

Impact of information on human health: educational and professional aspects

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Abstract. Currently, the information space has a great influence on all types of human activity, allowing us to form a worldview, habits and skills necessary for life. However, global informatization and digitalization, affecting bodily, mental and social constructs, affects the duration and quality of life. The information a person receives affects his physical, mental and social well-being. The problem of security of information flows, especially in educational and professional activities, is relevant because it has a complex impact on the human body. The article examines the impact of information flows on human health and reveals the impact of the modern digital environment on a person's physical, mental health and social well-being. The purpose of the work was to study the complex impact of modern information flows on individual and public health, as well as systematize measures aimed at reducing the negative effects of this process. There are general approaches to considering the problem of information flows and their impact on humans, which we are trying to present. A set of information hygiene and safety measures is proposed in the context of maintaining health, increasing the effectiveness of training and optimizing professional performance. The development of a culture of safe behavior in the information society involves a transformation of attitudes towards "information security" from the meaning of protecting information to ensuring the "security" of information for individuals and society. Keywords: security, health, information hygiene, learning efficiency, professional performance.

1 Introduction

The problem of information flow security, especially in educational and professional activities [1-10], is relevant, since it has a complex effect on the human body [1, 4]. Global informatization and digitalization, affecting bodily, mental and social constructs, affects the duration and quality of life, working capacity and the adequacy of adaptive and behavioral reactions of people [1, 3].

The aim of the work was to study the complex impact of modern information flows on individual and public health, as well as to systematize the measures aimed at reducing the negative effects of this process.

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2 Materials and Methods of Research

The duration and volume of digital consumption are growing almost daily, especially in the educational and professional fields of human activity, which stimulates the interest of specialists to this phenomenon study. To understand the consequences of modern information flow influence on society and the human body, it is necessary, first of all, to consider the understanding of the terms "health" and "information."

We perceive the term "health" within the trinity in which it is presented in the interpretation of the World Health Organization, namely: a state of complete physical, mental and social well-being, and not just the absence of diseases and physical defects [9]. Thus, the impact of information flows on the human body should be considered in terms of the impact on the body organs and systems, on the perception and reactions of the psyche, as well as in the context of communication.

The term "information" is multifaceted. In literal translation, this is an explanation, or a representation of a particular phenomenon [6]. However, depending on the forms of presentation, the methods of transmission, as well as quality and reliability, information acquires a diverse impact. So, for example, when a person perceives information, there is a subjective approach associated with the presence of previous intellectual experience, cultural characteristics, as well as criticality in evaluating the data received. We see another embodiment when receiving information by technical means, and information systems. Besides, the source of information, its reliability and objectivity are important.

Despite the fact that the concept of "information" has a general scientific meaning, it is indisputable that each science implies its own interpretation. However, there are general approaches to consider the problem of information flows and their impact on a person, which we try to present.

The impact of information on the organs and systems of the human body is associated with the very fact of its division into types according to the way of perception. It is customary to distinguish visual, sound, tactile, gustatory and olfactory information (Fig. 1).



Fig.1. Types of information by way of perception

The very division of information according to the method of perception indicates its versatility of influence on the body, since the receipt of information affects all analyzers of a person. However, data from various sources and practical observations indicate that we receive from 70 to 90% of information visually, that is, with the help of the eyes. It is not surprising that visual information has the main influence on us. The second place is occupied by the sound channel. So, it is the method of obtaining such information that largely determines its effect on the body. If during the previous periods of human history books were

the main means of obtaining visual information, then a video sequence becomes such a means in the 21st century. Participants of the modern educational environment and the workers of various sectors of the economy use various technical means to receive and process information for quite a long time during the day. Thus, there is a certain negative effect both on the organs of vision and on the body as a whole [1]. The thing is not only about fatigue, but also about a certain light background, radiation, the frequency of changes in the information provided, the screen size (especially if a phone screen is the information carrier), font size, color design, etc.

