GERIATRIC POPULATION;
EFFECTIVENESS OF PHYSICAL ACTIVITY ON QUALITY OF LIFE IN GERIATRIC POPULATION

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ABSTRACT… Background: Aging is an inevitable process which has to take place at any cost and is experienced by all of us, as a true reality of life. So, this stage of life; is quite pleasurable for some elderly people whereas for some it becomes miserable. They become more fragile and prone towards diseases which greatly impact their health and limits activities of daily living. This decline increases day by day and becomes a cause of death. **Objectives of Study:** To evaluate the relationship of physical activity on quality of life of elderly people. To determine whether how many of them are still active and to find the reasons that makes an elderly person responsible for being active or inactive which directly impacts the quality of life of an individual. **Design:** A Descriptive Cross Sectional survey. **Period:** It was 6 months of duration from January 2014 till June 2014. **Setting:** A Descriptive Cross Sectional survey was conducted in elderly population. This study was conducted from elderly people living in Rawalpindi, Islamabad. For these OPDs of the hospitals of Rawalpindi, Islamabad had been visited. **Methods:** The sample size was 700 elderly individuals including males & females of ages 65 years & above. A structured questionnaire was designed and finalized after peer review. This questionnaire was "The Lawton Instrumental Activities of daily living Scale" that consisted of 15 questions, out of which 7 were close ended questions & 8 questions taken from the scale. Then, the data had been be analyzed on SPSS-20 software. **Results:** The results of Lawton's scale (which measures the level of effectiveness of physical activity) show that out of 700 total elderly populations, 564(80.5%) participants are physically active whereas 136 (19.4%) participants are the ones who are not at all active. Among elderly population of 439 male participant 283(64.4%) of them are active that is they achieved the score 5/5 which is maximum independent score as described by Lawton for males. Whereas out of 261female participants 84 (32.2%) of them are independent and active as their score is 8/8. The result regarding diseases of our geriatric population show that 200 (28.6%) of them are the ones having no disease at all. Whereas in the case of diseased population, 119 (17%) of them are having cardiovascular & Hypertension, 128 (18%) among them have the diseases present in combination of two. 76 (10.9%) among them are having Arthritis, which cannot be ignored. **Conclusion:** Physical activity has shown to have extremely positive benefits on health, mind, body & quality of life of an individual. The same implies with the elderly population because physical activity is a very powerful tool to delay the degenerative process which inevitably take place in the body. As the process of aging is delayed, it produces many beneficial effects on almost all the systems of the body. Physical activity is proved to be extremely cardio protective in elders. Delay the disease process & protect them against many harmful effects of aging which would otherwise make elderly bed-stricken from the very beginning of aging process in geriatric population.

Key words: Geriatric Population, Quality of Life, Physical Activity & Inactivity.

INTRODUCTION

The branch of Medicine that deals with the conditions, illnesses and conditions of the elderly population or aging people is called as Geriatric. As we all know that, as the age progresses one may pass through several stages of Aging which is inevitable and all of us have to experience it as we grow old.

And the way through which we get older is termed as Aging. When the process of aging starts, all the functions of the body decline as it involves

the whole body in the form of Inflammation. Due to inflammation, free radicals are produced in the skeletal muscle that can cause oxidative modification of protein, lipid, and DNA respectively. The chances of muscle injury increases, and the inflammatory response can produce further oxidative stress to muscles. Moreover, muscle's repair and regenerative capacity declines drastically and poses potential enhancement in muscle's cellular oxidative damage. Besides this, Pre-deposition of certain age-related pathologic conditions may also exacerbate the risks in elderly people. Whereas, in contrast those elderly individuals who remain physically active throughout their lives are benefitted from exercise-induced cellular anti-oxidant adaptation, due to which their defense mechanisms are far well-developed than sedentary elderly individuals. Research evidence strongly supports the fact that improved muscle's strength, endurance and mechanics with less vulnerability to acute injury and chronic inflammation is seen in active elderly than non-active elderly population due to formation of reactive oxygen species (ROS) (formed biochemically) in response to exercise in active elders.[1]

Conceptually, the terms "Physical Activity" "Exercise" and "Physical Fitness" are different however are used interchangeably. Physical Activity is any bodily movement that is produced by skeletal Muscles results in Energy expenditure which is measured in Kilocalories. All the activities like conditioning, sports, Occupational and Household come under the category of Physical Activity, whereas subset of physical activity that is planned, structured, repetitive and goal-oriented is called as an Exercise. And the set of attributes, which are either Skill or Health related, is called as Physical Fitness. So, these definitions are providing a clear framework for comparing studies that relate physical activity, exercise, and physical fitness to health.[2]

