Information and Communication Technologies in the Training of Health and Education Professionals

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Abstract

The training of health and education professionals is by various sources of information and specific actions. The content analysis that focus on knowledge of these professionals to empower themselves reveals very encouraging results, as the knowledge they possess. With this, the objective is to consider the information sources in the context of information and communication technologies as tools to aid health professionals and education in their professional training. From this context, the quick access to the right information for these professionals is one of the most efficient ways to combat drugs and its consequences. The text describes the influence of Information and Communication Technologies in the universe of health and education. This presence is decisive for the process of professional training.

Key words: Information and Communication Technology, Training, Health, Education.

1. Introduction

One of the milestones of this epoch is the problems related to the abusive use of psychoactive substances [1]. In Brazil, crack cocaine, defined as a "devastating drug", stands out due to its physical and social effects. Easy access and low cost made the drug a worrying dimension for public health [2]. Crack has been breaking social and geographical barriers [4], posing a challenge for health professionals and educators regarding the prevention of their use and treatment of dependents. Among the difficulties to deal with this issue is the need to improve the qualification of health professionals who will work in the assistance of users and their relatives [5], as well as teachers of Elementary and Middle School, who have a great role in the prevention of use [3].

This training faces difficulties that go beyond the knowledge of scientific concepts. Epidemiological indicators show that crack consumption is increasing in Brazil [4], reason enough for information on the subject to be constantly improved. However, more than this quantitative increase, reflected in a greater number of users, the emergence of new forms of drug consumption, as well as changes in the culture of use and new drug associations [2]. Soares and Campos [6] show concern with the subject when they affirm that the scientific production on the subject drugs is abundant with respect to the pharmacological aspects of the drug itself and the treatment of dependence, as traditionally. It has been focus in the area of health, but characteristics related to the user's behavior, the usage culture and the problems associated with it are few information. The qualification of the health professional occurs through several sources of information and specific actions. As training is fundamental, the activity of the health professional is being reflect by efficient and effective practical actions.

Bucher [7] analyzing information on drug prevention programs, further states that for prevention to be link to a non-perverse but true ethic, it is necessary to rely on clear and truthful information. Therefore, the construction of more effective preventive actions, with the aim of minimizing the problem of drug abuse, will depend on the type of information one has on the subject, favoring more tolerant or more restrictive attitudes depending on the constructed archetype. However, the sources of information that help to elaborate these actions are diverse and, when unreal or distorted, can cause more problems than benefits. Sometimes they do not express the real situation they can be loaded with ideologies derived from moral and religious values of those who disseminate them or with errors of scientific conceptualization. Furthermore, the author can ignore the epidemiological picture of Brazil highlighting drugs whose use does not exist and does not even constitute a public health problem or can often create strategies based on the "pedagogy of terror" to drugs, ineffective.

Among the possibilities of using content, we can see Information and Communication Technologies as an opportune vehicle for access to information. The analysis of contents that focus on the knowledge of health professionals and education on empowerment reveals little encouraging results, as for the knowledge they have, for example, in the area of drugs. There is a paradoxical picture, for example, the increase in drug consumption and the constant changes in the culture of use of these substances and the lack of preparation of professionals considered "decisive" to deal with this problem.

In other words, the most used sources of information contribute to the perpetuation of this paradoxical picture. Added to this is the fact that much, if not all, of scientific knowledge is produced in large university

centers, making it difficult for those who are distant to access it, which is a true cultural segregation. In this constantly changing scenario, rapid, complete and reliable information must be available and accessible to health professionals and teachers, so that they act based on reality, respecting the peculiarities of the place where they intend to intervene. Canoletti and Soares [8] corroborate this assertion when he argues that the production of information in health seems to reflect a stage of experimentation in which guidelines and proposals are been produced, but only centers of excellence in the area and governmental institutions, report on the development of prevention programs per se.

Sancho and Hernandez [9] emphasize that the impact that ICT has caused on people's daily lives is very visible, as it has affected many aspects of life. At work, it caused many professions to disappear and others to emerge. It has also changed culture, leisure and even the economic world. There are people who have grown up having contact with ICT as part of their routine. It has become difficult to deny the changes that technology has brought to the world. However, these changes are not always positive for the whole society. This paradox of benefits and oppositions that the TICs offered, especially to the computer science, a bias of study and perception. Continuing education is fundamental in the field of health sciences, due to the enormous amount of new data generated by the rapid growth of knowledge in the area [10]. The large amount of information that exists in the various education and training channels makes the use of these tools and accesses a challenge of knowledge implantation and recruitment. Therefore, the construction of more effective preventive actions, with the aim of minimizing the problem of drug abuse, will depend on the type of information one has on the subject, favoring more tolerant or more restrictive attitudes depending on the constructed archetype. However, the sources of information that help to elaborate these actions are diverse and, when unreal or distorted, can cause more problems than benefits.