The auditory way of perceiving information was earlier, but today the range of such information carriers has been expanded significantly. Audio books, educational programs (including linguistic ones), the means capable of storing audio information, and even a simple audio message. All this is the reality of modern life. Similar devices were used before, but not in such quantity and not on such a large scale. Today, these devices have become "mobile", which means they have a wider range of use. Besides, their use outdoors, in a noisy environment (it is especially true for the transport industry workers) leads to excessive strain on the hearing organs, which is exacerbated by the use of a special headset that increases the negative consequences (including occupational and professionally caused diseases, the accidents due to overwork, etc.).

The current situation associated with the use of remote technologies to provide information in the context of population isolation, caused by the spread of COVID-19 infection, has made these issues very relevant. On the one hand, the possibility of video and audio training and control, provision and exchange of information through digital technologies has made it possible to organize the educational and labor process of the vast majority of the population of many countries. On the other hand, the negative consequences of digital consumption volume and duration increase for all systems of the human body are exacerbated by the restriction of motor activity [1, 8]. A characteristic feature of electronic media use as a means of information obtaining in the modern world is their availability at any time. Often access to a computer or a phone occurs at night, which gives rise to a very important problem - lack of healthy and full sleep.

Undoubtedly, the information space provides a person with great opportunities in terms of promptly obtaining the necessary data, self-education, creativity, communication, and professional activities. Such accessibility beyond geographic boundaries and territorial restrictions allowed a huge number of people to gain access to museum collections, databases of scientific publications, libraries, etc. during the period of pandemic restrictions. But at the same time, this environment is not safe. It has its own laws, rules, difficulties and problems. In the information space, the human psyche is exposed to a huge impact. Therefore, information flows are associated not only with individual, but also with public health.

Let's take a look at several factors of such influence. The content of information and the ways of its presentation are the most powerful weapons that can influence the behavior, lifestyle of people, their views and judgments. An interesting experiment was conducted in the 60s of the twentieth century by Canadian psychologist Albert Bandura. The essence of the experiment was that small children were shown different options for interacting with the doll on the screen, in one case they hugged and kissed it, in the other case they beat it. Then the child was taken into a room with exactly the same doll. The results of the experiment showed that the vast majority of those children who saw violence on the screen began to repeat it in real life [2].

It is no secret that this property of information can be used not only with positive intentions, but also in the pursuit of any selfish goals. Any medium, whether it's a new movie in the cinema, a current TV show, or a popular YouTube clip, can carry all sorts of mental viruses. Despite the fact that most states try to control media flows in order to prevent the spread of anti-state, anti-social and extremist activities, unfortunately, this is almost

impossible to implement nowadays. So, it is known about the existence of an organization called the Blue Whale, which purposefully influences the psyche of adolescents, luring them on social networks, and then convincing them to do all sorts of experiments, which can often lead to suicide in the end.

In general, the impact on the psyche of adolescents is the most radical, since their worldview, logical constructs, mental assessments, as well as the ability to think critically are at the stage of development. The lack of experience, a sufficient knowledge base does not allow for a critical selection of information, which means that the reaction and behavioral manifestations can be distorted.

Besides, the information received often does not have any censorship control and is content garbage per se. But a person’s worldview, his views, assessments and psychological reactions are formed on the basis of such “garbage” [1]. Despite the knowledge and experience, the representatives of the older generation also have their own subtleties of information environment perception. People who grew up reading books that have been censored and contain verified and confirmed information tend to perceive the material of television programs, as well as the material of the Internet space, as reliable and possible to use. However, this is not always true, which can lead to disorientation, a revision of one’s own attitudes that have developed over time.

Adults are less susceptible, but the constant consumption of destructive information also influences them in some degree. If an adult person does not have any purpose, meaning in life, if he does not have his own moral guidelines, then it becomes easy to manage him as a child. This is all more relevant during a period of constant economic challenges, the changes in a social situation, which, unfortunately, is typical nowadays. And here we proceed to the next construct of health - social well-being.

According to sociological studies [3], the media environment in the 21st century is gradually coming to the fore in terms of influencing a person’s worldview, even ahead of agents of primary socialization, such as family, not to mention friends and educational institutions (Fig. 2).

