ACTA SCIENTIFIC NUTRITIONAL HEALTH

Volume 3 Issue 5 May 2019

Research Article

Prevalence of Some Postural Anomalies among Rural Girls and Women Living in Alborz Province—A Cross-Sectional Study

Kasbparast Mehdi*, Soleymani Nader, Ahmadi Elham, Shahnahad Robabeh

Federation of Rural Sport and Local and Indigenous Games of the Islamic Republic of Iran, Rural Sports Board and Local and Indigenous Games, Alborz, Iran

***Corresponding Author:** Kasbparast Mehdi, Federation of Rural Sport and Local and Indigenous Games of the Islamic Republic of Iran, Rural Sports Board and Local and Indigenous Games, Alborz, Iran.

Received: March 28, 2019; **Published:** April 10, 2019

Abstract

The aim of this study is investigation of Prevalence of some postural anomalies among rural girls and women living in Alborz province from October 2018 to February 2019. Totally, 700 girls and women including 430 women and 270 girls with Mean of Age, weight, height and BMI: 37.19 ± 3.14, 70.10 ± 10.77, 162.66 ± 8.55, 27.4 ± 3.22 respectively were studied. Out of the 35 villages composed the central part of Alborz, 7 villages was selected randomly, then from each village, 100 potential eligible participants were selected. Data were collected through Nordic questionnaire Then, postural anomalies such as: forward head posture (FHP), asymmetric shoulder, hyper kyphosis, hyperlordosis, scoliosis, genuvarum, genuvalgum, genurecurvatum, flat foot and hallux valgus was measured. The results of study indicate there are some anomalies among rural girls and women that the most abnormalities in rural women and girls are related to hyperkyphosis and the least anomalies among them are related to the scoliosis. Also our results showed there are some reasons for these abnormalities such as: equipment, poor decisions when sitting, sleeping and standing obesity, muscle weakness, overuse injury, muscular imbalances, degenerative changes, cultural problems, and no referral to a physician. Therefore, identification with the rate of abnormalities among rural women and girls, as well as understanding the causes of these abnormalities, can help to prevent and treatment of them.

Keywords: Postural Anomalies; Prevalence; Rural Female

Introduction

Posture is defined as "a position or attitude of the body; the relative arrangement of body parts for a specific activity; or a characteristic manner of bearing one's body [1]. Today postural anomalies (PA) are one of the most important occupational health issue [2]. Postural anomalies are defined as abnormal posturing refers to rigid body movements and chronic abnormal positions of the body. This symptom is not the same as showing poor posture or slumping over. Rather, it's a tendency to hold a particular body position or to move one or more parts of the body in an abnormal way Most people experience musculoskeletal pain at some stage in their lives [3]. Also, some studies have reported that the prevalence of pain, region of pain and pain symptoms may be influenced by body posture and work-related behaviors as well as demographic factors [4]. Due to the importance of postural anomalies, the World Health Organization (WHO) has named the years between 2000 and 2010 as decade of bone disease. Rural people are one of the most productive social groups who are helpful for independency, self-sufficiency and food security of all countries. Today almost half of the workforces are employed in the agricultural sector. However, these groups have been neglected because the majority of attentions have been focused on workers working in industrial sector [5]. Results of a study in Africa showed that 67% of rural women have been reported chronic muscle pain [3]. The health and fitness of the population is one of the most important indicators in developed countries. Machination life of contemporary life

