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The spinal manipulation/chiropractic care neurophysiological function and immune markers.

Imran Amjad [1,2]

The spinal manipulation and chiropractic care can significantly influence central neural function. The prefrontal cortex activity changed after spinal manipulation/chiropractic care, like improved error of joint position sense,(1) cortical processing, (2, 3) reflex excitability, (4) reaction time, (2) cortical sensorimotor integration, (3, 5) motor control, (5) and strength of lower extremity muscle. (6) The prefrontal cortex is a fundamental region of the brain responsible for multimodal integration. It is the part of the brain responsible for executive functions, (7) i.e., the process by which the different regions of the brain integrate and coordinate the processes of various neural systems to solve cognitive and motor problems and achieve tasks based on the frequently fluctuating environment. (8) It have a vital part in pain perception, (9) emotional control & mental health, (10) and it contribute in regulating the autonomic nervous system, the immune and the endocrine system. (11) The Prefrontal cortical is supposed to be the main region of the brain for assisting various neural systems integration, control and coordination. It requires development a sequence of subtasks to achieve a final task, concentrating attention on applicable information, inhibiting unrelated distractors, switching attention among tasks, observing memory, initiating movement, and responding to stimuli.(8)

A recently published review(12) has summarized basic science evidence that spinal manipulation /chiropractic care modulate immune mediators.(13) However, most of these studies assessed the immune markers instantaneously before and after spinal manipulations/adjustments or a few hours post-adjustment on the same day.(13) As the Prefrontal

cortical activity also mediates the regulation of the hypothalamic-pituitary- axis, the autonomic nervous system, and the immune system. Interaction of Neuro-immune is affected by pain and emotional-related stress. Stress triggers the sympathetic nervous system and also the hypothalamic-pituitary-axis and ultimately induces inflammation in the body. Moreover, Stress inhibits the prefrontal cortical activity, sequentially it decreases its inhibitory control on the hypothalamic-pituitary-axis and inhibits the anti-inflammatory parasympathetic nervous system action. This stress-induced inflammation declines the immune response. Spinal manipulation/Chiropractic adjustments have been shown to affect the mechanism of vertebral motor control, the activity of the prefrontal cortex and the concentrations of immune markers in the human body.

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Workplace evaluation of computer users of the medical university; an ergonomic perspective

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ABSTRACT

Background: Computer usage in the workplace had started in 1950 for commercial purposes. The study of environmental factors in the people's workplace is known as ergonomics. It is used to adjust the working stations of people using standard protocol to reduce the stress that affects people physically while spending many hours a day in front of the computer at workplace.

Objective: To ergonomically evaluate workplace environment of computer users of the medical university.

Methods: A cross-sectional study was conducted on computer users at Dr. Ziauddin University Karachi. The sample size was 100 and the sampling technique used was convenient. Ergonomic Workplace Evaluation questionnaire consisting of questions from an ergonomics perspective was used. The study duration was 6 months (from March 2019 to August 2019). Data was analyzed with aid from SPSS version 21.

Results: Results showed that out of 100, 60% participants had problems with physical conditions at workplace with the environment, 69% had a problem with noise, (31% had problems with light due to letting it in during the day, 19% suffered due to equipment. Other 34% stated the cause to be the building number and 13% was due to room. Regarding postural problems, 66% had problems with working stations. The reason of absenteeism was 32% due to working posture, 30% was due to repetitive work, 21% was attributed to Lifting, and 17% was due to other reasons regarding this perspective. In addition, 86% participants responded that their physical work environment contributes to absence due to illness.

Conclusion: There is a significant effect of the workplace environment on the performance of computer users at the medical university.

Keywords: Career engagement, ergonomics assessment, physical ergonomics, posture, workstation.

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Introduction:

The study of environmental factors in the workplace of people is known as ergonomics.(1) Ergonomics is characterized as the use of human organic sciences which is used to accomplish the ideal and equally shared division of work for individuals, the advantages measured as far as human productivity and prosperity is concerned.(2) Workstation Ergonomics fits the work environment of specialists by adjusting or updating the job, workstation, apparatus, or environment. Workstation outlines can have a major effect on office workers' well-being and prosperity.(3) The most commonly diagnosed musculoskeletal conditions are related to neck, shoulders, and back in people at workplace. Moreover, eyes and ears are also affected by the improper lighting and noise effects in the environment of the same.(4) Perhaps, certain normal attributes have been recognized and connected to the prevention of musculoskeletal problems. These incorporate: outline of the workstation, nature of the assignment, requirement of the employment, level of postural requirement, work pace, work/rest timetables, and individual traits of specialists.(5) As far as workplace evaluation of computer user's workstations is concerned, it can cause certain risk and musculo-skeletal issues.(6)

Some improper routines of office workers at their offices are sitting in one position for a long time, sitting on a non-flexible seat using of desktop closer than 18" with eye level, seeing the screen in a sufficiently bright

room, setting useful things out of range, working without occasional breaks, and using a tablet as one's essential PC.(7) According to the study, there is a lack of knowledge and consequently, practices of ergonomics measures is seen in computer users at workplace.(8) Even the individuals who had the information were not ready to deliberately apply this for the avoidance of body pain and disabilities.(9) As reported in the research, the applications of ergonomics are used for the comfort of employees in the working environment are to reduce the potential for injuries, reduce the potential for harm and sick well-being and enhance the execution and efficiency of a safe working environment. These majors can decrease the chances of injury at the workplace.(10)

Ergonomics can prevent and minimize the risk of injury and body pain at work, for example, strain, sprain, and damage to the wrists, shoulders, back, and another office work-related musculoskeletal disorders.(11) Some typical' ergonomic problems found in the workplace are the design of working stations, manual handling of the worker, workstation layout, and daily workload.(12) A study was done which revealed that office ergonomics can reduce lower back and neck aches. The study showed that the application of a participatory ergonomically environment can be a fruitful technique to create and organize ergonomic measures to delay LBP and neck pain.(13) In spite of many workshops done by experts and awareness programs related to ergonomics, the execution of the organized ergonomic measures was lower than expected.(14) Another study was done on the Effect of Setup Configurations of Split Computer Keyboards on Wrist Angle. The study showed that the consequences of this exploration gives physical advisors and ergonomists an arrangement of designs of a split console that they can prescribe to their patients or customers.(15)

The greater need for ergonomics setup is due to the repetitive use of the mouse which can cause an improper wrist position, which hypothetically would diminish the work-related muscular disorders, for example, tenosynovitis in the wrist and carpal passage disorder.(16) Another study was done on workplace ergonomics and it was found that there was a major role of ergonomics for the prevention of workplace musculoskeletal or visual issues.(17) Objective of the study was to evaluate the workplace environment of computer users of Dr. Ziauddin medical university. This study will be helpful in improving the working environment of computer users which can reduce hazards, and improve the productivity of an employee which results in increased turnover of an organization in the future.

Methods:

This is a cross-sectional study, descriptive in nature, which was conducted on computer users of Dr. Ziauddin Medical University Karachi. The sample size was calculated by using openepi.com software version 3.0 from a prevalence population of 50%. Statistical conditions were a 95% confidence interval and a 5% margin of error. This software estimated a sample size of 100 participants. The sampling technique used was convenient. Ethical approval was obtained from Dr. Ziauddin Medical University, Karachi (BASAR/No. 045541/physio). A consent form from all participants was taken before filling out the questionnaire. The study duration was six months after the approval of the ethical committee from March 2019 to August 2019. Inclusion criteria was computer users working for more than 6 hours a day for 5 days a week as well as health status, as physically stable and exclusion criteria were computer users with diagnosed musculoskeletal disorders, and also surgery, where users who refused to participate in this study were excluded from this study. Problems with physical conditions concerning the working environment included noise and lighting. In this study, a validated questionnaire titled as Ergonomic Workplace Evaluation was used in which questions related to standard ergonomics requirements at the workplace are asked from the participants.(18) The secrecy of participants was maintained. Data were analyzed by Statistical Package for Social Sciences (SPSS) version 21.

Results:

In this study, we considered the working conditions of physically healthy individuals who used computers during their working hours five days a week for more than 6 hours a day. The results showed that 60% of research participants had problems with physical conditions concerned their workplace environment out of 100 respondents and 40% had no issue regarding this as shown in Table no 1.

Out of 100 computer operators, 69% of participants stated that there was a problem with physical conditions concerned with noise while 31% stated there was no issue regarding it as shown in Table 1.

In response to a question regarding lighting problems, 100 computer operators who were study

participants responded that their problem with lighting was caused by letting in daylight at 31%, equipment lighting at 19%, room lighting at 31%, state at 13%. Other 34% is shown in graphical form in figure no. 1.

Regarding the ergonomics conditions of computer users, 66% of participants responded that they had problems with workstation conditions and 34% responded they had no issue with it.

Moreover, for the reason for the absenteeism of the research, out of 100 computer operators, participants' response was that 32% was due to working posture, 30% was due to repetitive work, 21% was due to lifting, 17 % was for other reasons as shown in figure no. 2.

Out of 100 computer operators, 86% of participants responded that their physical work environment contributes to absence due to illness and 14% responded that they had no issue with it.

