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Title- Effect of Mobile Game Addiction on Craniovertebral Angle and Respiratory Function.

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Abstract

Background: Smart phones have made internet access ubiquitous, with no bounds on time or place and are used for a wide range of purposes ranging from pleasure, communication to business Prolonged smartphones usage causes faulty posture such as forward head posture,slouched posture or rounded shoulders.[2]structural issues causedby inappropriate posture may cause the respiratory dysfunction. The aim of this study is to identify the change in cervical posture and respiratory function in improper constant sitting during mobile game playing.**Materials and Methods**: An observational study was planned for a duration of 6 months from 1st July to 31st December 2021. All Male student from Physiotherapy college from western M.P. were interviewed for Addiction of Mobile Gaming. Students, aged between 18-25 years, those who were playing games for 2-3 hr a day and from last 2years, Non-smokers,boys who didn'thad any respiratory complain/dysfunction. **Result-.** Total 60 students were recruited in our study who have fulfilled the inclusion criteria, the mean age of participant with CI 95% 20.9333 ±0.531 (±2.54%) and the BMI 20.02 ±0.45 (±2.25%) out of 60 participant 6.67%(4) were having normal CVA i.e. >49.9º, 93.3% (56) participant were having CVA<49.9º. FEV1 & Forced Vital Capacity similar result i.e. 8 participant were having below normal FEV1 among them 2 were having normal CVA, and 6 were having CVA<49.9º. **Conclusion**- This study suggested that Mobile Game addiction may lead to the Abnormal CVA and Pulmonary function.

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Keywords: Addiction, Mobile gaming, Physiotherapy students.

Introduction-

Smart phones have made ubiquitous internet access possible, with no bounds on time or place and are used for a wide range of purposes ranging from pleasure and communication to business.[1] Prolonged smartphones usage causes faulty posture such as forward head posture,slouched posture or rounded shoulders.[2]

The prevalence of smartphone devices has rapidly increased to the point that the use of smartphones has become an indispensable part of our lives.[3] The symptoms of smartphone addiction can be grossly classified into two categories psychosocial disorder,including sleep disorder,aggressive or depressive symptoms,dropping of school andantisocial personality disorder andphysiological disorders including dry eyes, carpal tunnel syndrome,musculoskeletal disorder and migraine headache .[1]

Smartphone have small monitors that are typically held downward near the laps, users must bend their heads to see the screens,increasing activity in neck extensor muscle loading the neck and shoulder increases muscle fatigue,decrease work capacity and affects the musculoskeletal symptoms .[4]

Smartphone use in a static position and with an unsupported arm could bring about abnormal alignment of neck.[4] With the use of hand-held devices,everyone is prone to poor sitting posture like forward head posture.[5]

A forward head posture results in a posture in which the extended head and upper cervical and lower cervical vertebrae flex .[6] The work of Kim Kang,and Kim(2013) states that just 300 seconds of smartphone use can bring about slouched posture and increased reposition error of the cervical spine ,which supports that prolonged smartphone use induces inappropriate posture and changes proprioception.[7] Normal respiration is very intricate function comprising mechanical as well as non mechanical components. It can be affected by various factors, including age,lifestyle,disease and change in posture,that can interfere with its functioning. Different posture such as forward head posture and kyphosis have been shown to alter breathing mechanism including diaphragm mobility and weakness of respiratory muscles.[5,8]

The psychological community has defined video game addiction as a unique behavioural addiction in adult which is characterized by an excessive or compulsive use of games that interferes with an individual routine life.as of june 2018; the WHO however,included gaming disorder in its 11th revision of its international statistical classification of diseases and related health problem (CCD-11).

