

Original Article

Improvement in Daily Life as Well as Working of Health Professionals with Body Postural Correction at Workplace: A Multicentre Study

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Abstract

Introduction: Good body posture plays vital role in our daily life. Habitual mal-postural patterns are associated with musculoskeletal pain. Adaptation of bad postures disturb our life patterns.

Objectives: The objective of this study was to find out the role of postural correction in maladapted health professionals and design guidelines for prevention of maladaptive postures at workplace.

Methods: Postures of health professionals were observed during work in this prospective cohort study at three leading Plastic surgery centers of Punjab, Pakistan from October 2023 to September 2024. Consistently maladapted were identified and individually contacted. After informed consent, mal-adaptive posture/s were noted and post work stiffness, pain, lethargy, irritability, socialization and eagerness to get back to work next day was scored. Postural correction instructed by the Physiotherapist and monitored for three months after which rescoring was done.

Results: Mean age of the subjects was 29.90 ± 13.04 years the maximum 50 years and minimum 23 years of which 55% were females. Among them 37 were surgeons, 17 physicians, 21 Nurses. 4 dispensers, 8 OT technicians and 5 dressers. Most of the subjects (52%) were ectomorphic and shoulder droop, kyphosis, feet eversion, pelvic posterior tilt and feet broad base were the bad postures mainly observed. Pre and post intervention mean scoring about post work muscle stiffness, body aches, lethargy, irritability, socialization and eagerness to get back to work next day were found out. Eagerness to get back to work was having mean score 4 ± 1.7 which improved to 6 ± 2.3 after following postural instruction by the participants.

Conclusion: Correct body posture is one of the key factors for better performance at workplace among health professionals.

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Introduction

Bad or poor body posture is defined as position of body which is either asymmetrical or non-neutral.¹ Majority of health workers have been observed to adapt bad postures in some part of the day or every time. There are multiple patterns of postures adapted by the workers

with involvement of head and neck, shoulders, arms, back, particularly lower back, hip, knees and feet. Sometimes just mal positioning is observed. Each involved area can further have a variety of postural designs adapted by a person. Whatever the design or type it may be, the adapted patterns of wrong posture at work place lead to muscular pain and stiffness due to sustained contraction and over work of muscles to maintain the adapted asymmetry of posture.^{2,3}

Postural muscles are red muscles which are specially designed for the task and have lots of reserves for prolonged working and posture maintenance.^{4,5} They have abundance of myoglobin molecules in the myocytes and are acclimatized for prolonged working being myoglobin carrying extra amount of oxygen readily available for special mode of working by these cells. Analysis of work depicts that these muscles are already working to their maximum person is at work or not. Even if the person is not doing anything, just maintaining the erect posture is enough for the working of these muscles. Imbalances in the working of these postural muscles act as a distractor resulting in extra hit to the maximally engaged tissue and results in exhaustion of these special group of muscles. Fatigue, lethargy, irritability and unhappiness are common concerns after whole day work in physical workers like health professionals.⁶ Due to long-term working in bad postures, these issues are either turn into more pronounced or become perpetuated which is not only because of consumption of extra calories but also due to accumulation of molecules like lactate crystal and spasm of muscles. As a result, the affected person reiterates in to isolation for rest and ultimately becomes less socialized and at the same time eagerness to return to work is decreased. Adapted posture usually turns into habit and person is most of the time even not aware of the mal posture.⁷ Most of the time these adapted postures are positions of ease to give temporary relief but in the long term, once these positions are adapted, body is extra burdened. When someone observes, may give piece of advice occasionally for correction and avoid such postures but most of the time the correction advised is forgotten in majority of the cases and required reminder time and again to get re-adaptation of the correct posture. After correction, muscle balance is achieved again in certain time requiring from 6 to 8 weeks to get responsible set of muscles to return to normal phase and turn into relief when molecular changes have taken place at cellular level and muscle spasms are completely relieved.⁸

The rationale of this study was to find out effects of posture correction not only on general wellness but also

on their social lives and eagerness to return to work in health workers with mal adapted postures to improve their life style and health. This study has wide canvas in general and in health sector particularly as it has involved not only physicians and surgeons but also nurses, dispensers, OT technicians and dressers to produce generalized impact. Involvement of people with different age groups with varied service experience also make it more attractive and practical. The objective of this study was to find out the role of postural correction in maladapted health professionals and design guidelines for prevention of maladaptive postures at workplace.

