

Television as a source of information on health and illness – review of benefits and problems

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ABSTRACT

Despite the dominating and expansive role of the Internet, global reports on mass media still find television as the most popular source of information on health. The following paper is an attempt to systematize the knowledge concerning television broadcast dedicated to the subject of health and illness. The authors aimed to identify the benefits and limitations resulting from the use of the audiovisual means to convey information on health; diagnosing potential threats and explaining trends and possibilities of making use of the television to educate and improve health awareness of the viewers. A critical review of 47 papers published in Polish and international scientific journals in years 2010 – 2014 has been performed. They were categorized into 8 following sections: 1) health information in medical television series; 2) subject

of health in reality television programmes and medical talk-shows; 3) health in television news programmes; 4) television and the issue of physical activity and nutrition; 5) television and selected stimulants (cigarettes/alcohol); 6) television and information about cancer and other diseases; 7) public service announcements concerning health/PSA; 8) television and health education/edutainment. In the light of the conducted review, the television presents itself as a promising source of information on the topic of health and illness which, provided one maintains a cautious attitude as well as moderation, influences the level of knowledge of the viewers, identification of simple symptoms and constitutes an important source of education in terms of prevention and avoiding risk behaviours.

Key words: television, health, health information, health education

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INTRODUCTION

Reed Hastings, CEO of Netflix (online film library) announced during a conference introducing the platform to Latin American market that a conventional television would become extinct within next 16 years. According to Hastings, by 2030 the terrestrial, linear television will be long forgotten and replaced by its Internet counterpart [1]. At the same time, the recent Nielsen Audience Measurement report claims that an average American does not seem to resign from the traditional television, and spends 5 hours and 11 minutes daily in front of the silver screen [2]. The report indicates that the European audience appears to be slightly more temperate. An average French or German spends over 3 hours (about 200 minutes) in front of the television, whereas for a Dutchman it is 184 minutes and for a Swede merely 165 minutes. In 2014, the Polish viewer stood out from previous nationalities by devoting 4 hours and 20 minutes of their day to watching television. And what is worth pointing out, this value is higher than the TV-audience research conducted in 2012 and 2011 [3]. At the same time, Poles are not reluctant to admit that television is their primary source of entertainment and the way they spend most of their free time [4]. Since being exposed to audiovisual content proves to be undisputed element of everyday activity, it is almost certain that the viewer may encounter health information in a television broadcast. What is more, this information will be trusted and the television (apart from consulting a doctor, family, available literature, and with time the Internet) will be considered by the viewer as available and conventional source of their knowledge on health and illness. It has been emphasized in American and British studies conducted at the end of 20th century [5,6] and in the first decade of 21st century [7-8]. The latter have especially indicated which television formats may be a potential source of medical information (news programmes, series, talk-shows, advertising). Accordingly, the studies show that the television, next to press and radio, is the medium for health information and may provide the viewer with medical knowledge. However, there seems to be an open question whether visual depiction of the aforementioned issues may shape health behaviours of the viewer and their actual idea on topics related to health. Analyzing the content of television programmes, the researchers may only speculate, and the question concerning the potential influence on perception and opinion of the viewer in terms of health is still open [8]. At the same time there is a serious lack of scientific summaries for this issue in Poland and the above review tries to complete and fill this gap.

This paper aims to attempt to systematize the knowledge concerning television broadcast dedicated to the subject of health and illness. In the

light of the mentioned research, the authors made an a priori assumptions that the television is medium for such information.

In reference to the above-mentioned discussion, the objective of this paper is to identify the benefits and limitations which result from the use of television in the following aspects:

- conveying information on health and illness,
- diagnosing potential threats,
- explaining trends and possibilities of television to educate and improve health awareness of the viewers.