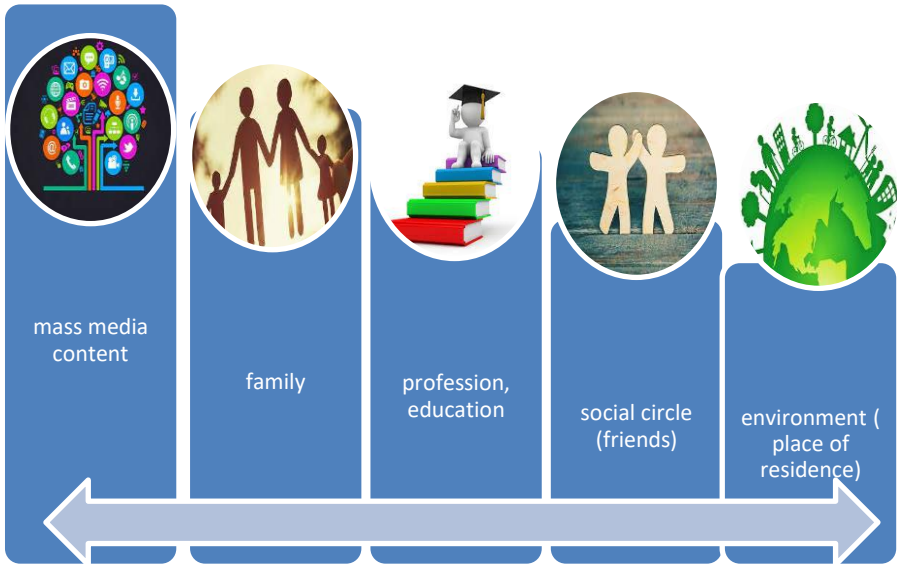


Fig. 2. Main external factors influencing the worldview of a person

The influence of social networks as the largest way of interaction is the subject of research in various scientific, political, economic and other areas. Undoubtedly, the opportunity to interact with a large number of people creates unique perspectives. These are the issues of professional growth, and the search for partners, and the realization of interests. But the rules and laws of virtual communication differ from the accepted and well-known principles of social interaction. In the virtual world, you can "invent" communication scenarios, hide your age, appearance, use "foreign" statements and thoughts (borrowed in the Internet space). As a rule, on the one hand, people, communicating in social networks, believe that such communication can always be stopped. On the other hand, a possible "leakage" of information can affect a person's real life, change his position in society. While recognizing the possibility of optimal variable use of remote communication, which, as we noted above, is an objective necessity in the conditions of restrictions caused by the measures to prevent the consequences of COVID-19, some negative factors can still be noted:

- Some time is spent participating in meaningless polls, getting acquainted with "empty information";
- use of social networks leads to "isolation" of a person from the real world;
- use of social networks can cause depression as people tend to post their "best" photos and describe accomplishments (sometimes far from reality). At that, the user compares his status with others, "more successful" people, which can lead to low self-esteem;
- Evaluation of the actions of some people by others can lead to fear of public actions - social phobia;
- if a user monitors reactions in the form of "likes" in social networks, then this is accompanied by the release of neurotransmitters, which gives rise to dependence on such communication;
- the ability to "edit" one's own photos can lead to attempts to avoid real communication, during which it becomes impossible to "hide" problem areas or embellish one's own body.

3 Results and Discussion

The development of technological progress, the emergence of new technologies is an integral feature of human society. Advanced practices and modern means of communication are aimed at improving the quality of life, providing a person with new opportunities for education, professional growth, raising the cultural level, and solving personal and social problems. However, the use of information, especially related to electronic media, information provided by the Internet space, work in social networks, implies the existence of a number of rules, the observance of which will allow to use all the positive potential and to eliminate possible negative consequences at the same time. On Figure 3, we systematized the measures described in the scientific literature [1, 4 - 7] related to the considered problem solution.