Methods

Postures of health professionals were observed during working in out-patient department, ward rounds and operation theatres in this multicentered prospective cohort study at Burn and Plastic surgery unit Mayo Hospital Lahore, Allied Hospital Faisalabad and Punjab Rangers Teaching Hospital, Lahore from October 2023 to September 2024. Subjects with consistently maladaptive postures were identified by regular surveillance at workplace and contacted in individual privacy for their willingness to participate in the study. Those having congenital skeletal disorders including kyphosis, scoliosis and flat foot were excluded. Similarly, subjects with history of skeletal or spine surgery were also not considered for the study⁽⁹⁾. Similarly, those subjects who were already on analgesics or steroids due to any reason were excluded from the study. After explaining the procedure about their regular monitoring and posture correction at work, informed consent was taken and 98 health professionals were recruited. Data regarding their gender, age, weight, height, marital status, distance of residence from work place, category of employment and years in service were noted. Each study subject was individually interviewed and pre-intervention scoring out of ten about different study parameters such as post work muscle stiffness, body aches, lethargy, irritability, socialization and eagerness to get back to work next day was recorded. As shown in figure 1, initially 213 subjects were identified but on regular follow up and analysis, 109 persons were excluded as they had occasional bad posture. Similarly, after detailed history, those having spine surgery or non-compliant were dropped. One person was transferred to other city and was also excluded from the study.

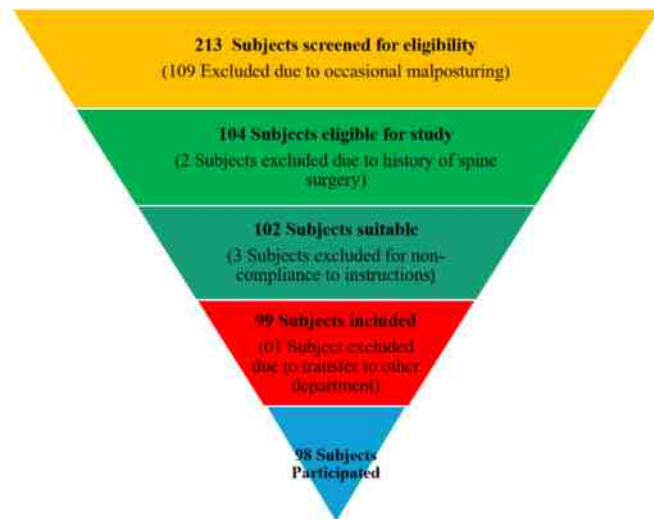


Fig 1: Recruitment of subjects

Mal-adapted posture/s already noted for each subject were discussed with them by the Physiotherapist and corrections were suggested. They were further monitored during their working hours repeatedly reminding about the posture correction. After 03 months of monitored posture correction, each subject was re-interviewed and scoring was done again to find out any change in the scores of the observed parameters.

Qualitative variables like gender, marital status and category of service were expressed in percentages while quantitative variable like age, weight, height, years in service, distance of residence from work place, improvement in scores of muscle stiffness, body aches, lethargy, irritability, socialization and eagerness scores were expressed as means (SD). Improvement score in muscle stiffness, body aches, lethargy, irritability, socialization and eagerness to come for work next day was found out by subtracting post intervention score from pre intervention scores and means \pm SD were calculated for each category. Data analysis was done by using SPSS 23. Paired t-test was applied for pre and post intervention data and p-values for each of the parameters was less than 0.05 showing statistical significance.

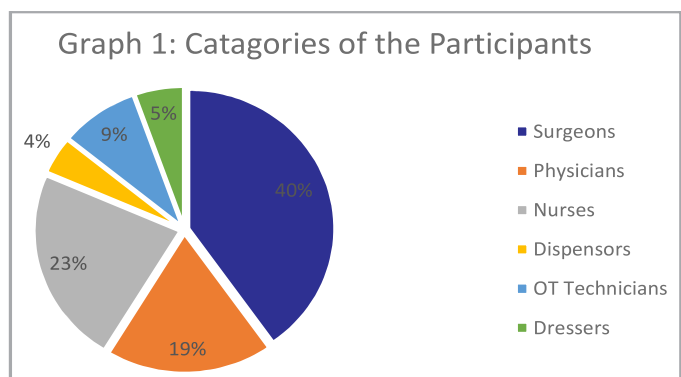
Results:

