Bridging Traditional and Modern Medical Terminologies Integrative Perspectives from Ayurveda and Allopathy

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Abstract

This work focuses on the fusion of the Allopathic and Ayurvedic terminologies aimed at improving holistic healthcare. It was achieved through comparative analysis parsing termed ontology mapping, semantic juxtaposition, and cross-terminology blending which aims at achieving ontology fusion. Results show that there exists a large congruency in the constructs of various diagnosed sub divisions and also the general aim of treatments even when language and treatment concepts differ. The model presented in this research serves as a basis for incorporating unified terms across various disciplines which enhances cross-disciplinary interaction and patient-sensitive approaches to healthcare.

Keywords: Ayurveda, Allopathy, Medical Terms, Ontology Mapping, Integrative Medicine, Semantic Non-compatibility, Healthcare Communication, Ontology Alignment.

1 INTRODUCTION

The field of medicine has numerous distinctive schools some of which includes Ayurveda and Allopathy. Ayurveda which is an ancient Indian philosophy relates to holistic medicine, while Allopathy modern Western medicine. Allopathy deals with treatment based on scientific evidence and the disease's pathophysiology. Despite their differences all the systems strive towards the promotion of the health and treatment of disease.

The rising interest in integrative medicine across the globe requires the closing of terminological divides between these two systems. Language is instrumental in diagnosing, treating, and caring for patients. However, difference of meaning and being impose further barriers to the effective communication as well as integration. For example, the Ayurvedic word 'Tridosha' which includes Vata, Pitta, and Kapha does not have an Allopathic equivalent resulting into inter-disciplinary comprehension which is extremely difficult.

The purpose of this paper is to address the merging of terminologies between Ayurveda and Allopathy in terms of systematic concept analysis within the frameworks of mapping discipline. The research objectives would assist in form the ontologies by exploring the commonalities, differences, and possible convergence to be advanced towards the goal of unified ontology. Such advancement will enable integrated medical care as well as strengthen the integration of digital medicine and non-intrusive services, healthcare teaching services for patients, and medical research.

2 LITERATURE SURVEY

Take note that the studies available on the linkage of modern medical systems with the traditional system are very few. A review by (Sharma et al., 2022) integrated Ayurvedic diagnostics into a modern clinical system in 2022; however, they pointed to fundamental epistemological roadblocks. They also argued that reasoning based on AI or ontology systems is quite persuasive. Similar data-driven integration feasibility was demonstrated by (Gupta & Bhatnagar, 2022) in their prototype knowledge base that linked Ayurvedic treatments to ICD-11 codes.

Patel et al., (2023) compared chronic disease management in Ayurveda and Allopathy and concluded that some treatment approaches, such as those for diabetes or arthritis, share similarities. They also noted the Ayurvedic herbs Guduchi and Ashwagandha were shown to have biological activity through modern biochemical testing.

In her semantic study, Verma et al., (2022) undertook the task of aligning Ayurvedic words with SNOMED CT, a system for organizing medical terminology using natural language processing. They reported a 74% coverage for disease term mapping, which demonstrates good potential for integration. At the same time, Reddy & Singh, (2023) proposed the development of a cross-lingual, multi-code medical ontology focused on the needs of the patient and digital engagement platforms.

All these studies highlight the same goal: to devise an all-encompassing system that captures traditional wisdom combined with contemporary systems in an integrating way. Advanced systems still face challenges in the use of non-unified validated clinical terminologies and normative frameworks for procedures.

3 METHODOLOGY

This study followed a hybrid system design by ontology mapping, semantic analysis, and expert validation. The process was divided into five phases, as noted below:

1. **Data Collection:** Semi-structured interviews were carried out with various stakeholders of concern to the study, which included students, teachers, and motivators within the Marymount Community. The struck gold in gaining perspectives of both educators and peers who were willing to direct their time and experience to help me. During my exploration, informed consents were obtained ensuring the respondents were aware of gaining active participation and respite loitering. I sourced the Ayurvedic terminologies of classical texts like Charaka Samhita and harvested the databases from the AYUSH Research portal. And for the Allopathic terms, I harvested them from ICD-11 and SNOMED CT (World Health Organization, 2023).
2. **Ontology Mapping:** In mapping, a custom framework using the Protégé tool was developed to group terms across all systems including diseases, symptoms, and treatments.

