt to communicate through non-verbal avenues; she took the communication partner to the desired objects or took out the picture card of the item from her modified AAC.F.S. was trained to use modified PECS by heavily reinforcing every correct response.

F.S. was familiar with 60 to 80 items used in her milieu and was able to use them to fulfill her needs. F.S. touched items that she needed; therefore 'touching' was made her communicative method. Each time she touched an object she was immediately rewarded tangibly and her behavior was reinforced.

A camera was used to take pictures of everyday objects, starting with foods and items of interest, and gradually progressing towards pictures of clothes and places. The items being touched were replaced by pictures.

Additionally, F.S. began to produce a combination of vowel sounds. She had started combining vowels with the initial developmental consonants to produce 'mama' and 'baba'.

RESULTS

After six months of SLT, results were compared to assess the progress made by F.S.[4,5]

Discussions with the mother revealed that a helpful change had occurred through PECS. The additional intervention of sound therapy helped her express her emotions as well. However, much is yet to be achieved.

DISCUSSION

The clinicians working with F.S. reviewed her physical, sensory and cognitive abilities, as well as her chronological age and lexical skills prior to choosing an AAC device /method[6,7]. After much consideration it was decided to use a modified version of PECS. This low tech AAC system was chosen to maximize her current skills and develop new ones. The parents were counseled to follow up on therapeutic strategies in other environments.

Beginning of Treatment (February 2012)	Current level of skills (August 2012)
1. F.S. was unable to point to objects when asked where they were.	1. F.S. is able to identify familiar items and point to them (e.g. pointing to apple when asked to show 'apple').
2. F.S used random gestures to communicate. Communication partners were not able to understand said gestures.	2. F.S. uses 'touch' for communication, displaying intention, towards familiar items or tasks (e.g. touching the food card for food).
3. F.S. was not seen vocalizing any sounds.	3. F.S. vocalizes vowels, and produces CVCV combinations
4. F.S. was unable to follow instructions.	4. F.S. is able to follow single-step instructions.
5. F.S. was unable to wait for her turn.	5. F.S. is able to wait for her turn when asked.
6. F.S. displayed disruptive behaviors (e.g. biting, snatching, etc).	6. F.S. displays reduced number of disruptive behaviors.
7. Receptive language skills were judged to be profoundly delayed.	7. F.S identifies 60-80 familiar objects, people and events when shown her PECS cards.
8. F.S. was not aware of or interested in everyday events	8. F.S. seems aware of an event when shown on a PECS card (e.g. brush her teeth).
9. F.S. was unable to identify sequence of daily activities.	9. F.S. is able to identify what comes next in a sequence when shown a PECS card (e.g. when 'toilet' card is shown to F.S. she knows what to do next - go to restroom, take a shower).

After providing intensive therapy to F.S., she was able to express her needs effectively. The benefits of using AAC with her have been highlighted in the table above.[8]There was an improvement in her receptive and expressive language, phonological and social skills. The AAC and visual schedule helped her with predictability, requesting and protesting.[9,10]

Through PECS, F.S. learnt to exchange a single picture for a desired item, and will eventually learn to construct picture based sentences and add attributes in her request.

CONCLUSION

Using AAC for communicatively challenged individuals helps establish effective functional participation in every day life. In the case of F.S., it was highly effective in shaping random gestures into meaningful ones that conveyed intention, thereby enhancing interaction with people in society. The modified PECS boosted her social and communication abilities; not only did she understand others better now, but also made herself understood. F.S. now stands at the threshold of developing her literacy skills through the same approach.

The need to have professional training for successful intervention for communicative disorders and to develop AAC systems/devices is strongly felt in Pakistan. The skills of F.S. could have been harnessed in the first few years of her life, reducing the despair and frustration of her parents and others in similar situations.

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COMPARATIVE STUDY ON THE EFFICACY OF MAITLAND TECHNIQUE (GRADE IV) AND MULLIGAN TECHNIQUE, IN THE TREATMENT OF FROZEN SHOULDER

ABSTRACT

OBJECTIVES
To compare the effectiveness of Maitland technique (Grade IV) and Mulligan technique for the treatment of frozen shoulders.

STUDY DESIGN
Experimental Study.

STUDY SETTINGS & PARTICIPANTS
This study has been conducted at Ziauddin Hospital with 50 volunteers who participated in the study that were equally divided into two groups (pre and post treatment groups). Subjects were randomly assigned to each group.

INTERVENTIONS
Intervention given to Group A was Maitland Technique (Grade IV) and Group B, Mulligan Technique.

OUTCOME MEASURES
Functional activity of shoulder is measured by using Shoulder Pain and Disability Index (SPADI) score, Pain is measured by VAS Score, and Range of motion, measured by Goniometer both before and after treatment.

RESULTS
Both the treatments showed positive results but Mulligan technique was found to be more effective. The total SPADI score was 15.48 before and 11.92 after the Mulligan technique and 15.32 before and 13.16 after the Maitland technique.

CONCLUSIONS
It is evident that Mulligan technique is more effective for the treatment of frozen shoulder compared to Maitland technique.

CONCLUSION

Key Words
Frozen Shoulder, Maitland Technique, Mulligan Technique, Shoulder Pain And Disability Index (SPADI), Range of Motion (ROM), Visual Analogue Scale (VAS)

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INTRODUCTION

Adhesive capsulitis is one of the most common causes of all peripheral joint disorders. The shoulder is made to stretch and produce a large amount of movement, where few movements take place through the shoulder blade and chest wall; however, many movements come about through ball and socket joint[1]. The frozen shoulder also known as adhesive capsulitis is a situation where shoulder joint becomes very stiff, painful and tight, further the shoulder joint is also inflamed that ultimately leads to shoulder pain and restricted Range of Motion (ROM) of shoulder in capsulitis pattern[2]. The patient initially suffers from the situation of pain or freezing, later the condition of frozen and finally defrosting condition characterized by the limited ROM[3,4]. The capsular pattern in the shoulder is characterized mostly with the limitation of passive lateral abduction and rotation.

The presence of capsular pattern referred to diagnosis of shoulder capsulitis. Whereas, ROM differs on the condition of the patient, on which stage of capsulitis the patient is, yet he or she still has limitations of passive ROM in a capsular pattern[5]. The Adhesive capsulitis is categorized through insidious & progressive loss of active and passive mobility in glenohumeral joint likely because of capsular contracture, however the researches have been conducted in last century, etiology and pathology of frozen shoulder remain enigmatic [6,7].

According to Reeves, Adhesive capsulitis has three stages of disease:

Stage 1: Characterized by pain lasting 2 – 9 months.
Stage 2: Pain sub-sides, but stiffness is marked lasting 4 – 12 months.
Stage 3: Pain resolves an improvement in the range of motion.

Where II and III stages of adhesive capsulitis and ROM are considerably restricted, where restriction of movement is in the capsular pattern i.e. external rotation is most limited, followed by limitation in abduction and internal rotation respectively [8].

However, some authors have describes the frozen shoulder in primary frozen shoulder, that leads to which corresponds to idiopathic. The secondary corresponds to traumatic capsulitis or if some other medical condition is present alongside [9]. Actually, it persist for longer period as compared to stated period, whereas, it does not completely recovers, it never gets full recovery. The purpose of the treatment is to get the relief, sustain the range of motion and ultimately to restore function. The clinical syndrome includes limited ROM, muscle weakness and pain. However, few researchers have debated that frozen shoulder is a self-restricting disease lasting as little as 6 months; further some more researchers recommended that frozen shoulder is more prolonged disorder causing long term disability. Adhesive capsulitis is more reactive in the; diabetic patients as compare to general population. It ranges from 10% to 20% in the diabetic patients [10], whereas, in contrast to that it is only 2% to 5% in the general public [11]. Furthermore, it is more common in the females as well with age range of about 40 to 70 years, where the probability of recurrence is very minimal.

Various treatment exist for the treatment of adhesive capsulitis, which ranges from rest and analgesics, physical therapy, electrotherapy, arthroscopic/open surgery, injections, acupuncture, manipulation under anesthesia and Corticosteroid, exercise,, Transcutaneous electrical nerve simulation (TENS), Ultrasound, deep heat and ice, whereas, as such no treatment is being considered as standard treatment [12].

Maitland Grade IV Technique

The Maitland concept is a process of analyzing, investigating and also for the treatment of neuro-musculoskeletal disorder through manipulative physiotherapy [13]. There are V grades of Maitland Techniques, discussed as follows:[14]

I: Minor amplitude in the start of ROM
II: Large amplitude could not touching end of ROM
III: Large amplitude touching restricted ROM
IV: Minor amplitude at end of restricted ROM
IV: Minor amplitude and high speed at end of restricted ROM

Whereas, the Grade I & II are mainly applied for the treatment of the joints limited with pain. The vacillations can have inhibitory effect on perception of painful stimuli through frequently motivating mechanoreceptors which block nociceptive pathways at the brain stem levels or spinal cord. Those no stretch motions can help in moving synovial fluid in improving nutrition of cartilage. Appropriate selection of mobilization technique for treatment can only take place after a thorough assessment and examination [15]. As mentioned above, the capsulitis is challenging for therapeutic as well as rehabilitation purposes.

Mulligan Technique

Mulligan's Mobilization with Movement (MWM) is nowadays getting reputation in the treatment of the musculoskeletal situations. Mulligan in 1993[16] explained it is a manual therapy, where the force is being applied in the form of Glide, on the motion position and it is applied in the condition when the impaired joint could freely move along pain/impediment. It has been highlighted that the treatment through the MWM yields its impact by rectifying the faulty positions of the joints, which occurred due to strains or the injuries[17,18]. Mulligan technique is applied for reducing the pain and improves functionality in the patient of adhesive capsulitis and reduces stiffness of shoulder.

Mulligan's technique is being applied in flexion, elevation and internal rotation, where 3 sets of ten repetitions can be applied having rest intervals of 30's during each set. Patients were treated for 5 days per week for 3 weeks [19].

Kochar and Dogra (2002) concluded through quasi-randomized-clinical Mobilization in addition to Mulligan & adding with the ultrasound (US), by randomizing the 66 subjects into three groups, one group is unable to visit hospital for the physiotherapy. Where, the 10 treatment sessions were arranged for the treatment, where the treatment was given through MWM and US, it was delivered within 1st three weeks & continued with a progressive exercise regime till next 9 weeks. The measurement was evaluated through Pain Visual Analogue Scale (VAS) of 10 cm, a weight lifting test, grip strength and self-assessment of patients. It concluded that the combination of MWM and US yields better results as compared to US only. The group who got the treatment through the combination of MWM and US showed 07% improvements as evaluated through PVAS scale[20].

Poonam and Neeti (2010) conducted the study that Maitland technique yields immediate pain relief along with increase in ROM. The study was conducted on the 50 randomly selected patients suffering from the frozen shoulder to check the efficacy of the two treatments; one

is Maitland glide & hot pack while other is Active Exercise & hot pack. They concluded that there is significant improvement in the patients got treatment of Maitland with hot pack as compared to active exercise with hot pack [21]. Teys et al. stated that clinically meaningful improvements in both ROM and pressure pain threshold occur immediately after the application of Mulligan's technique in the pain-limited shoulder[22].

METHODS

Convenience sampling design is used on the OPD patients at Ziauddin Hospital. The study has been conducted on the 25 random patients suffering from Adhesive capsulitis that include both male and female patients. The consent was taken from each subject before participating into the study, thereafter; the subjects were randomly divided into groups after evaluating the inclusion and exclusion criteria. Where, randomization was executed with the help of random numbers in each group.

Group A
25 patients were selected with age range of 35 to 60 years. Group A was treated with the Maitland technique IV.

Group B
25 patients were selected with age range of 35 to 60 years. Group B was treated with the Mulligan technique.

