How Specific Demographics Contribute to Disparate Outcomes in the Patient-Physician Relationship

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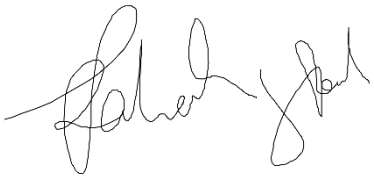
On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments



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Introduction

The patient-physician relationship is defined as the amalgamation of social aspects underlying a physician providing consensual medical care or treatment to a patient. It is reliant on several traits exhibited by a patient and physician, such as vulnerability, trust, loyalty, knowledge, consideration, and satisfaction (Chipidza et. al, 2015; Cooper et. al, 2006). In the "iceberg" concept, these values are seen as hidden features that form from demographics like race, gender, and age (Cooper et. al, 2006). Patient-physician interactions are "at the heart of health care has been a constant across cultures and centuries" and should be preserved to meet new challenges as medical care evolves and becomes more complex (Noseworthy, 2019). The importance of these interactions has been characterized in four models that each distinctively describe the ways in which of the patient-physician relationship affect tangible patient and physician behavior (Emanuel & Emanuel, 1992).

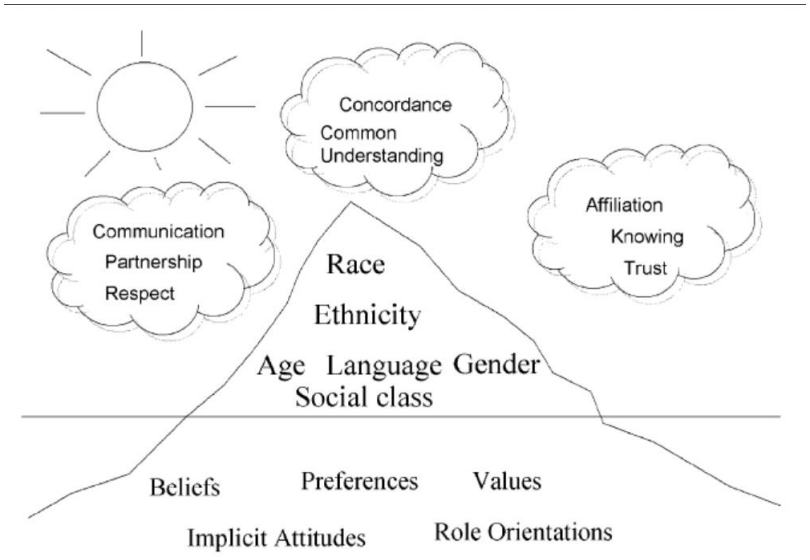

Figure 1. Model of the iceberg concept, where visual demographics like age, gender, race, and social class inform cultural beliefs or attitudes that heighten or reduce patient-physician concordance (Cooper et. al, 2006).

In the informative model, the physician actively informs the patient of his disease state, treatments, and any potential prognosis. The patient then determines what course of action he or

she wishes to take. Dissimilarly, the paternalistic model frames the physician as the ultimate authority, whereby decisions are made solely using physician expertise without respect to patient input. The interpretive model incorporates both the physician and patient. The physician provides information about relevant medical interventions and delineates what is the best course of action in consideration of the patient's values. Lastly, the deliberative model involves a physician forming a conclusion from the available medical treatments given deliberate suggestions provided to a patient about the values that each of the treatments bring (Emanuel & Emanuel, 1992). While there has been concern about whether using only one of the four models can describe the full range of communication between patients and physicians, these models collectively do well to determine a baseline of the roles required within the patient-physician relationship. For that reason, they provide guidelines to assess the quality of the patient-physician relationship.