Table 1: Response of participants to ergonomic problems

Variable		Frequency (Percent)
Problems with physical conditions concerned with workplace	Yes	60 (60%)
	No	40 (40%)
Problem with physical conditions concerned with noise	Yes	69.0 (69%)
	No	31.0 (31%)
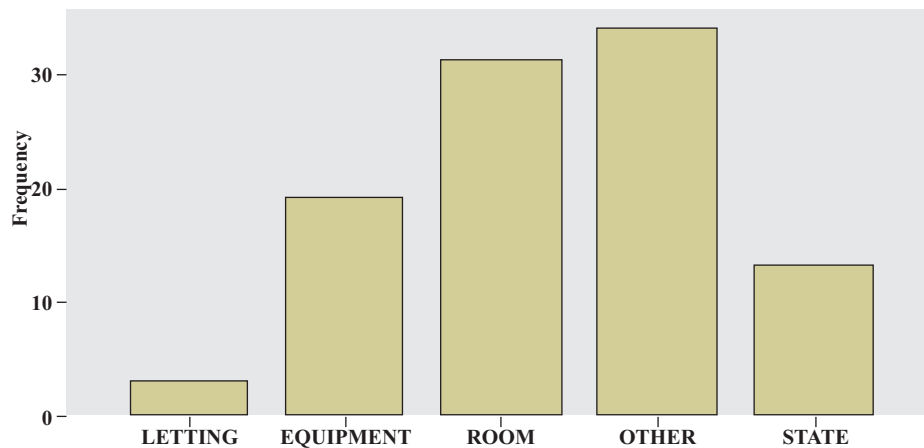
Figure 1: Problem with lighting of workplace
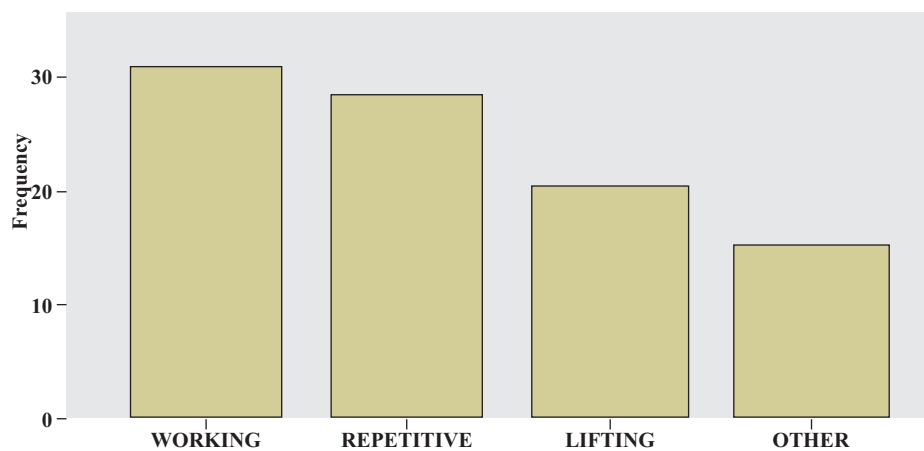
Figure 2: Causes of problems at the workplace

Discussion:

A safe and healthy environment at the workplace is very important for the workers because these factors contribute to the performance and motivation of an employee. Pakistan is a developing country, but the safety measures for the promotion of a healthy working environment at the workplace are neglected by employers and employees as well. The increase use of computer also causes harm to users due to prolonged use of desktop screen.

In our study, physical conditions concerned with the workplace caused problems for computer users. In the previous study, Rakhshaan et al demonstrated that a large portion of the respondents was not aware of the standards behind safe working conditions. Furthermore, those workers who had knowledge regarding the ergonomics measure were not ready to apply and follow that can prevent future injury and musculoskeletal problems. In this study, 64% of computer users said that they had an ergonomics problem.(6)

In this study, we showed ergonomic conditions that affects the working conditions of computer users. As reported in the randomized controlled trial study, the most commonly diagnosed physical pains and accidental musculoskeletal issues were seen among computer users.(19)

According to the study, office noise is categorized into four categories: the noise of conversation and speech, equipment, the noise came from the background and installations.(20) Another research revealed that out of four categories of noise, speech has been proven to be the most irritating and divertive. In our study, 69% of computer users stated that had noise problems.(21)

Another study revealed that giving expansive lower arm support with the ergonomically prepared office chair is a powerful measure to prevent abdominal area musculoskeletal issues and reduce abdominal area injury connected with PC work among call center workers.(22) In our study, 60% of computer users had problems with ergonomic conditions at their workplace and a direct effect of job pressure and working environment was seen on the physical health status of an employee. The early stage of musculoskeletal injuries is pain and increase muscle tension which can be caused by the physical, personal, and psychosocial pressures of workers.(23)

Prolonged time duration in front of a computer is also the main cause of improper posture which can also cause injury to the back. So in this domain, a study reported that the use of a non-ergonomically made chair for a prolonged period is strongly related to low back pain.(24) In the present study, 40% of computer users said that they have encountered MSK problems due to an incorrect ergonomic environment. The workplace should have ergonomically designed working stations in which keyboard height and mouse location allows the wrist to move with the elbow line. The main cause of musculoskeletal disorders is unknown but the multiple factors suggested by the studies can increase the risk, e.g., repetitive activity, improper posture, and prolonged use of computing.(25) In our study, 86% of computer use of stated that they have issues in physical work environments that contribute to their absence of work due to illness.

Awareness sessions should be held in an organization to provide knowledge of ergonomics measures to the employers and employees. In addition, there is a need for ergonomics training at school level to promote a healthy and disease-free environment. Limitations of the study are psychological elements, family background, and household lifestyles of people working in the workplace. These have not been viewed to be the section of this study because they might be contributing element segments to cause any musculoskeletal issue and illness with respect to the job of people in future. So, researchers can work in this domain of a worker that will have an effect on improving the working conditions of an employee according to their needs.

Conclusion:

It is concluded that environmental factors including lighting, equipment, rooms, noise, etc. had direct effects on the performance of employees, and ergonomically designed working stations can reduce work-related musculoskeletal problems as compared to non-ergonomically designed workstations.

Disclaimer: None to declare.

Conflict of Interest: Signatory of ethical approval is also one of the co-authors of study.

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Jamil K: Study concept, design and result interpretation
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Quality of life in older adults with mild cognitive impairment

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ABSTRACT

Background: Mild cognitive impairment (MCI) is a common phenomenon which is noticeably common among the older individuals population. Progression of this disorder is known to increase risk of Alzheimer's disease and Dementia.

Objective: The objective of this study was to determine the association of quality of life and mild cognitive impairment in geriatric population.

Methods: The data was collected using Memory Symptom Assessment Scale-Short Form (MSAS-SF) and Quality of life- Alzheimer Disease (QOL-AD) during a time period of six months from 300 individuals aged between 55-85years. The data analysis of this study was done using SPSS 21 version. Spearman test values were calculated to obtain results.

Results: MSAD-SF and QOL-AD showed a significant decline of QOL in individuals with mild cognitive impairment. MSAS-SF and QOL-AD had the significant association with pain, lack of energy, difficulty sleeping, problems with urination, lack of appetite, dizziness, feeling sad, worrying, feeling irritable, memory, ability to do chores around the house, physical health, self as a whole and ability to do things for fun (p-value<0.05). Domains in both questionnaires indicated a decline in QOL with significant p-values of <0.05.

Conclusion: In conclusion, those who had higher impairment level had lower quality of life in multiple domains.

Key words: Aged, Cognitive dysfunctions, Geriatric population, Mild cognitive impairment, Quality of life
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Introduction:

Mild cognitive impairment (MCI) is a wide and non-specific spectrum of cognitive impairment short of dementia which causes difficulty in remembering, thinking, learning new things, and deciding choices that influences a person's activities of daily living with the ADLs maintained.(1) Progressing from mild to severe, it can lead to Alzheimer's disease (AD) in approximately 10%-15% cases.(2) Screening of the high risk patients by use of MRI is important for beginning appropriate treatment strategies and delaying onset of AD.(3) Risk factors for MCI include high cholesterol, hypertension, type 2 diabetes mellitus,

older age and female gender.(1, 4-6)

Prevalence of mild cognitive impairment is 22.2% among older population in the US, with 14.71% among Chinese, 4.3% in India and 3.1% in Germany.(6) A cross-sectional study conducted in Saudi Arabia among 171 individuals concluded that the prevalence of MCI was 38.6%.(1) There is scarce information present on the prevalence of MCI in Pakistan but prevalence of dementia in South Asia is found to be approximately 1.9% suggesting that over 1.5 million population in the country is diagnosed with dementia.(7)

Neurophysiological conditions like MCI, dementia and Alzheimer's reduce a person's quality of life (QOL) as the disease progresses interfering with their behavior, personal life and psychology. In many cases improving the QOL of the patient is the main objective to make sure that pharmacological and psychosocial interventions are effective.(8) A recent study aimed to evaluate the neuropsychological characteristics, and current perspectives of MCI patients. They found that the patient's quality of life is affected in regard to depression, anxiety and apathy. Their results showed that there is high prevalence of MCI patients with at

least one of these symptoms. Presence of these factors increase the progression of MCI to dementia.(9) A cross-sectional study which aimed to find the possible determinants of depression and MCI in people with type 2 diabetes reported that 30-85% of people who have MCI also have depression and this has an impact on the activities of daily living.(10)

The purpose of this research was to determine the aspects of the quality of life that were compromised in patients having cognitive impairment. This study will highlight the association of quality of life and mild cognitive in geriatric population allowing health care professionals to take in account all the aspects of an affected individual's life and treat them accordingly, thus enabling them to counsel the patients to improve their QOL.

Methods:

This descriptive cross-sectional comparative study was approved by the ethical review committee at Riphah International University (RIPHAH/RCRS/REC/Letter-00809). Informed consent was taken from all participants. The study was conducted in hospitals, clinics and old age homes of Islamabad and Rawalpindi namely; Tasneem Surgical Clinic, Azmat Rashid Hospital, Nijjat old age home, and Physio experts. The study was done for a duration of 6 months from January to June 2020 with a sample size of 300 people in age group of 55-85 years. Non-probability convenience sampling was used. Both genders and people with Montreal Cognitive Assessment score less than 26 were included in the study. Bed bound patient, comatose patient, those with severe visual and hearing problem or a chronic medical illness were excluded.

