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## The Role of Entertainment Education in Health Literacy and Implications for the Future

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**The Role of Entertainment Education in Health Literacy and Implications for the Future**

By

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## Introduction

It is expected that health care professionals must exercise their knowledge and consistently review clinical information in order to successfully practice medicine. However, it is often overlooked that patients, too, must perform this feat. The phrase “health literacy” describes a skill set that influences a patient’s ability to make informed health decisions; skills include reading, writing, communicating, and more recently, using technology.<sup>1</sup> In a primary care setting, clinicians and patients may overlook health literacy, assuming routine information has been properly communicated and understood.

In 2003, the United States Department of Education commissioned The National Assessment of Adult Literacy (NAAL) to gather population data on health literacy.<sup>1</sup> This study continues to remain the nation’s most comprehensive measure of adult literacy.<sup>2</sup> Health literacy has been categorized into four tiers that reflect a patient’s ability to perform tasks pertaining to healthcare (Table 1). Using these designations, 36% of US adults have basic or below basic health literacy levels.<sup>1</sup> Even so, those with intermediate health literacy may still encounter difficulties such as determining when to take a medication dose in conjunction with meal times.<sup>1</sup> Poor health literacy is more common among those 65 years and older (59%) and in Hispanic and Black populations. Other factors include lower forms of education, poverty, and language barriers.<sup>1</sup>

<i>Tier</i>	<i>Percentage of the U.S. population</i>	<i>Examples of key abilities</i>	<i>Associated health tasks</i>
Below basic	14	Able to locate only straightforward pieces of information in short, simple texts or documents; some patients have even less ability because of nonliteracy in English	Find the date on a hospital appointment slip; identify what is permissible to drink before a medical test based on a short set of instructions
Basic	22	Find more complex information in short texts and simple documents that are somewhat longer and more complex than those at the below basic level	Give 2 reasons a person with no symptoms of a specific disease should be tested for the disease using information from a patient education handout
Intermediate	53	Interpret or apply information presented in complex graphs, tables, or other health-related texts or documents	Determine a healthy weight range for a person of a specified height, based on a graph that relates height and weight to body mass index; identify substances that may have an adverse interaction with an over-the-counter drug using information on a drug label
Proficient	12	Draw abstract inferences, comparing or contrasting multiple pieces of information within complex texts or documents, or apply abstract or complicated	Evaluate applicability of a legal document in a specific health care situation; calculate an employee's share of annual health insurance costs using a table that shows how the cost varies based on income and

**Table 1.** Overview of the NAAL Health Literacy Tiers<sup>a</sup>  
<sup>a</sup>Data from National Assessment of Adult Literacy (NAAL). <sup>2</sup>

Unfortunately, limited health literacy has severe implications including increased health costs, poorer health status, and higher mortality rates. The necessity for adequate health literacy has become remarkably significant; present-day

patients have no choice but to assume more personal responsibility due to multiple providers, polypharmacy, increased chronic disease states, and shorter hospital stays, among other complexities of the current health care system.

A 2016 meta-analysis of health literacy in relation to medical treatment adherence revealed health literacy interventions (e.g. handouts/pamphlets, audiovisual resources, educational software programs) increased both health literacy and adherence. Across 101 studies, this correlation was significant ( $p < .001$ ); those without intervention were seen to have a non-adherence risk 1.38 times higher than those who had received intervention.<sup>3</sup>

How one obtains health information to improve health literacy is specific to the individual. Research shows health-conscious patients seek active forms of communication such as print media (newspapers and magazines), internet, and interpersonal networks. For less health-conscious patients, however, broadcast media such as radio and television serve as primary sources of information.<sup>4</sup>

Entertainment television remains a source upon which Americans have increasingly relied. Entertainment-education (EE) is a growingly popular strategy that incorporates educational messages into media sources to positively influence awareness and knowledge and subsequent attitude and behavior.<sup>6</sup> Although EE is not limited to entertainment television, familiar examples include: the use of emergency contraception in the prime-time drama *ER*, the demonstration of condom efficacy in the sitcom *Friends*, and a storyline involving HIV in the daytime drama *The Bold & The Beautiful*.<sup>6</sup> Though it remains a promising health communication strategy, not enough information is known regarding audience involvement with EE messages.