Variable of the Study
In the study following variables are being tested:
i. Shoulder pain and disability index (SPADI)
ii. Ranges of Motion (external rotation and abduction)

Inclusion Criteria
Patients fulfilling following criteria were included in the study:
i. Patient within age bracket of 35 years to 60 years
ii. Pain in shoulder movement for the period of at least 2 months
iii. Diagnosed frozen shoulder or adhesive capsulitis

Exclusion Criteria
i. The patients with radiological investigation were not included in the study
ii. Patients with Inflammatory arthritis were not included in the study.
iii. Post fracture complication, neurological involvement, diabetic patient or any cardiac disorder.

Study Setting
The study is being conducted on fifty patients including male and female, with age range of 35 years to 60 years. The patients were diagnosed Adhesive Capsulitis by the orthopedic doctor and recommended to the Physiotherapy department of North Nazimabad and Clifton Campus of Ziauddin Hospital, Karachi.

Study Duration
The study has been conducted on the outdoor (OPD) patients of Ziauddin Hospital; the study was conducted for the period of one month.

Statistics
SPSS version 20 software was used for analysis of the gathered data. Sample-test was done to analyze within-group variables for pain and disability on SPADI. External rotation and abduction range were analyzed by Wilcoxon Signed Ranks test for within-group and Mann-Whitney test for between-group variables. The study was significant if the resultant values were <0.05.

Reliability Procedure
Cronbach's Alpha coefficient of the reliability for the measurements were found as 0.96 for the variable Abduction (pre and post), 0.99 for the variable External Rotation (pre and post treatment), 0.93 for the variable pain and for the variable Disability Index (SPADI) was 0.904.

RESULTS AND ANALYSIS

Sample of 50 patients were included in the study with mean age of 50.34 + 5.62. It was seen that out of 50 randomly selected patients 27 (54%) were male while 23 (46%) were females. Patients were divided into two groups equally i.e. 25 patient per group. Group A was treated by Maitland Technique while Group B was treated by Mulligan Technique. Pre and Post Range of motion of shoulder as well as pain and deformity were noted of the respective treatment given. It is transpired from the descriptive statistics that mean range of Maitland pre abduction and post abduction is 96.8 and 105.60 respectively, which shows an increase in range of 8.8 in Abduction. At the same time pre and post Mulligan Technique, ranges of abduction has shown an increase of 12 which was 103.80 before and 115.80 after treatments. In the same way, External rotation was also measured before and after each treatment in both groups. It was seen that external rotation before the treatment was 65.56 and afterwards 68.0 in Group A with a mean difference of 2.44 while in Group B external rotation before treatment was 64.24 and later 69.28, with significant difference of 5.04 in the range.

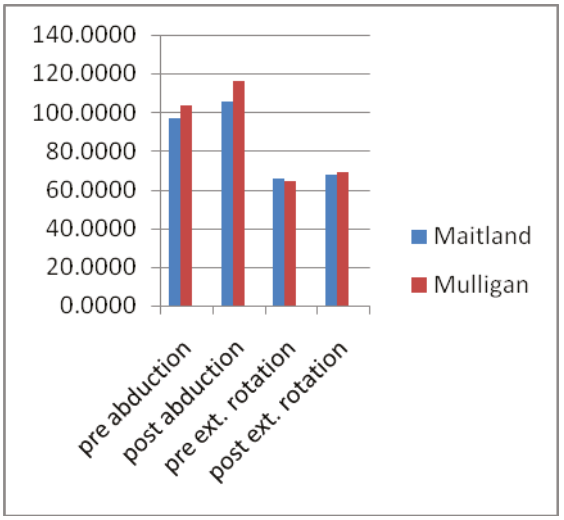

Fig 1 comparison between ROM of abduction and external rotation in both groups

Pain and disability were also calculated in patients along with comparison of total SPADI scores. It was found that in Group A, calculated pain was 7.60 and disability 7.72 before treatment and 6.36 and 6.80 after the treatment. While Group B Pre treatment pain was 7.84 and disability 7.64 but after treatment there is remarkable reduction in both pain and disability i.e. 5.96 each. The total SPADI score is 15.32 before and 13.16 after the treatment in Group A. In Group B, the total SPADI score is 15.48 before and 11.92 after the treatment.

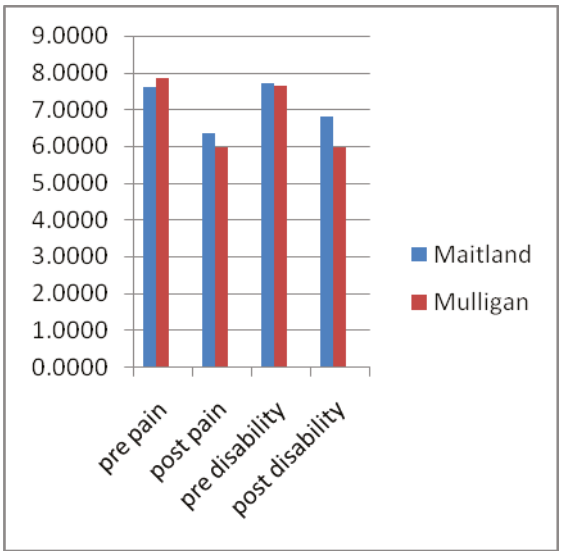

Fig 2 Comparison of SPADI score for both group

It was also transpired that both these techniques are effective in the management of frozen shoulder with p-value 0.00 by applying paired sample test (Table 1).

At the same time in comparison, it is evident that there is a prominent difference in the results of both techniques. It was observed that pain and disability reduction after Maitland was only of mean difference 2.16 on SPADI scoring while a difference of 3.56 in patients who underwent Mulligan Technique (Table 2).

DISCUSSION

The present study was designed to know the efficacy of Maitland mobilization techniques in the treatment of shoulder adhesive capsulitis by comparing with mulligan technique.

While analyzing the outcome measures of this study, it was observed that both the groups have shown significant improvement over time. Statistical analysis of the data in pre- and post intervention SPADI values illustrated difference (shown by decreasing trends in Table 1 and Figure 2 for both groups). Though both groups have significantly reduced pain scores, the difference was found in favor of Group B in between-group comparison (Table 1). Both the groups shown reduction in pain scores, and this is in agreement with previous study suggesting that mobilization reduces pain[23] due to neurophysiologic effects on the stimulation of peripheral mechanoreceptors and the inhibition of nociceptors. The activation of apical spinal neurons as a result of peripheral mechanoreceptor by the joint mobilization produces presynaptic inhibition of nociceptive afferent activity[7].

Mechanical force during mobilization may include breaking up of adhesions, realigning collagen, or increasing fiber glide when specific movements stress the specific parts of the capsule[24]. Furthermore mobilization techniques are supposed to increase or maintain joint mobility by inducing biological changes in synovial fluid, enhanced exchange.

Maitland's rhythmic oscillations also have an effect on circulatory perfusion. The ongoing circulatory stasis may lead to ischemia and the potential for intraneural odema, inflammation, and fibrosis. Mobilization has aneffect on fluid flow as blood flow in the vessels supplying the nerve fiber and synovial fluid flow surrounding the avascular articular cartilage. This, by a pressure gradient, is generated which helps in facilitating exchange of fluid, that is, increased venous drainage and dispersing the chemical irritants. This causes a reversal of the ischemia, edema, and inflammation cycle and reduces joint effusion and relieves pain by reducing the pressure over the nerve endings.

Table 1:

Group		Paired Differences		T	Sig. (2-tailed)
		Mean	SD		
Maitland	prepain – postpain	1.24	.96	6.39	.00
	predis – postdis	.92	.27	16.61	.00
Mulligan	prepain – postpain	1.88	1.23	7.60	.00
	predisability – postdisability	1.68	1.10	7.58	.00

Table 2: Comparison of Total SPADI Score of Both Groups

	Maitland Technique (Mean)			Mulligan Technique (Mean)		
	Pre	Post	Difference	Pre	Post	Difference
Pain	7.60	6.36	1.24	7.84	5.96	1.88
Disability	7.72	6.80	.92	7.64	5.96	1.68
Total SPADI	15.32	13.16	2.16	15.48	11.92	3.56

Mulligan's technique and stretching exercise both strategies are effective in reducing pain and restoring ROM and function in patients with adhesive capsulitis in the stiffness phase. Compared with stretching exercises, Mulligan's technique led to better improvements in terms of pain, ROM, shoulder scores. Mulligan's technique was chosen for this study because it has the advantage of increasing ROM along with providing analgesia. Mulligan's technique was compared with stretching because stretching exercises are the mainstay of exercises in joint limitations; however, in contrast to Mulligan's technique they lack an analgesic effect.[25] Scaringe et al.[26] have previously used the Mulligan's technique in addition to chiropractic manipulations of the spine for a golfer with chronic shoulder, arm and neck pain. The authors followed the patient for 29 weeks; however, they used multiple techniques, which made it difficult to delineate the specific effects of a certain treatment.

CONCLUSION

The study revealed that the Mulligan technique is more effective to the patients as compared to the Maitland technique of the treatment of the frozen shoulder. The descriptive analysis shows that the post effects of the mulligan technique is more effective in comparison to the Maitland technique which means that the frozen shoulder should be treated by the Mulligan technique.

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PREVALENCE OF LOW BACK PAIN IN HOME-BASED PHYSICAL THERAPISTS

ABSTRACT

BACKGROUND

To find out the prevalence and to highlight the risk factors of low back pain in home-based physical therapist.

STUDY DESIGN AND SAMPLING TECHNIQUE

A cross-sectional survey study with non-probability convenience sampling technique

STUDY SETTING AND PARTICIPANTS

200 physical therapists that were doing home patients in Karachi, either without or with their jobs were the part of this study. They were either self-employed or affiliated to different hospitals..

DATA COLLECTING TOOL AND DATA ANALYSIS

A questionnaire was used to collect data, which was adopted from Nordic questionnaire and other researches. The collected data was analyzed on SPSS 20.

RESULTS

93 % home-based physical therapists had experienced the work related pain or discomfort in the last 12 months. Among them the low back is the highly affected site with prevalence of 81.5%. Their working status of job in physical therapy department or academics with home-based physical therapy had a significant difference in presence or absence of work related pain or discomfort.

CONCLUSION

This study shows that home-based physical therapists are more prone to develop work-related problems and had higher prevalence of work-related LBP. This may be due to more work load, lower bed height of home patients, poor ergonomics at homes of patients and poor posture of physical therapists.

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Key Words
Home-based Physical Therapists, Home-based Physical Therapy Services, Work-related Low Back Pain, Work-related Musculoskeletal Pain Or Discomfort, Home Visits, Physical Therapy Departments, Ergonomics.

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INTRODUCTION

Musculoskeletal disorders (MSDs) are common worldwide. Among them, work-related MSDs are very important. Risk factors associated with work place play a major role in development of work-related MSDs of different body areas[1,2]. The personal, psychosocial, physical and ergonomic factors are associated with them. Researches focused many fields of work to find out its occurrence in that work and many found Low Back as the most common affected site. Low back pain (LBP) is a very common health issue of general population as well as populace of every profession, including health care providers[3,4]. 62-80% of general population suffers from this agony in their lives[3]. Both men and women are affected evenly. However variation occurs in the age of both genders. It occurs mostly in men at an average age of 40, and more in elder women[3]. In industrial population, LBP results in loss of work time, disability either temporary or permanent[3]. LBP leads to absenteeism from work[4]. Ultimately, these organizations have more losses due to increased absenteeism, turn over and decreased productivity. Other than industrial workers it is also common in nurses, varying with age, length of employment, handling techniques[5].

Studies conducted to find out the prevalence of work-related musculoskeletal problems in nurses, surgeons and doctors, revealed LBP as 46.8% in nurses, 68.1% in surgeons and 36.84% in doctors5-10.

Among the health care providers, physical therapists are also prone to develop different work-related musculoskeletal problems, including low back pain[3,4,11-25]. Similar work has been done by Siqueira GR et al. who found that 78.58% physical therapist in the city of Recife, Brazil had complaint of LBP[4]. Babatunde OA et al. also reported 91.3% prevalence of Work-related musculoskeletal disorders among Nigerian Physiotherapists. In this study 69.8% has the involvement of low back was and 34.1% had neck involvement.