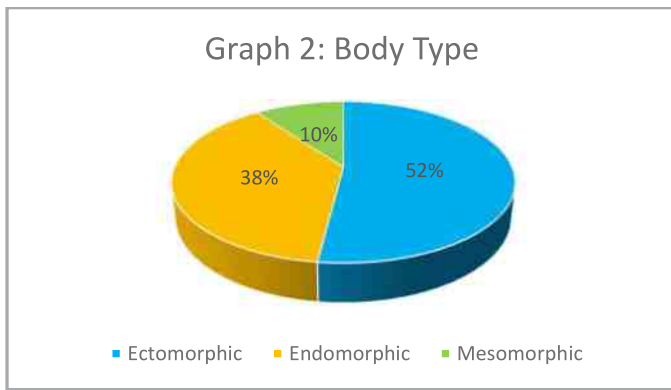
Mean age of the subjects was 29.90 ± 13.04 years the maximum 50 years and minimum 23 years of which 55% were females. Their mean weight was 60.21 ± 8.72 with maximum weight 95.3 kg and minimum weight 45.7 kg. Mean height was 5.15 ± 0.21 feet with maximum 6.0 feet and minimum 4.8 feet. Among them 37 were surgeons, 17 physicians, 21 Nurses, 4 dispensers, 8 OT technicians and 5 dressers as depicted in graph 1.

All the participants included were working in morning shift from 8am to 2pm Pakistan time and majority of them, other than surgeons, were having fixed positions of work while surgeons were working in ward, outpatient department, emergency, classroom and operation theatre on their specific days. Most the subjects (58%) had service experience of 5 to 10 years. Residence of 83% was within 10 miles from the working area while 17% were approaching their workplace after more 10

Table 1: Characteristics of the recruited professionals

Variables	Values
Age	29.90 ± 13.04
Below 35 years	69%
35 to 55 years	20%
Above 55 years	11%
Height	
Mean	5.15 ± 0.21 ft
Maximum	6.0ft
Minimum	4.8ft
Weight	
Mean	60.21 ± 8.72 kg
Maximum	95.3kg
Minimum	45.7kg
Marital Status	
Married	53%
Unmarried/Single	47%
Category	
Surgeons	40%
Physicians	19%
Nurses	23%
Dispenser	04%
OT Technician	09%
Dresser	05%
Service Years	
<5 Years	29%
5 to 10 Years	58%
> 10 Years	13%
Travelling	
<10 miles	83%
>10 miles	17%





to 20 miles travel per day.

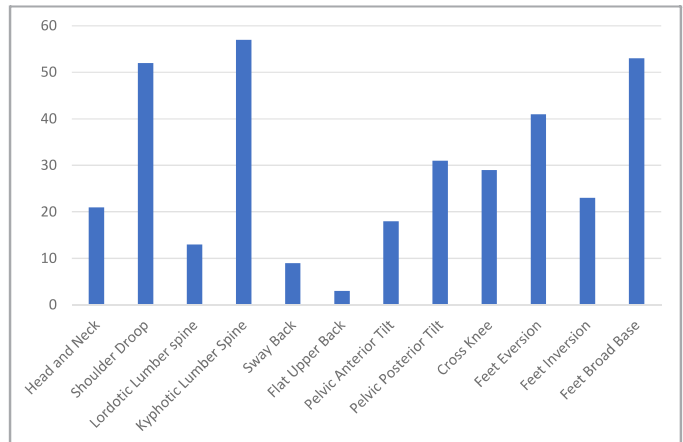


Fig 2: Mal-adapted posture detected in A, C and E with corrections done in B, C and F

Most of the subjects (52%) were ectomorphic while only 10% were mesomorphic as shown in graph 2 and shoulder droop, kyphosis, feet eversion, pelvic posterior tilt and feet broad base were the bad posture mainly observed along with many other postures shown in the graph 3. Some observed bad postures were shown in figure 2 where health workers are seen in their adapted posture while at work as well as the corrected posture after the advice.

Pre and post intervention mean scoring about post work muscle stiffness, body aches, lethargy, irritability, socialization and eagerness to get back to work next day are shown in table 2. The most commonly involved area for body ache was lower back in 86% subjects followed by feet in 70% and neck in 43% participants. Similarly, muscle stiffness was noticed in lumber region in 93% subjects followed by shoulders in 62%, neck in 59% and calf in 47% subjects. Lethargy and irritability were found in all the subjects in varying proportion which showed improvement after postural correction. Socialization was measured through time spent in-house or out of house in social activities by the subjects like family gathering, friends meet up, going for shopping, cinema, playground etc. There was improvement in

socialization scoring after the posture correction and, in the same way, Eagerness to get back to work was having mean score 4 ± 1.7 which improved to 6 ± 2.3 after following postural instruction by the participants.