This review examines whether EE can be successfully applied as a tool to improve patient health literacy and health behavior, its limitations, future implications and importance for the role of a health care provider.

### **Background**

To understand the EE strategy, it is vital to recognize how it differs from other forms of health education. At the most basic level, an individual simply watches a television program with educational content. Cognitively, however, the viewer becomes immersed in a new world that allows his or her consciousness to accept new ideas. These distinguishing components of EE are *transportation* and *identification*. *Transportation* refers to the experience of becoming engaged in a story, thus losing self-awareness and distancing oneself from reality. *Identification* describes taking on the experiences of a character and thus adopting the character's emotions and subsequent goals and motivations. Both transportation and identification uniquely involve the audience to reduce mental resistance by disguising its persuasive intent through means of entertainment.<sup>6,7,8</sup>

EE also differs from other forms of persuasive communication by its placement of educational content directly into entertainment media involving storylines. How the narrative is written can drastically influence how health information is received. This includes *integration* and *framework*.<sup>7,8</sup> A useful theory for understanding the effect of education and story integration is Fisch's capacity model, originally conceived to describe children's comprehension of educational television.<sup>7</sup> The model dictates a necessity for educational content and story to be closely integrated in order to successfully generate memory regarding the educational content. For example, a narrative focusing on a character's contraction of a virus is more integrative than a story featuring a character who meets a friend with a virus. The latter, unfortunately, succumbs to the audience's competing memory resources and memory favors the narrative over the educational

information. Framework, on the other hand, describes how behavior can be associated with positive or negative perceptions. For example, organ donors may be portrayed as good people versus non-organ donors who may be portrayed as selfish.<sup>8</sup>

Finally, like all other forms of education, the EE strategy depends upon the viewer's motivation for change. According to the elaboration likelihood model (ELM) and heuristic systematic model (HSM), persuasive messages are more likely to be processed if the individual recognizes personal relevance to these messages.<sup>7</sup>

## **Discussion**

### *The Efficacy of the EE Strategy*

In 2015, Burzyńska et al. published an international critical review detailing the EE strategy. With credentials from the Department of Public Health and National Medicines Institute in Poland, these authors examined 47 papers published in international and Polish academic journals from 2010-2014.<sup>9</sup> Two studies developed by Kim et al. (2014) and Van Leeuwen et al. (2013) examined the efficacy of EE on implicit memory of antialcohol messages in television shows in the United States and Netherlands. Both studies found positive effects for health education and a significant relation between the EE exposure and increased knowledge and awareness of alcohol abuse.<sup>9</sup>

A 2013 study conducted by Khalil and Rintamaki investigated the pathways between EE exposure from the television drama *Three Rivers* and organ donation discussions. 1325 survey participants living in the United States were administered a cross-sectional survey for a period of one week. Data collected included storyline recall, perception of entertainment, perception of health information accuracy and positive discussion of these. Positive interpersonal discussion (PID) involves active communication, which can in turn lead to furthering health literacy skills.