50% Physiotherapists had this agony within 5 years of graduation and 61.7% were below 30 years of age[16].BuddhadevNeeti P found the 69% physiotherapists had WRMDs and 35% has this at low back[25]. Glover found that 68% members of the Chartered Society of Physiotherapy (CSP) had work-related musculoskeletal disorders. Among them, 58% had this in last 12 months and 42% had symptoms for more than three days. 44% had problem in low back[11].

Various studies have shown the prevalence of low back pain and WRMD among foreign population but this study has focused only those physical therapists that provide home-based physical therapy services, either with or without their separate job. This study is aimed to find out the prevalence and to highlight the risk factors of low back pain in home-based physical therapist. To best of my knowledge, there is no data available about the prevalence of low back pain among home-based physical therapist of our population.

METHODOLOGY

Study Design
This study was a cross-sectional survey study.

Sampling Technique
Convenience Non-probability Sampling technique was used to collect data.

Study Setting and Participants
The data was collected from 200 physical therapists. Physical therapists that were doing home patients in Karachi, either without or with their jobs were the part of this study. They were either self-employed or affiliated to different hospitals.

Study Duration
Six month.

Inclusion and Exclusion Criteria
Both male and female physical therapists of age 25-60 years, providing home-based physical therapy services to patients were included in the study. Physical therapists who did not want to participate were excluded from this data.

Data Collecting Tool
A questionnaire was used to collect data. The questionnaire consists of questions about general information of age, gender, working status, work load, years of working, works other home-based therapy, number of home patients, and details about low back problems. Questions of this questionnaire were adopted from Nordic questionnaire and other researches[16, 18,21,26,27].

Ethical Consideration
Before filling the questionnaire, study was explained to

Table 1: General information of home -based physiotherapists

Characteristics	Mean (SD)	Range
Age (yrs)	34.27 (5.29)	26-52
Height (m)	1.62 (0.09)	1.46-1.80
Weight (kg)	69.96 (7.9)	48-96
Years of PT Experience (yrs)	9.27 (5.29)	1-27
Characteristics	n (%)	
Gender: • Females • Males	 9 (4.5%) 191 (95.5%)	
Working Status: • Only Home- based Physical therapy • Home-based Physical therapy with other job	 7 (3.5%) 193 (96.5%)	

them and written consent was taken. Their personal information was kept confidential.

Data Analysis

The collected data was analyzed on SPSS 20. General information about socio-demographic characteristics were shown in Mean (Standard Deviation) and percentages. The descriptive and occupational characteristics were shown in percentages, Fisher's exact tests and Chi-square statistics.

RESULT

Two hundred home-based physical therapists filled the questionnaire, with mean age of 34.27 ± 5.29 years, ranging from 26 to 52 years. Among them 9(4.5%) were females and 191 (95.5%) were males. Their average years of Physical therapy experience were 9.27 ± 5.29 years, ranging from 1 to 27 years. General information of physical therapists that were doing home-visits is shown in Table 1.

When inquired about the job routine of 200 physical therapists, 7 (3.5%) physical therapists responded that they were doing home visits only and 193 (96.5%) physical therapists responded that they were doing home visits with their jobs (as physiotherapist or in academics). Among these 193 physical therapists who were doing a job with home visits, 176 (91.2%) were working in physical therapy departments, while 17 (8.8%) were working in academic side. The distribution of working status in the genders is shown in Table 2.

When asked about the means of transport for home visits, the majority 97.9% male physical therapists mentioned the use of motor cycle for travelling. When they were asked about their opinion of mostly available bed height to give treatment in homes, 196 (98%) physical therapists responded that they never found the correct height of bed for themselves and they worked with that height too.

Table 2: Working status with their jobs and gender wise distribution.

Characteristics	n (%)	Females n (%)	Males n (%)
Total	200	9	191
Working Status:			
• Only Home- based Physical therapy	7 (3.5)	1 (14.29)	6 (85.71)
• Home-based Physical therapy with other job, in:	193 (96.5)	8 (4.15)	185 (95.85)
- PT department	176 (91.2)	5 (2.84)	171 (97.16)
- Academics	17 (8.8)	3(17.65)	14(82.35)

Table 3: Work related musculoskeletal pain or discomfort (WRMD) with Characteristics

Characteristics	Total n	WRMD n (%)	No WRMD n (%)	Statistics
Total	200	186 (93 %)	14 (7 %)	
Age (yrs):				x^2= 0.408
• ≤ 30	73	69 (94.52)	4 (5.48)	P= 0.58
• > 30	127	117 (92.13)	10 (7.87)	
Years of PT Experience (yrs):				
• 1 - 5	76	70 (92.11)	6 (7.89)	
• 6 - 15	111	105 (94.59)	6 (5.41)	x^2= 1.93
• ≥16	13	11 (84.62)	2 (15.38)	P= 0.38
Gender:				
• Female	9	7 (77.78)	2 (22.22)	x^2= 3.35
• Male	191	179 (93.72)	12 (6.28)	P= 0.12
Working Status:				
• Only Home- based Physical therapy	7	5 (71.43)	2 (28.57)	x^2= 5.185
• Home-based Physical therapy with other job	193	181 (93.78)	12 (6.22)	P=0.078
Working Status of Home-based Physical therapy with other job in:				
• PT department	176	169 (96.02)	7 (3.98)	x^2= 17.199
• Academics	17	12 (70.59)	5 (29.41)	P= 0.0016

Table 4: Frequency of WRMD in females and males with working status							
Characteristics	Total	Females			Males		
		Total	WRMD	No WRMD	Total	WRMD	No WRMD
	n	N	N	N	n	N	n
Total	200	9	7	2	191	179	12
Working Status:							
• Only Home- based Physical therapy	7	1	1	0	6	4	2
• Home-based Physical therapy with other job, in:	193	8	6	2	185	175	10
- PT department	176	5	5	0	171	164	7
- Academics	17	3	1	2	14	11	3

Remaining 2% physical therapists told that they worked on only that bed height which suits them by making adjustments, when they not found the correct bed height. Out of 200 physical therapists, 64 (32%) told that the height of bed of their most of home patients were at the level of their knee, 133 (66.5%) reported it between the knee and hip.

It is found that 186 (93 %) from 200 physical therapists had experienced the work related pain or discomfort in the last 12 months. Their characteristics with presence or absence of any work related pain or discomfort is shown in Table 3. Their working status of job in physical therapy department or academics with home-based physical absence of work related musculoskeletal pain or discomfort (WRMD). Table 4 showed the frequency of Work related musculoskeletal pain or discomfort (WRMD) in females and males with working status.

Among the 186 physical therapists who had experienced work related musculoskeletal pain or discomfort in the last 12 months, 81.5 % reported the low back as the most vulnerable area where neck (34.5%), shoulder/arm (22%) and other regions/sites were also reported (Table 5).

Table 5: Work - related musculoskeletal problems at highly affected sites with their percentages		
Sites	n	%
Low back	163	81.5
Neck	69	34.5
Shoulder / arm	44	22
Wrist/ hand	31	15.5
Knee	28	14
Upper back	27	13.5
Hip /thigh	14	7
Elbow	7	3.5
Ankle/feet	5	2.5

Regarding the onset of low back pain (LBP), 141 (86.5%) physical therapists had gradual onset, while 21 (12.88%) had sudden. 1 (0.61%) had accident which caused LBP (Table 6).

When asked about parting of their home-based physical therapy services, 144 (88.34%) out of 163 had not left the home-based physiotherapy, while 19 prevented them for 1-7 days from doing their normal work. 52 (31.9%) had changed or modified their treatment techniques for patients (Table 7).

The prevalence of work-related musculoskeletal problems at highly affected sites with their percentages from three different studies is shown in the table 8 [16,18,25].

Table 6: Onset of Work- related Low Back Pain (LBP) in home-based physical therapists		
Onset of LBP	n	%
LBP (n=163)		
Gradual	141	86.50
Sudden	21	12.88
Accident	1	0.61

Table 7: Outcome of Work-related Low Back Pain (LBP) in home-based physical therapists		
Outcomes of LBP	N	%
LBP (n=163)		
Not left the home-based physiotherapy	144	88.34
Left temporarily the home-based physiotherapy	19	11.66
LBP prevented them from doing their normal work for 1-7 days	81	49.69
Changed or modified their treatment technique	52	31.9

Table 8: Prevalence of Work-related musculoskeletal problems at highly affected sites with their percentages from different studies

Sites	Nizami GN et al		Adegoke et al		D. Rugelj		Buddhadev et al	
	n (200)	%	n (126)	%	n (133)	%	n (20)	%
Low back	163	81.5	88	69.8	98	73.3	7	35
Neck	69	34.5	43	31.1	26	19.5	5	25
Shoulder/ arm	44	22	28	22.2	20	15	3	15
Wrist/ hand	31	15.5	26	20.6	20	15	1	5
Knee	28	14	20	15.9	18	13.5	-	-
Upper Back	27	13.5	18	14.3	8	6	3	15
Hip / thigh	14	7	8	6.3	8	6	-	-
Elbow	7	3.5	7	5.6	3	2.3	1	5
Ankle/ feet	5	2.5	12	9.5	3	2.3	-	-

DISCUSSION

Higher intensity of physical work with poor ergonomics leads to Low back pain (LBP). Physical workers with improper lifting and carrying, and poor postures will develop LBP and other problems.

Lifting and carrying techniques with its frequency, amount of load, time spend in a static posture or activity, bending, reaching, work load, vibration, work-place and many other factors with age and sex are important for work-related musculoskeletal disorders including LBP. Many researches focused to find the prevalence, incidence, causes and risk factors of low back pain and to find the preventive measures for work-related low back pain.

Numerous studies have shown the high prevalence of low back pain among physical therapists of foreign population. Most of the home-based physical therapist of our population treat patients in physical therapy departments and/or involve in academic activities during their job hours. They provide home-based services privately before or after their job duties, which ultimately increase the work load on them. Most of the patients who take therapy at home are bed ridden or dependent. Physical therapists mostly compromise with the ergonomic factors, especially bed height. For comparison no data is available about work-related problems of home-based physical therapist of our population.

This study has shown that home-based physical therapists had more work-related low back pain (93%) than result of other studies. In other studies, the Prevalence of Low back pain was found 44% in members of the Chartered Society of Physiotherapy (CSP) by Glover et al11, 78.58% by Siqueira GR et al in physical therapist of Brazil[4], 73.7% in physical therapists by Rugelj D[18], 45% in physical therapists by Bork et al[20], 26 % in physical therapists of Izmir-Turkey by Salik Y et al[21], 69.8% in Nigerian physical therapists by Babatunde OA et al[16], 70% in physical therapists (61.8% in males, 74.2% in females) by Shehab D[24], 29% in physical therapists by Molumphy et al[3], 62% in physical therapists and 56% in physical therapy assistants by Holder NL et al[15], 46.8% in nurses by Dehlin O et al[6], 68.1% in surgeons by Grace et al[9], 36.84% Salvi Shah & Beena Dave in doctors of Surat[10]. Naude, Benita found 47% point prevalence for LBP in nurses[8].

Cromie JE et al studied the attitudes and beliefs of therapists that had WRMD and also found 91% life time prevalence of WMSD[22,23]. Scholey et al studied Back pain in physiotherapists involved in back care education[19]. West DJ et al studied occupational injuries of physiotherapists in North and Central Queensland, found that 55% physiotherapists had work-related injury, primarily of low back, hands and neck[17]. Among them 56% initial episodes were within 5 years of graduation. After occupational injury, 38% therapists had changed ther work setting, while most had changed their techniques[17].

Comparison of this study with three studies in detail is shown in the table 8[16,18,25]. These three studies were done on physical therapists working in physiotherapy departments. As my study is based on home-based physical therapist which did home-patients with or without their job duties, may be due to this reason the prevalence of work-related problems are higher than these studies. Buddhadev Neeti et al found that 20 (69%) out of 29 physical therapists had developed WRMD and 35% had LBP[25], which is a very low value than other studies and may be due to less sample size.

Physical therapists having work- related problems, especially the LBP thought that lower bed height, poor ergonomics in patients' home and their poor posture due to it, were the main reasons of their low back pain and other problems.

