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Education Article

The case for data sharing in traditional, complementary, and integrative medicine research

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A R T I C L E   I N F O

A B S T R A C T

Traditional, complementary, and integrative medicine (TCIM) research encompasses a diverse range of health practices rooted in various cultural, philosophical, and historical frameworks. As global interest in conducting research in this field grows, the need for rigorous research to support the integration of evidence-based TCIM therapies into mainstream healthcare has become essential. Data sharing is critical to advancing TCIM research by enhancing reproducibility, fostering interdisciplinary collaboration, promoting ethical practices, and addressing global health challenges. Despite its benefits, numerous challenges are associated with data sharing in TCIM, including a lack of standardized practices, cultural sensitivity, intellectual property concerns, and technical barriers in resource-limited settings. This editorial explores the unique nature of TCIM research, emphasizing the importance of data sharing while acknowledging the complexities it entails. Implementing the CARE Principles for Indigenous Data Governance, which prioritize collective benefit, authority to control, responsibility, and ethics, offers a framework for ensuring that data sharing respects indigenous knowledge and cultural sensitivities. Strategies for overcoming barriers to data sharing include developing standardized protocols, investing in research infrastructure, and fostering a culture of openness and collaboration within the TCIM community and beyond. By advancing data sharing practices, TCIM research can contribute to evidence-based healthcare solutions and address global health disparities, ultimately improving health outcomes worldwide.

1. Introduction

Traditional, complementary, and integrative medicine (TCIM) encompasses a wide range of health practices, approaches, and philosophies that are not typically part of conventional medical training or practice. This field includes practices such as Ayurveda, acupuncture, herbal medicine, and mind-body therapies, among others.[1] The growing productivity in research related to holistic and integrative health approaches has brought considerable attention to TCIM,[2] underscoring its potential to address health disparities and improve health outcomes among various populations. However, the effective integration of evidence-based TCIM into conventional health systems, especially in the Western world, relies heavily on rigorous research, which in turn can be aided by researchers' commitment to data sharing.

Data sharing is defined as a "collection of practices, technologies, cultural elements and legal frameworks that are relevant to the practice of making data used for scholarly research available to other investigators".[3] Despite the promising nature of TCIM, the field faces substantial challenges, particularly concerning data sharing. The lack of standard-

ized practices and ethical considerations presents barriers that can hinder progress.[4] This editorial highlights the critical role of data sharing in enhancing the credibility and reproducibility of TCIM research, fostering collaboration and innovation, promoting ethical research practices, and addressing global health challenges.

2. The Unique Nature of TCIM Research

TCIM is characterized by its diversity, encompassing a vast array of practices and cultural frameworks. Each system of TCIM is deeply rooted in its respective cultural, philosophical, and historical context, making it inherently complex. This diversity presents challenges in standardizing data collection and methodologies, which are essential for producing reliable and comparable research findings.[5]

Moreover, cultural sensitivity is paramount in TCIM research. Researchers must navigate the intricate relationships between practitioners, patients, and communities, ensuring that their work respects local beliefs and practices. Ethical considerations also play a significant role in TCIM research, particularly regarding the protection of indigenous

knowledge and cultural heritage.[6] This unique nature of TCIM research underscores the necessity for a data sharing approach that is both comprehensive yet respectful.

The diverse landscape of TCIM practices often leads to variations in how treatments are delivered, how practitioners are trained, and how patients respond. This heterogeneity makes it challenging to create a uniform framework for research, which is essential for the generalization of findings.[4] As such, researchers must acknowledge and embrace the complexity inherent in TCIM while striving to establish best practices for data collection and sharing.

3. Benefits of Data Sharing in TCIM Research

3.1. Enhancing Reproducibility and Credibility

Reproducibility is a cornerstone of scientific research. The ability to replicate findings is essential for establishing the credibility of any study,[7] and this is particularly crucial in the context of TCIM, where anecdotal evidence sometimes overshadows rigorous scientific inquiry. Data sharing enhances reproducibility by providing researchers with access to raw data, methodologies, and findings, thereby enabling independent verification of results.[8,9]

The TCIM field has encountered challenges in achieving reproducibility due to the diversity of practices and the lack of standardized research protocols. By embracing data sharing, researchers can collectively address these challenges and contribute to a more robust evidence base. Transparency in data availability fosters trust in TCIM research and facilitates critical evaluation, ultimately strengthening the field.

Data sharing also allows researchers to identify trends and discrepancies across studies. When data is made accessible, it opens the door for meta-analyses and systematic reviews,[10] which can reveal the effectiveness of specific TCIM practices across different populations and settings. Such analyses are vital for developing guidelines and recommendations that can enhance clinical practice and inform policy decisions. Furthermore, data sharing promotes a culture of openness and collaboration, encouraging researchers to build upon each other's work rather than duplicating efforts. This collective approach to research not only accelerates the advancement of knowledge but also enhances the overall credibility of TCIM research.

