

Undergraduate Thesis Prospectus

Improving Doctor-Patient Relationships through Efficient Communication

(technical research project in Computer Science)

Distrust of Health Authorities in the United States

(sociotechnical research project)

by

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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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General Research Problem

How may public trust in credentialed experts be improved?

Trust is an attribute of relationships. Epistemic trust is the reasonable trust that others may be reliable sources of information. Because no one can be expert in everything, such trust is a practical necessity. In the U.S., distrust of experts has been common. Jacobs (2020) found “a slight decline between March and May 2020 in the number of respondents to a series of global surveys who felt scientists, doctors, and national and international health officials would ‘tell you the truth about the [corona]virus and its progression.’” Trust in U.S. financial institutions has also been low; according to the Financial Trust Index, just 35 percent of Americans trust them (Sapienza, 2021). Institutions and credentialed experts must earn greater trust.

Improving Doctor-Patient Relationships through Efficient Communication

How can the communication between medical professionals and patients be improved?

The CS capstone includes summarizing and analyzing a work experience where I worked on a project that made a substantial difference. I worked at Meddbase, a medical management company, specializing in improving the usability of the online framework. My team at Meddbase included a few employees from various countries in Europe, all of whom were middle to senior developers. Daniel Graham is serving as the technical advisor for this project.

Given the advancements in travel and the vast amount of people moving between countries daily in modern society, contagious viruses such as COVID-19 are a much larger risk to spread worldwide than they have been in the past (Levin, 2021). However, although medical

discoveries have improved the effectiveness of vaccines over the last century, many people worldwide have shown distrust over vaccines because of a distrust of institutions (Karoub, 2021). But, by making doctors and the information they provide more intelligible for his or her patients, it is possible to combat the distrust of doctors and fight the ideology which puts healthcare professionals as a part of an institution that aims to harm the public for their benefit. In a time where public distrust of healthcare is much higher than usual, it is critical to create better channels of communication with patients or dedicate resources towards improving the channels which already exist. Increased trust yields a variety of benefits, especially for patients as they “reported more beneficial health behaviours, less symptoms and higher quality of life and to be more satisfied with treatment when they had higher trust in their health care professional” (Birkhauer, 2017). My work at Meddbase aimed to improve the company’s software which provides an interface for doctors to share information with their patients.

Around the time of my arrival, the Meddbase team had noticed a trend of hesitancy to trust the advice of healthcare professionals. I was brought onto the team to aid existing team members in their maintenance of the software, as well as working on ideas that could improve how information was relayed on the management system. The company believed that by upgrading the current communication channels doctors had access to, they could increase patient satisfaction with their physicians.

The major challenge faced while completing the project goal involved staying within the means of what could be achieved just by modifying the current system. For example, an initial idea incorporated adding a live-chat feature to the Meddbase product. The team found that instant communication would have been great for patients as it was preferred over email when

discussing the meaning of sensitive results. However, this was not possible because live-chat support was outside of the realm of what could be created through the existing development portal. Another issue the live-chat idea highlighted is the ability for a practice or hospital to provide the personnel that any changes to the software would require. The team attempted to extensively predict the resources any addition would need after the discussion around the live-chat feature.

Currently, the Meddbase system is one of the leading clinical frameworks for managing patient care. While there is room for improvement, the current system can integrate with third-party software, automate billing, record patient consent forms, and perform a multitude of other tasks that would be beneficial for doctors (Meddbase, 2021). But, in terms of building a relationship between doctors and patients, the entire medical management software field has yielded to autonomy and self-regulation (Maynard, 2003). Since it has not been made a priority, interpersonal relationships between doctors and patients have started to suffer as technology has advanced (Karoub, 2021). Modern systems such as Meddbase should be modified so that when a channel of communication is provided between a patient and doctor, the patient is comfortable and can ease any worries they have. This is achievable by giving patients access to larger quantities of information specific to their medical diagnosis.