In this constantly moving scenario, rapid, complete and reliable information must be available and accessible to health and education professionals, so that they act based on reality, respecting the peculiarities of the place where they intend to intervene. Thus, the construction of more effective preventive actions, with the aim of minimizing the problem of drug abuse, will depend on the type of information one has on the subject, favoring attitudes more tolerant or more restrictive, depending on the constructed archetype. However, the sources of information that help to elaborate these actions are diverse and, when unreal or distorted, can cause more problems than benefits.

In the current context of the 21st century, Information and Communication Technologies (ICTs) are an important tool to find, disseminate and deepen the scientific information developed in centers of excellence, which represent the most adequate parameter of evidence for health decision making. In this sense, the purpose of this text is to analyze the ICTs, in the universe of education and health professionals, in their communication process and as sources of information for their professional qualification.

2. The Communication Process

The classical process of knowledge construction has taken place over the years, mainly in education, in the linear form of transmitter-receiver. With the advent of ICTs, this process is been energized and a new form of communication begins to prevail in human society. In the contemporary scenario, the subject happens to be as someone who has consciousness and only accepts what he desires. In this sense, it is observed that

the construction of knowledge is been influenced directly by cultural factors, based on individual history and related to the information coming from the environment in which the person lives.

According to Valente [11], "the way the process of meaning, understanding and appropriation of information happens is not the object of communication." The author also adds that the “education has a fundamental role and a commitment to help the recipient- subject - the apprentice - to build their knowledge." At this point, communication and education differ both in their function and in the field of study. Therefore, in this process of knowledge construction, ICTs can be extremely useful in the educational field as cognitive tools that play different roles.

3. The Sources of Information and Their Technologies

The researches in the Brazilian scientific bibliography by studies that analyze the information and the formation of the health and education professionals returned results not very encouraging. We can call technology textbooks, printed and electronic media, for example. The textbooks [12] are the teacher's main vehicle of information. Being a source almost unique to the teacher, the book has great importance as a provider of knowledge for these professionals. Carlini-Cotrim [12] analyzed eighteen Brazilian textbooks and found that there is a discrepancy between what is focus on books and reality. The drugs most mentioned in the books studied were tobacco and alcohol, followed by marijuana, cocaine, heroin, morphine and opium. This list of drugs contrasts with the epidemiological distribution of drug use in the country, resulting in a very different approach to reality. For example, heroin, morphine and opium are drugs that are not widely consumed by the Brazilian population.

In relation to the print media, the transmission of knowledge by some vehicles (newspapers, magazines specialized in the dissemination of knowledge) is been characterized by the indeterminacy of its receivers (lay public). They do not explain the conditions of production (diversity of its producers: who speaks, where does it speak, to which group it belongs), by the variety of the genres of discourse on the same knowledge (scientific discourse, didactic discourse, journalistic discourse etc.). In this way, the analysis of drug content in newspapers and magazines detects that, although alcohol is the most consumed psychotropic drug among Brazilians and causes several health problems, including deaths, not most cited in these texts, losing for marijuana, which has not shown to have the same alcohol-killing potential [14].

As for electronic media, especially the internet, teachers' knowledge about ICTs, their frequency of use, and the types of applications that support the classroom routine, found that 60% of the interviewees knew about these technologies. However, with regard to computing, none of them had advanced knowledge, concentrating only on the basics. The most cited tool to help in class was PowerPoint, with the Internet being the least used [15]. Observing the behavior of nurses in Basic Health Units, Vargas and Luis [16] have concluded that there is a little knowledge of nurses on the subject of alcohol and alcoholism. Therefore, they suggest the capacity to prepare them for care, recognition and the prevention of alcohol use /abuse disorders in basic health care units, as there is evidence that users of this abusive substance are significantly present in these services. In an analysis of physician training to provide assistance to drug users.

Cruz and Filho [5] have concluded that academic training for drug user assistance is been considered insufficient for the physicians interviewed. Training based on a predominantly biological model, aimed at

assisting the most acute and severe cases, does not enable physicians to perform early identification and deal with issues such as relapse, inconsistency of treatment demand, aggressiveness, comorbidities , clinical complications and the social family situation.