The Montreal Cognitive Assessment (MoCA) was used at first for the screening of mild cognitive dysfunction. Its assessment included various cognitive domains, such as attention and concentration, executive functions, memory, language, visuoconstructional skills, conceptual thinking, calculations, and orientation. The Memorial Symptom Assessment Scale (MSAS-SF) evaluate multiple domains of medical signs and symptoms that will predict beforehand the onset of a chronic or life-threatening disease. It consists of 27 variables. The subcategory includes 'no = score 0 and 'yes', 'if yes then, not at all distressed = score 1', 'if yes then, a little bit = score 2', 'if yes then, quite a bit = score 3' and 'if yes then, very much distressed = score 4'. It was used along with Quality of Life–Alzheimer's Disease questionnaire (QOL-AD) which evaluates a patient's medical, physical, social, personal and psychological aspects. It consists of 12 domains or variables such as physical health, energy, mood, living situation, memory, family, marriage, friends, self as a whole, ability to do chores around the house, ability to do things for fun, money and life as a whole. The subcategories include 'poor', 'fair', 'good', 'excellent' and 'not applicable.

The data was analyzed using SPSS version 21. For quantitative variables, mean and standard deviation were calculated and for qualitative variables, frequency and percentage were calculated. Correlation between mild cognitive impairment measured using MoCA and quality of life assessed using MSAS-SF and QOL-AD was found using spearman rank-order correlation.

Results:

A total data of 300 individuals between 55 and 85 years was collected after assessing the exclusion and inclusion criteria. Of 300 individuals, 155 (51.7%) were females and 145 (48.3%) were males. 282 (94%) of them were married and 18 (6%) were unmarried. 23.3% (70) of individuals with mild cognitive impairment scored 22 on MoCA scale. Table 1 and table 2 shows descriptive statistics of MSAS-SF and QOL-AD questionnaire. Spearman's rank-order correlation was used to determine correlation between mild cognitive impairment and quality of life (table 3).

Discussion:

This study investigated the association of mild cognitive impairment with quality of life in the geriatric population. In our study majority of the patients with mild cognitive impairment had their health domains affected mildly. Physical and psychological health of the patients were assessed by Memorial Symptom Assessment Scale – Short Form (MSAS-SF) while the quality of life was assessed using QOL-AD (Quality of life in Alzheimer's disease) questionnaire. The results had shown p value less than 0.005 for each domain which showed significant relationship of cognitive impairment with quality of life.

A previous research concluded that individuals diagnosed with MCI contributed to poor QOL. The current study also reported to have shown how QOL is negatively impacted in patients having mild cognitive impairment.(3)

A similar study aimed to find the association of physical fitness with functional capacity, cognitive function and quality of life among the aged individuals

Table 1: Descriptive statistics of MSAS-SF questionnaire

VARIABLES	No	If yes then, Not at all distressed	If yes then, A little bit distressed	If yes the, Quite a bit distressed	If yes then, Very much distressed
Difficulty concentrating	142(47.3%)	19(6.3%)	113(37.7%)	16(5.3%)	10(3.3%)
Pain	56(18.7%)	19(6.3%)	83(27.7%)	84(28.0%)	58(19.3%)
Lack of energy	43 (14.3%)	55(18.3%)	118 (39.3%)	70(23.3%)	14(4.7%)
Cough	177(59.0%)	21(7.0%)	60(20.0%)	32(10.0%)	10(3.3%)
Changes in skin	219(73.0%)	11(3.7%)	36(12.0%)	22(7.3%)	12(4.0%)
Dry mouth	197(65.7%)	23(7.7%)	48(16.0%)	23(7.7%)	9(3.0%)
Nausea	232(77.3%)	17(5.7%)	27(9.0%)	20(6.7%)	4(1.3%)
Feeling drowsy	185(61.7%)	46(15.3%)	48(16.0%)	21(7.0%)	0 (0%)
Numbness in hands and feet	175(58.3%)	16(5.3%)	61(20.3%)	34(11.3%)	14(4.7%)
Difficulty sleeping	99(33.0%)	9(3.0%)	84(28.0%)	57(19.0%)	51(17.0%)
Feeling bloated	164(54.7%)	28(9.3%)	70(23.3%)	33(11.0%)	5(1.7%)
Problems with urination	199(66.3%)	10(3.3%)	42(14.0%)	33(11.0%)	16(5.3%)
Vomiting	250(83.3%)	5(1.7 %)	32(10.7%)	7(2.3%)	6(2.0%)
Shortness of breath	231(67.7%)	14(4.1%)	56(16.4%)	35(10.3%)	2(0.6%)
Diarrhea	213(71.0%)	16(5.3%)	61(20.3%)	10(3.3%)	0 (0%)
Sweats	224(74.7%)	14(4.7%)	27(9.0%)	20(6.7%)	15(5.0%)
Mouth sores	224(74.7%)	14(4.7%)	27(9.0%)	20(6.7%)	15(5.0%)
Problems with sexual	277(92.3%)	5(1.7%)	12(4.0%)	1(0.3%)	5(1.7%)
Itching	240(80.0%)	17(5.7%)	40(13.3)	0 (0%)	0 (0%)
Lack of appetite	201(67.0%)	41(13.7%)	47(15.7%)	10(3.3%)	1(0.3%)
Dizziness	219(73.0%)	20(5.9%)	35(10.3%)	11(3.2%)	4(1.2%)
Difficulty swallowing	229(76.3%)	5(1.7%)	40(13.3%)	18(6.0%)	8(2.7%)
Change in the way food	219(73.0%)	16(5.3%)	42(14.0%)	18(6.0%)	5(1.7%)
Weight loss	205(68.3%)	33(11.0%)	43(14.3%)	17(5.7%)	2(0.7%)
Hair loss	193(64.3%)	29(9.7%)	47(15.7%)	25(8.3%)	6(2.0%)
Constipation	189(63.0%)	62.0%)	52(17.3%)	41(13.7%)	12(4.0%)
Swelling of arms and legs	192(64.0%)	21(7.0%)	51(17.0%)	29(9.7%)	7(2.3%)

Table 2 : Descriptive statistics of QOL-AD questionnaire

Variables	Rarely	Occasionally	Frequently	Almost
Feeling sad	113(37.7%)	138(46.0%)	41(13.7%)	8(2.7%)
Worrying	62(20.7%)	128(42.7%)	87(29.0%)	22(7.3%)
Feeling irritable	79(26.3%)	120(40.0%)	84(28.0%)	17(5.7%)
Feeling nervous	147(49.0%)	82(27.3%)	45(15.0%)	26(8.7%)

Table 3 : Correlation between mild cognitive impairment and quality of life.

Variables	R value	P value	Variables	R value	P value
Difficulty concentrating	-0.205	<0.001***	Dizziness	-0.27	<0.05*
Pain	-0.233	<0.05*	Difficulty swallowing	-0.015	0.790
Lack of energy	-0.171	<0.05*	Change in the way food tastes	-0.008	0.889
Cough	-0.065	0.25	Weight loss	-0.039	0.500
Changes in skin	-0.127	0.67	Hair loss	-0.035	0.550
Dry mouth	-0.042	0.46	Constipation	0.078	0.179
Nausea	0.026	0.65	Swelling of arms and legs	0.018	0.755
Feeling drowsy	-0.079	0.17	Feeling sad	-0.23	<0.05*
Numbness in hands and feet	-0.042	0.46	Worrying	0.39	<0.05*
Difficulty sleeping	-0.23	<0.05*	Feeling irritable	0.120	<0.05*
Feeling bloated	-0.44	0.443	Feeling nervous	-0.058	0.83
Problems with urination	-0.121	<0.05*	Physical health	0.222	<0.001***
Vomiting	0.002	0.974	Energy	0.062	0.287
Shortness of breath	-0.069	0.236	Mood	0.011	0.845
Diarrhea	-0.032	0.87	Living situation	0.018	0.176
Sweats	-0.049	0.401	Memory	0.118	<0.05*
Mouth sores	-0.041	0.480	Family	0.115	0.92
Problems with sexual interest and activity	0.063	0.273	Marriage	-0.019	0.745
Itching	0.021	0.723	Friends	0.018	0.65
Lack of appetite	-0.36	<0.05*	Self as a whole	0.169	<0.001***

*** = highly statistically significant *= statistically significant

using Mini-Mental State Examination (MMSE) scale to assess the cognitive impairment. Their results suggested that physical fitness impacts QOL and cognitive impairments also affects QOL adversely. Our study also concluded that cognitive impairment has unfavorable effects on the individuals QOL.(11)

The results showed that the people who were diagnosed with MCI reported lower QOL than those who did not have any diagnostic label which is in similarity to our study findings.(12)

In Malaysia a study conducted including 271 people aimed to define the MCI incidence in older adults attending primary care clinics and its association with QOL (quality of life). The results revealed that the prevalence of MCI was 23.7%, while poor QOL scores were found in all domains in patients with MCI. This showed that MCI was prevalent in the patients and was associated with a poor QOL and all its domains being affected.(8)

In yet another study conducted in 2017, it was indicated that higher scores of QOL i.e. each additional point on the scale reduced the risk of MCI by 10%. The QOL of older people declines with a growing deficit in

their memory. Similarly, our study also shows that for patients with MCI, the QOL scores were low.(13, 14)

However, we were unable to collect date from other cities of Pakistan and certain hospitals in Rawalpindi restricted us to collect data due of COVID-19 pandemic restrictions imposed by the government. Many patients did not consent to filling the questionnaire due to psychological domain present in the questionnaires and because of the potential stigma attached to metal issues in Pakistan. This limited us to carry out our research on a large scale. Interventional studies should be conducted with emphasis on Physical therapy, mind relaxation exercises, stretching exercises and yoga. Also computer based cognitive training would be very helpful to stop regression to severe cognitive impairment. More education is needed to motivate the health care professionals to improve the QOL in individuals with MCI by identifying early signs of cognitive degradation. This will be helpful in counseling the patients to cope up with MCI rather than being distressed all the time about their condition.