To come up with solutions to the project, the team at Meddbase followed a rough process which first required ideas to be supported with data from customer feedback or the quality assurance team. These barriers filtered out ideas from team members which might be useful in theory, but do not apply to a large enough portion of the clientele to be worth resources in practice. Data from the quality assurance team would generally focus on improvements

discovered by employees within Meddbase and aimed at fixing technical aspects of the software. Alternatively, data extrapolated from customer feedback was filtered to highlight qualitative changes that could benefit how patients interact with doctors.

Another key tool of the development process was the Meddbase development portal. The Meddbase system is maintained by the creation and deletion of “pathways” which are pre-set methods created in the development portal. These methods are made up of variations of common coding concepts (loops, conditional statements, etc...) to create complete actions on the live Meddbase software. For example, a pathway can be made to request a patient to sign a consent form prior to arriving at a doctor’s office for an x-ray. The development portal was responsible for the vast majority of solutions created by the team at Meddbase in response to the communication issues between patients and doctors. Based on the data provided from customers and/or the quality assurance team, pathways were created and tested in the development environment before being implemented on a live server.

As a result of the work completed by the Meddbase team, the Meddbase software can now send related FAQs to patients, as well as providing the option for the patient to respond to their results with questions. This was achieved by adding multiple levels of condition based pathways to pre-existing methods because the team found that it would be easier to adapt the current model as opposed to completely overhauling the original support path. In the future, the Meddbase system can work to provide patients with relevant data that can ease their minds about a medical crisis they may be enduring. The use of trustworthy sources along with an emphasis on providing information regarding the success rates of a specific treatment can foster trust in the doctor-patient relationship.

Distrust of Health Authorities in the United States

In the U.S. response to the pandemic of 2020-21, how may social groups' distrust of public health authorities be explained?

Some segments of the American public have distrusted authoritative health guidance about seatbelts, smoking, and COVID-19. Some social groups, including so-called antivaxxers and some religious fundamentalists, have rejected official medical advice. Even when given FDA approval for the Pfizer vaccine (Pfizer, 2021), resistant members of the public opposed the shot and claimed it was harmful. Tragedies such as the 725,000+ documented deaths to COVID-19 in the USA (Worldometer, 2021) are diminishable if trust can be rebuilt between officials and the public. To rebuild this relationship, how may some social groups' skepticism of public health authorities be dissected to highlight the source of the issue?

Studying survivors of the Ebola epidemic in Africa, Blair (2017) found that “respondents who experienced hardships during epidemics expressed less trust in government than those who did not. This perpetuates a harmful cycle of suffering amongst those in disadvantaged positions, breeding distrust for the institutions in place. More recent research regarding the COVID-19 pandemic found that distrust in vaccines specifically stemmed from a poor relationship between America’s institutions and its citizens. University of Michigan researchers saw that “communities question whether their governments, and scientific, technological and medical institutions, represent their needs and priorities,” shedding light on another possible explanation to different social groups’ distrust (Karoub, 2021). Without informed consent, vulnerable populations have been subjected to dangerous medical experimentation. A notorious example of

this was the Public Health Service (USPHS) Study of Untreated Syphilis in the Negro Male in Macon County, Alabama (Best, 2021).

Examples of major participants include certified medical professionals, pharmaceutical companies, and social groups supporting prominent public figures (more specifically, vaxxers vs anti-vaxxers). Pharmaceutical companies like Pfizer created the vaccine to curb the COVID-19 pandemic and received government approval for their vaccine in the process (Pfizer, 2021). Supporters of a popular anti-vaccine public figure like Robert F. Kennedy Jr. argue that Pfizer's intentions are malicious and that the company does not have their best interest in mind (Children's Health Defense, 2021). Religion is also a factor as surveys have shown that Evangelicals are more likely to be opposed to the vaccine than other religious groups (Lovett, 2021), citing personal freedoms as the main reason for their beliefs. There are still social groups fighting against misinformation of vaccines, especially online. Groups like the Adult Vaccine Access Coalition inform adults about vaccines against all diseases, not only COVID-19 (AVAC, 2021). Similarly, the American Travel Health Nurses Association is a social group participant which is outspoken against COVID-19 misinformation from sources online and in the news (ATHNA, 2021). During the pandemic, ATHNA has worked to protect travelers' health.

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