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RESEARCH ARTICLE

EFFECT OF SMARTPHONE OVERUSE ON POSTURE AND FLOW METER AMONG ASTHMATIC PATIENTS

Salma Ahmed Salama Hussien[1, *], Amira Ismail Almeldin[2], Dr Saif Eldeen mehmed Ahmed Ragab[3] and Assist. Prof. Heba Ali Abd El Ghafar Ali[4]

[1]B.Sc in Physical Therapy for Cardiovascular, Respiratory Disorder and Geriatrics, Faculty of Physical Therapy, Cairo University;[2]Associate professor of chest diseases, Faculty of medicine, Cairo university; [3]Lecturer of Physical Therapy for Cardiovascular Respiratory Disorder and Geriatrics Faculty of Physical Therapy, Cairo University ;[4]Assistant Professor of Physical Therapy for Cardiovascular, Respiratory Disorder and Geriatrics, Faculty of Physical Therapy, Cairo University

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ABSTRACT

Background: smartphones this days became very important in our life for communication, work, learning, gaming. It is irreplaceable But it also has many of disadvantages , people using it for a very long time which called smartphone overuse and Unfortunately, all this time people spend using the smartphone is in a faulty posture for neck and shoulders. Which cause muscle imbalance around the neck and shoulders and itconsequently affect muscles of respiration. **Purpose:** The purpose of this study was to assess the effect of smart phone over use on posture and flow meter among asthmatic patients..

INTRODUCTION

At recent years smart phone over users numbers are increasing all over the world (sojeong lee et at., 2015). Nowadays smart phone has a critical role in our life but unfortunately people use it with a faulty posture for a long period of time . (Kang *et al*., 2016). Improper posture may decrease the functions of respiratory system especially people who have respiratory diseases (TaiichiKoseki *et al*.,2019). Many studies showed that prolonged use of cell phones can cause faulty neck posture and several muscular disorders.(Kang *et al*., 2016). When using the smart phone for a long time it causes postural deformities like forward head, rounded shoulders, slouched posture. (Prawit Janwantanakul *et al*., 2012).(Jung *et al*., 2016). Because of poor posture during prolonged time of using the smart phone it decreasing the scapular index value and causing a rounded shoulders and forward head posture when comparing them to people who are using smart phone for a less hours per day (Jung *et al*., 2016). Asthma is a respiratory disease which is chronic and patients with asthma are suffering from air way obstruction which causes exaggerated recruitment for accessory muscles of respiration so it cause hypertrophy for this muscles because these muscles are always under tension . (Almeida *et al*., 2013). Asthma can cause posture malalignment due to over activation for accessory muscles of respiration and hyperinflation (Almeida *et al*., 2013). Continuity with forward head posture leading to truma for joints of neck and lumber in addition to ligaments (Fernandez-de-Las-Penas *et al*., 2006) so these structural disorders can be a cause for respiratory dysfunction (Kapreli *et al*., 2009)

Corresponding author:** ***Salma Ahmed Salama Hussien,
B.Sc in Physical Therapy for Cardiovascular, Respiratory Disorder and Geriatrics, Faculty of Physical Therapy, Cairo University.

DISCUSSION

This study investigated the effect of smartphone over use on posture and peak flow meter among asthmatic patients. The study has been implemented on one hundred twenty patients diagnosed with bronchial asthma who are smart phone over users . They were recruited from Helwan General hospital and Helwan sulfur baths. Their ages ranged from (20-35) years old. The patients of this study were randomly assigned into two equal groups (n=60), Study Group A (60 patients) who use smart phone less than 4 hours per day Study Group B (60