There could be one more reason that physical therapists have to treat more patients. They try to save the time by avoiding the ergonomics and by ignoring their own health, which will also prone to develop work-related problems.

Male physical therapists are doing predominantly more home visits than female physical therapists in our population. Females have many casual factors of LBP including pregnancy, number of deliveries etc. Among the data from these 9 female physical therapists, it is difficult to say that cause of LBP was totally related to home visits or not.

Guidelines to prevent and manage low back pain at work place are established and available. If the guidelines and proper ergonomics are followed, then physical therapists can decrease the risk of low back pain and eventually its outcomes[28-30].

CONCLUSION

This study shows that home-based physical therapists are more prone to develop work-related problems and had higher prevalence of work-related LBP. This may be due to more work load, lower bed height of home patients, poor ergonomics at homes of patients and poor posture of physical therapists.

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AWARENESS OF ERGONOMICS AMONG THE PHYSIOTHERAPY AND MEDICAL STUDENTS

ABSTRACT

BACKGROUND
Ergonomics is the scientific discipline concerned with understanding of the interaction among humans and other elements of a system. Thus, ergonomics attempts to always 'fit the job to the man' having realized the limitations and capabilities of man. The main aim of ergonomics is to reduce the on job risk of injury as well is to improve the productivity which benefits the organization.

OBJECTIVES
The aim of this study is to reduce risk of injury to make job easier and ultimately increasing the productivity to the benefits of organization and community.

STUDY DESIGN
Cross sectional survey.

STUDY SETTING AND PARTICIPANTS
300 participants from different physical therapy and medical colleges.

INTERVENTIONS
Self administered questionnaire.

RESULTS
It was observed that only 28.67% were aware of the word Ergonomics but 82% of admitted to have knowledge of body posture and productivity in whole sample size. It was noted that 85.33% considered that maintaining body posture can prevent musculoskeletal disorders while on the other hand 14.67% thought that it improves body outlook. 72.33% people admitted to have musculoskeletal problem where 27.67% people replied negatively and different specific tasks contribute to discomfort in posture hence affecting generalized body and the efficiency of work.

CONCLUSION
It is concluded that level of ergonomics awareness is very low in Pakistan among professional students' e.g. medical and physiotherapy students. This low level of ergonomics awareness is due to the fact that they were not conversant with the benefits derivable of ergonomics.

Key Words
Ergonomics, Awareness, Physiotherapy Students, Medical Student, Work Productivity, Posture Care.

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INTRODUCTION

The International Ergonomics Association (IEA) defines ergonomics as 'the scientific discipline concerned with understanding of the interaction among humans and other elements of a organization or system, and the profession that applies application, theory, data and methods to design in order to optimize human well-being and overall system performance[1]. Thus, ergonomics attempts to always 'fit the job to the man' having realized the limitations and capabilities of man[2]. The main endeavor of ergonomics is to reduce the on job risk of injury as well is to improve the productivity which benefits the organization[3,4]. It is a well known saying about health that "Health is Wealth". Earning is the main objective of life, but most of the people don't know how to work properly in a healthy environment. People work in order to get wealth at the cost of their health.[5]Most of the people don't have concept of good working place according to health aspect. It was observed that those people who are not aware of the rights for a proper work environment faces health problems (hearing impairments)[6] even leading to early deaths[7]. Takala (2005) stated that 2.2 million people die of work-related accidents and diseases annually. Similarly, Leigh et al (1999) had estimated that non fatal injuries in Sub-Sahara Africa as 770,000 per annum and fatal injuries of 9900 per annum. They predicted 9.02 million injuries per annum. To reduce the predicted rate of injuries, ergonomics has to play a crucial role. However, despite the enormous benefits accruable from the application of ergonomics, there seems to be lack of concern towards ergonomics from developing industries (Rogan and O' Neill, 1993). However, O'Neill (2000) observed that the developing countries like India, Brazil, South Africa and Thailand acknowledge the importance of ergonomics and have indigenous capabilities to apply ergonomics principles and undertake ergonomics[3]. In Pakistan a large number of the industrial units don't provide a healthy workplace for their workers and endanger the lives of their workers at the cost of money/low wages[8]. In loom industries most of the workers lose their hearing because of noise pollution. The main reason is lack of ergonomic awareness in skilled workers.

The similar ergonomic problem is faced by School going children developing low back pain because of their school bags, exerting extra pressure on L4 and L5 because school bags limit for children is 10% currently recommended and inappropriate shoulder strap adjustment and school bag hip belt also contributed factors for back pain [9,10,11]. Medical care staff also suffers from same ergonomic problem due to over work as they are very less paid due to which they are forced to do two jobs at a time to meet their expenses that's why nursing has highest prevalence of backache than other professions[12]. Currently 40% of the world's occupational and work-related health costs are attributed to musculoskeletal diseases and ergonomic interventions have been successful in reducing the number of MSDs by over 50%, especially in professions that expose employees to a high level of work risk factors[13]. In 2010, a study on ergonomics awareness in Nigeria done, which shows only 2.1% awareness in medical profession about ergonomics[3]. In Malaysia, manufacturing industry are now moving towards the right path[14].

Internationally a lot of work has been done on awareness and importance of ergonomics among professionals and on community level. In Pakistan, research on this issue is scarce; therefore the topic was selected to analyze the awareness of ergonomics in physiotherapy and medical students. The main aim is to reduce risk of injury to make job easier and ultimately being increasing the productivity to the benefits of organization and community.

MATERIALS AND METHODS

Study Design
Cross sectional survey

Study Population
Students of final year of BSPT & MBBS

Study Setting
Students from different physical therapy and medical colleges.

Duration of Study
One year

Sampling Technique
Convenience sampling

Sample Selection
300 totals, 142 physical therapy students and 158 medical students

Data Collection Procedure
Self administration

Data Analysis procedure
Data entry and analysis will be done using computer software "SPSS" version 11.0. Frequencies / proportions of qualitative variables and mean, standard deviation of quantitative variables will be presented where necessary. Chi-square test of proportions will be used to determine the association between qualitative variables. P-value <0.05 will be considered significant.

RESULTS

A sample size of 300 was taken among which 47.3% were Physiotherapy students and 52.7% were Medical students as shown in Table. The male to female ratio was 1:2 respectively.

It was observed that only 28.67% were aware of the word Ergonomics but 82% of admitted to have knowledge of body posture and productivity in whole sample size. Regarding previous experience to any postural awareness training programmers, 62.33% gave negative response where only 37.67% responded positively. Regarding equipment that can increase productivity, 65.33% respondent replied positively but 34.67% had no idea about that.

It was noted that 85.33% considered that maintaining body posture can prevent musculoskeletal disorders while on the other hand 14.67% thought that it improves body outlook. 33.33% people felt that they can be role model in society in terms of health by using good ergonomics.

Regarding duration of the treatment session with patient, it has been found that 16.67% give less than two hours treatment, 39.67% for two to three hours and 43.67% for more than three hours. While the time of lecture was, 41.67% were found to attend the lecture for two to three hours, 30.33% less than two hours, while others attended lectures for more than three hours.

When inquired about musculoskeletal problems majority, 72.33% people admitted to have musculoskeletal

problem where 27.67% people replied negatively.

It is known that different specific tasks contribute to discomfort in posture hence affecting generalized body and the efficiency of work. Scrutinizing the reality, respondents were asked about different postures, on which, the majority 38.33% referred long time sitting in the class for lectures as the major cause. In view of others, 14.33% prolong standing and bending postures were also leading causes. Few 10.33% regarded heel wearing as another cause of discomfort, 13% responded in negation and 9% respondents had no idea about factors contributing to discomfort.

When asked about the class chairs, nearly 31% respondent replied that they use the chairs with back rest and with hand and foot rests respectively. 28% people were using chairs with hand rest only. When comes to comparison of body health with other, 69% respondent replied negatively means they never compare their body health with others but 23.67% admitted to compare their health with other for some time.

1-Profession of responder	Frequency	Percentage
Physical Therapist	142	47.3
Doctor	158	52.7
Total	300	100
2-heard the word Ergonomics	Frequency	Percent
YES	86	28.67
NO	214	71.33
Total	300	100
3-Good body posture increase productivity	Frequency	Percent
YES	246	82
NO	54	18
Total	300	100
4-Attended postural awareness training program	Frequency	Percent
YES	113	37.67
NO	187	62.33
Total	300	100
5-Equipment that can increase productivity	Frequency	Percent
YES	196	65.33
NO	104	34.67
Total	300	100
6-Importance of maintaining body posture	Frequency	Percent
Look fit and healthy	44	14.67
Prevent all MSD	120	40
Prevent from fatigue other stress	55	18.33
Keep body good posture and relax	38	12.67
Prevent from pain all body ache or pain	43	14.33
Total	300	100
7-I can be a role model in term of body health	Frequency	Percent
Yes	100	33.333
No	104	34.667
Don't know	96	32
Total	300	100
8-How long you work with patient	Frequency	Percent
less than 2 hours	50	16.67
2 to 3 hours	119	39.67
More than 3 hours	131	43.67
Total	300	100

9-how long you attend a class	Frequency	Percent
Less than 2 hours	91	30.33
2 to 3 hours	125	41.67
More than 3 hours	84	28
Total	300	100
10-musculoskeletal problem	Frequency	Percent
Yes	217	72.33
No	83	27.67
Total	300	100
11-specific task/s contributes to discomfort	Frequency	Percent
prolong sitting or standing or posture or bending	43	14.33
long time class taking	115	38.33
prolong reading or computer work	45	15
unnecessary wearing heels or other things	31	10.33
nothing	39	13
no idea	27	9
Total	300	100
12-kind of chair in class	Frequency	Percent
With backrest	94	31.33
With hand rest	84	28
With foot rest	6	2
With all of the above	95	31.67
Without back rest, hand rest &footrest	21	7
Total	300	100
13-compare body health with others	Frequency	Percent
Never	207	69
Some time	71	23.67
Always	22	7.33
Total	300	100

DISCUSSION

The awareness of ergonomics among the physiotherapy and medical students was assessed using a self administered questionnaire. It was observed that only 28.67% were aware of the word Ergonomics on the other hand a study conducted in Malaysia revealed 35.6% manufacturing industries have a high level of ergonomics awareness15. Elizabeth Mailoa & Peter Rovani in their research conducted on dentists found that 55.7% of dentists had sufficient knowledge about ergonomics[16].