Comparing the Four Models

	Informative	Interpretive	Deliberative	Paternalistic
Patient values	Defined, fixed, and known to the patient	Inchoate and conflicting, requiring elucidation	Open to development and revision through moral discussion	Objective and shared by physician and patient
Physician's obligation	Providing relevant factual information and implementing patient's selected intervention	Elucidating and interpreting relevant patient values as well as informing the patient and implementing the patient's selected intervention	Articulating and persuading the patient of the most admirable values as well as informing the patient and implementing the patient's selected intervention	Promoting the patient's well-being independent of the patient's current preferences
Conception of patient's autonomy	Choice of, and control over, medical care	Self-understanding relevant to medical care	Moral self-development relevant to medical care	Assenting to objective values
Conception of physician's role	Competent technical expert	Counselor or adviser	Friend or teacher	Guardian

Figure 2. An in-depth comparison of the four proposed models, incorporating patient values, physician obligations, and conceptions of the patient's autonomy and physician's role (Emanuel & Emanuel, 1992).

Having conducted my Prospectus research in advance of my technical project, several changes have occurred while performing both my technical and sociotechnical research. The technical portion of my Prospectus set out to create a set of bitter utensils to promote weight loss through subconscious, learned caloric restriction without respect to dietary adherence, while the sociotechnical portion of my Prospectus focused on analyzing the vulnerability of the hit television show *The Biggest Loser* to determine why social and psychological factors occur

beyond the merely using dieting to lose weight. My current technical project, however, focuses on another facet of medical care, namely introducing point of care ultrasound (POCUS) through the promotion of accessible hydrogels.

Point of care ultrasound is defined as the collection and immediate interpretation of ultrasound imaging by a physician at the patient's bedside. Because it forgoes obtaining ultrasound images through a radiologist or cardiologist, physicians of varying specialties (Díaz-Gómez, 2021) can perform it. It has been previously used in emergency medicine to reduce mortality and time to determine intervention for cardiac arrest (Singh et. al, 2021; Schnittke & Damewood, 2019). However, there are many barriers that exist despite its increased use. In many hospitals, there is a lack of structured curriculum that teaches POCUS, poor machine availability, inadequate means to store ultrasound images after collection, and insufficient optimization of time to begin and complete the diagnostic exam (Singh et. al, 2021; Schnittke & Damewood, 2019).

My technical project approaches the problem of how to improve POCUS use at the University of Virginia through the lens of incentivizing the desire to address institutional barriers to its implementation. I am working with another student and Dr. Masahiro Morikawa of UVA Family Medicine to increase the use of POCUS by replacing ultrasound gel with a convenient alternative. Common alternatives already exist for ultrasound gel. They include ingredients that can be transported to or obtained in low-resource settings, such as cassava flour, cornstarch, and xanthan gum (Aziz et. al, 2018; Vinograd et. al, 2019). While these materials are practical alternatives to ultrasound gel, they share the same tendency to be messy and because their base often consists of a mixture of powder and some aqueous solution like water (Aziz et. al, 2018). This would inadvertently increase the barrier of optimizing time for examination. As a result, we

focused on other alternatives. Hydrogels make a promising candidate to produce quality ultrasound images, with double-network (DN) hydrogels being the most prominent structures used (Chen et. al, 2015). Polyacrylamide/alginate DN hydrogels and polyvinyl alcohol-based double-network DN hydrogels are two of the most notable examples (Yi et. al, 2020a, 2020b). As substitutes for DN hydrogels synthesized by researchers in laboratories, we used accessible hydrogels that are commercially available. To this end, we have obtained some accessible hydrogels, collected their respective ultrasound images, and created and implemented both qualitative and quantitative methods to analyze these ultrasound images. From this, we will select the most optimal accessible hydrogel to replace ultrasound gel.

In performing my technical project, I see a commonality between the development of the bitter utensils and the assessment of accessible hydrogels to improve POCUS use at the University of Virginia. More specifically, each of these technologies can improve contact between a patient and his or her physician by providing a necessity for the two to communicate during medical treatment. Furthermore, in both cases, using the technology alone does not promote successful medical treatment. Instead, there are additional social considerations that stand in the way of advancing medical treatment, including the nature of the patient-physician relationship. Thus, the goal of this STS research paper is to answer how specific demographics contribute to disparate outcomes in the patient-physician relationship using the sociotechnical framework of Actor-Network Theory and the four patient-physician relationship models discussed previously.