although has valuable services for humans, but it has numerous effects such as poverty of movement, immobility and obesity. In addition to these, wrong patterns of sitting, standing, carrying of objects, use of improper clothing, heritage, cultural conditions and anthropometry can cause deviation from desired condition of height and predisposing of people to skeletal anomalies [6]. The statistics based on the investigations of researchers in some points of the country about the prevalence of skeletal anomalies are very serious in such a way that averagely 80% of people's society has postural anomalies [7]. The studies show that among different postural anomalies, thoracic kyphosis, flat back, kypholordotic posture, Scoliouz, genus varum, genus valgum, foot flat and haluxe valgus are the most common [8]. Studying period causes anomalies in mechanical condition of body especially in spinal cord [9]. Developing countries health care and its related economy are major concern. In terms of collective growth of their society as a whole, rural public's status of health prevalence of diseases and disorders, level of literacy, accessibility, affordability and availability of timely medical intervention can save lives and improve the standard of rural population life style. Providing due health attention is their rights and duty of every medical professional, at the same time urbanization can be halted, if similar living and health care facilities of urban life among our rural brothers and sisters could be extended and made available at their door step, we are assured of our berth as super power and a developed nation, an achievable goal all should bear in mind was the major aim of this original study to be presented [10]. A recent study conducted in Iran reported the prevalence of PA -over the past month -in at least one body site has been 51.7% and the most common sites were low back and right shoulder pain as 27.4% and 20.1%, respectively [11]. However, to the best of our knowledge there are limited evidences about the prevalence of PA and demographic related factors in different rural regions of Iran. In this regard, this study aimed to determine the prevalence of PA among rural women living in Alborz province of Iran.

Material and Methods

This cross-sectional study aimed to determine the Prevalence of some postural anomalies among rural women living in Alborz province from October 2018 to February 2019. Totally, 700 girls and women including 430 women and 270 girls were studied. Out of the 35 villages composed the central part of Alborz, 7 villages was selected randomly, then from each village, 100 potential eligible participants were selected. First of all, Signed informed consent, the data were collected through Nordic questionnaire that has obtained high reliability and validity in previous study [12]. This standard questionnaire has been used to collect data on cross-sectional studies regarding PA and related disability/inability to work. The questionnaires were completed through interview with participants. Then, postural anomalies such as: forward head posture (FHP), asymmetric shoulder, hyper kyphosis, hyperlordosis, scoliosis, genuvarum, genuvalgum, genurecurvatum, flat foot and hallux valgus.

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Age(y)	700	10	68	37.19	3.14
Weight(kg)	700	28	97	70.10	10.77
Height(cm)	700	141	180	162.66	8.55
BMI	700	18.7	36.2	27.4	3.22

Table 1: Demographic information among subjects.

For measuring the forward head, a special goniometer is used, For measuring the asymmetric shoulder a posture screen is used, for hyperlordosis and hyper kyphosis used from flexible ruler, for scoliosis a scoliometer is used, for genu valgum and genuvarum were measured by measuring the intermalleolar distance and the intercondylar distance of femur respectively, and these distances were measured by bone caliper, for flat foot used from a podoscope and finally for hallux valgus a goniometer in used. Collected data were analyzed through descriptive/analytic statistics using SPSS version 22. The significance level was set at P≤5%.

Results

Our results indicate that the most abnormalities in rural women and girls are related to hyperkyphosis and the least anomalies among them are related to the scoliosis. In fact, in this study, 700 people were evaluated consisting of 415 women and 285 girls that 248 were identified as having FHP (35.4%). According to the Nordic-style questionnaire, 309 subjects (44.1%) complained of shoulder pain, of which 121(17.2%) complained of pain on the dominant side, 76 (10.8%) on the non-dominant side, and

112(16%) bilaterally. The results indicate asymmetric shoulder among rural women and girls is 348(49.7%) Prevalence of self-reported shoulder pain increased significantly with age indeed, the mean age was greater in subjects who reported pain. As mentioned before 700 participants in our study, that 436(62.4%) had hyperkyphosis. The subjects consisted of 700girls and women whose lumbar spine curve was correctly extracted. The results for the rural girls and women lordosis was 339 (48.4%). The prevalence of thoracic scoliosis was 68(9.7%) that they had curves 10° or more. Females exhibited a prevalence of scoliosis but the older patients exhibited increased scoliosis, but no differences were observed in thoracic kyphosis with increasing scoliosis. The results indicate Genu varum among rural women and girls was 118(16.8%), also, a total of 700 subjects were evaluated, actually presented valgus knee. Genu valgum was more common in overweight or obese rural women and girls. The results indicate Genu valgum among rural women and girls was 249(35.5%), also, 86 rural women and girls (12.2%), showed genu recurvatum. Of the patients with genu recurvatum, 77 (11%) experienced knee pain in the limb. The prevalence of flatfoot in the left foot using the podoscope was 95(13.5%), and that in the right foot was 124(17.7%), with prevalence in both feet increasing with age. About 179(25.5%) of participants complained of big toe pain, but only63 (9%) had a history of treatment for big toe pain. The results indicate hallux valgus among rural women and girls is 192(27.4%). The mean angle was 10.0° for the right foot and 11.0° for the left foot. Descriptive data are presented in figure 1 and 2.