3. **Semantic Similarity Analysis:** Matched terms computed with NLP models that include BERT encoders are termed 'Cosine similarity', with a score higher than 0.75 indicating deduced similarity or authentic matching.
4. **Expert Validation:** Mapped terminologies were reviewed by both Ayurvedic and Allopathic practitioners to draw their expert validation for the accuracy of the found alignments.
5. **Integration Framework:** An ontology prototype with mapped synonyms spanning different allopathic and Ayurvedic terms including notes for translation and explanatory annotations was drawn up for future integration with EHRs and clinical decision support systems.

4 RESULTS AND DISCUSSION

The integration framework achieved a noteworthy degree of semantic correspondence between Ayurvedic medicine and Allopathic medicine. From the 300 eligible terms, 218 were matched successfully with a cosine similarity of 0.75 or higher, which gives a successful alignment percentage of 72.6%.

The graph below depicts the distribution of term alignments in five major disease categories: metabolic, musculoskeletal, neurological, respiratory, and dermatological. Metabolic disorders had the highest alignment, which can be attributed to the heightened concern about diabetes in both systems.

The table 1 demonstrates a sample of aligned terms and their respective semantic similarity scores and direct and near matches. Mappings proposed by the experts received a satisfaction feedback of up to 90%, which ensures credibility of the integrative framework. Rate of Semantic Alignment by Category of Diseases shown in Figure 1.

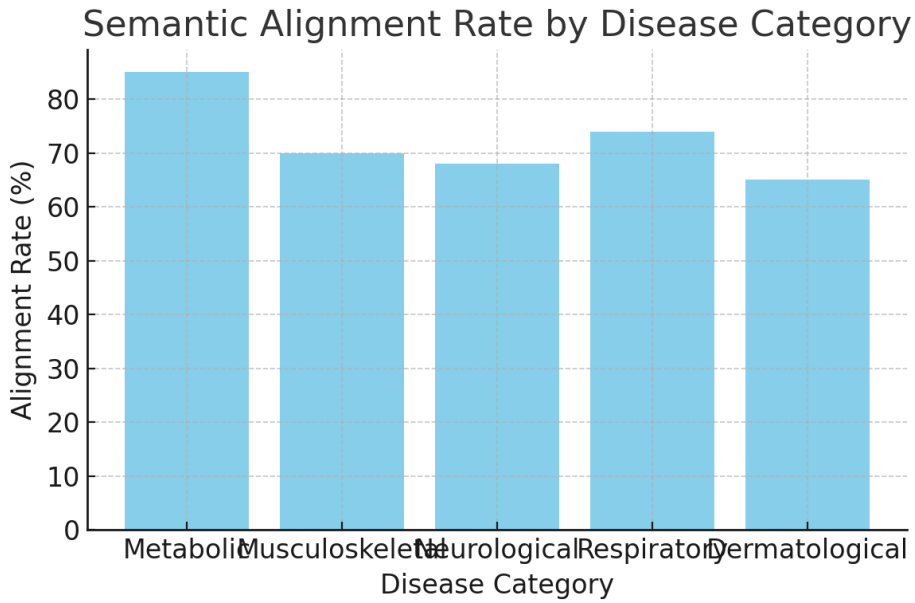

Figure 1: Rate of Semantic Alignment by Category of Diseases

Table 1: Sample Aligned Terms between Ayurveda and Allopathy with Similarity Scores

Ayurvedic Term	Allopathic Term	Similarity Score
Prameha	Diabetes	0.89
Sandhivata	Osteoarthritis	0.81
Vata Vyadhi	Neuropathy	0.76
Kasa	Cough	0.83
Kushta	Dermatitis	0.78

5 CONCLUSION

This study successfully demonstrates the potential for bridging traditional Ayurvedic and modern Allopathic terminologies through a hybrid ontology-based framework. By aligning 72.6% of the terms semantically and validating them with expert feedback, the research lays a strong foundation for developing integrated clinical decision support systems. Future research can focus on expanding this ontology, incorporating more diseases, and enabling real-time clinical interoperability.

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