3.2. Fostering Collaboration and Innovation

TCIM research is inherently interdisciplinary, drawing from fields such as medicine, biology, sociology, and engineering. Data sharing can enhance collaboration across these diverse fields, enabling researchers to pool resources, expertise, and perspectives. Collaborative research efforts have the potential to yield innovative solutions that may not be possible within isolated disciplines.[11,12] For instance, shared datasets can reveal patterns and insights that lead to the development of novel integrative health interventions. Such innovations could significantly benefit populations, particularly in low- and middle-income regions where access to healthcare may be limited.

Collaboration can also lead to the identification of best practices and the sharing of effective methodologies. When researchers from different backgrounds come together to share their findings, they can learn from one another and refine their approaches. This iterative process fosters a dynamic research environment that encourages experimentation and the exploration of new ideas.[13] Moreover, interdisciplinary collaboration can help address complex health issues that require multifaceted solutions. For example, integrating insights from traditional medicine with modern scientific research can lead to a more comprehensive understanding of health and disease, paving the way for innovative treatments that respect both traditional knowledge and scientific evidence.

3.3. Promoting Ethical Research Practices

Ethical considerations become especially important in TCIM research when conducting research involving indigenous knowledge and cultural heritage. Researchers must navigate the complexities of intellectual property rights and ensure that the rights and interests of indigenous communities are respected. Data sharing can promote ethical research practices by fostering transparency and accountability. By sharing data, researchers can ensure that findings are accessible, and that indigenous knowledge is represented fairly in the research landscape. Furthermore, ethical guidelines can be established to govern data sharing practices, ensuring that benefits are equitably distributed among all stakeholders involved in the community where TCIM research is being considered.[14]

Ethical research practices also extend to the informed consent process. Researchers must ensure that participants are fully aware of how their data will be used and shared, providing them with the opportunity to opt-out if they feel uncomfortable. This approach fosters trust and encourages greater participation in research, which is essential for building a comprehensive evidence base.

In addition, data sharing can facilitate the dissemination of findings to the communities involved in the research. By sharing results in accessible formats, researchers can empower communities with knowledge that can inform their health choices and practices. This community engagement is crucial for ensuring that TCIM research is relevant and beneficial to those it aims to serve.

3.4. Addressing Global Health Challenges

The potential role of TCIM in addressing global health challenges, particularly in low- and middle-income regions, cannot be overstated. As the world grapples with complex health issues such as infectious diseases, chronic conditions, and mental health challenges, integrative approaches that leverage the strengths of TCIM have the potential to offer valuable solutions.[5]

Data sharing plays a critical role in this context. By pooling data from various studies, researchers can develop a comprehensive understanding of the efficacy and safety of TCIM interventions. This collaborative effort can inform evidence-based practices and policies, ultimately leading to improved health outcomes for diverse populations. Furthermore, data sharing can facilitate the identification of gaps in knowledge and research, guiding future investigations that address pressing global health concerns.[15]

For instance, during health crises such as the COVID-19 pandemic, TCIM practitioners have often been at the forefront of community responses, providing support and care.[16] Data sharing among researchers and practitioners can help identify effective strategies and interventions that can be scaled up in similar situations. By documenting and sharing successes and challenges, the TCIM community can contribute to a more robust public health response.

Additionally, the integration of TCIM into global health strategies can help address health disparities and promote equity. By recognizing the value of evidence-based TCIM practices, policymakers can create frameworks that support their inclusion in healthcare systems, ultimately benefiting underserved populations who may rely on these approaches for their health and well-being.

4. Challenges to Data Sharing in TCIM Research

While the benefits of data sharing in TCIM research are evident, several challenges must be addressed to realize its full potential.

4.1. Lack of Standardization

One of the primary obstacles to data sharing in TCIM research is the lack of standardization in data collection and reporting. The diversity of TCIM practices and their associated research methodologies has

Table 1

Positive and Negative Examples of Data Sharing in the Context of TCIM Research.

Type of Example	Example	Description
Positive	Data Repositories Training for TCIM Researchers	Providing training programs for TCIM researchers on how to properly deposit, access, and manage data in repositories is an effective and ethical way to promote good data sharing practices.
	Data Standardization for Comparative Studies	Standardized data on TCIM treatment outcomes enables meaningful comparisons across studies and populations, advancing knowledge and integration into broader healthcare systems.
	Culturally Respectful Knowledge Sharing	Data sharing frameworks that respect cultural context and obtain indigenous community consent help preserve traditional knowledge and enhance collaborative research efforts with these communities.
Negative	Inadequate Data Privacy Protections	Sharing TCIM patient study data without robust privacy safeguards risks exposing sensitive information, violating patient confidentiality, and damaging trust in researchers.
	Misappropriation of Traditional Knowledge	When data on traditional practices is shared without consent or cultural context, it can lead to exploitation and misuse by commercial entities, eroding trust and respect between researchers and indigenous communities.

led to variations in how data is collected, analyzed, and presented. This lack of standardization hampers the comparability of research findings and limits the potential for meaningful data sharing.[1] Developing standardized data collection protocols is essential to facilitate data sharing and enhance the comparability of TCIM research. By establishing common metrics and reporting guidelines,[17] researchers can create a cohesive framework that promotes collaboration and data sharing across diverse studies. Standardization should encompass not only the methodologies employed but also the terminology used in TCIM research.[18,19] Discrepancies in language can lead to confusion and misinterpretation of findings. Therefore, creating a common lexicon for TCIM practices will further enhance the ability to share data effectively.