Methodological assumptions

There has been conducted a critical review of current publications in Polish and international journals which presented research in the scope of the identification of benefits and limitations resulting from the use of the medium of television. In order to establish the time frames for the assembled literature, the documents were narrowed in terms of the date of publication that is years 2010 – 2014. Empirical, observational, cross and prospective studies, of which majority were American, were taken into consideration. The research which focuses on other formats except television (a short film, a feature film, a documentary, a para-documentary, theatrical performance) were excluded. The review does not incorporate studies which concentrated on advertising and its influence on the viewer and their buying decision process in terms of health (commercials of pharmaceuticals, dietary supplements, nutrition products, alcohol, etc.). It has been established that the persuasive character of advertising messages is contradictory to informational role of television in terms of health, which is the subject of this study. In the review there were accepted publications of *entertainment-education* (E-E) which in television broadcast employ persuasion and manipulation techniques, such as: *product placement* or *framing*, or which use *public service announcement (PSA)* in the context of health. They serve to educate, prevent risk behaviours and may constitute a source of information, therefore they were considered a valuable addition to the review. The criterion for exclusion was also: 1) research published in other language than Polish or English; 2) research being a review of literature and research methods; 3) papers investigating other values of television than the informational and educational ones, for instance the relation of “watching television” and the results that this activity may bring to health, that is obesity, lack of physical activity, depression, etc.

For purposes of this analysis, the source of literature concerning informational potential of television in terms of health and illness were the following electronic databases: Medline/Pubmed, ScienceDirect, Google Scholar, Web of Knowledge

and Polish Medical Bibliography. There were also analyzed articles found on the Internet websites of the publishers of scientific journals: Elsevier, Springer and Lancet. Additionally, there were used the following websites: American Journal of Public Health, International Journal of Health Communication, Global Media Journal as well as Journal of Global Mass Communication. The search was narrowed by the use of key words, such as: “health”, “health information”, “television”, “health education”, “media” in both, Polish and English languages. In consequence, there were obtained nearly 130 documents out of which 47 were selected as they met the conditions for inclusion: they included the uses and benefits and/or limitations of the presence of topic of health in television broadcast.

In order to systematize the literature with regard to the topic, the qualified documents were divided into 8 categories: 1) health information in medical television series; 2) subject of health in reality television programmes and medical talk-shows; 3) health in television news programmes; 4) television and the issue of physical activity and nutrition; 5) television and selected stimulants (cigarettes/alcohol); 6) television and information about cancer and other diseases, 7) public service announcements concerning health/PSA; 8) television and health education/edutainment. This distinction allowed to view the subject in the most wholesome manner.

Health information in medical television series

Medical television series and their educational potential in the aspect of health seem worthy of attention for several reasons, namely: popularity, high ratings, approachability and topical diversity as well as attractive place in broadcast programming. The studies which analyzed the content of medical television series most frequently focused on the following four titles: *Grey's Anatomy* [9-15,17], *ER* [9-15,17], *Scrubs* [9,12,13,15] and *House M.D.* [9,11-17]. In many cases, tuning for any of the above-mentioned did not necessarily was the result of searching for medical information. There were different motivations of which the most frequent was seeking entertainment. Nevertheless, the educational potential of such programmes appears in a way “after the fact” when the viewer is given the chance to confront health-related issues, and then to treat the series as reference for fresh knowledge. More often than not, it will be a chance for them to look into the hospital everyday life, observe it through the eyes of doctors and see their point of view. It is important for the viewer to stay reasonable and remember that even the most realistically depicted situation on screen is nothing else but a fiction feature [9].

Ye and Ward [10] examined 127 (from 2000 to 2007) episodes of two television series

Grey's Anatomy and *ER* in terms of the most frequent medical issues that were featured there. They concerned whole body injuries, cardiovascular diseases and cancer. The injured comprised equally of men and women. Less numerous were the elderly, but there was a balance between white and African-Americans. The researchers stressed that both TV series focused on portraying medical issues from the perspective of medical personnel, however, the series also appeared to provide educational value for wide group of viewers.