Recent Research Evidences support the fact that premature deaths are being shown in the elderly population due to Chronic diseases. And an ideal and average life span nowadays is approximately 85% years. As a matter of fact, chronic illnesses are modifiable. It's not that these are not modifiable. Through simple lifestyle changes like additional of physical activity can produce dramatic effects in reducing chronic illnesses in the old aged-population. Thus the average age can be raised, thereby extending the strength & improving quality of life by physical activity of an elder person even near the end of life. So, the implementation of the strategies requires careful measures and appropriate methods.[3]

According to another recent study, although exercise capacity declines with age, the decline appears to be slight when measured in healthy, physically active subjects. There is growing evidence that exercise has a positive influence on increasing healthy function and decreasing the impact of diseases common in the elderly. With respect to the physical activity and health benefits, there is some evidence that even low- and moderate-intensity exercise programs in older people result in realistic improvements in many physical and psychological aspects.[4]

As there are uncountable benefits of physical activity and exercise so it is not restricted to any age group. According to international standardized protocol of Exercise i.e. To promote and maintain health, all healthy adults aged 18 to 65 years need moderate-intensity aerobic (endurance) physical activity for a minimum of 30 min on five days each week or vigorous-intensity aerobic physical activity for a minimum of 20 min on three days each week. Combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation. Moderate-intensity aerobic activity, which is generally equivalent to a brisk walk and noticeably accelerates the heart rate, can be accumulated toward the 30-min minimum by performing bouts each lasting 10 or more minutes. Vigorous exercise like Jogging which substantially increases heart rate and breathing rate are found to be extremely beneficial for all age group individuals especially in elderly population Current research evidences support this as it maintains or increase muscular strength and endurance in them.[5]

MATERIALS AND METHODS

A Descriptive Cross Sectional survey was conducted in elderly population of age (65 & above) of Rawalpindi, Islamabad. Non-probability convenient sampling technique was used & 700 elderly individuals were selected including both males & females. Those elderly having major health risk diseases & physically unfit bedbound individuals (e.g. Cardiovascular, Neurological, Immunological, Renal, Hematological, Hepatic Disorders etc.) were not included in our study. The data collection tool (Performa /questionnaire) was "The Lawton Instrumental Activities of daily living Scale" that consisted of 15 questions. The scale consisted of general instrumental activities of daily living. As for the interpretation of the scale males were scored from 0-5 and as for females it is from 0-8 because the three items that is cooking, housekeeping and laundry are skipped for males and hence they are assessed from the other items that is the use of telephone, shopping, medications, transportation and finances. And for the females the items of cooking, housekeeping and laundry are included. So the score explains 0 as dependent and 5 as independent for males and for females 0 as dependent and 8 as independent. And Data has been analyzed on SPSS-20{Statistical Procedure of Social Sciences} software.

STATISTICAL ANALYSIS
REGRESSIONS

According to regression tables which indicate that the regression model predicts the dependent variable significantly well. The significance column indicates the statistical significance of the regression model that was run. Here, $p < 0.0005$, which is less than 0.05, and indicates that, overall, the regression model statistically significantly predicts the outcome variable (i.e., it is a good fit for the data). The regression equation is: Physical activity = 1.041 + 0.112 (gender of elderly population). According to another table the significance column indicates the statistical significance of the regression model where, $p < 0.0005$, which is less than 0.05, and indicates that, overall, the regression model statistically significantly predicts the outcome variable (i.e., it is a good fit for the data).So the regression equation is: Physical activity = 1.020 + 0.132 (gender of elderly population).Through another table the significance column indicates the statistical significance of the regression model indicates that, overall, the regression model statistically significantly predicts the outcome variable (i.e., it is a good fit for the data). And the regression equation is: Physical activity = 1.648 + (-0.91) (scale of Lawton).The other table shown also indicates that the regression model statistically significantly predicts the outcome variable (i.e., it is a good fit for the data). So the regression equation of this table is: Occupation = 7.300 + (-0.583) (scale of Lawton). According to another table which indicates that, overall, the regression model statistically significantly predicts the outcome variable (i.e., it is a good fit for the data).The regression equation is: Gender = 0.821 + (0.111) (scale of Lawton). Finally one more table indicates that the regression model predicts the dependent variable significantly well and indicates that, overall, the regression model statistically significantly predicts the outcome variable (i.e., it is a good fit for the data). So the regression equation is: Age = 2.528 + (-0.148) (scale of Lawton)