Conclusion:

All domains of QOL were affected in individuals

having MCI. Those who had higher impairment level had lower quality of life overall.

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Prevalence of research-related anxiety among students of Allied Health Sciences

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ABSTRACT

Background: Anxiety is one of the most common mental disorders. Although being detrimental, it is less researched upon than depression. While research is an essential component of medical education, it is also unfamiliar to undergraduate medical students. Therefore, research at the undergraduate level has been shown to cause anxiety among students.

Objective: To determine research-related anxiety among Allied Health Sciences students.

Methods: A cross-sectional study was conducted in which a sample of 150 undergraduate students was selected on the basis of inclusion (no past history of mental illness, no traumatic incident in past 6 months and allied health sciences student from final year) and exclusion (traumatic incident in past 3 months, failure in recent major exam) criteria. The participants after signing the informed consent were recruited in the study through a non-probability convenient sampling technique. The data was collected using Generalized Anxiety Disorder scale (GAD-7 scale). Data were analyzed through SPSS version 21.

Results: In this study, 150 undergraduate students participated in the study. Results showed that out of the 150 students, 90 (60%) had mild anxiety related to research, 32(21%) students had moderate level anxiety, and 28 (18%) students had severe anxiety.

Conclusion: According to the results of this study, the majority of students in their final year or semester experienced mild levels of research related-anxiety.

Keywords: Allied health, Anxiety, Research, Students.

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Introduction:

Anxiety is our body's natural response to stress or threat, serving as an 'alarm' that alerts us of potential danger. Ordinary anxiety, although is unpleasant but the discomfort is meant to stimulate a protective response which eventually turns out to be beneficial. Performance on cognitive tests might be improved by some degree of anxiety in people with good working memory.(1) Anxiety disorders are the most common of mental disorders and affect nearly 30% of adults at some point in their lives. Although it is almost as impairing as depression it is relatively less studied.(2) Several types of anxiety disorders, including generalized anxiety disorder (GAD), panic disorder, phobias and separation anxiety. Based on previous studies, researchers found sources of anxiety among students such as mathematic anxiety, language barrier anxiety, family pressure anxiety, exam anxiety, presentation anxiety, and social anxiety. Due to this, students cannot perform well in their academics leading to an effected performance in research.(3)

In a study done by Jennifer N. Shearer, MSN, RN, she found that fears such as critique by Peers and Faculty, and experience of making mistakes among students is also one of key factors that contribute towards anxiety.(4) Anxiety has both physical and psychological symptoms. The psychological symptoms being fear, worried thoughts, restlessness, irritability, uncontrollable obsessive thoughts and insomnia.(5) The general physical symptoms are: heart palpitations, sweaty palms, and tremors, difficulty in breathing, muscle twitches, nausea and headaches.(6)

There are three main brain circuits in the anxiety circuitry, namely the Amygdala (the central emotional processor), the Prefrontal Cortex and the Hippocampus. When incoming stimuli from inner or outer world is interpreted as a threat by the Amygdala, anxiety starts. A distress signal is sent to other parts of brain, mainly the

Hypothalamus. The Hypothalamus relays the signals, setting off the stress response as the sympathetic nervous system is switched on. Body is pitched into a high state of alertness when Epinephrine is released, heart rate and blood pressure rise, breathing rate is increased. Long-term standing anxiety can cause chest pain, palpitations, digestive issues and muscular pains. Sometimes people even seek treatment for these physical symptoms without even getting to the root cause of the problem.(7) The Information Search Process (ISP) model proposed by Kuhlthau was supported by the data analysis, which also identified additional affective and cognitive components of research and writing in their study regarding research-anxiety and students' perceptions of research.(8)

The final year research project is a high-impact educational approach that has been shown to boost student knowledge as well as problem-solving and analytical skills. As a result, it is critical to the professional and personal growth of final-year medical students.(9) The amount of time, effort, and dedication necessary for final-year students' research projects is particularly substantial and demanding. According to reports, even though most education students don't fully understand what research methods are about, they often feel stressed and anxious as they begin their research methods courses.(10) In particular situations, prior knowledge, course grade, course status (i.e. obligatory or elective), major, attitudes toward calculators, and course and teacher evaluation are situational elements that have been found to be particularly connected to statistics anxiety.(11) Numerous research also showed a correlation between statistical anxiety and unfavorable earlier experiences with mathematics, poor academic performance in mathematics, and a low sense of mathematical self-efficacy.

Therefore, students' research anxiety is one of the most prevalent fears among medical students. Fear and uncertainty connected with genuine scientific study and output are referred to as research anxiety.(12) Research anxiety can affect the quality and quantity of scientific output, as well as the satisfaction, personal life, and physical or emotional health of researchers. It can also contribute to burnout, because high levels of anxiety can lead to long-term physical, physiological, and behavioral issues easily develop anxiety and sadness as a result of such stress and obligations.(13) So this study aimed to determine levels of anxiety in AHS students undergoing research projects in final year.

Methods:

A cross-sectional study was conducted in which a sample of 150 undergraduate students was selected on the basis of inclusion (no past history of mental illness, no traumatic incident in past 6 months and allied health sciences student from final year) and exclusion (traumatic incident in past 3 months, failure in recent major exam) criteria. Ethical permission was taken from the research committee of Bashir Institute of Health Sciences, Islamabad (BIHS) with ERC letter Ref. # BI-05/DPT/2021. To approve the willingness of participants, a mandatory informed consent was signed by them. Their data was kept confidential. The participants after signing the informed consent were recruited in the study through a non-probability convenient sampling technique. Participants were selected on the basis of inclusion and exclusion criteria. The study setting for this research was the Bashir Institute of Health Sciences, Islamabad. The study duration was of 3 months after approval of the synopsis which was (07/07/2021 to 01/10/2021). Study sample size was 150 undergraduate students who were selected on the basis of inclusion and exclusion criteria. Study outcome measurement tool was a standard scale, the Generalized Anxiety Disorder scale (GAD-7 scale, ICC= 0.86) which was used to measure research-related anxiety among students(14,15). After signing the informed consent, the questionnaires were distributed among those 150 students and their responses were collected by hand. For descriptive analysis frequency and percentages, data was analyzed through Statistical Analysis software (SPSS version 21).

Results:

Demographic data showed 66(44%) study participants were female and 84(56%) were males. shown in Figure 1.
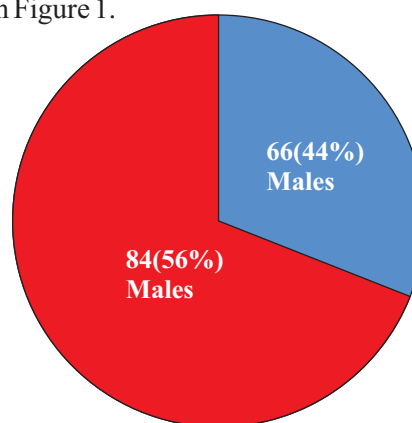

Figure 1: Pie chart showing frequency of gender of participants

The level of anxiety among undergrad students was evaluated by the GAD-7 scale and has been shown in table 1. It was found that out of the 150 students, 90(60%) had mild anxiety related to research, 32(21%) students had moderate level anxiety, and 28(18%) students had severe anxiety.

Table 1 : The level of Anxiety among participants

Level of Anxiety	No. of students	%
Mild	90	60%
Moderate	32	21%
Severe	28	18%

Discussion:

The concept of statistical anxiety related to research has received the majority of study interest for more than 30 years. The findings of this study highlighted the necessity to focus more on the holistic development of research.(10) Anxiety is as draining as depression but it is often undetected and therefore has gathered less attention among the general population.(12)   In this study, we investigated the research-related anxiety among students of Allied Health Sciences. The demographic data of in this study sample consisted of 16 (32%) females and 34(68%) males.   From the results obtained from the GAD-7 questionnaire, it is apparent that most of the students had mild levels of anxiety while a few have moderate levels of research anxiety.

In a study by Onwuegbuzie, while discussing the factors of anxiety among under grated related to research, he stated that there is a relationship between self-perception and research anxiety that is bidirectional as a major factor influencing anxiety.(16) Another factor which contributed was that students who appreciated the value of the course became more irritated when confronted with such research related problems, which can lead to an increase in anxiety. The findings demonstrated by another study were that students with easier research courses were more likely to experience lower levels of anxiety.(17) Study conducted by Ali Mercy in Turkey showed overall moderate level of anxiety among Turkish graduate ELT students. It also suggested that factors like gender and level of study had minor effects on research anxiety.(18) Similar to this study, a cross-sectional survey showed that 72.67% of students faced research anxiety and 74% of students reported difficulty in research.(13) This study's results was supported by previous research data which indicated that final-year students are highly susceptible and at greater risk of developing research-related anxiety.(19), despite being at its mild stage but still having alarming concerns for both the mental health and educational development of our students, especially the male student population.(20)

The study is limited as it was conducted among the students from a single institute and the results could be better generalized if the study is carried among multiple institutes with different faculties. The data was based upon self-reported results and thus, individual biases cannot be excluded. It is recommended that field experts, research mentors, and supervisors who greatly influence the outcome of results must help reducing the fear of students through their efficient guidelines and helping attitude.

Conclusion:

The study concludes that final-year students are at mild level of research- related anxiety which is a concern for both the mental health and educational development and well-being of students.

Disclaimer: This study is a part of undergraduate Doctor of Physical Therapy thesis.