Graph 3: Adopted Postures in Percentage of Cases

Table 2: Pre and post intervention scorings

Parameter	Mean pre-intervention Score of all the participants	Mean post-intervention Score of all the participants
Body Aches after day work		
• Neck pain 43%	8 ± 2.1	4 ± 2.3
• Upper back 17%		
• Lower back 86%		
• Knee 21%		
• Feet 70%		
Muscle Stiffness after day work		
• Neck 59%		
• Shoulders 62%		
• Arms 17%	9 ± 3.5	2 ± 4.1
• Hands 29%		
• Lumber 93%		
• Thighs 33%		
• Calf 47%		
• Feet 18%		
Lethargy after day work	6 ± 1.8	4 ± 1.1
Irritability after day work	4 ± 1.2	3 ± 1.4
Socialization after day work	3 ± 1.1	4 ± 1.5
Eagerness to get back to work next day	4 ± 1.7	6 ± 2.3

Discussion

Maladapted posture is not uncommon around us particularly in the working class in general and health personals in particular due to their long hectic routines of

extended working hours and committed varied tasks in OPD, wards, emergency and operation theatres. As shown in literature, it has many deteriorating effects on our working as well as daily life with even in the times of other than working hours due to stretched fatigue and muscle spasms.¹⁰ Like published data, variety of maladapted postures were seen around us in health professionals at various places with majority in females seen with maladapted postures.¹¹ Early and easy fatigability, unhappiness and irritability were seen in most of the health workers with bad posture which was not documented in previous data related to health professionals. Regular monitoring, follow up and repeated reminders, after posture correction advice, were needed to ensure effects of the advice otherwise forgetfulness and re-adaptation of bad posture was commonly seen in our study subjects as well as in other literature which was due to unintentional going back in the same posture again which has been adapted for long time.¹²

Health professionals working in different roles at different places like surgeons, nurses, dispensers and OT technicians were equally habitual of bad posturing with most of them having ectomorphic body habitus.¹³ At the same time varied tasks of the nature of their job required change of formation from day to day. If today, they are working in ward, next day will be working in operation theatre and the day next in out-patient department and so on till the cycle is repeated again and again. A large variety of bad postures were noted involving various parts of body such as head and neck, shoulders, spine, hip and feet. Shoulder droop and broad feet were the most adapted postures like previous documented literature but in some surgeons on shoulder drop was observed which was probably due to the demand of their task and later learnt the posture.¹⁴ Lower back having unique location and anatomy, needs special mentioning in posturing as it was involved in most of the subjects probably due to being the most mobile areas and at the same time it is unnoticed due to loose fit wear of our population.¹⁵ Stiffness and spasm were noticed more in the areas with actively involved in motion, support and posture. The muscles of neck, shoulders and back were of main concern because of their sustained activity even if the person is nit at rest and these muscles are maintaining the normal posture.¹⁶ Reminders were needed time and again to ensure corrected posture to be adapted as mentioned in the literature was due to working of the bad posture without involvement of will.¹⁷ On inquiring about why the forget the advised posture there was single answer of just forgetting the posture while engaged in working. After correction

of posture and adaption of correct posture till minimum of four weeks, changes started to be noticeable. Muscle spasm and body aches responded significantly after correction of body posture and it was same as described by Suwaidi AS at all.¹⁸

General wellbeing was seriously affected by the bad posture and resulted in retracted behavior depicted through poor socialization.¹⁹ It was the most probable reason that socialization and eagerness to return to work was unique thing in our study found to be affected by bad posture in health professionals. Measurement of Socialization was suggested by activities after work and depended on how much a person was involved in in-home and out-door activities after returning from work.²⁰ In our study population, it increased probably due to general wellbeing due to corrective care of posturing muscles avoiding undue fatigue and tiredness as suggested by many studies.^{21,22} Interaction with people and attending gathering is one of the hallmark of wellbeing which showed by the study participants once they were in corrected form of their body posture. Improvement in daily life as well as professional working was so encouraging that further studies should be conducted to further elaborate the importance of good body posture in our daily lives.²³

The limitation of the study is that subjects were observed only at their workplace and not at the other spots of their daily life. Similarly, only morning shift was focused due their more regular and streamlined duty rosters as compared to evening and night shifts. The evening and night shifts were also having other factor for not being included as their sleep cycles and working spells were not closer to natural sleep and working cycles and study for them may have other special criteria for selection.

Conclusion:

Correction of mal adapted postures at workplace improves working as well as daily life of the individual.

Ethical Approval: The Ethical Committee Punjab Rangers Teaching Hospital, Lahore approved this study vide RefNo. 45/2024.

Conflict of Interest: The authors declare no conflict of interest.

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Authors' Contribution:

AB: Conception & design, drafting of article, critical revisions for important intellectual content, final approval of the version to be published

SC: Acquisition of data, drafting of article

SA: Analysis & interpretation of data

SA: Drafting of article, final approval of the version to be published

SA: Analysis & interpretation of data

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