Figure 1: Percentage of anomalies among rural women and girls in the trunk, head and neck.

Figure 2: Percentage of anomalies among rural women and girls in the lower extremities.

Discussion and Conclusion

The findings from this present study revealed that 248 subjects out of 700 were found to have a Forward head posture abnormality. Similar results have been found in other studies [13,14]. The incorrect use of heavy backpacks in students, psychosocial factors such as depression or stress, lack of ergonomic school furniture and extended hours in incorrect postures in schools and in front of television and work in farm may be responsible for the findings. Up to 309% of subjects reported shoulder pain with sign of shoulder abnormality in the clinical or imaging examinations. Indeed, the prevalence of non-specific pain in general female adult populations has been estimated to be between 2.5% and 13.7% [15,16]. Although relatively little is known about its etiology, it seems likely that psychological or psychosocial factors are involved [15,17]. Our study tried to addresses a common dilemma in daily rheumatology and orthopedic practice that refers to an assessment of shoulder pain in women of working age and the proper measures of its evaluation. Survey results show that a greater percentage of female aged 10-68 years can have lordosis than double its complications. The findings of the research is consistent with [18], who have reported a high percentage of people with complication of lumbar lordosis. The cause of prevalence of this disorder in girls and women can be muscle weakness especially abdominal muscles, lack of exercise and exposure to grow and reach maturity. This leads to a mismatch between their skeletal structure and muscle strength and finally led to increased complications of lumbar lordosis of them. The results also show that prevalent of kyphosis among female aged 10-68 years is more. This result of researcher [19] is consistent. Most common reason of kyphosis can be motion to poor hygiene, poor decisions when sitting, improper use of equipment such as tables and chairs in long time and muscular imbalances. Students at this age are complicated with kyphosis, Due to the symmetry of the growth spurt in height and reach a mature stage face to the short -and lower chest muscles flexibility and a result of respiratory muscle weakness. Also, due to the specific cultural issues that the women would be emphasizes. It can be the reason for the prevalence of this complication at old age. The findings of the research show that no relationship between symptoms of lumbar lordosis and abdominal muscle strength-endurance in any of the categories - age. Muscle weakness can be one of the main factors affecting lordosis, strengthen muscles, with increase flexibility in antigravity muscles (right side of the spine) and hamstring muscles with a proper pattern of behavior can move to resolve this problem effectively. The adolescent idiopathic scoliosis is one of the most challenging deformities in adolescence and can be associated with several physical, psychological and financial problems for the patient, his/her family and healthcare system and this can be worse for older women. The prognosis of idiopathic scoliosis is affected by several factors, such as morphology of the curve, severity, age of onset, skeletal growth and rate of deformity progression. The progressive deformity may cause several body prominences, asymmetric waistline, uneven shoulders, injured self-image, pain, spinal degenerative changes, limitation in activities of daily living and, in severe cases, disturbed pulmonary function [20]. Angular changes of the knee are very common in pediatric orthopedics. Associated with this pathology, flat feet appear frequently, but we do not see this association frequently in the literature, so this between knee extension and supination of the hindfoot. The present study reports the casuistry of patients who presented an intermolar distance of more than 6 centimeters, which is diagnostic for valgus, and patients with flexible flat feet. Excessive or prolonged pronation may delay lateral rotation of the tibia and alter the desirable rhythm weight bearing plumb line will fall into the normal median line and may overload the arch longitudinal medial. Verderi [21] proposes that valgus genus, in certain cases, can result in an imbalance of the plantar arch, causing pronated and flat feet. In this study, seem several potential causes of genu valgum, including metabolic bone disorders and genetic disorders. Most cases of genu valgum, however, are harmless such as: obesity, injury or illness affecting the leg or knee, arthritis, particularly in the knee, deficiency of vitamin D and calcium. The individual's gait is also likely to be affected as they compensate for the lack of gap between their knees. Also, the altered gait may cause additional symptoms, such as: knee pain, a limp when walking, pain in feet, hips, and ankles, stiff joints, lack of balance when standing. Little data are available regarding the risk factors for genu varum in healthy rural girls and women and their clinical relevance. Genu varum was positively associated with male gender, being underweight, and living in rural areas, and negatively associated with being overweight and obesity. In contrast, genu valgum was positively associated with female gender, being overweight and obesity, and negatively associated with being underweight. Many studies have been carried out to determine the prevalence of flat foot in different age groups and genders in different cities of Iran and other parts of the world [22]. Igbigbi., et al. [23] reported a prevalence of 43% in Kenyans and 23% in Tanzanians. Yucesan., et al. [24] carried out a study in Turkey and explained that flat foot was the most prevalent