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Correlation of physical activity with step-length and step-width in healthy young adults

Zeenia Ahmed[1], Faiz Rasool[2], Namra Nadeem Mir[1]

ABSTRACT

Background: Gait is one of the most complex neuromuscular phenomena which require perfect coordination between the brain, spine, and muscles. Due to the adverse effects of physical inactivity, physical activity it is now considered as the biggest health issue of 21st century. Physical activity effects the gait parameters to variable extent, thus affecting the quality of life. International analyses showed a clear reduction in youth physical activity.

Objectives: The purpose of our study was to identify the gait impairments present in the younger adults and modify their activity levels to avoid impairments and disability in later years of age. The objective was to determine the correlation between physical activity and step-length in healthy adults.

Methods: Gait parameters were assessed in 40 individuals including both males and females. Subjects with any musculoskeletal conditions, neurological impairments and individuals those were unable to follow verbal commands were excluded. Outcomes measure included International Physical Activity Questionnaire (IPAQ) to access physical activity level and observational method to access gait parameters step-length and step-width. The data was analyzed using SPSS 21 software.

Results: Physical activity measured through the IPAQ and step-length through observational method showed no significant correlation of physical activity with step-length (p>0.05, r=0.226) and step width (p 0.37, r=-0.145).

Conclusion: Change in physical activity levels does not have any impact on step length and step width.

Keywords: Gait, Physical Activity, Young Adult.

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Introduction:

Human gait is a manner of walking or moving on foot. It is considered as one of those neuromuscular actions which are complex in origin requiring spine, brain and muscles to work in perfect coordination. It is also known as a procedure which is cyclic in nature and it requires feedback from sensory and visual system in order to perform all the movements effectively.(1) Fall and injuries can be result of gait disorders and thus cause an increase in reduction in life quality. In early stages of a disorder in gait there can be an acute lesion in the nervous system or problems of proprioception but it can also be a result of harmful or side effects of medications and some systemic problems or disease.(2) The prevalence of Gait disorders increases from 10% in 60-69 years old community dwelling subjects to 60 % in 80 years old community dwelling subjects. Most of the gait disturbances or problems start in primarily in the age group between 60 years and 9 years, with almost one third of the said population a gait abnormality.(3)

Physical inactivity is indicative of one's level of immobility, chronic latent diseases and aging.(4) Physical inactivity is predictable as one of the risky health problems due to excess of adolescent physical inactivity and viewed a dramatic universal drift.(5) Physical inactivity tends to raise the risk of any health diseases including diabetes, heart diseases and cancers of many types including breast and colon cancers.(6) Due to the adverse effects of physical inactivity, physical activity it is now considered as the biggest health issue of 21st century.(7) International analyses showed a clear reduction in youth physical activity. Regular physical activity is one of the key determinants of health in the younger population.(4) Different analyzes were undertaken, revealing the contrary

interaction between physical training and good health. Physical inactivity only expands the risk factors of many health challenges, including gait troubles. The significance of physical activity and its implications on gait parameters are significantly impacted.(4) Physical activity and exercise can help to decrease the negative impact of age, on the body and the mind, indeed physical activity is a promising non-pharmaceutical intervention to prevent age-related cognitive decline and neurodegenerative diseases.(8) Another study compared eighteen young adults and twelve elder subjects walking on an instrumented treadmill was calculated where the speeds were self-select, the step width variation was found to be a more clinically significant variable for the assessment of locomotive control in younger subjects as compared to the step length variability.(9) A study conducted by Jennifer F Brach et al 2005, conducted the study in older population find out the association between gait parameters and the risk of fall. He conducted that gait parameters i.e. step-length and the step-width which are affected by physical activity. He stated that greater step-width is associated with the increased risk of fall in older adults. He further concluded that with age, step-width tends to increase, that further affects the gait hence increase the risk of fall in older adults.(10) A study conducted by Jennifer F. Brach et al. 2007, conducted in adults found out the relationship between the gait parameters, step-length and step-width. He concluded that with age these parameters are altered and hence gait speed is affected. Gait speed then tends to affect the mobility in the older adults and is associated with the decrease mobility in the older individuals and risk of fall in them hence, complemented our study.(11) Gait variability that is mostly affected with increasing age. He conducted that with decreasing age there is a decrease in gait variability and gait variability increases as the age progresses. Gait variability is a prominent indicator of fall and hence with increasing age the risk of fall also increases.(12)

Age related change in the spatial-temporal parameters is prominent in the older population and is not prominent in younger adults. It's still affecting the young age but the change is not significant during this age.(13) The study aimed to determine the correlation between physical activity step-width and step-length in healthy adults.

Methods:

A cross-sectional correlational study was conducted from February 2019 to July 2019 using non-probability sampling technique with a sample size of 40 young adults of both genders, age group18-35 years. Ethical approval was taken from Foundation University Islamabad (FF/FUMC/215Phy/19). However, the adults having any musculoskeletal or neurological impairments or disability were excluded from the study. A written consent was taken from all participants. For step length, foot prints were obtained on 10 m walkway covered with brown glace sheet. At the end, the subjects were requested to fill the IPAQ (long version) to determine physical activity level in terms of MET minutes per week. Data was analyzed using SPSS V 21.0. Qualitative data was presented in frequency and quantitative data was presented as means and standard deviations. To determine relationship between physical activity and step length and step width correlation analysis was conducted.

Results:

The total sample collected in this study was n=40 adults of 18-35 years of age. Gender wise distribution is shown in figure 1. All the subjects were from Rawalpindi, Islamabad and its premises. The mean age of participants was 25.15 years.

Table no. 1 shows the P value for spearman's test applied between physical activity and step length which was 0.161 which indicated non statistical significance of the result and the correlation coefficient value of 0.226 i.e. positive correlation between two parameters. The correlation even though was weak and not significant but positive relation shows with increase in physical activity step length will also increase. For spearmen's test between physical activity and step width the P value 0.37 indicated non-statistical significance of the result and the correlation coefficient value of -0.145 indicated positive correlation between two parameters. The correlation was weak and not significant but negative relation showed that with increase in physical activity step width will also decrease.
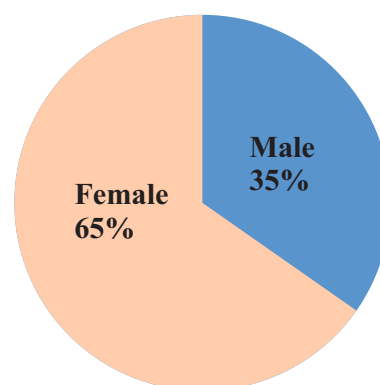

Figure 1: Pie chart showing gender distribution

Table 1 : Table showing correlation between physical activiry levels and step length and step Width

Spearman's Test	Correlation coefficient	P value
Physical Activity X Step Length	0.226	0.161
Physical Activity X Step Width average	-0.145	0.37

Discussion:

Gait variability and physical activity has very strong relationship with each other, and has very marked effect on human gait performance. This study observed the correlation of physical activity with step width and step length in healthy adults of age (18-35 years). According to literature review many studies were conducted but they had included older population. Currently, studies are being conducted worldwide to explore the correlation with both cross-sectional and longitudinal designs, but in our study cross-sectional design was used. The result of our study revealed no significant correlation among level of physical activity and gait parameter.

A study was conducted by Daniela ET al. including population of healthy adult women that shows negative relationship between physical activity and step length.(1) In the same year another similar study conducted by fillip et al., study was composed of healthy and physically active adults and the study showed that there was a connection between preferred walking speed and quality of life.(2) Our study observed independent relationship between physical activity and step length. Our results are somehow similar with the previous study revealing that there is no change in step length by doing physical activity.

In contrast to our study another study conducted by zijlstra A. et al. evaluated step length frequency in physically healthy adult woman and they found negative relation with step length frequency and progressive age.(3) This research supported the result of our research.

A study was conducted by tasulu kimora in the year 2007. He performed a comparative study between young physical active boys and girls and non-physical active girls and boys. At the end of the study, it was concluded that step- width decreases with the age. This

research supported the result of our research.(14)

Limitations of the study were related to less sample size and time duration. More objective tools should be included in future researched to measure physical activity level and gait parameters. Future research should focus on the effect size and clinical applications of physical activity levels on gait parameters.

Conclusion:

It was concluded that in young adults physical activity has no significant relation with step-length and step- width.

Disclaimer: None to declare

Conflict of interest: None to declare

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Ahmed Z: Literature review, data collection and data analysis and write up.
Rasool F: Literature review, data collection and data analysis and write up.
Mir NN: Literature review, data collection and data analysis and write up.

Perceived stress and sleep quality among health care faculty and postgraduate students during COVID- 19 pandemic lockdown

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ABSTRACT

Background: Perceived Stress and quality of sleep are major determinants of physical and mental health.

Objective: To determine perceived stress and sleep quality among medical, dental and rehabilitation sciences faculties and its association with age, discipline and designation.

Methods: This cross-sectional study was conducted at Islamic International Medical and Dental Colleges, and College of Rehabilitation Sciences of Riphah International University from July till September 2021. Two validated questionnaires perceived Stress Scale (PSS) and Pittsburgh Sleep Quality Index (PSQI) were administered with informed consent using convenience sampling after ERC approval. Data was analyzed by SPSS 20. Spearman rank- order correlation test was used for correlation between variables. $P<0.05$ was considered significant.

Results: Out of 220 study participants, there were 119(54.1%) medical, 56(25.5%) dental and 45(20.5%) rehabilitation sciences professionals with 184 (83.6%) postgraduate residents and 40 (12.2%) consultants. Moderate stress was reported by 111 (93.3%) medical, 56 (100%) dental and 42 (93.3%) rehabilitation sciences professionals. Higher levels of stress were reported at ages 27-40 years ($p=0.007$), rehabilitation sciences ($p=<0.001$) and postgraduate students ($p=<0.001$). Poor sleep quality was found in medical and dental professionals ($p=0.008$) and post-graduate students ($p=0.01$). There was a positive intermediate correlation between stress and sleep disturbance ($p<0.05$). Sleep showed a weak negative correlation with discipline ($p<0.05$) and designation ($p<0.05$). Stress was weakly correlated with designation ($p<0.05$) and positively with age ($p<0.05$).