In the study conducted by Moeller et al. [11] it was debated whether the medical television series correctly present first aid rules in the event of tremor. 364 episodes of four of the most popular series broadcast in American television (*Grey's Anatomy*, *House M.D.*, *Private Practice*, *ER*) were analyzed. 65 instances of tremor were identified. It appeared that in over a half the first aid was executed incorrectly. Merely 21% of the reactions were assessed as correct. The Canadian authors conclude that inaccurate depiction of first aid rules by the actors playing the roles of medical personnel may cause disinformation of the society and reinforce life-threatening behaviour.

Similar conclusions are reached by Foss [12] who examines the issue of medical error and its representation in medical television series. The author demonstrates that this topic is not attractive for the plot, and even if it happened to appear in the script, the medical error resulted from three reasons: insufficient experience of a young doctor, erroneously functioning system or temporary personal problems. According to the author, ignoring the problem of medical errors leads to trivialization of the whole issue as well as leads the viewer to come to wrong conclusions.

The research concerning the assessment of knowledge provided by the medical series was also carried out by Hirt et al. [13]. The scholars analyzed eight of the most popular medical television series produced in years 1990 – 2009. On analyzing 177 episodes, they arrived at a conclusion that fragments of *ER* and *Scrubs* may serve as an educational material for the fresh students of Medicine and the rest of medical personnel. As opposed to *House M.D.* and *Grey's Anatomy* which mainly concentrate on professional ethics and teamwork skills.

Chung [14] introduces interesting study on the relation between watching medical series and the standpoint of the viewer in terms of health, as well as about the reception of information from such source. In the study conducted in the period of January 2007 – December 2009 took part 11,555 respondents who were asked to indicate monthly frequency of watching 4 medical series (*Grey's Anatomy*, *ER*, *House M.D.* and *Strong Medicine*). Then, they were asked to express their opinion in reference to several pessimistic statements related to health, which were, among others: “It appears that

almost everything may cause cancer”, “There are so many recommendations for cancer prevention that it is hard to say which one should be trusted”, etc. The last element of the study concerned respondents referring to health issues which in their opinion are the most important and are visible to them. The issues were, as follows: cancer (33.1% of indications), cardiovascular diseases (27.3% of indications), diabetes (12.5% of indications), mental health (10.8% of indications) and HIV/AIDS (9.1% of indications). Conclusions presented by Chung show that the viewers who spend more time on watching medical series (so-called *heavy viewers* – 35 hours and more a week) more often demonstrate pessimistic opinions about health than people who are less active viewers. It may result from the fact that the series lack wider context and information on illness prevention, and fictional characters die more often than in reality, which may in turn cause confusion and disproportion. Moreover, *heavy viewers* tend to assess chronic diseases pessimistically, such as cancer or cardiovascular diseases and to undermine the initiative of dealing with these issues which, eventually, may result in lack of reaction in own life-threatening situation.

The problem of fiction feature and its reflection of reality in medical series was investigated also by Lapostolle et al. [15]. 18 episodes of *House M.D.* series, which were aired in France in 2011, served as research material which they analyzed paying particular attention to diagnostic strategies employed by the main character and his team. The French researchers observed 225 diagnostic interventions of Dr. House’s team (14 in each episode, on average). The most common diagnostic methods were, as follows: magnetic resonance imaging (MRI, 13; 72%), blood test (11; 61%) and biopsy (10; 56%). There also appeared surgical interventions, treatment of infections and steroid treatment (9 each, 50%). Two patients died (11%). According to the researchers, situations presented in the series are unreal and do not reflect reality. The fact that the reality presented in series contradicts everyday hospital life may result in lack of understanding in patients, their unjustified claims and in disappointment. The average ratings for the series *House M.D.* in France in the period of the study amounted to 8.4 million of viewers.

