The Internet is presently one of the most dynamic communication tools and is expanding fast. Globally, adolescents are active Internet users. Internet is also emerging as a significant source of health information and an attractive medium for the health promotion and delivery of health education among adolescents. The advantages of Internet-based applications over traditional approaches are numerous, especially when considering privacy issues, cost-effectiveness, number of users, data collection and information update. In view of previous researches and present dynamics of development in electronic communications, it seems beyond doubt that the Internet has a great potential to be a useful tool for delivering health prevention and health educational programs among adolescents as well as answers for sensitive and private questions asked online. This method of contemporary Public health services is feasible for reaching general population, and particularly seems suitable for programs aimed at adolescents. Bearing in mind the importance of the Internet as a public health tool, it needs to be constantly re-examined and improved in light on available data.

**Key words:** adolescents, Internet, health information, health education, health promotion

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**Introduction**

Adolescence is a critical period of human development often characterized by confusion, mixed interpretation and understanding of adult behavior and environment, exuberance and a penchant for experimentation, especially with drugs, alcohol and sex (1). Of all challenges, those associated with sexual maturation are the most distinctive as well as the most problematic (2). This stage of development is accompanied by an upsurge of sex drives, the development of sexual values, and the initiation of sexual behavior (3). The key concern about the health of young people is the extent to which they have access to resources that promote their development. Access to information and communication services is now seen as a universal right, and the United Nations is advocating for a global initiative for such access within this decade (4). The resources that adolescents need include: access to education, information and services; resources that reside in a stable and supportive structure such as the family; resources contained within policy-making and decision-making processes, and many young people do not have access to these resources, new strategies that are attractive to the youth are beginning to emerge, and they make use of the power, creativity and enthusiasm of adolescents. This is where information technology, such as the Internet, is expected to play a critical role as a source of information (5).

**Adolescence, health information and the Internet**

Adolescence is the period, between puberty and adulthood. According to Caldwell, et al. (1998) (6), adolescents are “...postpubertal population younger than 20 years who have a distinct life style”. They often want to discuss topics, such as physical fitness, stress, nutrition, STDs, HIV/AIDS, alcohol, good eating behaviors, and contraception with their counselors (7-9). They also hesitate to request personal health information from their physicians (7). Adolescents also struggle with lack of knowledge about reproductive health and healthy sexual relationships (10-12). Adolescents in general are uncomfortable discussing private health issues, such as sexuality and contraception, and younger adolescents are embarrassed, afraid, or uncomfortable discussing certain health issues (e.g., menstruation, pregnancy) than were their older peers in grades 10 to 12 (7).

Considering the attributes of cheapness, availability, ease of use and confidentiality of online resources, adolescent information needs may better be served by the Internet, which allows them to explore sensitive topics online which they may not want to reveal to parents,
physicians, school officials, or acquaintances (13). Web resources such as web pages, bulletin boards, newsgroups, listservs, and chatrooms found on Internet contain health information and provide access to information for a potentially large number of participants worldwide (14).

Globally, adolescents are active Internet users. However, percentages of online teens who use the Internet to access health information vary dramatically by country. For example, 53% of in-school Internet users in Accra, Ghana report trying to get health information from the Internet (15). About a third of urban Chinese youth have browsed for reproductive health knowledge (16), compared with 75% USA youth (9). Web-based education for youth may be especially useful in certain cultural context or for sensitive health content (17, 18) because they may be perceived as more confidential sources of sensitive information (19) and can be easily accessed anytime. Given these possibilities, an array of Internet health education interventions has emerged, ranging from passive absorption of text to more interactive modalities that include pop ups, email, games, videos, and moderated chat groups (20).

Few Internet interventions to increase adolescent knowledge of health topics have been evaluated using rigorous study designs with randomization and/or comparison groups (21). Meta-analysis of quasi-experimental studies has demonstrated modest knowledge acquisition, but modification of behavior via the Internet has been less successful (22, 23). Interventions featuring individually tailored web content targeting specific needs of the learner have shown some promise (16, 23-26).

