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Ethical Considerations and Technological Solutions in Healthcare Research

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ABSTRACT

The project aimed to explore the ethical challenges and technological solutions within the realm of healthcare research, with a particular focus on the unique context of Hawai'i. It took into account the healthcare disparities experienced by Native Hawaiians and other underrepresented or underserved populations. A prospective systematic review was registered and conducted, employing evidence-based practices and adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and a flow diagram, to ensure transparency and reliability in the review process (Page, Matthew J, et al, 2021). The registration of the protocol was pertinent because it prevented redundant research efforts and enhanced research transparency (Chang, Stephanie M, and Jean Slutsky, 2012).

The primary objective was to pinpoint existing gaps in the current body of literature and provide insights into potential strategies and solutions for addressing ethical dilemmas and technological advancements in healthcare. Particular attention was given to challenges specific to Hawai'i, particularly within the domain of rural medicine and the healthcare disparities faced by underserved populations. The overarching goal was to contribute to future research and enhance healthcare accessibility in Hawai'i by summarizing technological solutions that took into account cultural sensitivity and privacy concerns. The findings were disseminated through a future scientific journal publication and presentations at events.

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Protocol status: In development
We are still developing and optimizing this protocol

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Introduction

1 The widespread adoption of telehealth services during the pandemic has sparked inquiries into their effectiveness compared to traditional in-person visits and raised concerns about equitable access to these technology-based services (Shaw, James, et al., 2021). Within this dynamic healthcare landscape, there is a rising demand for adaptable, mobile, and personalized health services utilizing digital technology for diagnosis, health education, and patient-provider communication (Roberts et al., 2015). Nevertheless, ethical considerations regarding technology use have surfaced, encompassing issues of accountability, privacy, cultural appropriateness, healthcare disparities, equitable access, and data privacy and security (Vayena, Effy, et al., 2018). Challenges such as ensuring accessibility, addressing technology-related obstacles, preserving the patient experience, and integrating cultural contexts necessitate navigation with cultural sensitivity and collaborative efforts (Ramvi, E., et al., 2023). To ensure healthcare access, it is crucial to engage both patients and healthcare providers in the ethical design and implementation, especially for underrepresented communities like Native Hawaiians and Other Pacific Islanders (NHOPI)(Thimbleby, Harold, 2013). This project aims to identify potential solutions and challenges for addressing ethical dilemmas and technological advancements in healthcare. The discussion will focus on integrating technology with culture and prioritizing patient well-being and inclusivity in healthcare research.

Searches

2 A prospective systematic review will be registered and conducted using open-source databases such as PubMed, IEEE, and PsychInfo, limiting articles within the last five years from January 2019 - January 2024. The foundation of a prospective systematic review consists of reviewing existing literature and pinpoint research gaps, shaping the continuing questions and defining the review's scope. A protocol registration will occur at the project's inception, documenting the methodology of the systematic review, including research questions, search strategies, and analysis methods, with the aim of enhancing transparency and reducing bias. This process will ensure a well-structured and transparent systematic review which aims to compile existing knowledge and identify research gaps, benefiting healthcare professionals, researchers, policymakers, and other stakeholders in making informed decisions (Gopalakrishnan, S, and P Ganeshkumar, 2013).
The project keywords include healthcare disparities, cultural sensitivity, privacy concerns, accessibility, technology-related obstacles, patient experiences, equity considerations, cultural contexts, patient perspectives, and healthcare accessibility. Table 1 shows the methodology steps to build a prospective systematic review. For Spring 2024, we plan to develop until the registration of the protocol.

Types of study to be included initially:

Systematic Review with meta analysis

Systematic Review without meta analysis

Experimental study (RCT)

Non-Experimental Study

Domain/Condition being studied:

3 Healthcare disparities,technological solutions in healthcare research

Participants/Population: United States

4 Inclusion criteria:
This review includes all published literature written in English from January 2019 to January 2024. Included literature reviews, meta-analyses and ethical frame analysis.
Exclusion criteria:
Exclusion criteria for the literature review on the ethical and technological dimensions of healthcare may involve excluding studies published before January 2019, those conducted in outside of the United States and languages other than English, and studies not focusing on healthcare technologies. Additionally, studies lacking explicit exploration of ethical considerations related to healthcare technology may be excluded to ensure the review's focus on the intended subject matter.

5 **Implications for Healthcare Professionals**
Implications for Policymakers
Implications for Healthcare Professionals
Limitations
Research Gaps Identified
Key Findings
Purpose
Cultural Contexts
Patient Experiences
Equity Considerations
Technology-related Obstacles

5.1 **Primary Outcomes(s):**
The primary goal of this literature review is to provide a comprehensive overview of the current status, challenges, and advancements at the intersection of ethics and technology in healthcare.