Player unknown battle ground (PUBG) is an online multiplayer battle royal game.Unfortunately, in just over a year of release there have been multiple reports flowing in on the negative consequence the game has had on the individual,as the effects can easily be seen through their academics,sleep,social and various other patterns. [9]

Target Group- Male Physiotherapy student studying in Ujjain college of physiotherapy

Methodology- an observational study aims find out the prevalence of mobile addiction and its effect on the CVA and PF on students of physiotherapy college from central India were

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interviewed using Semi structured interview schedules for students. Sampling- Purposive sampling done Study Design: -Observational study. Study period- .study Place-Ujjain college of physiotherapy. Appropriate test will be applied wherever required using https://www.socscistatistics.com/tests/and Microsoft excel.Inclusion criteria- Male Students, age between 18-25 years, those who were playing games for 2-3 hr a day and from last 2years, Non-smokers, Boys who not having any respiratory complain/dysfunction.Exclusion criteria- Limb injuries or limb pail in prior 6months,Had experience cervical fracture or trauma, Neurological motion disorder,Unstable cardiac condition, Congenital deformities, Serious surgical or neurological disease.

Results-Total 60 students were recruited in our study who have fulfilled the inclusion criteria, the mean age of participant with CI 95% 20.9333 ±0.531 (±2.54%) and the BMI 20.02 ±0.45 (±2.25%) out of 60 participant 6.67% (4) were having normal CVA i.e. >49.9º, 93.3% (56) participant were having CVA<49.9º. 8 participant were having below normal FVC among them 2 were having normal CVA, and 6 were having CVA<49.9º.FEV1 also observed result are similar to Forced Vital Capacityi.e. 8 participant were having below normal FEV1 among them 2 were having normal CVA, and 6 were having CVA<49.9º. Abnormal FEV1/FVC observed among 40% (24) participant and abnormal Peak Expiratory Flow observed in 46.6% Participant.

Discussion– Our study measure CVA as parameter to demonstrate the effect of prolonged PUBG playing in smart phone on the change in posture. We also measure FVC, FEV1, FEV1/FVC and PEF as parameter to demonstrate the change in respiratory function caused by prolonged PUBG playing in smartphone.FHP is one of the most common abnormalities that predisposes individuals to pathological conditions,such as headache,neck pail, temporomandibular disorders, vertebral body disorder,alteration in the length and strength of the soft tissue.

Our study concluded that individual who use to play PUBG in smartphone 3-4 hrs a day have lower CVA,which indicate greater FHP, and lower values of FVC,FEV1,FEV1/FVC, PEF. This result is consistent with the results from the study conducted by sang in jung,MS,PT, Na kyung lee PhD, PTwho shows that the effect of smartphone usage time on posture and respiratory function.

The decrease CVA causes flexing of the cervical vertebrae in a forward position which if maintained for a long period of time, increases the load in the extension muscle .it is often unnoticed at early stages until symptoms appears. Increased degree of FHP has a bearing effect on chest expansion and respiratory activities which can lead to reduced alveolar ventilation,fHP resulted in an immediate effect on respiratory function even when subjects assume FHP for short duration of time. This could be a result of temporary entrapment of phrenic nerve , which supplies the diaphragm ,reduces its neural activity. FHP also increases compressive loading an tissues in cervical spine, particularly the facet joints and ligament.FHP greatly influences respiratory function by weakning the respiratory muscles. In fact,szezygiel et al .reported that FHP caused limited movement of lower ribs during inspiration.

The result of this study showed that palyingpubg in smartphone for a prolonged duration could negatively effect both posture and respiratory function. These results may be used to

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promote awareness about smartphone usage . For health consideration ,we need to pay attention to the duration of usage ,aswell as posture while playing pubg . This study has some limitations .the number of subjects was relatively small and we did not investigate the statistical relationship between posture and respiratory function Another limitation is that we could not determine possible solution to these problems .Therefore ,future studies should further extend on this study in order to evaluate the missing insights and determine possiblesolutions to the problems caused by prolonged playing pubg.

Conclusion: The present study suggest that the addiction of playing games on mobile phone will leads to the reduction in Cerebrovertbal angle and also affect pulmonary functions.

Limitation: the purposive sample was done, male student were included.

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Conflict of interest: None declared

Ethical approval: Not required

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