Skinner, Biscope, and Poland (2003) have noted that "Internet connectivity" alone is not the only pertinent factor in facilitating access to and use of web-based health information for youth (27). Adolescents have trouble locating high quality and relevant information, especially local health service information (28-31). Literacy, privacy, search skills, relevance, bandwidth, and gate-keeping issues shape adolescents’ benefit from online health content. The usability of a site is also a critical determinant of effective information acquisition (32). Several studies have noted the difficulties in sustaining youth’ attention to reproductive health sites due to other competing content on the web (30, 33).

The modest results reported to date in knowledge and behavior change in industrialized settings have not tempered the enthusiasm for Internet-based distance learning strategies globally. Bilateral and commercial donors increasingly support Internet strategies as potential solutions to Sub-Saharan African and Latin American unmet health educational needs in rural and urban areas where “e-learning” might overcome teacher shortages and other barriers to health education (34, 35). However, little evidence is currently available on the usefulness of web-based health educational strategies for students in low resource settings.

Many people are optimistic about the Internet as a source of information to young people. Some assert that a primary role of the Internet is to deliver information and improve the health of population, especially in developing countries (36,37). Moreover, several studies have shown that young people are more likely to go online than their older counterparts. Although concern is raised about the quality of online health information (38), the nature of this technology, including ease of access, anonymity and non-punitive attributes, make it an attractive information source for youth, especially for sensitive health issues (18, 28, 39). This observation can be accommodated by the Uses and Gratification Theory, which emphasizes the significance of people’s value for independence in the search and use of information and communication media.

Uses and Gratification (U&G) theory due to Blumler and Katz (1974) (40) is fast becoming an influential tradition in media research because it focuses on why people use the media rather than on the content of the media. The theory assumes that the individual user of the media is in control, active, and goal-directed, as opposed to simply receiving media messages. The media user has been seen as part of broader trend among media researchers, which is more concerned with what people themselves do with media, allowing for a variety of responses and interpretations. The media user consciously or subconsciously takes the initiative to link gratification needs with his or her media choice and use, from among alternative media and other available sources based on the fact that such is able to decide on the information required, select such information and use it (40,41). U&G views the media in terms of the gratification of social or psychological needs of the individual (40). An empirical study in the U&G tradition typically involves audience members completing a questionnaire about why they use the media.

Bearing in mind the fact that youth remain at high risk for contracting and transmitting human immunodeficiency virus (HIV) and other sexually transmitted diseases (STD) (42), we must note that, the Internet may provide access to the most current and most scientifically accurate information available on all aspects of HIV/AIDS, from risk factors for transmission and acquisition to early signs and symptoms to HIV testing and treatment (43). Web sites such as The Body (www.thebody.com) and POZ (www.poz.com) are dedicated to education and clinical information on HIV/AIDS testing, diagnosis, treatment, and prevention for consumers and include access to experts, forums, blogs, and other digital media.
In addition to traditional informational Web sites, a number of interactive safer sex educational Web sites, many targeted to teens (44), and non-traditional sites, such as “Kicesie’s Sex Ed-What They Don’t Teach You In School” on YouTube (45), have been developed.

HIV/STI behavioral interventions using digital media have been developed in many forms, ranging from complex computer-tailored multimedia interventions that take into account individual behaviors and stages of change to brief untailored video interventions (44, 46-48). Effective HIV prevention interventions that use digital media are likely to be highly cost-effective because they are easily replicated after development, require minimal staffing, and have unlimited geographic reach (49).

The development of online HIV prevention interventions of proven efficacy is an area of intensive research although it lags far behind online interventions for smoking (50), obesity (51), and mental (52) and physical health problems (53).

Conclusion

In conclusion, the Internet is emerging as a significant source of health information and an attractive medium for the health promotion and delivery of health education among adolescents. In view of previous research and present dynamics of development in electronic communications, it seems beyond doubt that the Internet has a great potential to be a useful tool for delivering health prevention programs. This method of contemporary Public health services is feasible for reaching general population, and particularly seems suitable for programs aimed at adolescents. In common with any other method, it needs to be constantly re-examined and improved in light on available data.

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**Ključne reči:** adolescenti, internet, zdravstvene informacije, zdravstvena edukacija, promocija zdravlja