Thesis Project Portfolio

Defining Value in Population Health: Evaluating Program Impact and Outcomes

(Technical Report)

The Benefits and Challenges of the Implementation of Herbal Medicines and Supplements as Complementary Treatments for Cancer Patients

(STS Research Paper)

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Zeena El-Mufti
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Department of Systems and Information Engineering

Table of Contents

Sociotechnical Synthesis

The University of Virginia (UVA) Health's Population Health Department advances health equity by expanding access to patient-centered care and improving health outcomes. One of their programs, Interactive Home Monitoring (IHM), provides follow-up care for patients discharged from the UVA Medical Center through remote patient monitoring protocols, proactive care coordination strategies, and patient engagement practices. This paper aims to inform quality improvement for IHM by understanding the value of the program through currently collected metrics (e.g. readmissions, emergency department visits, length of stay) and through creating a more holistic understanding of value from multiple stakeholder perspectives. Defining and demonstrating the value of IHM is currently challenging due to the ambiguous nature of value and limitations in data collection and reporting, including data integration and capturing patient perspectives. This paper evaluates IHM's effectiveness using statistical methods to compare outcomes between enrolled patients and those eligible but not enrolled. This addresses the challenges posed by limited data collection and reporting in defining and demonstrating program value. Through qualitative content analysis of interview notes and Mann-Whitney tests of datasets on the Locus platform, we define value for IHM. The findings aim to establish a framework for defining and assessing value in population health programs, aligning stakeholder priorities with program outcomes. This analysis provides actionable insights to enhance program effectiveness and measure value and could be used as a framework for similar population health programs.

Herbal medicines and supplements are widely used by cancer patients as complementary treatments, often driven by cultural traditions, affordability, and perceptions of safety and natural healing. However, their growing popularity presents significant challenges related to safety, regulation, and misinformation. This paper uses the Social Construction of Technology (SCOT) framework to analyze how different social groups including patients and families, healthcare providers, and regulatory bodies attach varying meanings to herbal medicine in the context of cancer treatment. Key issues include the lack of standardized formulations, limited scientific evidence, potential harmful drug interactions, and widespread misinformation, particularly through social media and personal networks. The absence of strict regulation allows herbal products to be marketed without rigorous testing, leading to inconsistencies in quality and safety. Furthermore, cultural perceptions and deeply rooted trust in anecdotal evidence can conflict with medical professionals' concerns about risks and unverified claims. This paper argues that improving the safe integration of herbal medicines into cancer care requires a multifaceted approach: expanding clinical research, strengthening regulatory frameworks, and promoting open, evidence based communication between healthcare providers and patients. By addressing these issues, the healthcare system can work toward achieving rhetorical closure, where herbal medicines are better understood and safely incorporated within modern cancer treatment. This study also highlights how the interpretive flexibility surrounding herbal medicine shapes both its risks and potential, demonstrating how attention to both social meaning and clinical evidence is needed to support informed, patient centered care.

Both the technical and STS projects are aligned in their aim of improving health outcomes by reevaluating how care is delivered and experienced. The technical project focuses on evaluating UVA Health's IHM program which supports patients through continuous monitoring and connection to social services. This work emphasizes the importance of tracking not only traditional metrics like hospital readmissions, but also more holistic indicators such as emotional support, health literacy, and perceived safety. It argues that by expanding what is measured and valued within the healthcare system, patient outcomes can be improved in more meaningful and comprehensive ways.

Similarly, the STS paper explores how herbal supplements might enhance cancer care when integrated thoughtfully into conventional healthcare settings. Rather than rejecting traditional medicine, it calls for an expansion of treatment options that acknowledges patient beliefs, preferences, and needs, especially for populations who may not feel fully served by standard medical care. Both projects aim to reshape healthcare delivery in ways that are more inclusive and responsive. They show that meaningful improvements in care can come from reevaluating how the system listens to and serves the people within it, and not just from new technologies or treatments. Together, these projects advocate for patient centered care, demonstrating that better health outcomes can be achieved by embracing both data driven insights and a broader understanding of what patients find valuable in their care.