congenital abnormality in Turkish school children (22.8%). Alamy investigated the prevalence of flat foot among school children in Tehran, Iran, where the prevalence of flat foot was found to be 35.6% [25]. When compared with the results of the aforementioned studies, the current study's result show a high percentage prevalence of flat foot among rural girls and women in Alborz. In general, studies show a high prevalence of flat foot in this region. These differences depend on different factors, such as anatomical, physiological, genetics, culture, shoes, obesity, and the groups studied. Several research claimed that bodyweight is one of the important factors which influenced the appearance of flatfoot [26-28] but the correlation between BMI and Arch height index in our study was not associated. Therefore, BMI or body weight was not the major effect on flattening arch of foot in rural girls and women. In a meta-analysis of 78 reports of Hallux Valgus primarily in the United States and United Kingdom the prevalence of Hallux Valgus was 15.0% (95% CI: 7.7%-22.3%) among people younger than 18 years and 26.3% (95% CI: 16.5-36.2) among those aged 18 to 65 years. In a 2004 study by Shibata., et al, which used the trace method to study Japanese women, the mean Hallux Valgus angle was 10.0° among those aged 10 to 19 years and 13.0° among those aged 20 to 29 years; the prevalence of moderate Hallux Valgus (Hallux Valgus angle, ≥20°) was 12.5% among those aged 20 to 29 years.6 Mean Hallux Valgus angle and Hallux Valgus prevalence in the present study were very similar to values from previous reports Internal factors such as anatomic characteristics associated with genetic predispositions and external factors such as footwear may be involved in the development of Hallux Valgus. In this study, Hallux Valgus prevalence was significantly higher in women with a family history of Hallux Valgus than in those without such a history. Hallux Valgus in young women was significantly positively associated with big toe pain and family history of Hallux Valgus but not with external factors such as heel height or morphologic characteristics such as big toe length and flatfoot. The percentage of participants who reported big toe pain increased with Hallux Valgus severity. Hallux Valgus should be considered among young women with big toe pain or family history of Hallux Valgus. Finally, we believe that this paper may support clinicians and researchers in understanding the prevalence of some anomalies among rural girls and women, also stimulating more research in this field.