It was observed in our results that 82% of the respondents thought that good body posture can increase productivity and nearly same results were found by Panagiotis Mitropoulos who used different strategies and parameters to see the improvements and productivity of work and further states that by improving posture productivity can be increased. [17]

72% respondents in our study confirmed that they experienced musculoskeletal problems due to poor ergonomics. In 1998, Bramson, gave similar evidence and said that 81% dental operators suffered from musculoskeletal problems due to the same reason[18]. Karen massin in 2008 in her research "distal lower- extremity pain and work posture" reported 9.4% people having significant pain in ankle or foot and 6.4% having lower leg or calf pain[19]. D'Souza JC, Franzblau A, Werner RA in their review of lower extremity musculoskeletal and vascular disorders gave a huge prevalence of 83% for foot and ankle pain and 20% prevalence for lower leg[20] .The same musculoskeletal problems were identified in Indonesia by Elizabeth Mailoa & Peter Rovani who claimed 56.8% of respondents having complaints of pain, with 25% of complaints of back pain, 23.9% limb pain and 8% of neck pain[16]

Regarding working with the patient in one day, majority of our respondents, that is, 43.67% stated that they work more than 3 hours with partients where 39.67% stated 2-3 hours and 16.67% stated less than two hours. Elizabeth Mailoa & Peter Rovani enquired the same and stated 61.4% of respondents work 3-4 hours with patient[16]
Based on specific tasks regarding discomfort 38.33% and 14.33% regarded long sitting in class and prolong standing/sitting as the major cause where elizebeth found the same in sitting position with 51.9% respondents complaint.[16]

INTRODUCTION

Students around the world begin to make important decisions about future immediately after the result arrives. Some wants to continue studying while other wishes to start looking for job or to get married. Study plans are really tough to decide for students of developing countries due to the fact that there are limited career opportunities available to them within their country, and to avoid job-seeking pressure, they prefer moving abroad. Therefore, these young adults start looking for universities and colleges in developed countries because these countries spend more on the research and education sector when compared to their home country.[1] It also guarantees higher standards of knowledge and practical usage of skills, and provides a career-boosting platform for further studies. Scholarship programmes for international students become subsidized form of human capitals loss when a great number of students do not return to the sender (developing) country, especially Master or PhD students who settle down in the receiving (developed) country permanently.[2]

In the developing countries like Pakistan, migration of talented people is much higher in numbers to the developed world. According to the estimation, around 36,000 professionals including doctors, engineers and teachers have migrated to other countries during the period of last three decades. The purpose of migration contains employment search, education, security and political freedom.[3, 4] United States is always the top most favorable place for Pakistani citizens, particularly students, as it provides advanced technology, research facilities and career advancement in their renowned institutes of the world. However, according to the Institute of International Education, 6,296 students went to US universities and colleges in 2005 whereas in the year of 2010, 5,222 enrolled in US.[5] According to the Australian Education International from the year 2005 to 2010, the number of Pakistani students in Australia has increased each year. In 2005, almost 2,294 Pakistanis went for education purpose in Australia. When looked into the recent data available, it shows an increase of four times that is upto 8,458 Pakistanis by the end of 2010.[6] Furthermore; Canada is also one of the most desired places of studies for Pakistani Students. The recent stats suggest that total 786 students from Pakistan entered in Canada until the end of 2010[7]. Research shows that Pakistan is one of those countries with biggest number of applicants who wants to establish them in Britain. People from all professions, either it is a IT professional or its a common laborer, all are enlisting themselves in the line to get an approval to move abroad for a better life.

Previous study found the causes of brain drain among many Taiwanese students who went to United States for "better teaching, research facilities, promising career advancement, professional opportunities and its recognition, and job satisfaction in the United States", which is influencing them to stay[9, 10]. A number of studies found the causes of brain drain, many of them finish up with the reason like 'wage differentials' as major encouragement of migrating when making their education decisions[11]. The reflection of Dass on brain drain in India is also quite rightly set here that Brain goes for money where healthy competitions are assured because it gives recognition which primarily needed for healthy brains.[12]

Concern of safety and security is also prevalent in South Africa. In the research by Peter Thompson, 66% of the family. They also mentioned that it would improve their quality of life[13]. Corruption has been a substantial obstacle in development of societies in Pakistan, Tout and bribery is prevalent in law enforcement. In such circumstances where all institutes are influenced with risk, individuals search for safer and productive life outside motherland[14]. However, citizens are aware that crime exists in the developed countries as well but it would be less endangering life than in their own country.[15]

Aside from the safety and education influences for going abroad, some young adults make their decision on idealization, fantasy and romanticized image for foreign countries. As according to research in South Africa these young adults fantasize regarding the foreign world.[16] Students often view studying abroad as an opportunity for personal growth to gain more insight into themselves, others and what they want from life. They broaden their space of exploration and try out new experiences to know their strengths and weaknesses better. They discover their wishes and understand their life from all unique dimensions.

This type of topic has always been viewed from the economic dimensions but has been less highlighted from the discipline of psychology. Psychology is a discipline with limitless boundaries, which cover almost any field of study where human beings are in question.[17] Through observing everyday life of individuals and their experiences, the reasoning behind certain behaviors' can be understood in detail through psychology discipline. [18] One would find many of these young adults searching programs for studies in foreign universities with viable outcomes in future; their cost of living, job market related to their field and some has even look for immigration laws of foreign country and planning to emigrate if able to meet the minimum requirement. [19]

This study would also highlight the psychosocial factors behind the decision to study abroad with the aim to achieve the current mind-set of young adults studying or planning to go abroad. Also to determine the five top most happening factors that young adults consider in selecting any host country for higher studies and to distinguish the rationale between young adults going for Masters/PhD and for undergraduate degree.

METHOD

It is a basic, cross sectional research, which reflects upon the existing ideas and applies it to the situation of Pakistan. Close-ended questionnaire was used for gathering data. The questionnaire was divided into three sections. Furthermore, quantitative research process was used to describe the relationship between independent and dependent variables. The duration of this study was about 1 year. The data collection was done in 2011.

Participants

The study is based on the responses of young adults of both genders with ages ranging from 18 to 30 years and has gone for higher education abroad from Karachi in last 5 years, counting from the year 2007 to 2011. The study is also targeting those young adults who were at that time planning to go abroad in 2012 to 2014 on personal expense. The rationale behind it is that they are not bound by any governmental or organizational policy to return to their home country, and it will be completely their choice whether they want to return or not. Only those participants were selected for the study that are

planning or studying in Australia, Britain, Canada and U.S .

Procedure

The consulates of US, Australia, Canada and UK in Karachi were contact via postal mail as well as electronic mail to gather statistical information about the number of students who went abroad in last five years. Online questionnaire was made to serve the purpose. The questionnaire was then posted on different social networking groups on social sites which includes, Pakistani students in Melbourne and Sydney, and Pakistani Student in UK on Facebook, LinkedIn, and Google plus. Moreover, the link of the questionnaire was also shared via email to the Euro Educational Consultants and MacnKro Travel Consultants, to forward it their current and previous clients.

Non-probability convenience sampling technique was used to collect the data with the sampling size of at least 200, including both the groups who are planning or currently studying abroad equally. Questionnaire was distributed among 207 students. Only 170 filled the questionnaire properly whereas 37 did not and hence were discarded for this reason. Out of 170, 83 have gone or were planning to go for undergraduate program whereas, 87 participants were pursuing masters degree at that time. From these 117 were males and 53 were females. Analysis was performed by means of Social Package of Social Sciences (SPSS) software, version 16.0.

RESULTS

Analyses focus on the psychosocial reasoning that influences young adults to think about the option of studying abroad. The Table 1 shows the mean of all the items of the first independent variable, which is quality of professional grooming opportunities in internship (M=3.69, ±1.132 SD), lower educational standards (M=3.69, ±1.217 SD) and limited field of study (M=3.65, ±1.252 SD) are having higher means among all other items in quality of education. While the overall mean of all the items is M=3.09, ±0.728 SD. The Table 2 shows the mean of all the items of social & personal reasons. It indicates that the items like, gaining knowledge about other cultures and places (M=3.62, ±1.077SD), urge to live by self (M=3.79, ±1.039 SD), and personal growth (M=4.46, ±0.747 SD) are having higher means from the rest of the items. Whereas, the overall mean of personal & social reasons is M=2.94, ±0.458 SD.

Table 1: Mean of all Quality of education items

Quality of education	Mean	SD
Lack of Scientific Research	3.35	1.193
Lack of modern equipments	3.45	1.182
Lesser integration of education & professional world	3.61	1.198
Lesser professional grooming opportunities in internships	3.69	1.132
Lower educational standards	3.69	1.217
Limited field of study	3.65	1.252
Poor teaching style	3.31	1.274
Rote learning	3.50	1.147
Poor course outline	3.36	1.199
Mean of all Educational factors	3.09	0.728

Table 2: Mean of all Social & Personal Reasons

Social & Personal Reasons	Mean	SD
Following social trend	3.02	1.060
Family & friends encouragement	3.49	1.105
To come back & create opportunities	3.33	1.140
Presence of strong connections abroad	3.15	1.180
Family & friends pressure	2.48	1.137
To get higher social status in Karachi	2.84	1.195
To gain knowledge about other cultures and place	3.62	1.077
Urge to live on my own	3.79	1.039
Personal Growth	4.46	0.747
Mean of all Personal & Social Factors	2.94	0.458

Table 3: Mean of all items of factors affecting quality of life

Factors affecting quality of life	Mean	SD
Lack of political stability	4.05	1.140
Rise in criminal & terrorist activities	4.12	1.147
Lack of humanity & justice	4.11	1.017
Lack of political freedom	3.82	1.175
Lower work/life balance	3.71	1.057
Lack of safety & security	4.14	1.088
Tout & bribery culture	3.94	1.126
Religious extremism	3.61	1.218
Media's negative depiction of Pakistan's future	3.61	1.279
Mean of all Quality of Life factors	3.36	0.718

The Table 3 represents the factors that affect the quality of life. From the list of items, rise in criminal and terrorist activities (M=4.12, ±1.147 SD), lack of humanity & justice (M=4.11, ±1.017 SD), and lack of safety & security (M=4.14, ±1.088 SD) are the highlighting factors motivating young adults to study abroad. Hence, the mean of overall ratings of factors affecting quality of life is M=3.36 ±0.718 SD.

From the mean of all the three independent variables, it was found that factors affecting quality of life is the most persistent, having M=3.36, ±0.718 SD among all that encourage young adults to take decision to study abroad.

DISCUSSION

As outlined previously, the top three items were taken from the list of independent variables each. The first variable was quality of education in which, lesser grooming opportunities in internships, limited field of study, and lower education standards in home country were the most enduring items.

When asked the participants about the professional grooming opportunities in home country, it was discovered that about 66% of 87 those participants who went abroad for Masters were dissatisfied with the opportunities available for internships in home country. These responses emphasize the poor governance in our educational institutes. Beside this, these opportunities allows employer to keep a record of performance of hired students and save further employment time and cost in future by hiring same student upon their graduation.[20]

Another most important item in the quality of education was the lower educational standards. According to 60% of 87 participants who left for abroad for Masters Degree, educational standards are most of the time compromised in Karachi. Similar feelings were shared by another 64% of 83 participants that are planning to go for Bachelors degree. The educational standards of developed countries are under strict government surveillance and are accountable for every action. For that purpose, 77% of the participants strongly agreed that they looked for university ranking while making the decision to study abroad. Out of 77%, 18% were from US, 14% were from Australia, 17% were from Britain and 28% were from Canada.

The third most important point was the limited fields of study in home country. 59% of 87 participants who are planning to study abroad for Masters and 59% of 83 students for Bachelors program, claims that there are limited fields of study available in Pakistan There is very less variety present in subjects of specialization and the advanced level education is limited. According to ISESCO, unavailability of funds for education sectors in Pakistan is the major cause for lower standard of educational system[1]. The reason behind having bereft of modern equipments in Pakistan is similar. Almost 53% of the participants agreed with lack of modern equipments and that is why students look forward to go abroad. Out of 53%, 17% were from Engineering and 21% were from Business and Management. A study by Atta ur Rehman reports that Pakistan lack the equipment, latest scientific literature, and information system and intellectual work force which had led to poor infrastructure in Pakistan[21].

Apart from quality of education factors, top three social and personal factors were also highlighted which independently and personal growth. From the groups of participants, 65% of 83 participants that are going for undergraduate degree gave higher importance to knowledge about new place and its people while studying abroad as compared to those who are focused on Masters Degree, which counted to 56% of 87. The second most important factor is the urge to live by self. From the analysis, it was discovered that almost 64% of the total participants highly rated this item on agree. These young adults with their abilities and capabilities want to prove themselves to their society, and want some independence to do things their way without any restriction from society. From the Dwyer research, it is being reasoned that being completely on your own makes a person more mature, as he would be the only one to take decisions of his life and manage his resources.[22]

The last most important factor that was highly rated by both groups based on program of study was personal growth. 90% of 87 students from Masters Group and 90% from Bachelors group strongly agreed to the reason of going abroad for personal growth. According to earlier research, living abroad increases self-confidence, give strength to tolerate vagueness in their lives and allow them to think from many other perspectives, which they never did while being dependent.[22]

In this regard, parental role is considered as much more important in eastern part of the world. From the previous study, it was found that parents with higher level of education tends to encourage their children more to study abroad, and it further strengthen this encouragement when parents themselves carry foreign education experience[23]. However, in this study, it was uncovered that parents having professional degree like undergraduate or higher was also keen of sending their kids abroad for better education.61% of 59 participants are encouraged by parents to study abroad. At the same time, parents that are having less education than high school were found a bit in favor of the decision too. 56% out of 111 participant's parents were encouraged to study abroad. This shows that parents of students in Karachi realize the importance of education in this fast-paced world.