Regarding teachers, in an analysis of the perception and attitude of teachers of private and public schools in relation to drugs, Ferreira, Sanchez et al. [3] evaluated that, although these professionals recognize themselves as opinion makers, they do not consider themselves sufficiently qualified to deal with the subject with their students. Even either because of their lack of information, interest or ability to approach the subject. In terms of the information on the subject, there was a low perception about the risk associated with licit drugs.

This paradoxical picture between increased drug use, constant changes in the culture of substance use and the lack of preparation of professionals considered decisive to deal with the problem of abuse may explain part of the failure of consumer prevention initiatives. On the other hand, the most used sources of information contribute to the perpetuation of this situation. Added to this is the fact that much, if not all, of scientific knowledge is produced in large university centers, making it difficult for those who are distant to access it, which is a true cultural segregation.

The production of information in the area seems to reflect a stage of experimentation in which guidelines and proposals are produced, but only the centers of excellence in the area and governmental institutions, particularly at the federal level, can report on the development of prevention programs as such [8] . In that sense, access to information systems, ICTs and computer-mediated education mechanisms can offer great access gains, but also provide erroneous and unsafe information. The impact of ICTs on people's daily lives is very visible because it has affected many aspects of life. In the field of work, it has caused many professions to disappear and others to emerge. It has also changed culture, leisure and even the economic world. There are people who have grown up having contact with ICT as part of their routine. It has become difficult to deny the changes that technology has brought to the world today, but these changes are not always positive for society as a whole [9].

This paradox of benefits and oppositions offered by ICTs, especially computer science, consists of a bias of study and perception. The internet has brought many changes in the lives of people and highlights benefits such as ease of thinking, writing, synthesizing thinking, rereading and correcting texts on certain subjects, as well as providing a great opening to the world, generating different possibilities of access to information diversified [17]. Continuing education is also fundamental in the field of health sciences, due to the enormous amount of new data generated by the rapid growth of knowledge in the area [11]. The large amount of information that exists in the various education and training channels makes the use of these tools and accesses a challenge of knowledge implantation and recruitment. Therefore, in the area of health, informatics brings together knowledge and skills in the use of information technologies and care and education actions.

4. Information and Communication Technologies - ICTs

Faced with the demand for communication that is been offered to us, we realize that new discoveries and incorporations of technology as a tool for knowledge and work are inevitable. According to Rodrigues and

Colesanti [18], since the 1990s, the advent and popularization of the internet have presented a new displacement of this "gravitational center", which implies numerous transformations for human life, especially with regard to circulation of knowledge and all the new possibilities and forms of knowledge provided by the global network. In this scenario, ICTs arise, which are, in general, processes and artifacts that interconnect communication and the transfer of data and information. It is very important to consider the World Wide Web as one of the resources that popularized the internet and made it accessible for public in general. Therefore, the internet is a product of Information Technology.

According to Santos [19], ICTs "consist of devices produced by human ingenuity for the purpose of obtaining, storing and processing information, as well as establishing communication between different devices, enabling such information to be disseminated or shared." The term "new information and communication technologies" came in the 1980s, when new options emerged to support the development of machines and devices designed to store, process and to transmit large amounts of information [20]. In this scenario, computers and the Internet are great examples of ICTs today, as they are facilitators of the process of searching for information and how to know people communicates with one another.

5. ICTs in the Educational Universe

We can realize that the school do not be restricted to simply transmitting content, having knowledge centered on the teacher exclusively, but rather, being democratic in expanding and offering the opportunities for the construction of knowledge, individual and collective, without regional distinction, financial, cultural or ethnic background. For Valente [11], the information transmitter posture, from the communicational point of view is focus on the concept of transceiver, widely used in the mass media. In this case, the receiver has be seen as a vessel that should be fill and everything that come from the transmitter should be accept by the receiver.

In the educational environment, ICTs have become present, either indirectly, when the student brings with him in his smartphone, or when the institution provides technological means to mediate education. The latter seems still to be an objective to be achieved due to the preconceptions and limitations that professionals have in using technological resources to mediate teaching-learning practice. From these observations, we can derive many benefits from the use of information technology in education and the absorption of information, be it formal or informal. The use of technology in education is a clear path to the process of democratization of access to information.

There are two different types of possibilities of using information technology in education [11], the computer as a teaching machine and the computer as a tool. It is possible to conclude that the computer as a teaching machine is associated with an instructional approach, which only indicates the offer of information and as a tool to a constructivist approach, when it allows the student to construct his own knowledge. The analysis of these two models leads to define that the instructional base refers to the technological media as mere means of transmitting information and the constructivist base is been related to the process of elaboration of capacity.