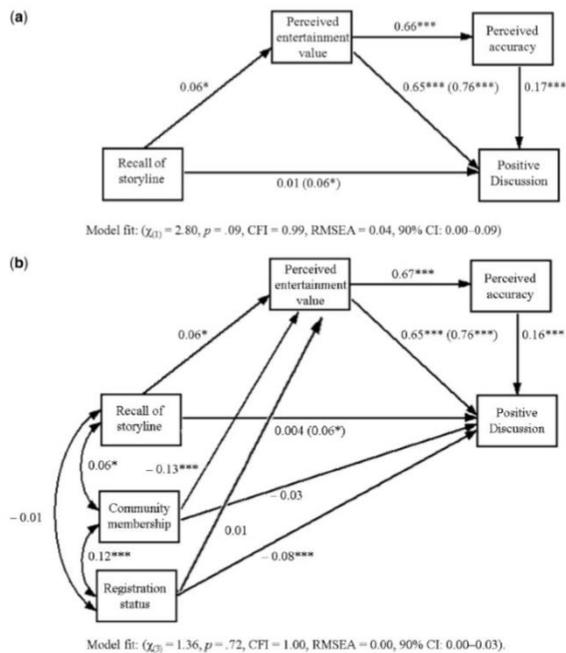
Post evaluation emphasized two factors that led to PID—perceived entertainment value

**Figure 1.** Path Model of Positive Discussion<sup>a</sup>.

<sup>a</sup> Data from Khalil GE, Rintamaki LS).<sup>10</sup>

perceived accuracy (Figure 1).<sup>10</sup>

(enjoyment and emotional involvement) and



### Facilitating Discussion

Discussion is vital for the processing of new health information. In 2010, a qualitative pilot study testing EE in conjunction with discussion was launched at a public high school in a low-income area of Pittsburgh, PA.<sup>11</sup> This was conducted by a principal investigator and third year medical student in conjunction with an internal

medicine physician. The study aimed to determine whether implementing a new healthy literacy curriculum using brief clips from a television program would improve learning health concepts. This public high school was particularly chosen because it reflected demographics determined to be at risk for poor health literacy; 53% of students came from low-income families and 35% were African Americans. Participants composed of a convenience sample of 55 male and female (49% female) ninth-grade students.

A 30-minute curriculum consisted of basic cardiology concepts with objectives for the lesson (e.g. defining congestive heart failure). The first 2 minutes from an episode titled “Fear of Commitment” (Episode 20, Season 7) from the television drama *ER* was selected, and then divided into three segments. Each segment was shown to students, and then subsequently followed by a discussion and summary of educational content. Two open-ended surveys to assess knowledge

(“What did you learn today?”) were administered following the curriculum and afterwards, the study team deciphered common themes and accuracy of knowledge. Responses (Figure 2) were coded inaccurate or accurate by two different physicians independently. These codes were then compared for similarity.

Results demonstrated the experience was compelling enough to help students reproduce accurate medical information, and the majority of these students’ statements were coded as accurate (92.3%).

Physician Assessment	Quotation
Incorrect (N = 2 comments)	I learned that the definition of CPR was Cardiopulmonary.
	Showing how blood is not going to the heart like O2 and AF.
Correct (N = 24 comments, all comments not included here)	I learned that CHF is congestive heart failure.
	A heart attack is when oxygen is not getting to the heart and then you have chest pain and stuff.
	I also learned broken bones can cause chest pain.
	When you have a heart attack it means not enough oxygen to the heart.
	I learned that just because you have a pain in your chest, it doesn't mean you are having a heart attack.
	Heart burn isn't really in your heart, but in your stomach and esophagus.
	[Congestive heart failure] means the heart is not pumping enough blood, so it backs up to the lungs then the whole body and you can tell if the person has that because you can listen to the fluid in their lungs.
	We learned about the difference between CHF and a heart attack, like what you think what might be a heart attack could be CHF which is actually in your lungs.
I also learned how CHF is caused and a lot more like about O3 is ozone.	

**Figure 2.** Verifiable Knowledge Based Statements<sup>a</sup>  
<sup>a</sup>Data from Primack BA, Wickett DJ, Kraemer KL, Zickmund S.<sup>11</sup>

*Limitations of the EE Strategy*

A 2011 Canadian study conducted by Moeller et al investigated the accuracy of health information. In this study, 364 episodes of four popular American television series (*ER*, *House M.D.*, *Grey’s Anatomy*, and *Private Practice*) were reviewed for the portrayal of treating seizure. Results indicated that over half of the aid portrayals were incorrect.<sup>9</sup> This misinformation may reinforce hazardous behavior.

