

ESTIMATING HARMFUL EFFECTS OF MOBILE ELECTRONIC GADGETS ON HEALTH OF MEDICAL STUDENTS

levleva OV ✉

Pirogov Russian National Research Medical University, Moscow, Russia

It is difficult to imagine a modern society without electronic gadgets (EG), as they promote rapid acquisition and exchange of data. At the same time, modern technologies do not only ensure information exchange, but also influence different organs and systems of users. As they are more commonly used by students and adolescents, it is important to have a holistic picture of the effect produced by the EG to estimate the harmful effects of various mobile EG. The harmful effects on health of medical students associated with the use of mobile electronic gadgets was assessed. Scientific articles considering the issues of how various environmental factors and harmful effects associated with the excessive use of electronic mobile gadgets influence the health of students were reviewed. The articles published in 2015 to 2021 were searched within ELIBRARY, PUBMED, PSYCINFO and CYBERLENINKA. Thus, taking into account literature data about the health of modern students, their way of life, role and place of electronic gadgets in their lives, and a special importance of forming health-preserving skills exactly among medical students, who are the future doctors, subsequent examination of harmful effects, associated with mobile electronic gadgets used in educational and leisure activity, on students' health, examining the effect of mobile electronic gadgets on other components of the students' way of life and development of modern technologies of hygienic education of medical students at Universities still belong to relevant issues. Development of electronic technologies enables acquisition and processing of large amounts of information. However, various factors producing a negative effect on health and a way of life of a human being are poorly understood. In spite of diversified information technologies, it is important to remember about the necessary skills used when the technologies are applied. Thus, health and skills related to a healthy lifestyle belong to an important factor for future medical students.

Keywords: students, mobile electronic gadgets, healthy lifestyle, hygienic education

✉ **Correspondence should be addressed:** Olga V. levleva
ul. Ostrovityanova, 1, Moscow, 117997, Russia; cool-levl@ya.ru

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ОЦЕНКА РИСКА ИСПОЛЬЗОВАНИЯ МОБИЛЬНЫХ ЭЛЕКТРОННЫХ УСТРОЙСТВ ДЛЯ ЗДОРОВЬЯ СТУДЕНТОВ-МЕДИКОВ

Иевлева О. В. ✉

Российский национальный исследовательский медицинский университет им. Н. И. Пирогова, Москва, Россия

Современное общество сложно представить без какого-либо электронного устройства (ЭУ), так как ЭУ очень помогает в быстром получении и обмене информации. В то же время современные технологии не только помогают осуществлять информационный обмен, но также влияют на различные органы и системы пользователей. Так как основными пользователями чаще являются студенты и подростки, важно иметь целостную картину влияния ЭУ для оценки риска от использования разнообразных мобильных ЭУ. Проведен обзор научных статей, в которых рассматриваются вопросы влияния на здоровье студентов различных факторов среды и риски на фоне чрезмерного использования электронных мобильных устройств. Поиск статей осуществлялся по базам данных: ELIBRARY, PUBMED, PSYCINFO и CYBERLENINKA, которые были опубликованы преимущественно между 2015 и 2021 гг. Таким образом, учитывая литературные данные о состоянии здоровья современных студентов, их образе жизни, роли и месте ЭУ в их жизнедеятельности и особой важности формирования навыка здоровьесбережения именно у студентов-медиков — будущих врачей, остаются актуальными дальнейшее изучение риска для их здоровья использования мобильных электронных устройств в учебной и досуговой деятельности, изучение влияния использования мобильных электронных устройств на другие компоненты их образа жизни и разработка современных технологий гигиенического воспитания студентов-медиков на этапе обучения в вузе. Развитие электронных технологий помогает в получении и обработке большого количества информации, но вместе с тем мало изучены различные факторы негативного влияния на здоровье и образ жизни человека. И при всем разнообразии информационных технологий важно не забывать о необходимых навыках при их применении. Так важным фактором будущих врачей студентов-медиков является их здоровье и навыки здорового образа жизни (ЗОЖ).

Ключевые слова: студенты, мобильные электронные устройства, здоровый образ жизни, гигиеническое воспитание

✉ **Для корреспонденции:** Ольга Владимировна Иевлева
ул. Островитянова, д. 1, г. Москва, 117997, Россия; cool-levl@ya.ru

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Development of electronic technologies enables acquisition and processing of large amounts of information. At the same time, various factors producing a negative effect on human health and way of life are poorly examined. In spite of diversified information technologies, it is important to remember about the necessary skills used when the technologies are applied.

The purpose of the research paper is to assess the harmful effects of mobile electronic gadgets on health of students.

MATERIALS AND METHODS

The research articles considering the issues of how various environmental factors and harmful effects associated with

the excessive use of electronic mobile gadgets influence the health of students were reviewed. The articles predominantly published in 2015 to 2021 were searched within ELIBRARY, PUBMED, PSYCINFO and CYBERLENINKA.

RESULTS

During the educational period, medical students are exposed to huge mental and emotional burden resulting in violation of diet, sleep and declined sports activity. The cumulative burden effect leads to stress, overpressure, reduction in adaptive capabilities and subsequent development of various diseases. So, it is necessary to correctly substantiate and convey the importance

of hygienic activities to future doctors and form health-saving competence, knowledge, expertise and skills of healthy lifestyle maintenance even at the stage of education [1, 2, 3, 4].