Methodology

Actor-Network Theory (ANT) states that actors, or sources of action that only have meaning when combined with other actors, form a network to achieve some common goal or

solve a particular problem (Cressman, 2009). Within the patient-physician relationship, there are two overt actors, the patient, and the physician. However, these actors are too broad to fully capture the quality of the patient-physician relationship. Instead, each of these actors should be broken down further using the method of demographic fragmentation, where an individual is actualized only by studying multiple parts or demographics.

Throughout this STS research paper, I emphasize that there are disparate outcomes that persist in the patient-physician relationship due to key demographic variables: age, gender, race, and income. In doing so, I make it clear that there are differences in either patient satisfaction or overall quality of the patient-physician relationship across one or more independent groups that make up a given patient or physician demographic variable. To aid in this research, I implore case studies consisting of primary sources with original research in addition to secondary sources.

Because original research is conducted in isolation and subject to the biases of interpretation by a single set of researchers, it is important to also use secondary sources like systematic reviews. Systematic reviews are helpful in establishing a common theme or pattern between primary literature, making them important for validating a large expanse of research (Gopalakrishnan & Ganeshkumar, 2013). Using the results of these case studies, I then posit that there must be deliberate changes made to the general medical school curriculum, communal clinical participation, and clinical and public health research to ensure that productive changes are made to alleviate the gaps in the quality of the patient-physician relationship seen as a result of each of the four preceding demographics. Moreover, the novelty of this research lies in its ability to use the four patient-physician relationship models to extrapolate why the results of

previously formulated case studies occurred and subsequently determine appropriate recommendations to heighten the quality of the patient-physician relationship.

Analysis

Age

People attribute specific characteristics to members of particular age groups in many societies. They see younger people as more entitled and lazier while older people are regarded as slow and senile (Weiss & Zhang, 2020). In tandem with these beliefs, age-related self-perceptions play a role in shaping age identity. Adults who perceive themselves as younger than their chronological age report the fewest poor health outcomes for hypertension and diabetes relative to those who believed they were older than their true age (Demakakos et. al, 2007). This emphasis on characterizing differences in age whether through personal or societal convictions suggests that age is an important social feature. Therefore, it affects how both patients and physicians communicate with one another, which in turn affects the patient-physician relationship.

In a study conducted using survey data taken from recently hospitalized patients in several hospitals in a large Midwestern metropolitan area, overall patient satisfaction differed across five age categories: 18-35, 36-50, 51-65, 66-80, and above 80. While the youngest (18-35) and oldest adults (above 80) showed moderate ratings in overall patient satisfaction, adults between 51 to 65 years of age provided the highest ratings. These results correlated with those found in the aspect of physician care, a metric defined by physician attention, availability, concern, caring attitude, and skill, as well as communication and teamwork between the patient and physician (Jaipaul & Rosenthal, 2003). There are a number of reasons why these disparate

outcomes have occurred, with one central reason being that different generations hold disparate values based on socialized norms they grew up with.

Members of Generation X and Millennials (younger adults) hold more extrinsic values, such as procuring fame and money, relative to Baby Boomers (older adults), who value affiliation, community, and self-acceptance more (Twenge et. al, 2012). As a result, they have different preferences in communication style. Given these differences, Generation X and Millennials are likely more interested in using the informative model of the patient-physician relationship, whereby their physician informs them of important information, and they subsequently choose the final decisions being made. In this respect, they would have more autonomy over their medical care with the focus more chiefly being on themselves. Conversely, Baby Boomers might use the interpretative or deliberative model to address health concerns. Using the interpretative model, these patients would express their health-related values and in return receive advice from their physicians about the best course of action. They can also receive support through the deliberative model. Instead of establishing their values, however, the patients would engage in a dialogue with their physicians pertaining to not only what they can do but also what would be in their best interests as interventions. In both cases, communion is at the forefront, which ultimately supports Baby Boomers' preference for community involvement.