At the same time, such improbable cases which Dr. House deals with inspired doctors from Marburg University Clinic. According to their account in *Lancet* [16], medical journal, thanks to the analogical symptoms of a character in one of the episodes of *House M.D.*, the doctors managed to diagnose correctly their patient with unusual coronary heart disease. The patient was admitted to the hospital with an acute heart failure (class IV NYHA) and the cause for his condition was unknown (earlier the patient complained about oesophagitis, fever, intensifying problems with

hearing and sight). Medical history of the patient indicated that in November 2010 he had undergone a hip replacement surgery. The ceramic-on-ceramic prosthesis was changed for its metal-made equivalent. Professor Schaefer, head of the team of doctors, personally a big fan of the series *House M.D.*, compared the symptoms of his patient and the fact of endoprosthesis replacement with one of the episodes (season 7, episode 11) of *House M.D.* series. The character in the series also experienced inexplicable heart problems. Dr. House’s diagnosis – cobalt intoxication from the metal hip implant. The doctors in Marburg ordered hip x-ray and tested the level of cobalt and chromium in blood and urine of their patient. The results showed that norms were exceeded threefold. It turned out that the metal endoprosthesis was damaged by the remnants of the previous one and, as a result, eroded. The patient underwent another surgery and was given a new hip prosthesis. The level of cobalt and chromium was stabilized, heart functions improved by 40%, part of the symptoms subsided, and the patient slightly regained sight and hearing. In Marburg University Clinic, the series *House M.D.* still serves as a resource for students of Medicine.

The usability of medical series for scientific and educational purposes among students of Medicine was additionally analyzed by Weaver and Wilson [17]. 386 students of University of New South Wales in Sydney were to refer to the problem of professionalism and ethics of the characters of medical series as well as assess the accuracy of presented situations with the hospital reality with which they were familiar. The study indicated that medical programmes prove to be a valuable source of information for students and may be useful in various forms of education, especially concerning professional ethics.

Alongside medical television series and their educational potential in terms of health there is interesting research on feature television series. As the authors of *Time to Change* report claim, the series help the viewers to understand issues related to psychology and increase awareness of the topic of mental health [18]. The characters from the series more often (in comparison with a parallel study from 2010) face psychological issues and the screenwriters make sure they are authentically and accurately portrayed. The report says that the viewers of *Homeland*, or one of the oldest British soap operas, namely *Coronation Street* in 54% expressed their understanding towards mental problems of characters in the series. 48% of viewers admitted that the series helped them change opinion about people who suffer from mental illnesses, and 31% stated that the series inspired them to raise the topic of the presented condition with their friends, family or co-workers.

Subject of health in reality television programmes and medical talk-shows

Similarly, a strong influence was observed in the context of reality shows. Such programmes, devoted to the subject of plastic surgery and appearance makeovers continue to enjoy unabated popularity. Two studies conducted by Markey and Markey [19] evaluate the influence of media messages included in like programmes and other television broadcasts on the interest level of plastic surgery. The participants of the first study (sample: 1,170 people watching reality show, of average age 19.77, women: 59%), on whom the programme made a positive impression would be able to undergo a plastic surgery in order to change their appearance. The second study (sample: 182 people, women: 51%) showed that the participants who watched a television programme concerning the topic of plastic surgery would be willing to change their appearance by plastic surgery more often than the participants who did not watch a programme of this type.

Additional format perceived as a potential source of health information is a medical talk-show. Seeking the answer to a question of the quality of such information were Korownyk et al. [20] who analyzed two of the most popular programmes of such type in the United States, namely *The Dr Oz Show* and *The Doctors*. 40 episodes of each series were examined in respect of health-related recommendations directed at the viewers. In *The Dr Oz Show*, there were identified 479 of such recommendations, whereas in *The Doctors* 445. The most common advice given during *The Dr Oz Show* concerned diet (39.2%, 188/479), and in *The Doctors* – medical consultation (17.8%, 79/445). The Canadian researchers selected 160 pieces of advice from both programmes and proved that the medical information presented there was insufficient (the lack of clearly formulated benefits or possibilities of damages which can result from the proposed solutions), and nearly half (46%) of recommendations concerning health was not supported by any medical evidence (39% for *The Dr Oz Show*; 24% for *The Doctors*), or was contradictory (15% for *The Dr Oz Show*; 14% for *The Doctors*). The researchers do not dispute the importance of medical talk-shows in respect to informing and educating the viewers, however, they recommend moderation in undertaking health-related behaviours that these endorse.