CORRELATIONS

There is a weak indirect correlation b/w the age of an old person with the frequencies of fall i-e. (-0.080) Age of an elderly person also strongly indirectly correlates with offering of prayer i-e. (-0.124) of an elderly & with the scale of Lawton i-e. (- 0.180). There is a strong direct correlation of gender with physically active individuals as (0.137). Gender strongly directly correlates with frequencies of fall as (0.107). Gender has a weak indirect correlation with co-morbidities as (-0.084). Gender has a strong indirect correlation with offering of prayers of elderly population as (-0.263). Gender also has a strong direct correlation with Lawton scale as (0.365). Occupation is strongly indirectly correlated to physical activity as (-0.101). It has a weak direct correlation with frequencies of fall as (0.084) & also has a weak direct correlation with co-morbidities as 0.096). But occupation has a strong direct correlation with offering of prayers i-e. (-0.233). Occupation has a strong indirect correlation with Lawton scale i-e. (-0.289). There

is a strong indirect correlation between spouse & occupation as (-0.198). Spouse has a direct strong correlation with physical activity as (0.156). Spouse has a strong indirect correlation with the frequencies of falls i-e. (-0.124). And spouse has also a strong indirect correlation with offering of prayers of elderly population as (-0.102). There is a strong indirect correlation b/w physically active & not being active of elderly population as (-0.199). Strong indirect correlation is found b/w physically active to frequencies of fall as (-0.154). Being physically active has a weak indirect correlation with co-morbidities as (-0.081). There is a strong direct correlation b/w physically active to offering of prayers five times a day i-e. (0.130). There is a strong indirect correlation b/w physically active to offering of 5 times a day (off-on) i-e. (0.227). Physically active elderly have a strong indirect correlation with Lawton scale as (-0.325). Frequencies of falls have a direct strong correlation with offering of prayers i-e. (0.143). Frequencies of falls correlates as a strong direct correlation with Lawton scale as (0.112). There is a weak direct correlation of co-morbidities with offering of prayers i-e. (0.089). Offering of prayers of elderly population has a weak indirect correlation with Lawton's scale i-e. (-0.080). Those elderly population who offer prayer, with age there is a strong indirect correlation of them as (-0.124). Those elderly population who offer prayer, with gender there is a strong indirect correlation b/w them as (-0.263). The offering prayer elderly have a strong direct correlation with occupation as (0.233). That elderly population who offer prayer have a strong indirect correlation with spouse as (-0.102). Offering prayer of elderly population makes strong indirect correlation with physically active individuals as (-0.277). Offering prayer of elderly population makes strong direct correlation with falls i-e. (0.143). Presence of diseases and comorbidities go with a weak direct correlation with individuals who offer prayers i-e (0.089)

RESULTS

The total sample size of this research consists of 700 elderly population of Rawalpindi, Islamabad. The results of Lawton's scale (which measures the level of effectiveness of physical activity) show that out of 700 total elderly populations,

564 (80.5%) participants are physically active whereas 136 (19.4%) participants are the ones who are not at all active, (Table-I). The cross tabulation in (Table-II) depicts that among elderly population of 439 male participant 283(64.4%) of them are active that is they achieved the score 5/5 which is maximum independent score as described by Lawton for males. Whereas out of 261 female participants 84 (32.1%) of them are independent and active as their score is 8/8. The female participants who achieved 7/8 score were 56 (21.4%), who were a little less active than being maximally independent. Just 5 out of them are the ones who are totally dependent & inactive as their score is 0/8. And from the perspective of gender, we see that males are more in number in our society than females which is 62.7% male population and 37.3% is the female elderly population as seen in cross tabulation of males & females given in (Table-III). Our geriatric society is having 80.6% people as active & just 19.4% as not active, (Figure-1).

The results also show that from total 564 active elderly populations, 372 are the males who are active and just 192 are the females who are active so we can conclude that in our society, females are less active than males. (Table-IV) And those elderly people who are not active are having limited activities due to presence of diseases. Their percentage is 12.1 & the next comes to be general reluctance which is 3.7%. Because general reluctance can also give us an idea that by the time a person reaches old age, apart from diseases; many come to a point where they no more remain interested in doing their ADLS or IADLS rather (Figure-2).

