Wahba et al., Int J Ment Health Psychiatry 2016, 2:4
http://dx.doi.org/10.4172/2471-4372.1000133

International Journal of Mental Health & Psychiatry

Research Article A SCITECHNOL JOURNAL

The Effect of Mobile usage on Quality of Sleep and Health Related Quality of Life in Elderly

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Rec date: Apr 28, 2016 **Acc date:** Sept 20, 2016 **Pub date:** Sept 24, 2016

Abstract

Objectives: To detect the levels of salivary amylase with mobile usage and its correlation with sleep deprivation and impaired Health related quality of life (HRQL) in a sample of Egyptian elderly.

Methodology: This study was conducted on 100 elderly, all participants underwent comprehensive geriatric assessment. Sleep assessment was done using the —Pittsburgh Sleep Quality Index (PSQI)‖ and assessment of QOL using The SF-12 and saliva was collected in a sterile suitable sampling devise for Salivary amylase measurement. Results: Significant correlations were found between hours of mobile usage and age, both components of HRQL and quality of sleep but insignificant relation to salivary amylase, Yet, there was a significant correlation between absolute usage and non-usage of the mobile and salivary amylase level X^2=0.901, p=0.036 (mean users=53.44, nonusers=37.97). There was significantly higher salivary amylase levels with poor quality of sleep (x^2=13.873, p=0.001). Conclusion: Significant correlations were found between hours of mobile usage and age, both components of HRQL and quality of sleep.

Keywords: Mobile; Salivary amylase; Quality of sleep; HRQL

Introduction

Aging is associated with psychobiological changes that could limit our ability to cope with stressors [1]. A review of the literature on psychological stress and disease concluded that there is considerable support for a link between stress and certain illnesses such as depression, cardiovascular disease and the progression of AIDS. There is also growing evidence for the role of stress in the incidence and progression of other diseases such as upper respiratory tract infections, asthma, autoimmune diseases and delayed wound healing. Research using animals provides strong evidence for a link between stress and cancer, but in humans this link is much weaker [2].

In order to better understand the role of stress, valid and reliable measurement of stress is of utmost importance [3]. Testing saliva is increasingly being used in research lately as it is easy to collect, doesn't require a skilled person or any specific equipment [4] and painless [5]. A handy system for measuring salivary α-amylase activity was released in Japan at the end of 2005 [6], which raised interest in the testing saliva [7].

Researchers investigated the components of saliva in systemic diseases, infectious diseases, malignancy, and hormonal imbalances in attempt to isolate biomarkers [4]. Unfortunately despite many indicators highlighting the advantages of salivary testing studies are lacking [8].

Available research demonstrates salivary alpha-amylase as a useful biomarker that can be used in assessing psychological and behavioral processes [9]. The levels of salivary α-amylase are altered by the adrenergic and the hypothalamic-pituitary-adrenal axis [7].

Results of studies regarding the relationship between salivary amylase activity and age are discrepant: results of studies have shown that salivary amylase activity declines with aging [10,11], that salivary amylase activity does not differ with aging [12,13], and that salivary amylase activity is increased in the elderly [14]. The results of Strahler, et al 2010 implicate sAA as an alternative or additional sympathetic stress marker throughout the life span [15].

Globally, during the past few decades there has been a recognizable increase in the number of people using mobile phones [16,17]. Recently, research is directed to benefit from mobile phones for helping elderly in several clinical domains. The technologies can be used to help manage older adult health and to positively affect their quality of life and well-being [18]. Unfortunately, the radiofrequency radiation emitted from these devices has revealed the importance to investigate possible side effects of mobile phone use on health [19,20]. Research illustrates a variety of adverse effects of long term mobile phones usage on different body systems [20].

Similarly, insufficient sleep impairs several health domains, as well as an individual's general quality of life. The effect of insufficient sleep may include increased propensity to fall asleep, difficulty concentrating, impaired cognition, slowed reaction time, reduced vigilance, fatigue, mood changes, and headache [21,22]. Several studies have shown that the impairments demonstrated from acute and chronic sleep deprivation are comparable to those observed in individuals with high blood alcohol content [23-27]. According to Yogesh and colleagues, a significant association of hours of mobile usage and sleep indices were observed in their study in both genders [28]. The social and economic consequences associated with untreated sleep disorders are significant [1].

Despite the consequences of insufficient sleep that has been demonstrated in literature there are only a few objective assessment methods [29,30]. Currently, only subjective methods ad polysomnographs, which are expensive, are available [31]. Given the diversity of sleep disorders and the direct link to different diseases [30,32] it is vital to search for new objective assessment methods. In 2013 Michael et al, reported that physical fatigue changes the components of saliva and detected a salivary biomarker of physical fatigue that may help identify sleep deprived individuals [33].

Health-related quality of life [HRQL] is an individual's satisfaction or happiness with domains of life in so far as they affect or are affected by "health" [34]. In the past decade, HR-QOL has become of increasing interest in sleep medicine diagnosis and treatment. It is of growing importance toward improving health outcomes and is being taken into consideration in clinical care, health care utilization, and cost [35].