Health in television news programmes

Television news programmes are the most common source of health information for Americans [21]. Lee et al. [22] analyzed the content and manner of conveying information to the viewers in local news programmes (n=416) and proved that the news stories which concerned therapy development or positive aspects related to health were mainly presented by the use of longer video material,

whereas information on deteriorated health was conveyed through statistics and short trend descriptions. In a similar manner was treated information on prevention and health policy. Most news related to health lasted no less than 30 seconds.

According to the studies by Luth et al. [23], television is a valuable medium for communicating health information and should become a partner to all the institutions related to health. Luth et al. underline mutual benefits resulting from such cooperation. Presenting their results, the researchers conclude that media messages in news programmes are often factually imperfect, unclear and incohesive (the scholars conducted the analysis of media messages connected to H1N1 virus pandemic in the region of Alberta, Canada; n=47). The viewers received information concerning the queues, lack of vaccines, poor preparation of the system, alarming announcements on high incidence, which in authors' opinion did not constitute valuable health information and caused unnecessary confusion among the viewers. The authors claim that if state institutions had worked out an appropriate information policy with the media, the commotion could have been avoided.

A good instance of such cooperation is illustrated by Pribble et al. [24]. Examining the quality and intensity of providing information on West Nile virus in television news programmes, the researchers recorded 1,371 pieces of material concerning the virus. They noticed that the material which featured a conversation with a public health expert, an epidemiologist or other health care representative was much more valuable information for the viewer. The cooperation of the two entities improves the quality of information as well as communication in crisis situation.

Television and the issue of physical activity and nutrition

In spite of the common trend of keeping fit (fitness, jogging, physical exercises) and presence of this topic in television messages, the analyzed material from years 2010 – 2014 does not provide original papers which investigate the influence of television on the increase of physical activity of the viewers. The issue was raised by Hamer et al. [25] who did not prove such dependence. 6,733 of adult women and men who participated in the study did not confirm that sport events which were watched on television motivated them to increasing physical activity. In fact, the study showed that men who spend more time on watching sport on television tend to have symptoms of obesity. Similar results were obtained by Lau et al. [26], who compared health behaviours of men before and after the football world championships in 2006 (before the finals 500 men were interviewed via telephone; after – 530). The comparison demonstrated that watching the finals resulted in increased consumption of

snacks and alcohol, which led the researchers to a conclusion that international sport events broadcast via television should have elements of health education as well as incentives to change the bad habits.

The papers devoted to the relation between television and diet produce other results. Media, such as television may influence nutrition choices of the recipients and their knowledge concerning the harmfulness and positive effects of particular products. Northup [27] carried out research on 591 students (average age of 22.09) asking about the correlation between television that they watch and the knowledge on healthy nutrition and eating habits which they presented. Surprisingly enough, the study showed that the respondents who watch more television demonstrate worse understanding of the issues related to healthy nutrition, and their attitude to this topic does not lead to correct decision-making in terms of nutrition which appeared contrary among respondents who devote less time to watching television. The scholar suggests that the reason for such phenomenon may be the fact that a person who spends many hours in front of television encounters various, often contradictory information concerning diet (a commercial encouraging to buy a candy bar and a recommendation of a doctor in a news programme to avoid sweets) and as a result their knowledge on a healthy diet is poorer than the person who is not exposed to such contradictory messages.

Simultaneously, the analysis of the content of television programmes for children conducted by Jenkin et al. [28] revealed the employment of numerous marketing techniques in promoting food products on television which partly explains the results obtained by Northup. Jenkin et al. mention depiction of logos of producers of sweets or products recognized as unhealthy, the influence on the sense of taste, subliminal techniques depriving the viewer of conscious thought, or combining food products with the idea of fun, good mood, positive emotions which are all openly presented in a television broadcast.