Gender

Gender identity is shaped by a myriad of factors, including physical appearance, culture, and genes. Children are even said to make distinctions between sex as young as 10 months old (Martin & Ruble, 2010). Alongside this recognition, they also begin to form stereotypes about gender, where girls and women are believed to be nice and show more relational aggression while boys are rougher and prefer more active games (Martin & Ruble, 2010). These gender

stereotypes do not stop as children get older. Research has shown that people believe women should be communal and less dominant. Men should be independent and avoid being emotional (Koenig, 2018). Because these gender stereotypes are so pervasive, they often impact healthcare.

One study determined that physician gender affects which nonverbal cues patients prefer while receiving medical attention. Using videotapes of real physicians during medical encounters, participants were told to indicate how satisfied they were with the physicians (Mast et. al, 2008). While negligible effect was seen between the analogue patient genders, there were significant differences between physician genders. Participants were more satisfied when female physicians gazed at the patient, leaned towards the patient, and touched their own faces and necks for longer periods of time relative to male physicians. Dissimilarly, male physicians provided more satisfaction than female physicians when they had more hand and arm gestures and open posture, looked at the patient charts more often, and spoke more loudly (Mast et. al, 2008).

Patients would prefer that physicians adopt different patient-physician models based on their genders. To improve patient interactions, female physicians would need to fulfill gender stereotypes by acting as more of a counselor or teacher through the interpretive and deliberative models, respectively. This will increase the amount of focus and perceived care given to their patients. In return, patients will be more satisfied with the medical care they are receiving. Male physicians can successfully use the informative and paternalistic models, which allow them to hold more dominant roles in the patient-physician relationship. In all genders, physicians speaking more, nodding at the patient, and allowing patients to speak increased patient satisfaction. This means that patients would value patient-centered models emphasizing patient

decision-making regardless of their physicians' genders. Thus, the interpretive and deliberative models might be more universally preferred across all patients.

Race

Race is a key demographic that possesses both individual and societal value. On a personal level, it is associated with positive mental health and stable self-perceptions across White and Black youth (Charmaraman & Grossman, 2010). However, there are differences in how individuals perceive other racial groups in America. For example, White individuals are more likely to adopt the notion of "colorblindness," a practice that results in the denial of racial discrimination (Charmaraman & Grossman, 2010). Because racial identity has been used to practice discrimination on a societal basis, these racial differences influence interactions in the patient-physician relationship in healthcare settings (Cooper et. al, 2006).

Many case studies have explored the relationship between patient and physician race concordance. In one study, video vignettes featuring physicians of different races, genders, ages, and communication styles were used to evaluate the impact of physician race on patient satisfaction. Participants rated these physicians with qualities like competence, interpersonal style, likeability, and trustworthiness (Saha & Beach, 2020). Black participants gave higher ratings for all physician attributes when the physician was the same race. Because members of the same race are more likely to have similar cultural inclinations, certain communication styles might reflect different perceptions about the information that a physician provides to a patient. In this way, a patient might be more likely to understand the gravity of a medical diagnosis or treatment that should be performed based on intonations and facial expressions that are specific to a given culture.

While some might argue that Black participants showed an innate in-group preference, the fact that little racial concordance had negligible effect on the ratings given by White participants suggests that in-group preference is not the only factor at bay (Saha & Beach, 2020). Black patients still possess medical mistrust due to generational racial discrimination in the United States (Adams et. al, 2017; Kennedy et. al, 2007). Mistrust then limits patient comfortability, willingness to listen, and positive reception of the physician, thereby reducing patient satisfaction and the quality of the patient-physician relationship. Still, emphasis on patient-centered communication also alleviated some preference towards racial concordance in Black patients (Saha & Beach, 2020). Thus, while Black physicians will have an easier time adopting several of the four patient-physician models when communicating with Black patients, non-Black physicians need to adopt to decrease patient mistrust in the presence of racial discordance. The interpretive model is thus the optimal choice for a non-Black physician to use, such that discourse between the patient and physician centers on the patient's values and concerns. The deliberative model might also be a viable choice. Following this, the informative model is not ideal because it assumes that the patient will automatically trust the physician's expertise. Furthermore, the paternalistic model is not sufficient, as it is reflective of many negative experiences that Black patients have had in the past with regards to the healthcare system (Kennedy et. al, 2007).