4.2. Cultural Sensitivity and Intellectual Property Concerns

Respecting the rights and interests of indigenous communities is essential when conducting TCIM research. The concept of indigenous data sovereignty emphasizes the need to protect indigenous knowledge and ensure that communities maintain control over how their data is used.[20] This sensitivity to cultural context and data governance is paramount in fostering trust between researchers and communities. The CARE Principles for Indigenous Data Governance provide a framework to guide the ethical collection, use, and sharing of data related to indigenous communities. CARE is an acronym for the following: collective benefit, authority to control, responsibility, and ethics. These principles aim to protect Indigenous knowledge systems, ensure data sovereignty, and promote respectful and equitable partnerships between indigenous peoples and researchers or institutions.[21] While open data principles encourage data accessibility and sharing, they may sometimes conflict with the cultural rights and values of indigenous communities. Researchers must carefully navigate these complexities, prioritizing the CARE Principles to ensure that data sharing practices honour the rights of indigenous communities while conducting their research. Developing ethical guidelines that emphasize community engagement and equitable benefit-sharing is crucial for addressing these challenges effectively. Additionally, researchers must be aware of the historical context surrounding TCIM practices. Many indigenous communities have faced exploitation and marginalization in research, which has contributed to mistrust. By actively engaging with these communities, respecting their authority over their data, and centering their perspectives, researchers can work towards restoring trust and fostering a more responsible research landscape.

4.3. Technical and Infrastructural Barriers

Many regions where TCIM practices are prevalent face technical and infrastructural barriers that hinder effective data sharing. Limited access

to technology, inadequate research infrastructure, and a lack of funding can impede researchers' ability to collect, analyze, and share data. Investing in infrastructure and building capacity for data sharing is essential to overcoming these barriers.[22] International collaborations and funding initiatives can play a pivotal role in enhancing research capabilities in regions where TCIM is practiced. By strengthening the research infrastructure, we can create an environment conducive to data sharing and collaboration. Training programs that equip researchers with the necessary skills and knowledge to engage in data sharing are also critical. These programs can promote best practices in data management, analysis, and sharing, ensuring that researchers are well-prepared to navigate the complexities of TCIM research.[23]

5. Case Examples

Table 1 provides positive and negative examples of data sharing in the context of TCIM research.

6. Overcoming the Barriers

To overcome the barriers to data sharing in TCIM research, several key strategies should be considered:

1. **Developing Standardized Data Collection Protocols**: Establishing common metrics and reporting guidelines is essential to facilitate data sharing and enhance comparability across studies. Collaborative efforts among researchers can lead to the development of standardized protocols that address the unique challenges of TCIM research.

2. **Implementing Ethical Guidelines**: Ethical guidelines must be developed to protect indigenous knowledge and ensure benefit-sharing. These guidelines should prioritize community engagement and respect for cultural sensitivities, fostering trust between researchers and the communities involved in TCIM research.

3. **Investing in Infrastructure**: Building capacity for data sharing requires investments in infrastructure and technology. International collaborations and funding initiatives can help strengthen research capabilities in regions where TCIM is practiced, enabling researchers to collect and share data effectively.

4. **Promoting Community Engagement**: Engaging with communities from the outset of research projects is essential for building trust and ensuring that data sharing practices are culturally sensitive. Researchers should prioritize community input and feedback, ensuring that their work is relevant and beneficial to the populations they serve.

5. **Fostering a Culture of Openness**: Encouraging a culture of openness and collaboration within the TCIM research community is vital for overcoming barriers to data sharing. By emphasizing the impor-

tance of shared knowledge and collective progress, researchers can work together to create an environment conducive to data sharing.

6. **Creating Collaborative Platforms**: Establishing platforms for researchers to share data, resources, and best practices can facilitate collaboration and innovation. These platforms can serve as hubs for interdisciplinary research, allowing for the integration of diverse perspectives and expertise.

7. Conclusions

By enhancing reproducibility and credibility, fostering collaboration and innovation, promoting ethical research practices, and addressing global health challenges, data sharing can contribute to the development of evidence-based TCIM interventions. As a community, we must embrace openness, collaboration, and innovation in our research endeavors. By prioritizing data sharing, we can ensure that TCIM research is conducted in a manner that respects cultural diversity, promotes ethical practices, and ultimately improves health outcomes across diverse populations. The path forward requires the active engagement of all stakeholders, including researchers, policymakers, practitioners, and indigenous communities. By working together to establish frameworks for data sharing, we can create a more robust and equitable research landscape that harnesses the potential of TCIM to improve health and well-being globally.

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JYN is the sole author.

Conflict of interest

The author has no competing interests to declare.

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Data availability

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