A group which also obtains knowledge on nutrition from television are teenagers. For five years, Roseman et al. [29] had been analyzing the content of television messages aimed at the group aged 11 – 14 on Disney Channel. On this channel, the youth could mainly encounter snacks (prevailing group of 41%), whereas breakfasts, lunches and dinners appeared with less frequency. 42% of presented products is not recommended by the U.S. Department of Agriculture (MyPlate program – being a specific dietary guide for Americans), vegetables and fruit constituted 24% of all the messages concerning food. The scholars are concerned about such low percentage of products which are recommended for children. They suggest that this prevailing number of products of low

nutritional value in the programmes for teenagers may result in bad eating habits in the future.

Comparable analysis of the content of television programmes popular among teenagers (average age: 14.4) conducted Eisenberg et al. [30] The researchers described negative attitudes towards people with distorted body weight presented in favourite programmes of the youth from Minnesota (the group comprised of 2,793 people). Out of 30 various programmes submitted by the scholars, half included elements of stigmatization based on appearance of people performing in them. Negative comments directed at characters with distorted body weight appeared more often in programmes aimed at youth (55%) than those addressed to all the viewers (8.3%). This disproportion led the scholars to a conclusion that reinforcing negative attitudes in programmes for youth may intensify the phenomenon of stigmatization in everyday life and bring negative reactions towards such people (the scholars noticed a higher vulnerability of boys to condemn, reject and ridicule people with distorted body mass – 63.6% vs. 36.4% of girls).

Television and selected stimulants (cigarettes, alcohol)

The research demonstrates that the presence of stimulants such as cigarettes and alcohol in television messages leads to increased initiation of their use. There is a dependence between the display of tobacco brands in television series and films as product placement and reaching for a cigarette by a viewer [31]. Format and context, thanks to which information gets across to the viewer, is a deciding effectiveness factor of such information in terms of stimulants. In their studies, Nelson et al. [32] revealed relatively constant presence of the topic of tobacco in American media in years 2004 – 2010. However, it appeared that this issue is more common for press than television which, additionally, more often presents the detrimental effects of smoking than other media. MacKenzie et al. [33] took an interest in the context in which tobacco smoking occurs. Their study was based on the analysis of news content concerning incidence of lung cancer. Out of 157 discussed cases, in 107 (68%) were presented the ill who were non-smokers. They were depicted as innocent victims of tragic coincidence who got lung cancer despite the fact that they were responsible and did not smoke. The researchers claim that such display may result in stigmatization of smokers, and in consequence may lead to neglecting the treatment and losing the will to improve their condition. Therefore, the depiction of cancer as a deserved “punishment” cannot be a method used to influence the viewers and may result in an outcome opposite to intended.

There are several ways of depiction of alcohol in television broadcast, namely: real-time use, presumptive use, presence of a specific brand or

indirect association. Lyons et al. [34] analyzed the occurrence of alcohol in different forms in five the most popular British television stations between 18:00 and 22:00 (prime time) over the period of 3 weeks in 2010. Alcohol was present in 40% of the analyzed programmes (soap operas, series, feature films and sport). In 21% of the programmes there were used particular brands of alcohol. Three of the most frequent brands were: Heineken, Carlsberg and Budweiser. It leads to a conclusion that such frequent appearance of alcohol in television broadcast may cause the increase in its use by the viewers.

Television and information about cancer and other diseases

Television broadcast may effectively shape the knowledge and health behaviour in reference to cancer prevention. It has been proved by Lemal and Ven den Bulck [35], who examined a dependence between reports on cervical cancer and the fear of it among women aged 18 – 85. The women who every now and then encountered the information on cervical cancer reported increased fear of developing the disease. The more information there was, the more the anxiety rose. And with frequent information about cancer it increased three-fold. The research by Niederdeppe et al. [36] confirmed that local television stations provide relatively more information concerning cancers than local press, and at the same time television messages contain less information on minimizing the risk of developing cancer.