The use of information and communication technologies in education is a path with no return to the teaching-learning process. At present, the use of cell phones in public schools, for example, begins to

released, contrary to what has always occurred, that is, its deliberate ban in the classroom. It is also important to mention that ICTs today have a great overcoming power. It is a state-of-the-art technology at a time is easily outdated at a future time. That said this metamorphosis requires of the people a great capacity of adaptation and overcoming. The electronic media also play an important role in the process of socialization and education of the individual, since they interact with it in an intimate way. The phenomenon has grown with the advent of technological enhancement, which is particularly effective in private educational institutions. These make these resources even a tool for the sale of products, while in public institutions the adherence is slow and not very immersive. This point is been criticized since mere technological insertion does not necessarily represent a gain in productivity, including intellectual gain.

The use of information and communication technologies in education is a path without a return to the teaching-learning process, even if it is restricted to different education professionals yet. This challenge imposed on education professionals is been confronted with the reality experienced in many institutions, mainly public, which lack the preparation and technological material to accompany the transition from a content reality to one in which the formation of new knowledge is predominant. Education, today more than ever, needs to be rich in resources, enabling its public to construct new knowledge and develop its capacity to think, create, express itself, participate and decide [21].

The ICTs in the educational universe are more than the use of simple technological tools. They can be understand as the implementation of a new didactic-pedagogical method that will guide education in the 21st century. One can no longer think that the application of a technological resource represents the insertion of education into a technological universe. The uses of computer tools may be the simple transposition of technologies from earlier centuries to the present moment. What will decide the insertion of these technologies in the educational universe will be the paradigmatic change of teachers and students, who will take advantage of the most accessible technological resources to incorporate new methods of teaching and of learning. Therefore, technologies and information technology are not the end of learning, but should be considered as a means of stimulating the development of new teaching and learning methodologies.

6. ICTs in Health Universe

For the American Medical Informatics Association Health Informatics boils down to “applying the principles of computer science and information to the advancement of life sciences, education, healthcare professionals and patient care" [22]. This multidisciplinary and integrative field focused on health information and communication technologies develops their own areas of approaches and differentiates them from other professions and disciplines. In this area, Information and Communication Technologies (ICTs) occupy, at these moment, evidence of applicability in the health field that needs to be adequately explored by teaching and pedagogical approach in the training of professionals. Informatics in the educational process has provided a great service allowing a high degree of interactivity between the student and the knowledge, besides offering attractive environments for learning with the use of educational applications. [23].

The Imia (International Medical Informatics Association on Education in Biomedical and Health

Informatics) describes the recommendations for medical education where it is possible to visualize the importance of its implications. For the Association there is relevant evidence that health information technology improves the training of professionals to develop, implement and evaluate their work systems [24]. Therefore, the necessary transformations in educational systems will require the integration of new information and communication technologies, not only as a means to improve the efficiency of systems, but, mainly, as pedagogical tools in the service of the formation of the individual.

7. Conclusion

ICTs are present in all contemporary areas of activity in such a way that it is practically impossible to imagine that a health professional can effectively exercise his profession without the aid of this resource at the present time. In the universes of health and education, the demand for these digital technologies that help the execution of tasks inherent to each medical specificity is increasing. In this context, the internet has become an indispensable tool for the accomplishment of the numerous processes that require updating of data in permanent update.

So it is also worth noting that in addition to the use of these technological tools for emergencies, these new health information resources are vital for the monitoring and surveillance of diseases and treatments, including supply chain management and all the pedagogical and logistical aspects that are, in fact, quite relevant to global health. In this sense, these new technologies are been considered appropriate and of great use in the training of health and education professionals, since they can facilitate the dissemination of knowledge to sectors lacking information such as drug prevention, to other problematic areas of Public Health.

In the specific case of drugs, the need for constant updating of the professionals involved in their prevention or treatment is essential, since the changes that occur in the cultures of the use of these harmful substances to individuals and to society as a whole strongly interfere in the severity of the social, organic and psychological complications suffered by users. Therefore, we can say that, with the popularization of digital technologies, we are all experiencing an innovative relationship between quantity, speed and way of creating and disseminating information. This makes possible a series of communicational, social and cultural transformations in the health area, enhancing not only the emergency, but also the urgency to establish new ways of thinking, of feeling and of acting professionally. It also establishes unprecedented ties of coexistence from a new structural dynamic in terms of the construction of a reality that presents itself and needs to be capture in a constant process of mutation.

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