Females are less active than males because of more commonly females are suffering from diseases than males. Among other causes of not being active we see that males are leading. So as in case of general reluctance of not being active both males & females are at equal level, (Table-V). And out of 137 individuals 85 have a cause of presence of physical inactivity with respect to presence of diseases whereas just 7 of them have the reason of being over facilitated which make them inactive, (Table-VI).

It has been found that 462 (67.2%) of our elderly population has never been fallen, And next to them who have fallen are those fell more than twice with 110 (15.7%), (Figure-3). And frequency of falling for once is more common in males than females (see Table-VII) The result regarding diseases of our geriatric population show that 200 (28.6%) of them are the ones having no disease at all. Whereas in the case of diseased population, 119 (17%) of them are having cardiovascular & Hypertension, 128 (18%) among them have the diseases present in combination of two. 76 (10.9%) among them are having Arthritis, which cannot be ignored. In general results further suggest that majority of geriatrics of our society are physically active (Figure-4). Besides all the causes out of 200 totals, 150 are the males who do not have any disease & just 50 are the females who do not have any disease. (Table-VIII) Furthermore results show, the frequency of physical activity is declining with age in elderly population (shown in Table-IX).

| Scale of Lawton | Are you physically active or doing any kind of physical activities or exercises? | | Total |
	Yes	No	
0	0	6	6
1	2	13	15
2	10	25	35
3	25	23	48
4	94	21	115
5	281	30	311
6	22	5	27
7	50	7	57
8	80	6	86
Total	564	136	700

Table-I. Scale of Lawton * Are you physically active or doing any kind of physical activities or exercises? Cross tabulation

| Scale of Lawton | What is the gender of geriatric person? | | Total |
	Male	Female	
0	1	5	6
1	5	10	15
2	18	17	35
3	32	16	48
4	96	19	115
5	283	28	311
6	1	26	27
7	1	56	57
8	2	84	86
Total	439	261	700

Table-II. Scale of Lawton * What is the gender of geriatric person? Cross tabulation

| What is the age of elder person? | What is the gender of geriatric person? | | Total |
	Male	Female	
65-70	257	175	432
71-75	87	37	124
76-80	46	23	69
81-85	29	13	42
86-90	10	6	16
91-95	5	4	9
96-100	2	1	3
101-105	2	1	3
106-110	1	1	2
Total	439	261	700

Table-III. What is the age of elder person? * What is the gender of geriatric person? Cross tabulation

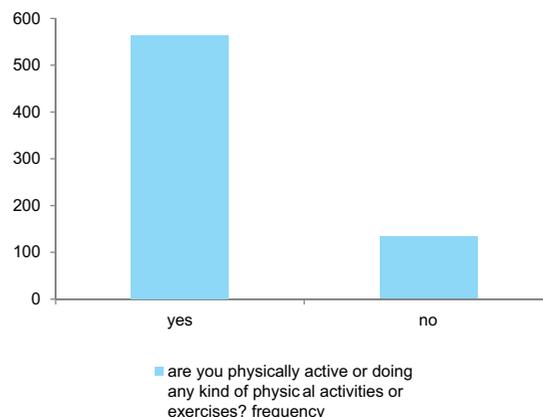are you physically active or doing any kind of physical activities or exercises? frequency

■ are you physically active or doing any kind of physical activities or exercises? frequency

Figure-1.

| Are you physically active or doing any kind of physical activities or exercises? | What is the gender of geriatric person? | | Total |
	Male	Female	
Yes	372	192	564
No	67	69	136
Total	439	261	700

Table-IV. Are you physically active or doing any kind of physical activities or exercises? * What is the gender of geriatric person? Cross tabulation

What do you think about the reason of not being active or having restrictions on performing activities of daily living? frequency
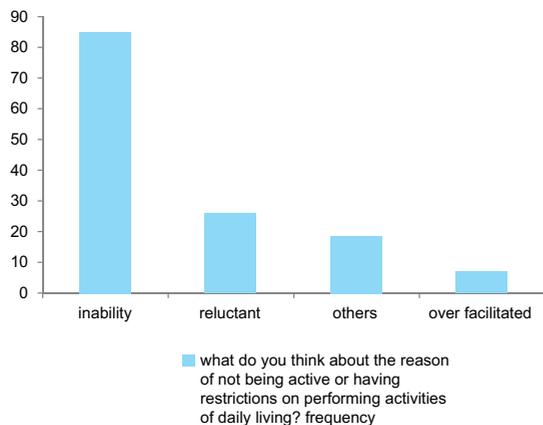

Figure-2. What do you think about the reason of not being active or having restrictions on performing activities of daily living?