Conclusion: A higher level of stress was detected in health care professionals in 27-40 years age groups, rehabilitation sciences and postgraduate students while poor sleep quality was reported more in medical and dental faculties and post graduate students' group.

Keywords: COVID-19, dental, health workers, physiotherapy, sleep, stress

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Introduction:

In Pakistan, as of 20th January 2023, there have been 1,576,109 confirmed cases of COVID-19 with 30,635 deaths, reported to WHO.(1) Pre-pandemic stressors for educators included classroom management, curriculum design, behavioral issues, and lack of respect; however, additional stressors in Covid-19 were added regarding physical health, sleep quality, safety, and wellbeing.(2) Moreover, widespread closure of educational institutions led to urgent shift from traditional to virtual learning: an additional challenge for faculty.(3) Those who were infected with COVID-19 had personal health issues. Others had to take care of family members, elderly relatives living with them and young children during COVID-19. Additional tasks of preparing meals and household chores added to stress as all domestic help was unavailable because of pandemic lockdown. The faculty enrolled in higher education programs faced academic deadlines, assessments and virtual meetings with supervisors during pandemic.(4)

Sleep is a physiological process the body uses to restore its normal functions. Stress from daily routine can negatively impact an individual's well-being if there is insufficient sleep recovery.(5) Literature suggests that sleep and stress are bidirectional, and the combination of high stress and lower sleep quality can increase allostatic load over time, resulting in long-term damage to health.(6) During the COVID-19 pandemic, sleep disturbances were associated with stressful conditions related to isolation, financial problems,

sedentary lifestyles which compromised wellbeing of hospital nurses reported in literature.(7)

This study aimed to determine stress and quality of sleep among faculty of three disciplines of medicine, dental and physiotherapy, and to found out association with age, discipline and designation. Many studies have examined sleep and stress separately during COVID-19 and reported that each impacts daily well-being. It is unclear how age, discipline and educational status of senior and junior faculty members is associated with stress and sleep quality during COVID-19. This study could contribute to increased productivity at both individual and organizational levels by formulating effective psychological health management strategies.

Methods:

This cross-sectional study was conducted in Islamic International Medical College in collaboration with Riphah Dental College and Riphah College of Rehabilitation Sciences from July till September 2021. Faculty was enrolled in study using convenience sampling technique. A sample size of 220 was calculated using Open-Epi 3.0 with a confidence interval CI of 95% and 5% precision. Prevalence was estimated from a previous study conducted on healthcare workers where 82.7% of all participants had a high level of stress.(8) This study was reviewed and approved by the institutional ethical review committee of Islamic International Medical College Ref No Riphah/IIMC/IRC/22/2081. Two validated questionnaires were filled by participants in English after informed consent. Perceived Stress Scale (PSS) by Cohen et al, is a 10- item reliable scale with Cronbach's alpha score of 0.75.(9) Scores from 0-40 divides the participants into three categories, low stress (0-13),

moderate stress (14-26) and high stress (27-40). Pittsburgh Sleep Quality Index (PSQI) scale is a 19-item questionnaire used to assess sleep quality. Variables assessed include sleep quality, sleep bedtime sleep latency, sleep duration, use of sleeping medication, and daytime dysfunction. The global score calculation ranges from 0-21 points where 0 indicates no difficulty and 21 indicates severe difficulty.(10)

Data was analyzed using SPSS 23. Descriptive statistics were calculated as percentages, median and interquartile range to assess the demographic characteristics age, discipline and educational level. The Shapiro-Wilk test was used to assess normality, and it revealed that data was not normally distributed. Mann-Whitney test was used for age and education analysis. The Kruskal-Wallis Test was used for intergroup discipline analysis. The Spearman Rank Test was used to explore the association between variables. R values represented in correlation value as: weak correlation (0 to 0.3); moderate correlation (0.3 to 0.7); strong correlation (0.7 to 1). $P < 0.05$ was considered significant.

Results:

The demographic variables and self-perceived stress level scores are shown in table 1. Out of 220 study participants, there were 184 (83.6%) post-graduate residents and 36(16.4%) consultants. Ninety-six percent of respondents in the 27-40 age group had moderate stress. A total of 111 (93.3%) medical faculty members, 56 (100%) dental faculty members and 42 (93.3%) rehabilitation faculty members had moderate stress symptoms. About 94% of the post-graduate residents had moderate stress.

Table 1: Demographic characteristics of study population and perceived stress scores

Variables	Study population	Perceived stress scores		
		Low Score (0-13)	Moderate Score (14-26)	High Score (27-40)
	N =220	n=2(1%)	n=209(95%)	n=9(4%)
Age				
27-40 years	180(81.8%)	2(1.1%)	173(96.1%)	5(2.8%)
41-59 years	40(12.2%)	-	36(90%)	4(10%)
Discipline				
Medical Sciences Faculty	119(54.1%)	2(1.7%)	111(93.3%)	6(5%)
Dental Sciences Faculty	56(25.5%)	-	56(100%)	-
Rehabilitation Sciences Faculty	45(20.5%)	-	42(93.3%)	3(6.7%)
Designation				
Postgraduate students	184(83.6%)	2(1.1%)	173(94%)	9(4.9%)
Consultants	36(16.4%)	-	36(100%)	-

Table 2 represents the total stress score comparison of the difference between the age, discipline and designation groups. Stress was increased in 27–40 age group with a median of 22 than 41–50 age group, which was 21. Stress was increased in the rehabilitation sciences discipline, with a median of 23 than dental and medical faculties. Stress was increased in graduate/post-graduate education with a median of 22 than consultants, which was 21. When the groups were compared with each other, statistically significant differences were observed in 27–40 age group, rehabilitation sciences and post-graduate residents' groups.

Study participants were asked questions about sleep quality during COVID-19. The calculated median score of sleep quality score (based on 7 components) is shown in table 3. Sleep disturbance was increased in the medical and dental professionals with a median of 14 than rehabilitation sciences group. Sleep disturbance was increased in post-graduate students with a median of 14 than that in consultants, which was 13. Therefore, groups were compared with each other, statistically. Significant differences were observed in medical and rehabilitation sciences discipline, and postgraduate students. There was a positive intermediate correlation (r=0.308) between stress and sleep disturbance (p<0.05). The correlation had a moderately linear trend, suggesting that stress is associated with sleep disturbance. (Table 3)

Table 4 shows the correlations among age, discipline, designation, sleep components and total stress scores. Sleep quality (r=0.151*), sleep disturbance (r=-0.420), use of sleep medication (r=-0.136) and total stress (r=0.145) showed a significant correlation with age. Sleep efficiency (r=-0.147), daytime dysfunction (r=-0.132) and total PSQI (r=-0.159) showed a significant correlation with discipline. Sleep latency (r=-0.281), sleep efficiency (r=-0.139), sleep disturbance (r=-0.144), daytime dysfunction (r=-0.140), total PSQI (r=-0.175), and total stress (r=-0.065) showed significant correlations with designation.

Table 2: Perceived Stress level score among health care faculty and post graduate students

Variables	Stress Score [Median (IQR)]	P Value
Age		
27-40 years	22(3)	0.007*
41-59 years	21(6)	
Discipline		
Medical Sciences Faculty	22(4)	
Dental Sciences Faculty	22(6)	<0.001*
Rehabilitation Sciences Faculty	23(3)	
Designation		
Post graduate Students	22(3)	<0.001*
Consultants	21(5)	

*Statistically significant with P<0.05

Table 3: Pittsburgh sleep quality score among health care faculty and post graduate students

Variables	PSQI Score [Median (IQR)]	P Value
Age		
27-40 years	13(1)	0.199
41-59 years	13(2)	
Discipline		
Medical Sciences Faculty	14(1)	
Dental Sciences Faculty	14(1)	0.008*
Rehabilitation Sciences Faculty	13(0)	
Designation		
Post graduate Students	14(1)	0.01*
Consultants	13(1.75)	

*Statistically significant with P<0.05

Table 4: Correlation values among age, discipline, education, sleep component and total stress (N=220)

Variables	Age	Discipline	Designation
Sleep quality	0.151*	-0.019	-0.074
Sleep Latency	0.030	-0.029	-0.281**
Sleep Duration	-0.67	0.040	-0.017
Sleep Efficiency	-0.006	-0.147*	-0.139*
Sleep disturbance	-0.420**	-0.038	-0.144*
Use of Sleep Medication	-0.136*	0.060	-0.128
Daytime dysfunction	0.103	-0.132*	-0.140*
Total PSQI	-0.087	-0.159*	-0.175**
Total stress	0.145*	0.021	-0.065*

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed).