Aside from reasons for individuals in society to move abroad, it has become a proper culture in east to migrate to the west. A study by Crush J, the culture of migration having high existence in the migrating community and having large migrating network abroad[19]. Money is not always the incentive for migration. In the context of India, migration has affected the marriage system of India. According to the research by Ali S and Xiang B, Hindu male IT professionals who are working in Australia shared their work and having foreign nationality has increased the amount of dowry from the family of bride in India[24,25].

The last independent variable was the factors affecting quality of life, which is also the most persistent factors among all the psychosocial factors that motivate young adults to make decision of studying abroad.

The top three most important matters in this list were rise of criminal activities, lack of humanity and lack of safety. While selecting the host country when deciding where to study, safety and security is the most important factor from the rest of items with M=4.32 and ±0.908 SD. When participants were asked to rate the safety and security in their home country such as Pakistan, it was uncovered that 78% of 87 participants from Masters Group strongly

agreed with the fact that there is a lack of safety in Pakistan. Similarly, 73% out of 83 participants from Bachelors group rated high to the lack of safety making it a unanimous feeling among students of Karachi. Safety and security issue is due to the rise in criminal activities and injustices done to common people. ISESCO research emphasize that Young adults are most likely to go where there is existence of peace, justice, and respect of humanity[1]. When asked participants to rate the criminal and terrorist activities in Karachi, 81% out of 87 of Masters group and 72% out of 83 of undergraduate group strongly agreed on the occurrence of this issue. At the same time, lack of humanity is also highly rated by both groups of young adults, which counts 77% out of 87 participants of Masters/PhD group and 73% out of 83 participants' undergraduate group.

CONCLUSION

This study has noted the process of decision that affects the mind set of young adults. Considering only psychosocial factors for the decision to studying abroad is never done in Pakistan. Therefore, it would add to the discipline of social and behavioral psychology. This study has attempted to answer the questions of psychosocial reasoning that motivate young adults to study abroad, and has focused more on factors that are closely related to their life.

This study had tried to unleash the thought process behind such belief systems that are active in Karachi due to prevailing uncertainty situations. The three highlighted factors, which became focus of this study includes quality of education, social & personal factors and quality of life.

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PHYSICAL ACTIVITY LEVEL IN MEDICAL STUDENTS OF THE ZIAUDDIN UNIVERSITY, KARACHI

ABSTRACT

OBJECTIVE

To evaluate the physical activity level in medical students of Ziauddin university in Karachi.

MATERIALS AND METHODS

This is a cross-sectional study. The data analysis included total 300 medical students, 60 students from each of Ziauddin College of Physical Therapy, Ziauddin College of Medicine, Ziauddin College of Nursing, Ziauddin College of Dentistry and Ziauddin College of Pharmacy of the Ziauddin University, Karachi. International Physical Activity Questionnaire (IPAQ) was used to evaluate physical activity level of the students.

RESULT

Physical therapy students achieved the highest level of physical activity, with 33% performing high level of physical activity compared to medicine (18%), pharmacy (12%), dentistry (28%) and nursing (28%).

CONCLUSION

Medical students found satisfactory results of physical activity level. But the majority of students did not meet the recommended criteria of physical activity. Therefore medical students improve their own habits because they are well trained and qualified to promote healthy habits.

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Key Words
IPAQ International Physical Activity Questionnaire, Physical Activity, Sports, Exercise, Vigorous Physical Activity, Moderate Physical Activity, Low Physical Activity.

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INTRODUCTION

In today's world there are lots of problems that are related to the well being of human race. As the life become luxurious, people stop thinking about physical activities. Physical inactivity is now identified as the fourth leading risk factors for global mortality [1,2]. World Health Organization (WHO) report that 20% – 35% of cardiovascular diseases could be prevented if more people become extra active throughout the life path.[3] According to WHO's worldwide survey in 2008 around 31% of adults aged 15 and over were insufficiently active (men 28% and women 34%). Approximately 3.2 million deaths each year are attributable to insufficient physical activity. [4]

In 2009-10, 42% of patients who had a heart attack (MI), bypass surgery (CABG), or an angioplasty (PCI) took part in physical activity programs crossways England, Wales and Northern Ireland, with the aim of reducing cardiac mortality, promoting self-management and improving quality of life[5]. Furthermore, according to WHO one of the Reasons of declining physical activity levels is the increase use of "passive" modes of transport. Also increased urbanization has resulted in numerous environmental factors which can put off participation in physical activity such as violence, traffic, low air quality, pollution, and lack of parks, leisure facilities.[1]

The World Health Organization warns that physical activity should not be mistaken for sport. Physical activity is any bodily movement produced by the skeletal muscles that uses energy. It includes exercise, sports activity and other activities such as playing, walking, doing household chores or gardening [6]. Physical activity also reduces the risk of osteoporosis and diabetes mellitus, although a lack of physical activity in the adolescent years may lead to health problems later in life.[7] Physical activity has been classified in three categories vigorous physical activity, moderate intensity and low intensity.[8] The American heart association together with WHO and the American College of Sport Medicine (ACSM) generally recommends 30 minutes of moderate-intensity physical activity 5 days per week or 20 minutes of vigorous- intensity physical activity 3 days per week for all adults [9].

The majority of women (88%) reported that they did not spend any time in heavy manual/gardening and more than half of women (56%) did not spend any time in sports and exercise, with a similar pattern of decreasing participation with increasing age was found with men. Around two thirds (66%) of women reported some kind of non-occupational physical activity for more than one hour per week which started to decline after 35 years of age. Both men and women reported walking and sports and exercise as the non-occupational activities with the highest number of day's participation in one month. On average men participated in non-occupational physical activity for 14 days during the one month compared to 12.2 days for women. The average number of days of physical activity participation declined with age for both men and women. [2]

It is assumed that medical students have extensive knowledge about fitness, physical activity and its benefits. Many authors reported that there is a positive relationship between Physical activity and academic results[10-12]. Physical therapists, who are the most important concern practitioners[13], have a vast potential to promote physical activity. Physical therapists (PTs) are dependable for promoting healthy lifestyles and health protection. PTs may team up with Physical Education teachers, occupational therapists, physicians, nurses to encourage physical activity for all students including those with disabilities and those in special education to promote fitness and healthy lifestyles and also identify hazard factors for unhealthy living and recommend fitness and physical education. But Angyan et al reported that medical students had low physical activity levels as a result of high workload and less free time [14]

The objectives of this study is to evaluate physical activity in medical students of Ziauddin University, Karachi.

MATERIAL & METHOD

The study was conducted in 2013. A group of 60 students are selected by stratified random sampling from each of the Colleges of Ziauddin University (Physical Therapy, Medicine, Pharmacy, Dentistry and Nursing) was selected. Each Student participated in this study with their own will and was also given the study outline verbally.
The students enrolled in Ziauddin University, Karachi, between the age group of 18 to 30 years both the genders male and female were included in this study. The exclusion criteria of our study are those who were suffering from neurological deficits, musculoskeletal conditions, fractures, recent surgery, and cardiovascular diseases. Students with disorders in which physical activity is contraindicated were also excluded from this choice of study.

The data collecting tool of our study is international physical activity questionnaire (IPAQ), it is a standardized and validated tool to assess the physical activity for monitoring and research purpose. The IPAQ short form asks about three specific types of activity that are walking, moderate-intensity and vigorous- intensity activities. The IPAQ has been used for physical activity overview in various countries and in the European Union.[15-17] The minimum time of 10 minutes of physical activity was required. The short version relates to physical activities performed at a high or moderate level, walking and time spend sitting.

Procedure
Data of our study is collected by personal interview and questionnaire. 60 students were selected from each of Ziauddin College of Physical Therapy, Ziauddin College of Medicine, Ziauddin College of Nursing, Ziauddin College of Dentistry and Ziauddin College of Pharmacy.

RESULTS

Data of 300 students' were analyzed in SPSS version 17. All students who participated in this research were physically fit and they don't have any disease. The group comprise 60.6% (n=182) male students and 39.3% (n=118) female students. All students who are department of pharmacy, nursing and dentistry were males (n= 60) of each college respectively where as the students from the physical therapy were 33 female and 27 were male students, those from the college of medicine were 41 male and 19 were female students.

According to IPAQ scoring protocols, students were assigned to three categories low-intensity, moderate and vigorous levels of physical activity. Students who thought that they have vigorous level of physical activity must meet the following criteria that participated in vigorous level activity (1) a minimum of 3 days per week, not less than 1,500 MET-min/week (MET level was multiplied by minutes of physical activity and by events per week

and the result was expressed as MET-min/week). (2) 7 or more days of any combination of walking, moderate-intensity activity, or vigorous-intensity activity, performing a minimum of 3,000 MET-min/weeks. Vigorous physical activity could be fast cycling running, swimming or moving heavy loads. Students assigned to the group with moderate level of physical activity had met the criteria (1) 3 or more days of vigorous activity for at least 20 minutes per day. (2) 5 or more days any combination of walking, moderate-intensity activity or vigorous intensity activity, performing a minimum of at least 600 MET-min/week. Moderate activity could be brisk walking, dancing or household chores. Students who did not meet the criteria for vigorous and moderate physical activity level were considered low-intensity[18].

Among physical therapy students, only 5% had a low level of physical activity, 62% exhibit a moderate level of physical activity and 33% exhibit a vigorous level of physical activity. Furthermore, a low level of physical activity was observed in 30% of the medicine students, 29% of the pharmacy students, 15% of the dentistry and 18% of the nursing students respectively.

The larger part of students were classified as having a moderate level of physical activity (medicine=51%, pharmacy =59%, dentistry=57% and nursing=54%). Furthermore the largest group of students with a vigorous level of physical activity was observed in the college of physical therapy (33%) compared with the medicine (19%), pharmacy (12%), dentistry (28%) and nursing (28%).

DISCUSSION

Being physically active every day is enjoyable and safe for most of the people. Health benefits of physical activity include improved fitness, strength and feeling better. Regular exercise is a necessary of a healthy lifestyle. Physical activity is anything that makes you move your body and burn calories such as hiking, climbing stairs or playing sports.

The objective of this research was to evaluate the physical activity levels among medical students of Ziauddin University, Karachi. Here the question arise why the medical students? The answer we all know that medical students are our medical professionals in future. They have all essential knowledge about the benefits of regular physical activity and they have an ethical obligation to care of the patient healthy life. Furthermore, they can motivate their patient attitude toward physical activity and can become role models for their patient[19]. Promotion of physical activity and conselling about a healthy lifestyle among patients is one of the physician's tasks. Family doctors (FD) are particularly well placed for health promotion: early enquiry about patients' lifestyles and counseling concerning risk factors[20].The patient's level of motivation is possibly one of the most important factors influencing counselling and changing lifestyle. The doctor's knowledge can also influence counselling[20,21]. A doctor's behavior is affected by his/her general attitude to the importance of preventive care[21]. And those who regard exercise as a highly important health contributing factor are more likely to counsel for exercise. Physical therapist who are the primary care practitioners, also have extensive knowledge about physical activity. Physical therapists are well prepared and qualified to promote physical activity, although their role is frequently underestimated by other health care professional. [22-24]

Furthurmore in 2008 Physical Activity Guidlines for Americans, being bodily active on a regular basis improves your chances of living longer and living healthier, helps to protect you fom developing any cardiac issues, Relieves symptoms of depression and anxiety and Prevents weight gain, promotes weight loss (when combined with a lower-calorie diet), and helps keep weight off after weight loss.[25]

The physical therapist students performs the highest level of physical activity compared with others medical students. Thirty three percent were performing the vigorous activity, 62% to the moderate level of physical activity and only 5% of the low level of physical activity. Therefore, it was not surprising that these students performing highest physical activity. This level of physical activity may result from superior knowledge of the need for regular physical activity because during their clinical posting or internships at hospitals or sports centers, they can prescribe suitable exercises to their patients and also encourage them to do physical activity in leisure time.