Bibliography

1. Shivani Lalitkumar., *et al*. "Prevalence of forward head posture among 12-16-year-old school going students—A cross-sectional study". *Applied Medical Research* 4. 2 (2018): 18-21.
2. Smith D., *et al*. "Musculoskeletal disorders and psychosocial risk factors among veterinarians in Queensland, Australia". *Australian Veterinary Journal* 87.7 (2009): 260-265.
3. Razavi S., *et al*. "Prevalence of Musculoskeletal Disorders And It's Risk Factors Among, Mothers'home Working". *Journal of Sabzevar University of Medical Sciences* 19.66 (2013): 390-394.
4. Leggat PA and Smith DR. "Musculoskeletal disorders self-reported by dentists in Queensland, Australia". *Australian Dental Journal* 51.4 (2006): 324-327.
5. Razavi asl, S. "Occupational health in agricultural sector. Qom". Andishemandegar Publication (2006).
6. Adam Seneh. "Journal of Educational Innovation". 30 (2009): 139.
7. Moradpuryan MR., *et al*. "Prevalence and causes of postural deformities in upper and lower extremities among 9-18 years old school female in Golestan province". *Lorestan Medical* CE 42 (2012): 120.
8. Mirzaei R and Salimi N. "The study of height anomalies among secondary school students in Bayangan". *Journal of Kermanshah University of Medical Sciences* 16.7 (2012): 565-572.
9. Ben-Zion. "D thesis". Semmelweis University (Bduapest, Hungary, 2004).
10. Kumar R. "Academic institutionalization of community health services: Way ahead in medical education reforms". *Journal of Family Medicine and Primary Care* 1 (2012) :10-19.
11. Chaman R., *et al*. "Psychosocial Factors and Musculoskeletal Pain Among Rural Hand-woven Carpet". *Safety and Health at Work* 6.4 (2015): 120-127.
12. Korana B., *et al*. "Standardised Nordic questionnaires for the analysis of musculoskeletal symptos". *Applied Ergonomics* 18.3 (1987): 233-237.
13. Fares J., *et al*. "Musculoskeletal neck pain in children and adolescents: risk factors and complications". *Surgical Neurology International* 8.1 (2017): 72.

14. Van Niekerk S., *et al*. "Photographic measurement of upper-body sitting posture of high school students: a reliability and validity study". *BMC Musculoskelet Disorder* 9.1 (2008): 113.

15. Miranda H., *et al*. "A population study on differences in the determinants of a specific shoulder disorder versus nonspecific shoulder pain without clinical findings". *American Journal of Epidemiology* 161.9 (2005): 847-855.

16. Walker-Bone K., *et al*. "Prevalence and impact of musculoskeletal disorders of the upper limb in the general population". *Arthritis Rheum* 51.4 (2004): 642-651.

17. Ireland DC. "Psychological and physical aspects of occupational arm pain". *Journal of Hand Surgery* 13.1 (1985): 5-10.

18. Been E and Kalichman L. "Lumbar lordosis". *Spine Journal* 14.2 (2014): 87-97.

19. Kratenova J., *et al*. "Prevalence and risk factors of poor posture in school children in the Czech republic". *Journal of School Health* 77.3 (2007): 131-137.

20. Trobisch P., *et al*. "Idiopathic scoliosis". *Deutsches* Ärzteblatt *International* 107.49 (2010): 875-883.

21. Verderi E." Programa de educação postural". São Paulo: Phort. (2001).

22. Askary Reihaneh., *et al*. "Prevalence of Flat Foot: Comparison between Male and Female Primary School Students". *Iranian Rehabilitation Journal* 11.18 (2013): 22-24.

23. Igbigbi PS., *et al*. "Arch index as a predictor of pes planus: a comparative study of indigenous Kenyans and Tanzanians". *Journal of the American Podiatric Medical Association* 95.3 (2005): 273-276.

24. Yucesan S., *et al*. "Prevalence of congenital abnormalities in Turkish school children". *European Journal of Epidemiology* 9.4 (1993): 373-380.

25. Alamy B. "An epidemiologic study of flat foot in Iran". *Tehran University Medical Journal* 55.3-4 (1997): 78-83.

26. Aurichio TR., *et al*. "The relationship between the body mass index (BMI) and foot posture in elderly people". *Archives of Gerontology and Geriatrics* 52.2 (2011): e89-e92.

27. Barati A., *et al*. "Comparison balance and footprint parameters in normal and overweight children". *International Journal of Preventive Medicine* 4.3 (2013): S92-97.

28. Azarfam A., *et al*. "The relationship between body mass index and footprint parameters in older people". The Foot (2014).

Volume 3 Issue 5 May 2019