Reason of not being active or having restrictions on performing activities of daily living?	What is the gender of geriatric person?		Total
	Male	Female	
inability due to diseases	37	48	85
general reluctance	13	13	26
over facilitated	4	3	7
others	14	5	19
Total	68	69	137

Table-V. What do you think about the reason of not being active or having restrictions on performing activities of daily living? * What is the gender of geriatric person? Cross tabulation

Do you have any disease or any other co-morbities?	What do you think about the reason of not being active or having restrictions on performing activities of daily living?				Total
	Inability Due to Diseases	General Reluctance	Over Facilitated	Others	
DM	3	0	0	0	3
HTN & CVS	6	7	2	4	19
Arthritis	18	3	2	5	28
asthma	4	0	0	1	5
Stroke	1	0	0	0	1
persons having two diseases	25	0	0	1	26
persons having three diseases	16	1	0	3	20
persons having more than three diseases	7	2	0	1	10
Others (Headache, hemorrhoids, kidney & gall problems, hearing, allergy, thyroid etc.)	5	0	0	1	6
do not have any disease	0	13	3	3	19
Total	85	26	7	19	137

Table-VI. Do you have any disease or any other co-morbities? * What do you think about the reason of not being active or having restrictions on performing activities of daily living? Cross tabulation.
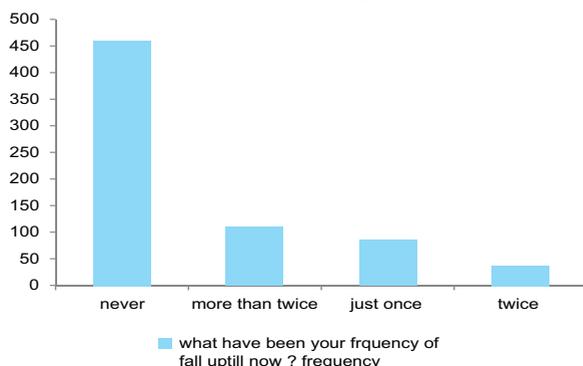
Frquency of fall among elderly population ?

Figure-3

What have been your frequencies of fall up till now?	What is the gender of geriatric person?		Total
	Male	Female	
just once	59	29	88
twice	16	12	28
more than twice	45	65	110
never/not yet	314	148	462
Total	434	254	688

Table-VII. What have been your frequencies of fall up till now? * What is the gender of geriatric person? Cross tabulation

Figure-4

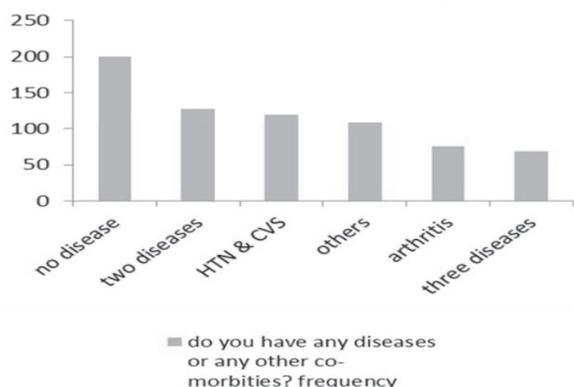| Do you have any disease or any other co-morbities?	What is the gender of geriatric person?		Total
	male	female	
DM	18	16	34
HTN & CVS	81	38	119
Arthritis	41	35	76
asthma	8	2	10
Stroke	0	2	2
persons having two diseases	69	59	128
persons having three diseases	36	32	68
persons having more than three diseases	8	9	17
Others (Headache, hemorrhoids, kidney & gall problems, hearing, allergy, thyroid etc.)	28	18	46
do not have any disease	150	50	200
Total	439	261	700

Table-VIII. Do you have any disease or any other co-morbities? * What is the gender of geriatric person? Cross tabulation

DISCUSSION

In this study, to assess quality of life of elderly population Lawton scale was used. In the light of results of this study majority of our Geriatric population is physically active as compared to being physically inactive. Also it was found that males were more active than females and their quality of life was better than females. The reason

might explain the fact that as males are the bread runners in our society so despite of age factor, they are still struggling hard for their families. And being physically active they remain far from certain age related co-morbidities and diseases. Whereas on the other hand home bound elderly females were less active due to age-related diseases and problems.