If exercise and regular physical activity benefit the body, a sedentary daily life does the opposite, having chances of becoming overweight and developing a number of chronic diseases. Adult Americans reported that they get regular physical activity during their free time and about 40 percent of Americans say they get no leisure-time physical activity at all.[26]

More recently, studies have found that people who spend more time in sitting, driving in cars and watching television have a greater chance of dying early than who people spend less time on their duffs.[27-29] Researchers show that sitting for hours on end may change peoples' metabolism in ways that promote cardiac problems, obesity, diabetes, and other chronic conditions.[28-30] it is also possible that sitting is a marker for a broader sedentary lifestyle.

The future research on physical activity level using the IPAQ would enable comparison with the results of other studies. The number of students was comparatively small. The study was limited to students attending one of the largest medical universities in Karachi. Although further research on medical students of other universities, may unquestionably show lower physical activity levels in medical professionals in contrast to the healthy lifestyle of their patients.

CONCLUSION

The level of physical activity among most of the students from the Ziauddin University, Karachi was found satisfactory. This research also shows that there was a group of students who have extensive knowledge about benefits of physical activity but they did not meet the recommended level of physical activity and did not apply their knowledge in everyday life. Physical therapist students demonstrated the highest level of physical activity compared with other students from the same university.

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COMMON MUSCULOSKELETAL DISORDERS IN DIABETES MELLITUS PATIENTS

ABSTRACT

OBJECTIVE

To determine the frequency of common musculoskeletal disorders complications among type 1 and type 2 diabetic mellitus patients and to find the association with BMI. Also to assess the level of awareness about Physical Therapy among diabetic patients.

METHODS

A cross-sectional (descriptive) survey of diabetic patients aged above 35 years with a history of minimum 5 years of disease, taken from physical therapy unit of Karachi Pakistan. It was conducted through self-administered structured performa, 375 patients fulfilling the inclusion criteria were selected and studied. Analysis was carried out using the statistical package for social sciences.

RESULT

There were 42.1% males and 57.9% females participated in the study. More than 90% participants were type 2 diabetics. The most common manifestations were osteoarthritis affecting both extremities (n=238), frozen shoulder (n=176), tendinitis (n=55) and fibromyalgia (n=50) noticed in both types of DM. A significant association was found between BMI and the duration of disease with respect to type 2 DM. More than half of the participants were aware of the various effects of physical therapy in diabetes.

Keywords
Musculoskeletal Disorder, Diabetes, Bmi, Physical Therapy, Hyperglycemia, Insulin.

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INTRODUCTION

Insulin, a hormone that is produced by the pancreas, controls the blood glucose levels. Due to the malfunctioning of this hormone in any aspect that is, either in its production or its action or both, leads to high blood glucose levels. The inability of insulin to control the blood glucose level leads to a situation known as "Diabetes Mellitus" or hyperglycemia, which is a group of metabolic diseases.[1] It is a chronic condition of high morbidity and mortality.[2] For DM, according to American Diabetes Association classification system, there are four basic types of DM that is, "Type I DM", "Type II DM", "Gestational Diabetes Mellitus" (GDM) and "other specific types". These terms emphasize on the management and treatment of DM rather than the cause of the disease.[3] Among these types, Type 1 DM and Type 2 DM are the most common and usually seen. In Type 1 DM, the absence of insulin leads to poor metabolism of protein, fat and carbohydrate. Type 2 DM represents approximately 90% of all cases. These patients have insufficient amount of insulin production or the amount is not balanced for their level of glycemia with primary defect in insulin resistance.[3]

Diabetes mellitus affect connective tissues in many ways and causes different alterations in periarticular and skeletal systems[4]. It can cause chronic damage which is unalterable and progressive affecting various organs and systems of the body. Although the precise cause of diabetes related musculoskeletal (MSK) disorders and complications remains uncertain, there is confirmation that hyperglycemia alters the structural matrix and mechanical properties of tissues by accelerating non-enzymatic glycosylation and abnormal collagen deposition in periarticular connective tissues leading to diffuse arthrofibrosis[1]. It may alter or modify the presentation, severity and pathophysiology of many musculoskeletal syndromes. Common therapies, treatments and management may differ in their effects and actions for patients with other diseases as compared to diabetic patients. Diabetes mellitus affects the musculoskeletal system of the human body, as a result, various musculoskeletal complication are seen affecting the limbs, feet and spine as a whole. Musculoskeletal complaints (MSCs) are among the major health problems worldwide and the most frequent cause of long-term sickness run off in Norway[5] Increased mortality has been reported among individuals with chronic widespread MSCs, which further emphasizes that this group of patients may constitute an important public health problem. A survey was done which showed that DM was associated with higher prevalence of chronic MSCs, in particular chronic widespread MSCs.[6] Diabetes mellitus (DM), a worldwide high prevalence disease, is associated with a large variety of rheumatic manifestations. It acts as a base for many musculoskeletal disorders and complications, causing pain, disease or even disability which later on affects and disturbs the quality of life of an individual. If it is left untouched than the awful part is the fact it acts as a food to many rheumatic conditions and associated circumstances which becomes the major cause of crippling deformities and other disabilities for many diabetic patients. But if it is correctly diagnosed it is usually controllable by the particular handling and management given by a multidisciplinary team work[7]. The selected disorders are: burning of feet and numbness of feet, delayed wound healing, Callosities formation, pressure ulcers and incidence of fracture. Other musculoskeletal problems occur with increased frequency in diabetic patients, including Dupuytren's disease, carpal tunnel syndrome, adhesive capsulitis of the shoulder.[8] tendinitis, synovitis, synovitis, osteoarthritis involving both, upper and lower extremities, rheumatoid arthritis, fibromyalgia and Systemic Lupus Erythematosus.

In 2004, the National Health Interview Survey determined that 58% of diabetic patients would have functional disability. Recent data show that the prevalence of MSK manifestations in the hands and shoulder in patients with type 1 or type 2 diabetes is 30%[9]. Statistics show increase burden of MSK diseases in diabetic patients such as degenerative joint diseases were more common (53.2%) than inflammatory arthropathies (20.1%). These manifestations, which are some of the causes of chronic disability, involve not only joints, but bones and the soft tissues as well. These manifestations are closely linked to age, prolonged disease duration and vascular complications in the form of retinopathy9. The percentages of diabetic patients with functional disability are increasing day by day as the number of diabetic patients are increasing, and hence can create a major public health problem.

Physical therapy can be the mainstay treatment for diabetics suffering from musculoskeletal problems. Results from a study conducted by Hooper4 et al showed patients with diabetes mellitus can get benefit through pure immersion in a heated pool at 37 to 40 0, reduction in medication, weight and a good glycemic control were some of the benefits that were observed. Physical therapy manages the pain caused by the rheumatic manifestations and associated problems, it can also treat these musculoskeletal tribulations and at the same time works on the postural correction, stretchings and strengthening of weak and shortened muscles in order to prevent the resulting deformities and disabilities so as to improve the different activities of daily living of diabetic patients making them independent and improving their quality of life. Most of these disorders can be diagnosed clinically, but some radiological inspection may help, especially in differential diagnosis. No definite treatment is available, and treatments used in the general population are also recommended for diabetic subjects[10]. A physical therapist is specially trained to decide the best option available for individual diabetic patients and some of the benefits that can be observed are Improve glucose levels, drop off use of oral hypoglycemic agents, reduce body fat and stress, and improve functioning of the circulatory system. There is a definite improvement in balance and ultimately decrease risk of fall.[5]

Most previous studies related to the association between diabetes and musculoskeletal syndrome have not included a control group or differentiated between type 1 and type 2 diabetes or included only a single musculoskeletal syndrome[8]. Therefore, No previous studies had been conducted to assess the prevalence of musculoskeletal disorders manifestations in diabetic patients or to evaluate the predisposing factors of Diabetes in Pakistan. So the purpose of our study was not specific and covering single aspect rather, various aspects were analyzed and examined that is, to determine the frequency of most common musculoskeletal disorders among diabetic patients, which musculoskeletal disorders are more common among Type 1 DM and Type 2 DM, to find the association between DM and body mass index and to assess the level of awareness regarding effect of physical therapy to them.

METHODOLOGY

Study Design and Setting

This was a descriptive cross-sectional study design. The

participants were taken from physiotherapy unit of hospitals during one year.

Sample Size and Technique
The sample size of 375 participants which was calculated by using the formula for calculating sample size on the basis of prevalence.

Prevalence was taken at 50% because no relevant data was available. The bound of error was taken at 5% with 95% confidence interval. Sample was selected through convenience sampling technique.

Inclusion Criteria
- Patients with both genders
- DM since 5 years
- Age above 35 years

Data Collection Method
Data was collected through self administered structured Performa in Standard English language. The Performa was divided into three sections. Firstly, the demographic data was collected for all the diabetic patients including their age, gender and BMI. Secondly, the clinical information including: duration of disease (in years), type of diabetes(-type 1 or 2), MSK disease found in an individual such as; Carpal Tunnel Syndrome, Osteoarthritis, Frozen Shoulder, Tendinitis, Synovitis, Rheumatoid Arthritis, Systemic Lupus Erythematosus, Fibromyalgia and Dupuytren's Contracture, and other possible problems related to diabetes including Fracture, Burning Feet, Numbness of Feet, Delayed Wound Healing, Pressure ulcer and Callosities formation. Finally, six questions were asked to assess the level of awareness regarding the role of Physical therapy in DM.

Data Entry and Analysis
For data analysis the data was entered on SPSS version 17. Percentages and frequencies were calculated for the categorical data whereas mean and standard deviation was calculated for numerical data. Chi square was used as test of significance for finding association between different variables. P-value less than 0.05 was taken as significant.

Ethical Consideration
Participants who were fulfilling the inclusion criteria were explained the nature of the study and verbal consent was obtained from the participants. They were informed that their identity will be kept anonymous.

RESULT

A total of 375 Diabetic mellitus patients filled the Performa during the study period .The mean age of the patients including 158(42.1%) male patients while 217(57.9%) patients were female. Patient suffering DM since 5 years or more included in the study, Type 1 DM was in 57(15.2%) patients included 21 males and 36 females while Type 2 DM was in 318(84.8%) included 136 males and 182 females.

TABLE 1
The most common musculoskeletal manifestations were located among diabetic patients in respect to their specific type and it came across that osteoarthritis was affecting both upper and lower extremities (n=238), frozen shoulder (n=176), and tendinitis (n=55)fibromyalgia (n=50) were the most widespread diabetic complications noticed in both type 1 and type 2.

TABLE 2
The awareness concerning various effects of physical therapy, mixed association was seen. More than half of the population (83.2%) believed that physical therapist can help in relieving pain, while half of the population (48%) was aware of physical therapist role in identifyingearly changes in area at risk and in deformity prevention. Apart from fewer cases reported as shown in table 2, most of the population was unaware of physical therapist role in increasing muscle movement and strength, enhancing wound healing and maintaining blood circulation by recommending different exercises.

Table 3
A significant association was seen between the BMI and duration of DM, out of 375 diabetic patients, 175patients with overweight and obesity presented with type 2 DM where as 143 patients were with normal weight and under weight .

No connection was seen between long standing type 1DM and overweight as minimum number of diabetes patients (n=26) were reported as overweight and obese. Hence according to table 3 patients with overweight and obesity may have a risk of type 2 DM.While studying the related disorders in diabetic patients we came across that foot problems are added observed with other major manifestations. These includes burning foot, numbness of foot, pressure ulcers and callosities formation. Among these, numbness of foot (n=173) and burning of foot (n=125) were the most frequent.

DISCUSSION

This fact cannot be denied that Diabetes mellitus is a complex disease to understand and intricate to manage. Fulfilling our aims of study, some most prevalent musculoskeletal complications (MSK) were seen in diabetic patients irrespective to its particular type. These manifestations include Adhesive capsulitis of shoulder, Osteoarthritis affecting both extremities: upper and lower, tendinitis, Fibromyalgia and Carpal tunnel syndrome as shown in table 1. A study conducted by Perttu E T Arkkila in Turku, Finland evaluated 425 diabetic patients and found a significant association in both types of diabetes mellitus and MSK complications[11].