Mobile electronic gadgets (MEG) that produce an increased load on the visual and locomotor apparatus and result in psycho-emotional dysfunction are not the last source of increasing loads and stress among modern students [2, 5].

It has been shown during the research that misuse of electronic gadgets (EG) by students (especially during leisure activities) violates sleep due to disturbed emotional background, results in eating disorders and decreases motor activity [2].

During the COVID-19 pandemic, the students were using more EG due to active implementation of distance learning with a high visual load [3, 6].

However, the literature describes not all MEG-associated harmful effects on students and especially medical students who are intended to take care not of their health only, but also of health of their patients, and consult them on a healthy lifestyle.

It has been established through the experiment that the visual apparatus experiences faster fatigue while reading poorly designed data on the screen [7]. To reduce the total negative effect not just on the visual analyzer, but also on various systems of the body, preventive activities are probably required considering various technical characteristics of different EG [8, 9].

Due to the increased visual load, medical students report different signs of visual fatigue as the principal factor, rapid fatigability and reduced stress resistance. So, we can substantiate the necessity in hygienic requirements to font design text of e-learning materials [10].

Use of various EG (PC, smartphone, laptop) by students during not only educational, but also leisure activity with a wrong posture and insufficient lighting will result in such violations as common and excessive accommodation tension, different degrees of myopia, computer visual syndrome, postural disorder, carpal syndrome, loss of hearing while using head phones, possible faster fatigue during an educational process and, as a consequence, reduced stress resistance [4, 11, 12].

Indirect influence of EG via changed lifestyle components such as non-compliance with labor and rest, sleep disturbance and reduced motor activity can result in vegetative dystonia. Thus, in accordance with research data, direct correlations between the rate and duration of using gadgets, sleep disturbances and development of vegetative dystonia, which can be a leading factor that should be taken into account when developing preventive activities, have been identified. The syndrome of vegetative dystonia can result in maladaptation [1, 13, 14, 15].

Development of information and communication technologies results in negative effects associated with their application such as changed personality measures (including Internet addiction). High risks of addiction formation are more characteristic of people who are morally or spiritually weak [1, 3].

The issue of Internet dependency is relevant more than ever, especially now, when social apps were created. On the one hand, these inventions make communication limitless, with constant addiction to a certain level of communication, on the other hand [16].

People with instable adaptation possibilities and disturbances of socio-psychological measurements commonly have different types of addiction. Another addiction can be represented by becoming dependent in an attempt to deal with stress, avoiding rushing to a solution [17, 18].

Internet dependency reduces socialization and, as a consequence, prevents students from being fully included into the educational process and interferes with academic performance. Meanwhile, students with no addiction

except for good academic performance display motives for self-development, self-improvement, etc. [19].

On the contrary, a rapid way of emotional release is escape from reality, communication in social networks, and, as a consequence, dependency on them. The alternative is represented by useful skills such as physical training, walks in the fresh air, real communication with like-minded people who are most important to students [20].

For proper formation of protection and adaptive skills to avoid dependencies it's important to comprehend which personal traits lead to this problem. It has been proven scientifically that it is about low self-esteem, tendency to depression, sense of insecurity and loneliness [21].

Stage-by-stage preventive work related to Internet dependency among students is required to increase effectiveness [22].

Formation of a holistic view about health and healthy way of life in a student is an important constituent of successful professional activity [9, 23].

This is especially true for medical students. Conducting preventive activities among medical students and teaching them a healthy way of life should be a fundamental component of the system of hygienic education of future doctors [24, 25].

Thus, hygienic education of medical students at universities using lectures, conversations, discussions, etc. is definitely necessary [8, 26].

It should be noted that 70.0% of medical students respect their teachers' opinions and consider the teachers as authoritative persons [12].

DISCUSSION

Finally, one shouldn't forget that state-of-art EG have useful advantages for a modern human being. Many useful apps for a healthy lifestyle have been developed currently. For instance, Screen Time app tracks how long the EG has been used; when the permissible limit is exceeded, a timer should be set to add 10–15-minute breaks to every work session of 40–45 minutes. Step Counter app monitors your motor activity within a day. It allows to plan the activity and increase it during a day due to correctly selected gymnastic or various physical exercises. There exist different platforms where you can share your achievements and run small competitions to achieve the set goals associated with a healthy way of life [27, 28].

Useful skills can be applied using Habit Tracker app that would enable to develop a useful habit during a certain period of time [29].

Check lists are important components utilized in formation of useful skills and preparation of materials for hygienic education. Their practical value has been proven already while using, sharpening and teaching the acquired skills to young people. A check list is a reminder to have all important points fixed with their subsequent application in work. This can look like a mini plan or algorithm of actions to prevent the problems with an organ of vision, stress, etc. [29, 30].

CONCLUSIONS

Not all methods of hygienic education of medical students that promote formation of health protection competence, correct assessment of MEG effects on health, risks of disruption of the visual apparatus, locomotor apparatus and formation of dependencies are described in the literature.

Health of future doctors can be formed at the stage of their education already, as acquisition of useful skills is important for subsequent consultation of future patients as far as a healthy way of life goes.

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