

Grey's Anatomy effect: television portrayal of patients with trauma may cultivate unrealistic patient and family expectations after injury

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ABSTRACT

Background Expectations of the healthcare experience may be influenced by television dramas set in the hospital workplace. It is our perception that the fictional television portrayal of hospitalization after injury in such dramas is misrepresentative. The purpose of this study was to compare trauma outcomes on television dramas versus reality.

Methods We screened 269 episodes of Grey's Anatomy, a popular medical drama. A television (TV) registry was constructed by collecting data for each fictional trauma portrayed in the television series. Comparison data for a genuine patient cohort were obtained from the 2012 National Trauma Databank (NTDB) National Program Sample.

Results 290 patients composed of the TV registry versus 4812 patients from NTDB. Mortality was higher on TV (22% vs 7%, $P<0.0001$). Most TV patients went straight from emergency department (ED) to operating room (OR) (71% vs 25%, $P<0.0001$). Among TV survivors, a relative minority were transferred to long-term care (6% vs 22%, $P<0.0001$). For severely injured (Injury Severity Score ≥ 25) survivors, hospital length of stay was less than 1 week for 50% of TV patients versus 20% in NTDB ($P<0.0001$).

Conclusions Trauma patients as depicted on television dramas typically go from ED to OR, and survivors usually return home. Television portrayal of rapid functional recovery after major injury may cultivate false expectations among patients and their families.

Level of evidence Level III.

INTRODUCTION

Prior research has demonstrated that public perception of healthcare may be influenced by the depiction of physicians, nurses, patients, and hospitals on television.^{1–3} Although many television dramas that portray the medical field (such as *Grey's Anatomy* and *E.R.*) strive for accuracy by using consultants to develop plausible, yet intriguing illness-based storylines and realistic depiction of providers and patients, the constraints of the television format and the need to entice viewers with sensational drama leads to a representation of healthcare in the television universe that may be significantly removed from real life. Ultimately, viewers of these television series may develop an unrealistic perception of the daily events and activities involving patients and staff at their local hospital.

This is particularly relevant for trauma patients and their families. The public's familiarity with the real-life hospital course and recovery from major injury is limited to personal experience, so it is conceivable that, for many, expectations are largely shaped by the portrayal of traumatic injury on television. Given the suddenness of physical trauma, there is no opportunity to pursue reputable sources of medical information to help prepare one for a hospital stay and/or operative procedure (unlike in the setting of other illnesses, such as cancer), resulting in further reliance on perceptions from mass media.

Prior studies have demonstrated that the presentation of modern medicine on television is often divorced from reality.^{4–6} Notably, the outcomes of cardiopulmonary resuscitation as performed on television has been demonstrated to be significantly overoptimistic.^{4–5} To date, however, the accuracy of the portrayal of major injury with respect to hospital course and outcome has not been assessed. The purpose of this study was to examine the course of care and outcomes after major trauma as depicted in contemporary television dramas to assess for accuracy relative to real-life experience after hospitalization for trauma.

METHODS

Two physicians and a nurse practitioner from an American College of Surgeons-verified Level I Trauma Center reviewed all 269 episodes from the first 12 seasons (2005–2016) of the television drama *Grey's Anatomy*. *Grey's Anatomy* was chosen as the representative television series given its long run, its immense popularity (consistently a 'top 10' television show in the USA), and its setting in a busy urban tertiary-care teaching hospital. The fictional hospital is located in Seattle, whereas the actual filming takes place in Los Angeles. From the 269 episodes, hospitalized trauma patients (TV patients) were identified. Demographic (age, gender) and clinical data (identifiable injuries, Emergency Department disposition (admission to floor/intensive care unit vs direct to operating room), length of stay and discharge disposition (death, discharge home, discharge to another inpatient facility) were recorded for each patient. A Certified Trauma Registry Specialist calculated Injury Severity Score (ISS) for each TV patient, based on the recorded description of injuries. As accurate length of stay in days was not possible to identify for the majority of

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the TV patients from the level of detail provided in the television narrative, length of stay was categorized as less than or greater than 1 week as gathered from the storyline for each patient. The reviewers analyzed this by evaluating the duration of the patient's story arc relative to the temporal elements of each episode or subsequent episodes (days vs weeks). For example, if a patient's hospital course was resolved within what appeared to be less than 1 week per the episode's temporal cues, and the patient did not reappear (still hospitalized) in subsequent episodes, then that patient's length of stay was deemed less than 1 week.