Discussion:

Our results suggest a higher level of stress in health care professionals in 27-40 age groups, rehabilitation sciences and postgraduate students (table 2), while poor sleep quality was reported more in medical and dental faculties and post graduate students' group (table 3). The current study found that 96% of respondents in the 27-40 age group had moderate stress. More stress is reported in graduate/post-graduate education group with a median of 22 than consultants' group, with a median of 21. The postgraduate residents are usually the ones aged 27-40 who have experienced more stress scores because of increased teaching load. It is also hypothesized that the 27-40 age group follows their own deadlines regarding their MPhil degree programs such as assignments, data collection, and coping up with research tasks. Senior faculty might have better socioeconomic and other support systems which enables them to cope with the stress during covid-19. Our results are consistent with the findings of Mei S et al who found younger age professionals need special facilitation as age moderated the direct and indirect effects of family stress on life satisfaction scores during Covid 19.(11) Huang et al found that a better income and a higher qualification level enables a worker to adapt better towards working goals in a workplace and these findings are consistent with our results.(12)

Prior to the pandemic, factors contributed to faculty members' stress were scientific research output, administrative affairs, teaching support and professional support. During the pandemic, dynamics of teaching changed with closure of educational institutions due to increased risk of infection leading to online or hybrid teaching modalities. In our study, self-perceived stress score calculation revealed that 95% of study participants had a moderate stress. The reason for this finding in the academic role in both online and on-campus teaching. These in turn needed more planning, inadequate resources, faculty development programs and administrative hurdles to manage workload leading to more stress. It also required team work to create high quality reading content such as scenarios and case studies to be used in online sessions. Besides tasks increases as separate records are needed to be kept as per attendance, participation and assessments. Stanton et al reported moderate stress of 8% and higher in the 18-45 years of age group in Australian adults. Our study had a low sample size conducted on faculty members which might be the reason for this inconsistency.(13) Our findings regarding more stress in rehabilitation sciences faculty are supported by results from Ditwiler RE et al who have explored many reasons of stress in physiotherapists treating Covid-19 patients which includes moral distress, patient care goals, uncertainty, working conditions, ethical and professional challenges.(14)

Sleep disturbance was increased in all the three faculties in this study as shown in table 3 (p=0.008). The findings of the present study are in concordance with another study in health care workers in China with higher prevalence of sleep disturbances and worse sleep quality, PSQI scores (9.3 ± 3.8 vs 7.5 ± 3.7; P < 0.001)

when compared to healthcare professionals who were not working frontline.(15)

A similar study in India reported sleep pattern abnormalities in 150 COVID-19 doctors in a tertiary care hospital. It was seen that all the 7 subscale scores (subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency score, sleep disturbances, use of sleep medications, and daytime dysfunction scores) were significantly higher among poor sleepers than good sleepers (P = 0.001). Moreover, poor sleepers (n=67) reported more stress (11.40±2.25 Vs 7.13±2.35, p= 0.001).(16) A study by Khan et al also demonstrated 10% psychological stress and 59% poor sleep quality in health care professionals in a tertiary hospital during COVID 19.(8)

Age is positively correlated with stress and negatively correlated with sleep disturbance and use of medication as shown in table 4. It is observed that faculty members experience more stress with increasing age. It has also been observed that more sleep disturbance and medication use was observed in young age during covid-19. Finding of our study is in line with the findings of Alomari et al who reported that younger participants were more likely to experience sleep disturbance and medication use.(17) Conversely, another study from India has reported similar results in health care workers and it was noted that sleep disturbance was significantly associated with age <30 years (P=0.04).(18)

Discipline (medical sciences faculty, dental sciences faculty and rehabilitation sciences faculty) is negatively correlated with subjective sleep quality and efficiency, and daytime dysfunction. Present study finding is supported by another study which has reported 26% increased daytime sleeping hours especially in bachelor's degree holders and 18% reported reduced sleeping hours.(17) Our study findings suggested PSQI score of rehabilitation sciences (p= 0.008). This is consistent with the results of similar study in physiotherapists conducted in Brazil with prevalence of poor sleep quality of 86% with worse scores on sleep latency, disturbances and daytime dysfunction (p≤0.037).(19)

Designation is not only negatively correlated with sleep quality, but also with sleep efficiency, sleep dysfunction and disturbance, and stress. This negative correlation suggests that early career professionals have additional workload during preparation and delivery of online classes and assessment especially related to their course work. Also, younger kids and household chores lead to additional burden of responsibility. It also includes taking care of elderly and poor domestic help especially during lockdown.

COVID-19 is a global crisis contributing towards devastating health in economic and educational sectors. All health care workers including academicians have suffered loss globally due to the closure of institutions due to intermittent lockdowns. This has created havoc in all domains of education, finances and health. This calls for a comprehensive programme to address these issues. Some innovations have been introduced such as a virtual heartfulness meditation programme introduced for eight weeks in USA which led to improved sleep quality and stress scores.(20)

More studies are needed to identify which specific psychosocial interventions are effective in certain populations considering age, discipline and educational background. Without sufficient support from teachers, they may experience job-related stress and become more susceptible to mental illness. This can negatively affect their ability to do their jobs well and ultimately lead to less favorable outcomes for students.(21)

These findings should be interpreted in the context of certain limitations. Firstly, this study did not assess the history of faculty employment, which may be a relevant factor related to the findings. Secondly, the self-reported measures used in the study may be particularly prone to a response bias. It is a single center study with a low sample size.

Conclusion:

There is a positive intermediate correlation between increased stress and deteriorating sleep quality during COVID-19. A higher level of stress was detected in health care professionals in 27-40 age groups, rehabilitation sciences and postgraduate students while poor sleep quality was reported more in medical and dental faculties and post graduate students' group. These findings suggest sleep and stress management strategies training in vulnerable individuals at individual and institutional level.

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Nazir SNB: Designing of study, Data entry and analysis, interpretation and drafting of tables, critical revision of manuscript.

Impact of asthma control on health related quality of life in Islamabad, Pakistan: A correlational study

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ABSTRACT

Background: Asthma is a bronchial airways disease which is characterized by chronic inflammation and repetitive Asthma attacks. Quality of life is also affected by asthma control.

Objective: The objective is to determine the correlation of the asthma control with the health related quality of life in Asthma patients.

Methods: This descriptive cross-sectional study was conducted at N.I.H Islamabad and Federal General Hospital Islamabad. The asthmatic patients who had suffered from asthma for at least 6 months and were aged between 15-40 years, had received anti-asthmatic drugs and should have had residence at Islamabad/Rawalpindi were included. The subjects having cardiac, pulmonary or traumatic shortness of breath, any dermatological issues and those undergoing surgery were excluded from the study. The quality of life of asthmatic people was calculated using Urdu version of Mini Asthma Quality of Life Questionnaire (AQLQ). The study was spread over 6 months and 100 asthmatic patients, calculated through G-Power, were selected in the survey through convenience sampling. Spearman's correlation statistics on SPSS was used to find relation between health related quality of life and control on asthma

Results: Out of total patients, 31% asthma patients had uncontrolled asthma and 63% had partially control asthma symptoms and only 6% with controlled asthma. The correlational value of r = 0.886 shows a strong relationship between control on asthma and quality of life. P<0.05 so relationship is strong and significant. Quality of Life was poorer when the asthma was uncontrolled (2.12± 0.36) and it was better (5.46±0.30) when asthma was controlled.

Conclusion: The study concluded that the patient's with controlled asthma had better quality of life as compared to the patients with poor control on asthma symptoms. These asthmatic patients had poor quality of life in all domains of emotional, environmental and activity limitation.

Keywords: Asthma, Asthma control, Quality of life, Urdu Mini-AQLQ

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Introduction:

Asthma is characterized by recurrent episodes of bronchospasm and airflow obstruction.(1) Bronchial airways become hyper-responsive to triggers in order to start a series of reactions that include inflammation, bronchial muscles spasm and hyperactive mucous glands causing limitation of the airflow.(2)

Asthma is affecting more than one-third of the population globally with a continuously rise in its number. About 2.5 million people died because of the severe excerbations.(3) In America, asthma effects 25 million people.(4) Asthma prevalence in Pakistan is estimated to be more than 10 million in terms of sufferers and it is increasing by 5% annually.(5)

The factors responsible for increasing the risk of asthma include family history, genetics, pre natal influences, cigarette smoking, pollution, childhood infections, obesity, physical inactivity and stress.(6-9) In asthma, there are some repetitive episodes of chest tightness, coughing, wheezing and shortness of breath. Symptoms are worse at night and early morning.(10-12) Precipitating or triggering factors of asthma may include biological allergens, dust mites, tobacco smoke,

paint/perfumes, seasonal variations, pollens, chemical fumes, cold weather, chemical fumes or gases, food allergens, physical exercise, and certain drugs.(13)

Asthmatic quality of life refers to the impact of asthma on life quality perceived by a patient himself.(14) It is individual's own satisfaction with his quality of life.(14) Health Related Quality of life (HRQOL) is defined as the overall quality of life (QOL) determined by its physical, psychological and socio-economic status. Asthma symptoms frequency, severity and expenses of asthma control are associated with poor QOL. Psychological symptoms are more in asthmatics than in non-asthmatics.(15) Health-related quality of life deterioration includes the symptoms severity, activity restrictions, restriction to avoid precipitant factors, medications cost, and asthma care, disruption of employment, career choices and effects on personal relationships. This decrease in quality of life in turn further deteriorates asthma control. It is expected that greater asthma attacks are associated with huge impact on person's health and has negative impact on patient QOL.(16)

Asthma has significant harmful effects on the overall quality of life of an individual. If asthma is un-controlled, these effects are even more marked. The quality of life is affected not only in the sense that the individual has difficulty in breathing but also in the sense that he avoids outings and even his work environment due to the presence of the allergens.(15) Physical activities of patient are severely disturbed during the attack. With efficient control on asthma by medications and avoidance of the precipitating factors, the undesirable effects of the asthma are prevented and the individual can live a very active life in society.(16)

Asthmatic people are usually less likely to participate in any physical activity due to the fear of their increase in symptoms, increased bronchospasm and reduced airflow. Due to this sedentary lifestyle, they are more prone to having a poor quality of life.(14) Evidence strongly suggests that aerobic exercises are very helpful in reducing the asthma symptoms with a decreased use of medication and less hospitalization. With the help of proper exercise plan, the quality of life of any degree of severity of asthma can be improved.(3, 12)

In a previous study, the asthmatic people with psychological problems were seen to have poorer health and activity limitation.(15) There is a significant association between the stress with asthma severity and

quality of life in young asthmatic adults.(16) With efficient control on asthma by medications and avoidance of the precipitating factors, the undesirable effects of the asthma can be prevented and the individual can attain a very active life in society.