patients) who use smart phone more than 4 hours per day.CVA was measured for both groups to assess the forward head posture, scapular index was measured to assess rounded shoulder posture and peak flow meter measured for both groups to assess the asthma and effect of posture on it. Study has investigated the effect of smartphone overuse on posture by measuring craniovertebral angle (CVA) to assess the degree of forward head posture (FHP) study showed that there is significance between the smartphone overuse and forward head posture. Result reported that The mean values ± SD of CVA of group A was 42.30 ± 3.96degrees and that of group B was 25.98 ± 4.64degrees. The mean difference between groups was 16.32degrees. There was a significant increase in CVA of group A compared with that of group B ($p = 0.001$). That mean that group B who use smartphone for long period of time CVA more deteriorated than group A who use smartphone less than 4 hours so group B suffering from more forward head posture (FHP). Forward head posture for long time cause a disorders in muscloskeletal system like trigger points and shortening especially around atlantooccepital joint and upper cross syndrome. The over tension at the muscles around joints cause a persistence cervical pain (Grace Szeto *et al*.,2002) study found that 58.2% from student at high school in Probolinggo suffering from cervical pain during usage of smartphone (Alwin Widhiyanto *et al*.,2017) (FHP) affect cervical curve and also has adverse effect on thoracic so it cause imbalance due to the muscolosceletal disorders.it is founded that the FHP prevalence is 66% among age of 20-30 yaers old (JeonHyeong Lee, *et al*.,2014) and greater in women (24.1%) than men (9.1%) (Maghsoud Eivazi Gh, *et al*.,2012) (Nanda Putra Wiguna *et al*., 2019).

Regardint to (Jintae Han *et al*., 2016) result reported that there is significant difference between craniovertebral angel of both groups of the study between normal people and FHP group both gender ($P < 0.05$) And it is reported that there is a significant decreasing in FVC and FEV1 of FHP group than they were in normal group in both gender ($p<0.05$) and there is a significance lowering in activity of SCM and PM in group FHP than normal group in males ($p<0.05$) . in FHP group the activity of UT and ES in male group generally show lowering than normal group but the difference not significant ($p>0.05$) .but there were a significant difference in women group ($p<0.05$) at the lowering of the activity of UT, SCM and ES at FHP group than normal group. Regarding to result of the current study scapular index show lowering in group B who are smartphone over users more than 4 hours per day and addictive to smartphone than group A who are using smartphone less than 4 hours per day and not addictive for smartphone. The mean values ± SD of scapular index of group A was 90.24 ± 3.32and that of group B was 75.09 ± 4.21. The mean difference between groups was 15.15. There was a significant decrease in scapular index of group B compared with that of group A ($p = 0.001$). so according to result of the current study group B who are smartphone overusers suffering from rounded shoulder posture. Regarding to result of (Rupali Salvi *et al*.,2018) showed that as time of phone usage increase the scapular index decrease which mean that patient has a rounded shoulders .because during usage of smartphone sholders are protracted for a long period of time which is not normal posture .at this study the correlation between mobile phone addictive scale and scapular index was estimated by Spearman's correlation which was significant ($r=-0.4370$, $p= <0.001$).it was perceived that people who exhibit a high level of mobile phone addiction had a decreased scapular index so this indicate that there is a relation between cell phone addiction and scapular index .in addition to (Qurat Ul Ain Gohar *et al*.,2021) statistical analysis found that there is a significance linkage between time of using the cell phone and scapular index with p value of right scapula is 0.036 and left scapula are 0.037. Regarding to the current study result The peak flow meter distribution of group A revealed that there were 57 (95%)subjects in green zone and 3 (5%)subjects in yellow zone. The peak flow meter distribution of group B revealed that there were 6 (10%)subjects in green zone and 54 (90%)subjects in yellow zoneas and There was a significant increase in subjects in yellow zone on group B compared with that of group A ($p = 0.001$). which mean that group A who use cell phone for less than 4 hours PFM reading is better than group B who use the cell phone for more than 4 hours per day which confirms the result of (Jung *et al*.,2016) which concluded that time of usage of smart phone affecting the respiratory functions as time of cell phone usage increase there is a more affection for respiratory functions FEV1 ,FVC,PEF all of them were reduced due to poor posture during prolonged time of using smartphone which lead to increasing in forward head posture and rounded shoulder. Inspiratory and expiratory reserve volumes, forced vital capacity, forced expiratory volume in 1 second and peak flow rate were recorded for group with forward head posture and other group with neutral head posture there were a significance lowering values of all of this respiratory functions at the forward head group thane group with neutral head posture . (Taiichi Koseki *et al*.,2019) Hussain, SA *et al*.,2022 reported that FVC and FEV were significantly differ at people who have a rounded shoulders and others without rounded shoulders(p-value= 0.000 and 0.003 respectively). So changes in posture can affect the vital capacities.

CONCLUSION

Asthmatic people who are smartphone overusers and suffering from FHP and rounded shoulder have lower peak flow meter reading than who are not smartphone over users.

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