Income

While income is not one of the three social categories outlined above, it is still an important determinant of self-identity. People attach importance to their incomes and believe that it is a key priority of their self-concepts (Easterbrook et. al, 2020). This demographic supersedes individual value, such that people value other individuals based on their incomes (Durante &

Fiske, 2017). These attitudes are even pervasive in healthcare, in which income disparities heavily contribute to health inequalities. Lower-income adults are more likely to have debilitating chronic diseases that inhibit daily activities like eating and dressing (Chokshi, 2018). The culmination of health inequities also results in a life-expectancy gap ranging from 10 to 15 years between the least and most affluent groups, the same number of years a person can expect to lose due to a lifetime of smoking (Chokshi, 2018). This matter of income disparities is graver when considering the effect it has on the patient-physician relationship. Because lower-income patients are far less likely to have medical insurance, they tend to use healthcare services more sparingly (Dickman et. al, 2017). By spending less with their physicians, low-income patients have less time to effectively build the patient-physician relationship.

According to a study comprising data from the Medical Expenditure Panel Survey (MEPS), differences in patient healthcare experiences exist across income levels. Notably, patients with lower incomes had more difficulty accessing and receiving responses from their healthcare providers. Individuals with extremely low incomes also reported poorer patient communication and capacity to make shared decisions with their physicians (Okunrintemi et. al, 2019). Overall, less patient satisfaction was seen amongst individuals with the lowest incomes (Okunrintemi et. al, 2019). This data suggests that there are factors that contribute to poor patient outcomes among lower-income individuals outside patient level disparities.

At the provider level, less care is devoted to individuals with lower incomes. This is exacerbated by communicative deficiencies in the patient-physician relationship, wherein healthcare providers adopt a paternalistic model of care and limit the amount of input their lower-income patients have in decision-making. This is concerning because discrepancies in preferences of patient-physician communication between patients and their physicians decrease

patient satisfaction. Among low-income individuals, there are even differences in personality and literacy that hinder the effectiveness of physicians primarily adopting a paternalistic role (Jensen et. al, 2010). Instead, emphasis should be placed on accounting for the totality of these differences, where even individuals with lower literacy levels may find the deliberative and interpretative models provide more chances to connect with their physicians and be involved in the decision-making process.

Conclusion

In this paper, I investigate what roles age, gender, race, and income play in the patient-physician relationship. From this research, I conclude that each demographic operates as an actor that alone influences patient care. By using the four patient-physician relationship models to explore why these disparate demographics affect the patient-physician relationship, I can also effectively elucidate how to mitigate the results of various case studies related to the demographics previously discussed. While some have proposed that the models inadequately capture the range of circumstances that patients and physicians will participate in, they still do well to determine why disparate outcomes occurred across these demographics (Clarke et. al, 2004). Moreover, physicians can determine which aspects of each of the models they wish to use with a given patient, which provides considerable room for variation to accommodate the diversity found in preferred patient communications.

In addition to physicians adopting one or more of the four patient-physician models, I propose general recommendations that can reduce the gap in the outcomes seen in the patient-physician relationship. Firstly, medical school curriculums should be altered. Coursework must reflect different demographics seen in patient populations. Although many medical schools often feature vignettes consisting of various demographics, they often misrepresent the same

demographics being studied (Amutah et. al, 2021). This misinformation can be removed by providing awareness through discussions on these demographics through seminars or pairing patients with medical school students. In fact, research has shown that implementing age-based interventions that foster contact between various ages and education about age misconceptions leads to decreases in ageist attitudes (Burnes et. al, 2019).

Communal clinical participation can also be used to improve diverse contact between patients and physicians. Medical outreach programs provide marginalized populations with greater access to healthcare providers. In the past, they have successfully increased the number of vulnerable patients seeking medical care (Cunningham et. al, 2007). Just as clinical and public health research have allowed me to explore how these demographics are related to the patient-physician relationship, additional research should be conducted to illustrate the progress that has been made in alleviating poor patient satisfaction and patient-physician relationship disparities. This way, potential solutions can be evaluated and accepted or remodeled to promote better outcomes.

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