Patient data were obtained from the 2012 National Trauma Databank (NTDB) National Program Sample to establish a genuine patient cohort for comparison. To achieve a patient cohort similar to the TV cohort, inclusion criteria was admissions to teaching hospital affiliated with a university with bed number greater than 400 in the NTDB Western Region. This criterion was chosen to representative of the fictional institution, 'Seattle Grace Hospital', the academic hospital setting of *Grey's Anatomy*. Patients transferred from referring hospitals and patients with significant amounts of missing or incomplete data were excluded. The resulting NTDB-adapted dataset was merged with the dataset containing the TV patients.

χ^2 tests of significance were computed for comparison of categorical variables. The t-test of equality of means was computed for comparison of continuous variables. All analyses were completed using SPSS V.24.

RESULTS

Two hundred and ninety patients with trauma were identified from 269 episodes of *Grey's Anatomy* and identified in the dataset as TV patients. Four thousand eight hundred and twelve patients constitute the NTDB sample. Comparison of demographic and clinical characteristics between groups is presented in table 1. Demographically, TV patients were younger (average age 34 vs 41, $P<0.0001$) and more likely to be female (40% vs 30%, $P<0.001$). With respect to injury severity, TV patients had relatively higher ISS (ISS 14 vs 12, $P=0.013$). After arrival to the emergency department, the majority of TV patients (71%) were taken directly to the operating room, compared with a relative minority (25%) in the NTDB sample ($P<0.001$).

Outcomes after hospitalization are presented in table 1 (bottom half portion). Mortality after injury was significantly higher on TV compared with reality. Twenty-two percent of the TV patients died, in comparison to 7% of the NTDB sample

($P<0.0001$). Concerning discharge disposition other than death, only a minority of TV survivors were discharged to a location other than home (6%), whereas 22% of the surviving NTDB sample was discharged to an inpatient facility ($P<0.0001$).

Among both TV and NTDB survivors, hospital length of stay appeared to be less than 1 week for most patients, but for those with severe injury (ISS ≥ 25), hospital length of stay was more likely to be significantly shorter for TV patients, with 50% of TV survivors with severe injury having length of stays of less than 1 week versus the same for only 20% of the NTDB sample ($P<0.0001$; table 1).

DISCUSSION

The value of incorporating 'realism' into the literary, visual, and dramatic arts with respect to reaching and appealing to a wide audience has long been recognized by authors, artists, and playwrights alike. Since the dawn of the television drama in the 1950s, the portrayal of realism has been of similar concern, with the goal of sustaining mass market consumption of television programming. Recognizing the influence of this new medium, the American Medical Association (AMA) created the Physicians' Advisory Committee for Radio, Television and Motion Pictures in 1955, with the goal of establishing organizational influence and control regarding the medical issues being portrayed on such early television serials set in hospitals as *Ben Casey* and *Dr. Kildare*.⁷ In exchange for consultation regarding accuracy in the portrayal of disease, appearance of operating rooms, use of medical instruments, and performance of emergency room procedures such as cardiopulmonary resuscitation, television procedures were able to display the seal of approval of the organization in the credits, effectively providing an aura of realism as sanctioned by an authoritative body. It was obvious to the AMA, at a time when media psychology was a nascent science, that the portrayal of the medical profession on television could have significant influence on the public perception of doctors, hospitals, and the practice of medicine in general.