These expanding complications in diabetic patients are more often due to their highly affected muscles performance and lower limb mobility[7,11,12,13,14]. This is why osteoarthritis affecting lower extremity was most frequently seen in present study as a foremost complication of Diabetes mellitus. A similar study conducted in Kolkata from November 1991 to November 2000 found an association between osteoarthritis of specifically lower extremity and diabetes mellitus[15]. Another study also conducted in Kolkata from 2003-2005, 80 patients were studied out of which 43 patients presented with rheumatological disorders. Among these diabetic patients frozen shoulder, carpal tunnel syndrome and limited joint mobility were more general[13]. Reported by P E Arkkila in his cross-sectional study on diabetic patients revealed frozen shoulder as the common diabetic complication present in both types of DM[11].

In our study most common diabetic complication associated to type 1 DM were frozen shoulder, osteoarthritis affecting lower extremity, carpal tunnel syndrome andasasasa

TABLE 1					
MUSCULOSKELETAL DISORDERS	VALUES	TYPE 1 DM PATIENTS		TYPE 2 DM PATIENTS	
		n	%	n	%
Carpel Tunnel Syndrome	Positive	8	14.03	46	14.6
	Negative	49	85.96	272	85.5
Frozen Shoulder	Positive	36	63.15	140	44.02
	Negative	21	36.84	178	55.97
Osteoarthritis (LL)	Positive	30	52.63	167	52.5
	Negative	27	47.36	178	55.97
Tendinitis	Positive	5	1.57	50	15.7
	Negative	52	91.2	268	84.2
Synovitis	Positive	8	14.03	39	12.26
	Negative	49	85.96	279	87.7
Rheumatoid Arthritis	Positive	3	5.26	36	11.32
	Negative	54	94.7	282	88.67
Fibromyalgia	Positive	7	12.28	43	13.52
	Negative	50	87.7	275	86.47
Dupuytren's Contracture	Positive	5	1.57	16	5.03
	Negative	52	91.2	302	94.96
Osteoarthritis (UL)	Positive	5	1.57	36	11.32
	Negative	52	91.2	282	88.67

TABLE 2			
Physiotherapy can:	Response	n	%
Relieve pain by electrotherapy modality	Agree	312	83.2
	Disagree	46	12.3
	Don't know	17	4.5
Identify early changes in area at risk	Agree	182	48.5
	Disagree	161	42.9
	Don't know	32	8.5
Prevent deformity	Agree	180	48
	Disagree	159	42.4
	Don't know	36	9.6
Increase muscle movement & strength	Agree	30	8
	Disagree	150	40
	Don't know	195	52
Enhance wound healing	Agree	39	10.4
	Disagree	189	50.4
	Don't know	147	39.2
Maintain blood circulation by recommending exercise	Agree	29	7.8
	Disagree	187	49.86
	Don't know	159	42.4

TABLE 3				
BMI (BODY MASS INDEX)	TYPE 1 DM PATIENTS		TYPE 2 DM PATIENTS	
	N	%	N	%
UNDER WEIGHT	1	1.7%	2	.62%
NORMAL WEIGHT	30	52%	141	44%
OVER WEIGHT	16	28%	119	37%
OBESITY GRADE 1	8	14%	39	12%
OBESITY GRADE 2	1	1.7%	13	4%
OBESITY GDRADE 3	1	1.7%	4	1.2%

and synovitis were present with similar frequency and fibromyalgia where as no significant association was seen in tendinitis and osteoarthritis affecting upper extremity with type 1 DM. According to one study conducted by Singh R at Auckland, New Zealand reporte a strong association between risk of developing carpal tunnel syndrome and type 1 DM[16]

A strong relation was seen in type 2 DM and diabetic manifestations including frozen shoulder[15], carpal tunnel syndrome and osteoarthritis affecting lower extremity[15.] Some disorders were strongly linked to type 2 DM than type 1 DM that is, these disorders were more frequent in type 2 DM than type 1 DM such as tendinitis(n=50 Vs n=5), rheumatoid arthritis(n=36 Vs n=3) and fibromalgia(n=43 Vs n=7). Apart from frozen shoulder and Osteoarthritis affecting lower extremity, few cases of musculoskeletal complications were seen in type 1 DM. Therefore, we concluded that type 1 diabetic patients are comparatively less affected with MSK disorders[9,17]. Similar results were also obtained by a study done by Suzan. M. attar in which MSK complications were more common in type 2 DM, 252 patients were included in the study 45 patients suffered from musculoskeletal complications, maximum patients (91%) had type 2 DM. Their findings also suggested frozen shoulder and carpal tunnel syndrome as the most frequent manifestation in type 2 DM[9]. Similar study conducted in Giaziantep, turkey also found frozen shoulder as the most common complication[1]

A pilot study carried out at Hippokration University Hospital in Thessaloniki, Greece revealed osteoarthritis as the most frequently encountered MSK complication in type 2 diabetic patients[4]. Another cross-sectional study carried out at Adnan Menderes University Hospital in Giaziantep,

turkey observed 102 patients and found dupuytren's contracture the most frequent MSK complication in type 2 diabetic patients[1]. According to some similar studies dupuytren's contracture was found as the most frequent diabetic complication present in both types of diabetes with almost equal ratio. (14,18) but in agreement with the present study dupuytren's contracture (n=21) was not found to be the most common complication and it was comparatively more common in type 2 diabetes.

According to Yanmaz MN and Mert M fibromyalgia was more common in patients suffering from type 2 DM as compared to type 1 DM[19]. Similarly in the present study fibromyalgia was more frequently seen in type 2 DM patient than type 1 (n=43 Vs n=7) where as another study conducted in Zerifin, Israel, found an association between fibromyalgia and DM[20] According to them fibromyalgia was almost equally significant in both types of DM, in contrast to our study we found its significance more in type 2 DM.

A strong correlation between tendinitis and type 2 diabetes was suggested by the study of M E Mavrikakis conducted at Alexandra General Hospital in Athens, Greece, who enrolled 824 adult type 2 diabetics and deep-rooted an association between the tendinitis and type 2 diabetes[21] as also observed in the present study.

In the present study it was analyzed that more cases of degenerative disorders such as osteoarthritis reported comparatively than inflammatory disorders such as carpal tunnel syndrome, tendinitis and synovitis. A similar study conducted at Bangabandhu Sheikh Mujib medical university, Dhaka to find the pattern of MSK disorders, 2062 patients were examined and came to a conclusion that degenerative disorders are more frequent than inflammatory ones of MSK in diabetic patients[22]. Similar results were also observed in our study that with in 375 patients, degenerative disorders such as osteoarthritis were more common in diabetic patients than inflammatory disorders such as carpal tunnel syndrome, tendinitis and synovitis. In the current study we found an association linking MSK manifestations and its features with long term diabetes mellitus. In such patients, with the growing age, amplified number of MSK problems were seen as also previously reported in some studies[23,24,25]. In company with the prevalence of common MSK complication in long standing diabetes mellitus, we also merged one more aspect of related problems in our questionnaire in order to further investigate common complications and related MSK disorders of foot. It is usually observed that diabetic patients typically go through foot problems along with major MSK manifestations and it is also noticed in our study as well that maximum number of diabetic patients reported several foot problems in which burning feet (n=125) and numbness of feet (n=173) were the most widespread. In previous studies it has been established that foot complications account for 20% of all diabetic patients because of disturbed sensibility[7]. According to another study, diabetic foot complications were the most common and serious manifestation in diabetic patients noticed[14].

Another association was establish in the present study between the body mass indexes (BMI) and chronic diabetes mellitus as shown in table 3. We found that about 60% (n=175) of diabetic patients were overweight or obese and presented with type 2 DM. Whereas a small number of obese diabetic patients (n=26) were categorized in type 1 DM. Overweight or obese people may have a danger of developing DM. In relation to one cross-sectional epidemiologic study conducted covering rural, suburban and urban areas of Greece between 1996-1999, accomplished a strong association connecting type 2 DM and obesity[26]. A survey done by CDC in United States to unearth the prevalence of overweight and obesity among diabetic adults. The report was based on two surveys done by "Third National Health and Nutritional Examination" (NHANES III), 1998-1994 and NHANES III 1999-2002. They indicated that the mainstreams of adults with diagnosed DM were cluster into overweight or obese and their dominance was 85.2%[27].

In our part of the world, due to lack of proper education and consistent awareness programs, it is hard to assess the level of awareness regarding physical therapy and its various effects. As shown in table 2, most of the population were aware from the general effects of physical therapy that is, physical therapist can relieve pain by using electrotherapy modalities but conversely, people are still unaware from the advantageous and therapeutic effects of physical therapy in variety of aspects that is, either we talk about its role in prevention or in maintenance or even in increasing muscles movement and strength. Unfortunately, no prior studies were performed to assess the level of awareness concerning effects of physical therapy. Therefore, present study would be of assistance in terms of providing a snap shot of the present awareness status regarding field of physical therapy so that further recommendations can be taken consequently.

The limitation of the study is that only those cases of diabetes were included in the study which visited to the tertiary care hospital, diabetic centers and nearby residents otherwise more actual snap shot of the musculoskeletal disorders could be observed as most of the patient visits private clinics.

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PAKISTAN JOURNAL OF
REHABILITATION

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It should briefly describe the study moving from a broad perspective to a narrow one. It should include background and literature reviews about the topic. Relevant references are appreciated. Always remember to mention the purpose of the study. Clearly mention the objectives of the study. Provide operational definitions of terminologies where required.

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Mention all the components of methodology including study design, study settings, duration, sampling method, inclusion and exclusion criteria and apparatus/tools/intervention. Mention clearly the procedure and the follow-up of the study. Always mention the implemented statistical test and the reasons of application.

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Present the results in logical sequence in the text as well as tables. Results should be specific and interpret all variables providing the evidence of the study.

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For example:

[1] Lloyd-Williams F, Mair FS, Leitner M. Exercise training and heart failure: a systematic review of current evidence. The Br J Gen Pract. 2002;52(474):47-55

Stress is prevalent and costly problem in today's workplace. About one third of workers report high levels of stress[21].one quarter of employees view their jobs as the number one stressor in their lives[22].three quarters of employees believe the worker has more on job stress than a generation ago[23]. Evidence also suggests that stress is the major cause of turnover in organizations[21]. With continued stress at the workplace, workers will develop psychological and physiological dysfunctions and decreased motivation in excelling in their position[24]. The Kenexa Research Institute released a global survey of almost 30,000 workers which showed that females suffered more workplace stress than their male counterparts. According to the survey, women's stress level were 10% higher for those in supervisory positions,8% higher stress in service and production jobs than men and 6% higher in middle and upper management than men in the same position[25] similar to our study in which it was seen that 18.33% people had stress which in turn was revealed to have impact that is 40% on altered posture and resulting in musculoskeletal problems.

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PSYCHOSOCIAL FACTORS INFLUENCING DECISION OF YOUNG ADULTS TO STUDY ABROAD

ABSTRACT

OBJECTIVES

The purpose of the study is to identify and describe the most persistent psychosocial factors that influence young adults of Karachi to take up the decision of studying abroad.

STUDY DESIGN

It was a cross sectional study. Respondents of the study were young adults currently abroad or planning to go abroad for higher studies from Karachi, ages ranging between 18 to 30 years. In this regard, a closed ended questionnaire was made on Likert scale. Non probability convenience sampling technique was used to collect the data with the sampling size of 170 students.

RESULTS

Out of 170 participants, the majority were male which counted to 117, whereas female participants were only 53. From the mean of all the independent variables, it was found that factors affecting quality of life is the most persistent, having M=3.36 with ±0.718 SD among all that encourage young adults to take decision to study abroad. For future research, comparative analysis can be done to find the reasoning behind young adults those who are applying and those who are not for higher education abroad.

CONCLUSION

The three highlighted issues, which became focus of this study includes quality of education, social & personal factors, and quality of life. In this study it is also concluded that quality of life is the focal point for most of the young adults of Karachi.

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Key Words
Psychosocial, Young Adult, Abroad, Brain Drain, Migration, Education.