What is the age of elder person?	Are you physically active or doing any kind of physical activities or exercises?		Total
	Yes	No	
65-70	359	73	432
71-75	99	25	124
76-80	46	23	69
81-85	34	8	42
86-90	12	4	16
91-95	7	2	9
96-100	2	1	3
101-105	3	0	3
106-110	2	0	2
Total	564	136	700

Table-IX. What is the age of elder person? * Are you physically active or doing any kind of physical activities or exercises? Cross tabulation

Extensive literature has been found with high incidence of falls among elderly people, which further supports the importance of this problem.[6] One study suggests that Geriatric population must be screened for Risks of Falls as the incidence of falls is higher in elderly population. Supplementary home exercises and general physical activity plays an important role in improving balance and reduces falls risks in community abiding elderly people.[8] Another study emphasizes on the importance of gentle physical activity and individualized strength training home based exercises can remarkably reduce this risk of falls among Geriatric population especially among women of 80 years and older so the results coincide with the results of our study.[9] According to Canadian Physical Activity guidelines, as the physical activity increases so the health status of a person improves: this way their not only the Health-status is improves but also the age-related diseases and co-morbidities are decreased.[10] Hence our results coincided with the results of

the studies mentioned above that despite of these age-related problems, physical activity poses major impact on not only reducing the risks of falls but also prevent numerous age-related limitation among Geriatric Population. It has been found that majority of our elderly population has never been fallen, the reason might be that majority of individuals are physically active in their lifestyles. But next to them who have fallen are the ones who have fallen more than twice. Frequency of falling once is more common in males than females. The reason might be their exposure to the outside environment. But the same data also draws our attention towards the fact that more are the males than females who have not fallen yet. Female are more likely to fall more than twice than males. This might explain that once the females fell down become more prone to falling again. Our study also found that the incidence of age-related diseases and co-morbidities is more common in elderly females than males which made them less active and restricted them to offer prayers even. That is why elderly males were found to have better quality of life than females. Our results also found that the life expectancy of Pakistan is declining & most interestingly to know is just 0.2% of elderly people are reaching the age b/w 106-110 years. Our finding is further confirmed by the study which is given as: "According to the latest WHO data published in April 2011 life expectancy in Pakistan is: The average age of Males is 65.5 years and females is 67.7 years respectively so the total life expectancy is average 66.6 years." So we can see that rarely we will find the elders of our country being in the ages of 106-110 years.[6]

We also came across some interesting findings that: some elderly males without their partners were depressed and lonely as compared to females who lost their male partners (with the perspective of death). While collecting data we also noted that people had so many questions in their minds that whether answering to us may be fruitful for them in a way that we would solve their financial, Health and job related problems. Some elderly males were quite agitated with their partners that they asked us to counsel their females' partners to live peacefully with them. Some couples were really enjoying being together up till now. We also observed that almost all of our elderly population lives in joint family system and were less depressed than alone elderly people. This statement can be confirmed by the study as: Age-related incidence of Dementia and Alzheimer's disease is common among elderly that leads them towards Depression. The rate of Depression is higher in Females than Elderly Males with the ratio of 1:9 and 1:3 respectively. Hence, associated with depression age-related dementia is also very common." So the elders living in joint families were found with very less dementia rate than isolated/lonely living elderly population.[7]

CONCLUSION

Conclusion of the study was that Physical activity has extremely positive benefits on health, mind, body and quality of life of an individual. It not only makes a person be in a state of well-being but also makes him socially confident and keeps him healthy. As a Greek quotation supports the point that, "a healthy mind nourishes in a healthy body." The more active is an individual, the less prone he is towards diseases. The elderly people of our society are still more active than inactive individuals. And males among them are more active and own better lifestyle than females as being in a credit of being physically active. Males are in less quantity than females to suffer from diseases. They are more capable and enthusiastic up till now. Females on the other end are still engaged in household work and activities till they reach their old ages.

CONFLICT OF INTEREST

There is no conflict of interest among the authors **Copyright© 15 June, 2018.**

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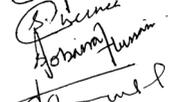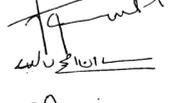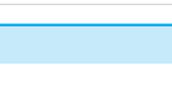
" All great changes are preceded by chaos.

– Unknown –

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Sana Bashir	Literature search, Data collection, data interpretation and drafting.	
2	Faryal Naweed	Literature search, Data collection.	
3	Saira Akhter Cheema	Data collection.	
4	Sobaina Hussain	Data collection.	
5	Furqan Ahmad Siddiqi	Conceopt and design, Final approval.	
6	Imran Amjad	Conceopt and design, Final approval.	
7	Sania Khawar Kiani	Statistical analysis.	