A completely unprecedented situation which caused worldwide information resonance and influenced thousands of women to undergo preventive medical tests was the news concerning a well-known American actress who decided to have double mastectomy. “The Angelina Jolie effect”, as the reaction of women towards breast cancer prevention was dubbed, appeared long-lasting and had global resonance, also thanks to the television [37]. When on 14 May 2013 *The New York Times* published actress’ letter [38] in which she described her dilemma, how she had made her decision and then the several week process of preparation to the surgery, actually, there was no television newsroom which would not comment on this topic. The news about actress’ decision spread around the world and according to researchers of “Angelina effect” [37,39,40] it caused massive interest in detection, prevention and treatment of breast cancer. Evans et al. [39] indicate a substantial rise of referrals for genetic tests for detecting BRCA1 gene mutation responsible for increasing risk of developing breast cancer. Data collected from 12 clinics and 9 medical laboratories indicate nearly two-and-a-half-fold rise of said referrals in June and July of 2013, from 1981 (2012) to 4847 (2013) and remaining on the level of about twofold increase until October 2013. On May

14, Google’s browser recorded 69,225 hits for “preventive mastectomy” which denotes 795-fold rise in comparison to Tuesday before the announcement in *The New York Times* [40].

Over 25 years (1984 – 2008), Kang et al. [41] found how the form and the manner of informing about the Alzheimer’s disease has changed. The analysis of 1,371 mentions of the disease showed that currently such information is presented to the viewers in the form of personal accounts of celebrities, politicians or well-known people who developed Alzheimer’s, which was of no such significance in the past. Additionally, issues like circumstances, causes, symptoms and diagnostics appear to be given less attention in broadcasts nowadays than it was in the past. As the authors conclude, attention of the viewer must be drawn by a familiar character and their story, not the disease itself. Nevertheless, the scholars agree in terms of educational potential of such messages, both on individual and social level.

Television and public service announcements (psa)

Public service announcements (PSA) are non-commercial messages which aim to improve the knowledge, attitudes and/or behaviour of the recipients in terms of a particular issue. The study conducted by Martiniuk et al. [42] indicates the effectiveness of PSA in educating students (aged 9 – 11) and inducing positive attitudes towards epilepsy. In a group of 803 students, 406 (51%) saw the message concerning epilepsy. They reported increased general knowledge of the condition than their peers who did not see the announcement ($P < 0.001$), and demonstrated more positive attitude towards epilepsy ($p < 0.001$). After a month, their level of knowledge on epilepsy did not diminish despite the fact that the advertisement was not broadcast any longer on television.

There can be found a range of studies [43-46] which claim that public service announcements in mass media may bring positive changes or may contribute to prevention of negative effects of health behaviours in large populations, and may constitute a reliable source of health information. Public service announcements mentioned in this paper establish the following: motivation to stop smoking cigarettes [43,44]; heart diseases prevention as well as stroke prevention [45] and education on effects of consumption of products considered unhealthy [46]. The analyzed studies show that public service announcements on television may effectively influence health behaviours of the viewers. There is a conviction that media campaigns which concern harmfulness of sugary beverages increase awareness of health problems connected with excessive consumption of sugar and contribute to a change of eating habits among the recipients of the campaigns [46]. The conducted studies show that messages

motivating to stop smoking or to limit the alcohol consumption generally achieve their aim, however, the effects are usually short-term. In order to obtain the intended effect, it is suggested that public service announcements which concern health were supported by other television formats (talk-shows, news and educational programmes) which could supplement public service announcements which are limited by time. In comparison of the above-mentioned public service announcements on television, one may find interesting the results of a one-year campaign on knowledge of symptoms of stroke among the Japanese. Miyamatsu et al. [45] examined its effectiveness. 1,960 randomly chosen residents of 2 cities who were aged 40 to 74 underwent an interview via telephone which assessed their knowledge in terms of early symptoms of stroke. The interview took place before and after the campaign. Before, 53% of respondents correctly chose five early symptoms of stroke. The study demonstrated that after a year-long television campaign, the awareness of the said symptoms had improved to 63% and that women provided the correct answers more often than men.