Previous research found out the association of the risk factors with the QOL. Asthmatic people with activity limitation are usually those having poor asthma control.(16) Study from Japan, evaluated association of stress with asthma severity and, QOL in young adults with asthma. Study reported no association between the perception of stress and quality of life in adult females.(15) R Ampon and colleagues found asthma impact on QOL in an Australian National Health Survey. The quality of life in asthmatic patients was found lower than diabetics but higher than arthritis.(17) Edward David Hanna found out asthma risk factors and effects on QOL by asthma in the New York industrial workers. They found poor quality of life with poor asthma control.(18)

Asthma is a very common and unfortunately non-curable disease affecting millions of people in our country and all over the world and its prevalence is increasing day by day. The asthma control affects the quality of life in all domains and it is being found out by previous researchers in America, Australia, Japan and European countries and in India, yet this relationship of asthma control on the quality of life needs to be further studied. The significance of the study is to highlight the harmful effects of asthma on quality of life on the asthmatic individual and on the society as well. By keeping asthma under-control, the effects on the quality of life can be minimized and the individual can spend an active and useful life for himself and society.

Methods:

A descriptive cross-sectional study was conducted to find out the impact of asthma on QOL of asthmatic individuals in Islamabad. Asthmatic patients who visited Allergy Center N.I.H Islamabad, Federal General Hospital Islamabad, within the study duration from October 2013-june 2014 were evaluated. The participants aged between 15-40 years, and diagnosed with asthma for 6 months, had received asthmatic treatment and should be living in Islamabad were included. They were requested to be included in the study. 100 asthma patients were selected by convenience sampling after informed written consent. All ethical guidelines according to declaration of Helsinki were followed while conducting the study,

patient confidentiality was maintained and permission from institute was obtained (No.F.1-34/2011-12/Allergy Centre).

Asthma control was measured through the asthma control test which mentions the control in control, uncontrolled and partial control categories. Asthma quality of life data was collected by Urdu version of 'mini AQLQ'. The questionnaire used was mini AQLQ that was developed by Professor Elizabeth Juniper in Canada. Urdu version of this questionnaire was used that was provided by Professor Elizabeth on demand by airmail. This is a shortened and efficient version of The Standardized Asthma Quality Of Life Questionnaire consisting of 32 questions. Mini AQLQ consisted of 15 questions. The questionnaire was divided into four domains Symptoms (5 questions), Emotional (3 questions), Environmental (3 questions) and Activity limitation (4 questions) domains. Responses of each of the question were divided into 7 point scale with 1 means severe impairment and 7 means no impairment and highest quality of life. Total score is calculated by taking the sum of all the responses of 15 questions and dividing it by 15. So the resultant mean is also between 1 and 7. If score is 1, it means severe impairment and 7 means that the individual has asthma but no impairment.(19)

The test that has been used to show the association is Spearman's correlation test by putting the data on SPSS (17) software. The total score of mini AQLQ was represented as quality of life and its relation was found with the control on asthma by patient.

Results:

Among 100 patients with asthma, 79 were females, 78 were married, and 37 patients fall in the age group of 36-40 years. Among patients, 9 patients were diagnosed with asthma in less than a year, 26 patients had asthma for 1 to 5 years, 35 patients had asthma for 6 to 10 years, and 30 patients had asthma for 11 to 20 years.

Asthma un-controlled were 31, 63 patients had partially controlled asthma and only 6 patients had controlled their asthma with medication and avoidance of precipitating factors. (Figure 1)

Figure 1 Control on asthma
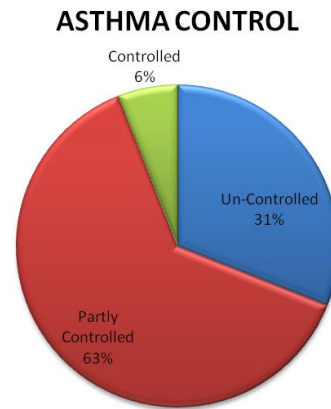
In current study, by using Spearman's correlation statistics, the relation was found between control on asthma and quality of life. The calculated value of correlation coefficient "r" was 0.886 which is near to +1 and showed a strong positive relationship between the score of mini AQLQ and control on asthma. $P<0.001$ which is less than 0.05 so relationship is strong and significant. It shows that quality of life improves with the control on asthma.

The association between the asthma control levels and different domains of mini AQLQ that shows quality of life is better with asthma control. (Table 1)

Table 1: Cross tabulation of asthma control with quality of life

Disease Severity According to GINA*	Global Score	Symptom Domain	Activity Domain	Emotional Domain	Environmental Domain
Uncontrolled (Mean ± SD)	2.12±0.36	2.01±0.54	2.56±0.52	1.41±0.36	2.45±0.86
Partly Controlled (Mean ± SD)	3.66±0.52	3.21±0.92	4.98±0.84	2.68±1.13	3.63±1.19
Controlled (Mean ± SD)	5.46±0.30	5.53±0.99	5.67±0.38	5.99±0.37	4.50±0.66
P-value	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**

*GINA-Global Initiative for Asthma

Discussion:

Asthma is a recurrent chronic disease that affects all aspect of an individual's life. This study mainly focuses on quality of life disturbance by asthma control. The study clarifies that the patients who have their asthma in the controlled range have better quality of life than those with partially controlled and uncontrolled level of asthma. Moreover, the emotional and symptom domains are more affected than environmental and activity domains of health related quality of life.

The asthma control in the current study mostly falls in the partially control and uncontrolled category. Few people were having the asthma in the controlled range. This asthma control in patients is much better in Sweden with 38% falling in the range of control asthma as compared to current study with only 6% falling in the range of control asthma.(20) Reasons for this are precipitating factors like smoke, pollens, dust cold and the working environment of the patients, pollens and smoke being the highest precipitating factors among all of these in the Islamabad region.(21)

The mean global score of mini AQLQ score in the Swedish population were lower overall in all domains of quality of life including symptoms, emotional function, activity limitation and environmental components in the patients with uncontrolled asthma as compared to the patients with controlled asthma. Although the other co-morbidities cannot be ruled out for the lower quality of life yet these values were statistically significant even after the adjustments of other co-variates like gender, age, BMI, smoking, depression, educational status and allergic rhinitis.(20) The current study also shows the same results with even more poor quality of life in the uncontrolled asthma cases particularly in the emotional and the symptom domain.(22) This means the quality of life with respect to control in our region is very poor as compared to other countries. Reasons for this are lack of awareness about the triggering factors of the disease like pollens and smoke, low socio-economic status and poor management of the disease.(21, 23) The quality of life in Spain and France was also poor with uncontrolled asthma.(24) Moreover, among the factors that affect the patient's quality of life it is the patient's education and the asthma control that are modifiable (24) so these are to be highlighted for the better management of asthma. The poor quality of life with uncontrolled asthma also increases the cost of asthma management.(22) The control on asthma can also reduce the management cost and improve health related quality of life.

Low literacy rate and lack of awareness in Pakistan causes troubles in answering questions as it was done through self-administered questionnaire. Non-response was not a major issue but there are conservative families that do not allow their ladies to participate in research sort of activities. This study was conducted on a small sample size due to which we cannot generalize it to all asthmatic population of country. Future study with a large sample and on a broad level would likely to give better results.

Conclusion:

The study concluded that most of the asthmatic population has partially control and uncontrolled asthma in Islamabad. The patients with controlled asthma had better quality of life as compared to the patients with poor control on asthma symptoms. These asthmatic patients had poor quality of life in all domains of emotional, environmental and activity limitation.

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Authors Contribution:
Razzaq A: Conception of idea, Collection of data, Data Analysis, drafting of work
Sheraz S: Revising work critically for important intellectual content and final approval
Tariq M: Revising work critically for important intellectual content and final approval

Active or passive neural mobilization for the management of radiculopathy: Which one of the two is more effective?

Sabah Afridi[1]

Neck and back are the most common sites of musculoskeletal symptoms even in young healthy adults (1), and the buildup of these symptoms can lead to spinal syndromes including postural, dysfunctional and derangement syndromes. (2-4) Two of the most common types of derangement syndromes are cervical and lumbar radiculopathy (5-7), and research has shown neural mobilization to be an effective technique for the treatment of cervical and lumbar radiculopathy.(8) Moreover, neural mobilization can be administered (passively) by a physical therapist, and can also be performed actively by the patient him or herself.(9) Even though research has shown neural mobilization to be effective in the management of cervical and lumbar radiculopathy (8), there is a dearth of literature regarding if active neural mobilization performed by the patient him or herself is as effective as passive neural mobilization performed by the therapist, or if there is a significant difference between active and passive neural mobilization. Based on the review of literature, there is only one study till date that has compared the effects of active and passive neural mobilization, which was carried in patients of cervical radiculopathy.(9) The findings of the study showed no significant differences between the two treatments in terms of neck pain, cervical range of motion and neck related disability.(9) However, it is imperative to point out that the aforementioned study consisted of female patients only.(9) Moreover, passive neural mobilization was only administered during treatment sessions with the physical therapist whereas active neural mobilization could be performed by the patient even after the treatment session with the therapist as a home exercise program, and no efforts were made to record the number of times a participant performed active neural mobilization outside the treatment session.(9) This suggests an unequal dosage of the two techniques and can perhaps be the reason that no significant differences were observed between the two treatment groups. Furthermore, no study has been identified regarding the effects and comparison of active and passive upper extremity neural mobilization in lumbar radiculopathy. Thus, in view of the findings from the literature, it is suggested that studies should be conducted on the effects of active as compared to passive neural mobilization in persons with cervical and lumbar radiculopathy, regardless of gender, and efforts should be made regarding equal dosage for both treatments in future studies.

Disclaimer: None to declare.

Conflict of interest: None to declare.

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