Although the producers of television dramas have long abandoned with formal, public collaboration with organizations such as the AMA, they continue to employ physician consultants to assist with accurate portrayals of patients, physicians, and hospital settings with the goal of realism in mind. Although realism is an integral element to the success of a television drama set in a contemporary workplace, be it a hospital or police department, the requirements for dramatic effect demand a focus on the exceptional rather than the mundane. Hence, American television medical dramas tend to rely on storylines that feature rare diseases, odd presentations of common diseases, fantastic and/or quirky injuries, and mass casualty events, all framed within a 'realistic' representation of a typical US hospital. In addition, the dramatic construct of a television serial lend to deviations from reality or accuracy in an effort to preserve the ability to communicate a story within the constraints of a 1 hour show. As such, surgeons in the operating room are often presented without masks and protective eyewear (so the viewing audience may recognize the characters), and the time constraints of the show require that most of the plot lines be wrapped up by end of the hour, including storylines related to a patient's illness or injury.

The balancing act between the presentation of the realistic and the dramatic can actually result in a skewed perception of reality among television viewers. Cultivation theory suggests that the portrayal of social reality on television ultimately shapes the viewer's perception of social reality in real life. The development of cultivation theory began in the 1970s, arguing that the depictions

Table 1 Comparison of demographic, injury characteristics, and outcomes between NTDB and TV patients

	NTDB	TV	P value
Demographic and injury characteristics			
Number of patients	4812	290	
Average age	41	34	<0.0001
Female patients	30%	40%	<0.0001
Average ISS	12	14	0.013
To operating room from ED	25%	71%	<0.0001
Outcomes			
Mortality	7%	22%	<0.0001
Discharged to long-term inpatient care	22%	6%	<0.0001
LOS <1 week	69%	66%	=0.428
LOS <1 week (ISS ≥ 25 subset)	20%	50%	<0.0001

ED, emergency department; ISS, injury severity score; LOS, length of stay; NTDB, National Trauma Databank.

of violence on television could shape the viewers' perception on the prevalence of violence in the real world, despite it being relatively inaccurate.⁸ More recent work has examined cultivation theory in the context of the modern medical television drama. As a result of the artistic license taken with the presentation of doctors, patients, and illness on television, viewers of medical dramas may develop a distorted perspective regarding prevalent health issues in the real world. In a study by Chung *et al*, heavy viewers of medical dramas were less likely to rate cardiovascular disease and cancer as important societal issues and were more likely to agree with the statement that cancer prevention is uncertain and that the disease is fatal.¹ In a study by Quick, regular viewers of *Grey's Anatomy* perceived the content to be realistic, which led to belief that doctors are courageous and led to perceived satisfaction with one's real-world doctor.⁹

Furthermore, television portrayal of medicine may have a profound effect on patient's medical knowledge and decision-making. A survey of geriatric patients demonstrated that 42% of older adults named television as their primary source of health information.¹⁰ In a study of sources of medical information, minorities were significantly more likely to recognize television as a valuable resource.¹¹ Among older adults identifying television as a primary resource for medical information, overly optimistic predictions of survival rates after cardiopulmonary resuscitation were observed.¹² When a patient develops a major illness with a subacute time course, the misperceptions that have been cultivated by television consumption may be mitigated by patient education provided by the physician, medical institution, or other reputable sources for patient education. Trauma patients are relatively unique in this regard, as the suddenness of injury and subsequent hospitalization do not allow for any educational opportunity to manage patient's expectations prior to medical treatment, and it is likely that patients with injury and their families are therefore more prone to rely on perceptions gleaned from television to guide their expectations.

With this in mind, we were interested to see how television portrayal of injury differs from reality, providing some insight into how many of our trauma patients may anticipate their hospital course and outcome after injury. From our analysis of the depictions of trauma patients over 12 seasons of the most popular medical drama in its time, it is clear that there are deviations from reality that follow a set pattern, regarding the nature of the injury. Trauma patients as depicted on television usually need an urgent operation to address an injured body part, and then alternatively die or, in most cases, have a swift recovery with return to home after a relatively brief hospital stay. As anyone involved in the care of patients at a regional trauma center knows, real-life patients are often managed non-operatively or with operations (sometimes multiple) performed at an interval to the time of admission, and depending on the burden of injury, often require prolonged hospitalization and have disabilities requiring transfer to long-term inpatient facilities.