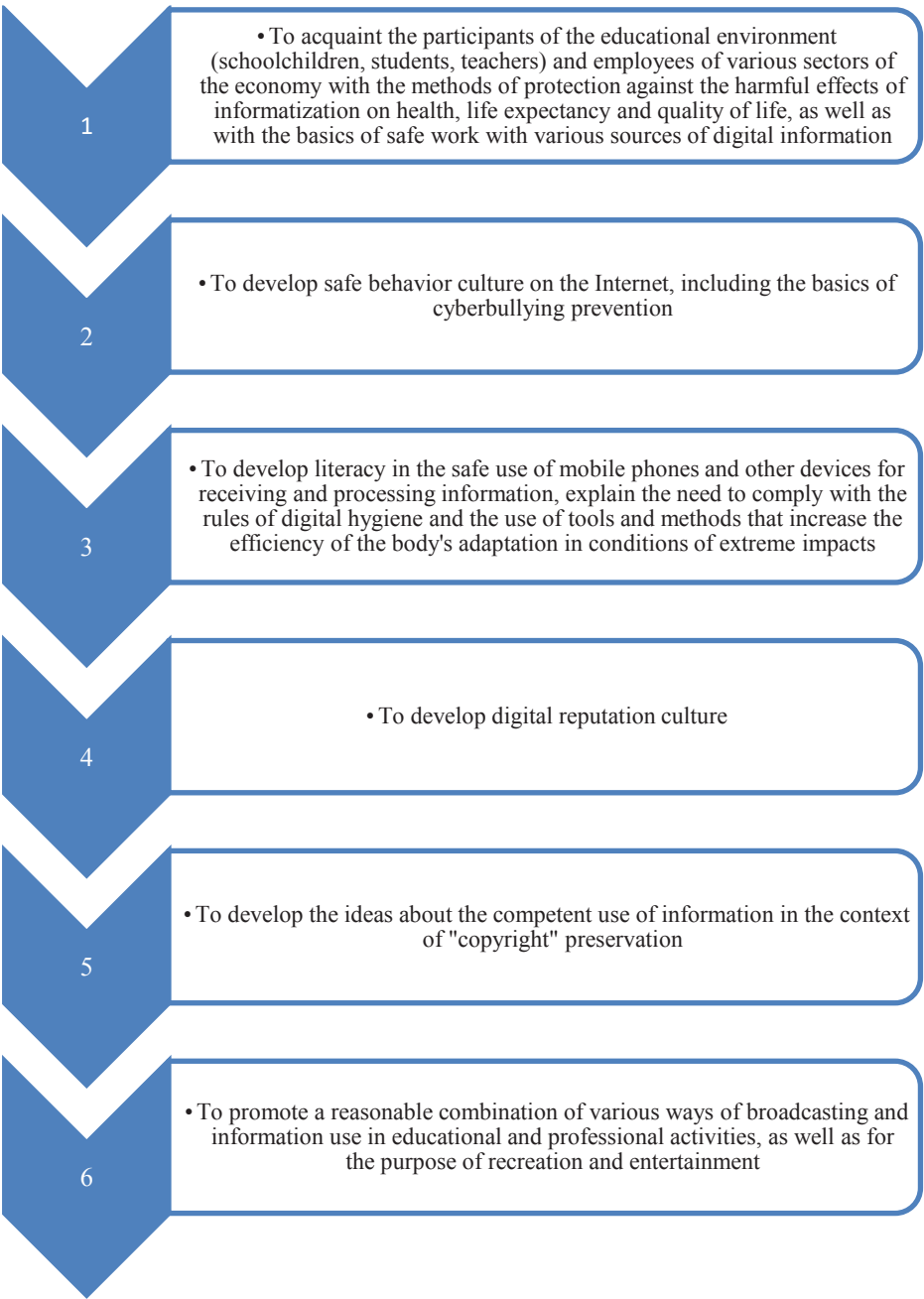


Fig. 3. Techniques for the safe use of information and communication resources

4 Conclusion

Thus, the development of safe behavior culture in the information society involves the transformation of attitudes towards "information security" from the meaning of information protection to ensuring the "security" of information for a person and society.

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