It seeks to identify key ethical considerations.

6 **Secondary outcomes:**

None.

Measures of Effect:

None.

Data extraction:

7 Systematic reviews, meta-analyses and ethical frame analysis will be included. The following information will be extracted from the included literature:

- APA Reference
- Title of the Study
- Authors
- Publication Year
- Database Source
- Study Design
- Geographical Focus
- Healthcare Disparities
- Technology-related Obstacles
- Patient Experiences
- Equity Considerations
- Cultural Contexts
- Research Questions
- Key Findings
- Research Gaps Identified
- Limitations
- Implications for Healthcare Professionals
- Implications for Researchers
- Implications for Policymakers
- Implications for Stakeholders
- Reference (Citation)

Two blind reviewers will independently screen titles and abstracts to identify indicated literature and remove irrelevant studies. Integrated agreement will be standardized using Covidence.

Standardized reporting of study selection will make use of the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines and flow-diagram.

8 **Risk of bias (quality assessment):**

8.1 Each included study will be evaluated for risk of bias along with quality assessment according to the Newcastle-Ottawa Scale. The included studies will be assessed and given a score between 0-9 based on factors of selection, comparability, and exposure in accordance with Newcastle-Ottawa Scale (Wells et al.).

9 **Strategy of data synthesis:**
Collected data will be compiled in Zotero.

Contact details

10 **Contact details:**
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Organizational affiliation of the review:
University of Hawai'i at Mānoa
Type and Method of Review:
Systematic Review
Health Area of Review:
Ethics, technology, and healthcare with a specific emphasis on patient autonomy and data
Anticipated or actual start date:
January 10 2024
Anticipated Completion Date:
XX XX 2025
Conflicts of Interest:
No conflicts of interest.
Collaborators:
None.

Subject Index Terms status:

11 We used the following search string when searching databases

("ethical considerations" OR "ethical implications") AND ("technology" OR "health information technology" OR "telemedicine" OR "digital health") AND "healthcare" AND "patient autonomy"

("ethical considerations" OR "ethical implications") AND ("technology" OR "health information technology" OR "telemedicine" OR "digital health") AND "healthcare" AND "patient autonomy"

("privacy" OR "confidentiality" OR "data security") AND ("technology" OR "health information technology" OR "telemedicine" OR "digital health") AND "healthcare"

("patient autonomy" OR "healthcare disparities") AND ("technology" OR "health information technology" OR "telemedicine" OR "digital health") AND "ethics"
("technology adoption" OR "ethics policies" OR "regulation") AND ("health information technology" OR "telemedicine" OR "digital health") AND "healthcare"

("legal considerations" OR "human rights") AND ("technology" OR "health information technology" OR "telemedicine" OR "digital health") AND "healthcare" AND "data security"

("patient-centered care" OR "ethics committee") AND ("technology" OR "health information technology" OR "telemedicine" OR "digital health") AND "healthcare"

("healthcare professionals" OR "patient perspectives") AND ("technology" OR "health information technology" OR "telemedicine" OR "digital health") AND "ethics" AND "patient autonomy"

("social implications" OR "cultural considerations") AND ("technology" OR "health information technology" OR "telemedicine" OR "digital health") AND "healthcare" AND "data security"

("organizational ethics" OR "systematic review" OR "literature review") AND ("technology" OR "health information technology" OR "telemedicine" OR "digital health") AND "ethics"

("meta-analysis" OR "evidence synthesis" OR "research synthesis") AND ("technology" OR "health information technology" OR "telemedicine" OR "digital health") AND "healthcare"

("medical ethics" OR "bioethics" OR "clinical ethics") AND ("technology" OR "health information technology" OR "telemedicine" OR "digital health") AND "healthcare" AND "patient autonomy"

("patient privacy" OR "health information privacy") AND ("data security" OR "health data security")

Citations

12 Gopalakrishnan, S., and P. Ganeshkumar. "Systematic reviews and meta-analysis: understanding the best evidence in primary healthcare." Journal of family medicine and primary care 2.1 (2013): 9-14.

LaPrincess C. Brewer, Shaw, James, and Tiffany Veinot. "Recommendations for health equity and virtual care arising from the COVID-19 pandemic: narrative review." JMIR Formative Research 5.4 (2021): e23233.

Ramvi, Ellen, et al. "Ethics of care in technology-mediated healthcare practices: A scoping review." Scandinavian Journal of Caring Sciences 37.4 (2023): 1123-1135.

Thimbleby, Harold. "Technology and the future of healthcare." Journal of public health research 2.3 (2013): jphr-2013.

Vayena, Effy, et al. "Big Data and Artificial Intelligence for Global Health." Global Health: Ethical Challenges (2021): 429.