A 2016 German multi-methodological study was conducted on the EE strategy utilized in *The Michael J. Fox Show* (TMJFS) (2013-2014), an American sitcom featuring actor Michael J. Fox as a former television anchor with Parkinson’s disease. While the sitcom format allowed for ease of health information administration, some viewers found it to be inappropriate. Empirical findings revealed that a humorous format for EE has negative effects on credibility; the seriousness of the disease was not shown, and therefore, viewers acknowledged the necessity to facilitate

positive interpersonal discussion.<sup>12</sup> Therefore, it would seem that while EE can have positive effects, the appropriate format of EE must be chosen to purposefully facilitate educational content.

#### *Future Use of the EE Strategy*

The future of television is advancing with changes in everyday social climate. *Time to Change*, a movement with a purpose to end mental health discrimination, reported that television series that depict psychological issues authentically can have a positive impact on education. 48% of viewers admitted *Homeland* and other television series helped change opinions regarding mental illnesses. 31% reported they were inspired to discuss this topic with others.<sup>9,13</sup>

Television series may also be used for educational purposes for medical professionals. In a 2011 Australian study conducted by Weaver and Wilson, 386 students from University of New South Wales were administered a survey that collected data on perception of realism, ethics depiction, professionalism and role models. This study revealed a high level of engagement, a high recall of ethical lessons, and beliefs that these television series portrayed professionalism ideally.<sup>14</sup>

Although most EE focuses on preventative and public health, research shows EE may be used for personal chronic health management. In 2018, a research study examined multimedia education tools for patients with knee osteoarthritis (OA), osteoporosis (OP) and rheumatoid arthritis (RA). These video tools, presented in both Spanish and English, were shown to patients to determine disease knowledge, decision conflict, and management. 20 patients per disease were recruited with at least 5 Spanish-speaking patients per disease group. There were statistically significant differences to pre and postintervention questionnaires (OA: P= 0.03, OP: P=0.01, RA: P <0.0001).<sup>15</sup>

#### **Limitations and Future Implications**

Most research study designs described in this review were limited by small population size given viewers of specific television programs could not be controlled. Because of this, the American population could not be generalized to said studies. Preexisting factors specific to the individual such as previous knowledge of the health information or eagerness for discussion could not be evaluated.<sup>10</sup> Selection bias of participants in the qualitative pilot study performed in Pittsburg, PA was evident; it is possible that students selected for this study were engaged in education overall versus those who did not participate. Qualitative analyses implemented on written material were a constraint since these analyses were not validated instruments.<sup>11</sup>

More research needs to be performed regarding the efficacy of specific formats of EE such as dramas versus situational comedies. Additionally, more research in regards to the degree of integration (a singular educational point in an episode versus a theme where an entire storyline constitutes focus). Further studies can also consider those in specific age groups such as the elderly. Future studies additionally need to consider not only change of health behavior but also retention of health information and how this information can be most efficiently practiced and stored in memory.

Finally, research is needed in the process of personal health management; research should detail whether EE can be utilized as an educational tool with a specific role for health care professionals.

### **Conclusion**

For health care providers, basic principles of EE can be utilized in order to improve patients' health literacy. A vital component of improving health literacy involves individual willingness to improve and education consistency. Patients appreciate accuracy, relevancy, and,

most importantly, interpersonal discussion. Focusing on these aspects in conjunction with integrative techniques may be useful.

For those with low health literacy, EE provides accessible education to diverse individuals. Information can be easier to understand and more relatable. This review highlighted the versatility of EE as well; EE can be used for general public education and for individualistic chronic disease states. There are certainly several aspects of EE that must be investigated and improved. However, despite these limitations, the future of EE looks promising.

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