Television and health education

Television participation in educating its viewers in terms of health issues was the subject of fourteen studies which were published in years 2010 – 2014. Television programmes were considered as valuable source of new, useful and practical information for the viewers [47-49] and the fact that it is provided through an audiovisual broadcast adds an undisputable educational value. People of lower social status and lower education indicate that television is their main source of health information [47,49]. What is more, television constitutes an effective source of health information for foreigners [48]. Women who base their knowledge of health on television decide to undergo mammography more often than those who obtain their information through the radio or the Internet [49]. Much the same happens with colonoscopy. Television message may prompt to reject myths concerning organ donation and provoke discussion on that matter [50-51]. Additionally, television may offer an effective way to reduce risky sexual behaviours through shaping pro-health behaviours [52] and constitutes a significant factor in changing eating habits [53]. The audiovisual television broadcast is particularly attractive for children as it combines informational and educational function with entertainment thanks to which it expands the possibilities of approaching problems and situations which go beyond the traditional curriculum.

The entertainment which is designed to educate the viewer is called *edutainment* (*entertainment-education*; *E-E*). This tool aims to make a difference in public sphere in respect of knowledge, attitudes and awareness of a specific

topic or problem by the use of television series, talk-shows or other format of television entertainment. The effectiveness of this tool in terms of television series related to health was attempted to be measured by Kim et al. [54], and Van Leeuwen et al. [55] who arrived at similar conclusions: E-E strategies are a promising educational tool which application results in positive effects for health education. The scholars found a significant relation between the content received by the viewers and their knowledge and awareness of the threats. The conclusions proposed by the researchers appear particularly valuable for the health promotion sector of health care and for public health institution which may strengthen effectiveness of their activity by introducing elements of *edutainment* to their educational programmes.

CONCLUSIONS

In view of the mentioned research results, television introduces new dimension to health education and is perceived as a serious source of health and illness information. Its undisputed asset of accessibility and range make it possible to reach a vast and diversified group of viewers. On the one hand, this mass access may be a blessing, on the other – a curse as the strength of the broadcast messages is not the content but the mere fact of making it public. Thus, many researches of the medium express their justified concern and underline low quality and insufficient factual level of television messages which refer to the topic of health.

However, what is undeniable is a fact that the accessibility of television allows various social groups regardless of age, education and place of residence to receive health-related messages. A wide spectrum of television formats which contain health information increases the probability of encountering such content every time the viewer decides to turn on their television set. The television viewing figures of news programmes are promising as for many viewers they constitute the main source of health information. The presented review of available studies shows that medical television series may educate the viewers in terms of: identifying some symptoms of an illness, getting to know the reality of hospital life, diagnostics procedures, observing the duties of doctors and medical personnel. What is more, the series provide valuable educational material for the students of Medicine as well as may serve as a support in medical practice of doctors and specialists. Nevertheless, the recipients ought to be aware that the series are fiction features and do not aim to faithfully reflect the reality (despite consulting specialists), that is why, one should not overly believe the situations presented on the screen. Therefore, appropriate distance and moderation is also recommended in such formats as: reality shows

and talk-shows devoted to health issues. One needs to be aware of their entertaining character and to treat information they convey with caution. Taking that into consideration, a high factual content is presented by public service announcements (PSA) and programmes based on *edutainment* strategy which present measured, verified messages consulted with the specialists which may effectively build health awareness of the viewers.

The present review indicates the need for further documenting of benefits and threats which result from communicative function of television in terms of health issues. Additionally, there is an insufficient number of studies which could affirm the relation between the television broadcast and undertaking physical activity, or the influence of audiovisual content on nutrition choices or health behaviours of the elderly. What is noticeable is a substantial disproportion between the interest in the topic by the scholars from the United States and Eastern Europe, and Poland in which the role of television in respect to health education seems insufficiently examined.

As the present studies focus on health information distribution, there is a more and more distinct trend to use platforms and tools based on social interaction to communicate issues of health and illness. Being a one-way medium, television lacks significant asset which is present in social media – more and more serious player in communications market. Combining audiovisual mass medium with tools which facilitate the ongoing monitoring of recipients as well as reaction to them in real time may provide a chance to maintain status quo of television and to defer the nightmare scenario presented by Reed Hastings in Mexico City.

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