The findings of this study beg the question as to what should specifically be done with this information. In an era where patient satisfaction is a major component of the quality initiatives of healthcare institutions and a pay-for-performance measure in many physician compensation plans, it is important to develop awareness of the drivers of patient satisfaction. Divergence of patient expectations from reality may, in fact, contribute to lower levels of satisfaction.^{13 14} In the present study, we have demonstrated how the representation of trauma patients on television dramas differs from reality, particularly with respect to recovery after injury. It follows that patient's expectations after injury may be distorted by this unrealistic depiction of injury on television.

Although the results of the present study provide evidence to speculate that there is a disconnect between trauma patient expectations versus reality as shaped by representations from television shows such as *Grey's Anatomy*, we and others have yet to specifically evaluate whether consumption of mass media is truly associated with such misperceptions. In fact, patient's expectations after injury in general remain relatively unclear, and exploration of this area may offer insight that could lead to both improved patient satisfaction and engagement in the recovery process, ultimately leading to better outcomes. At our institution, this study is leading us to embark on research to measure the trauma patient expectations with respect to convalescence after injury and how mass media consumption influences these expectations. Specifically, we hope to establish a baseline understanding of public perception of the trauma patient experience after common injuries, as well as the influence of mass media consumption such as *Grey's Anatomy* on these perceptions. Regarding performance improvement, we are assessing how well we are meeting the needs of our patients and families with respect to interpersonal communication concerning expectations of hospital course, return to home, and return to functionality. We encourage others to do similar explorations of the trauma patient experience at their own institutions in an effort to improve understanding of patient's perceptions and expectations after traumatic injury.

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PRESS RELEASE

TRAUMA SURGERY & ACUTE CARE OPEN

***Grey's Anatomy* TV drama may be distorting public expectations of trauma care**

Gap between fiction and reality may be important in era of focus on patient experience, say authors

The television drama, *Grey's Anatomy*, may be giving viewers a false impression of the realities of trauma care, including the speed at which patients recover after sustaining serious injuries, finds research published in the online journal ***Trauma Surgery & Acute Care Open***.

Unrealistic expectations of healthcare may be important in an era in which patient satisfaction is a key component of quality initiatives and performance related pay, say the authors.

While many medical dramas strive for authenticity, the constraints of the format and the need to keep viewers hooked with juicy storylines often mean that realism takes a back seat, they say.

To try and quantify this, they compared the portrayal of trauma sustained by 290 fictional patients in 269 episodes of *Grey's Anatomy*--the first 12 seasons (2005-16) -- with real life injuries sustained by 4812 patients in the 2012 National Trauma Databank.

The death rate was 3 times higher in *Grey's Anatomy* than in real life (22% compared with 7%), and most (71%) of the TV patients went straight from emergency care to the operating theatre, whereas only one in four (25%) of the databank patients did so.

Among the survivors of TV trauma, only around 1 in 20 (6%) were transferred to a long term care facility--significantly lower than the proportion of actual patients (22%).

And among the seriously injured, half of fictional patients spent less than a week in hospital, whereas only one in five (20%) of real life patients did so.

"Although realism is an integral element to the success of a television drama set in a contemporary workplace, be it a hospital or police department, the requirements for dramatic effect demand a focus on the exceptional rather than the mundane," write the authors.

"Hence, American television medical dramas tend to rely on storylines that feature rare diseases, odd presentations of common diseases, fantastic and/or quirky injuries, and mass casualty events, all framed within a 'realistic' representation of a typical US hospital."

And the time constraints of an episode dictate that most of the plotlines are wrapped up within the hour.

"The balancing act between the presentation of the realistic and the dramatic can actually result in a skewed perception of reality among television viewers," write the authors, citing various previously published studies.

In an era where considerable store is set by patient satisfaction, scores for which feed into quality improvement initiatives and the payments clinicians receive, this could be important, they suggest.

“Divergence of patient expectations from reality may, in fact, contribute to lower levels of satisfaction,” they conclude.

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