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# TibbOnto: Knowledge Representation of Prophet Medicine (Tibb Al-Nabawi)

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**Abstract**

The Quran and Hadith are the two fundamental sources of Islamic legislation. Hadith are narrations passed from Prophet companions regarding the words and deeds of Prophet Muhammad (peace be upon him). Hadith books contain topics related to all aspects of Muslim life. In this paper, we build a domain-specific ontology (Tibb Al-Nabawi ontology) to present the Prophet's medicine in a semantic ontological representation. Our source of knowledge is based on an authentic Tibb Al-Nabawi Hadith. We have identified the main classes and the relationship among them. The proposed ontology can be extended in the future to automatically generate treatments for specific diseases according to the Prophet's actions.


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*Keywords:* Ontology Engineering; Domain-Based Ontology; Hadith Ontology; Tibb Al-Nabawi ontology.

## 1. Introduction

Islam is a way of life for Muslims. They rely on the Quran and Hadith as the main source of knowledge throughout the world. Hadith are sayings and actions of Prophet Muhammad (peace be upon him)[1]. Hadith are considered by Muslim scholars as an essential tool to understand the Quran in all matters related to Muslim life and worship. Muslim scholars through decades have documented the Prophet's sayings and actions in safe books and attempted to record and detect the accuracy of Hadith by following clear guidelines in judging the authentic Hadith only. The famous books of Hadith are Sahih Al-Bukhari and Sahih Muslims. These Hadith books contain many chapters covering all aspects of life according to Prophet Muhammad's (s.a.w) sayings and direction to his companions. These books are organized in different chapters to assist the seeker of knowledge. One of Sahih Al-Bukhari chapters contains Kitab Al-Tibb, which means the medicine of the Prophet[4].

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Tibb Al-Nabawi is defined by many scholars as "medical treatments, prescriptions of diseases, prevention, health promotion and spiritual aspects that were recommended by Prophet Muhammad (s.a.w) to his companions"[4]. It illustrates how the people during the time of the Prophet were treated for diseases. Tibb Al-Nabawi is considered more for preserving health rather than curing illness. The preponderance of the Prophet's medication is considered preventive medicine (al-tibb al-wiqa`i) rather than therapeutic medicine (al-tibb al-`ilaji).

Because the Prophet's words and actions were revealed from Allah, his instructions to his sick friends are considered important pieces of knowledge. This knowledge was preserved and passed from generations. Hadith scholars for decades have maintained valuable knowledge and attempted to not mix this knowledge with other cultural practices. A recent study by a PhD Hadith student attempted to collect the accurate and accepted Tibb Al-Nabawi Hadith in one place. She followed Hadith scholars to confirm the chain of Isnad and Mutan of Tibb Al-Nabawi Hadith and retained only the authentic Hadith. Her dissertation is considered a valuable asset to be read and used by both Hadith scholars and normal people seeking a cure for disease following the medicine of the Prophet (s.a.w) [7]. Tabb Nabawi is usually available in text format only.

Accordingly, research in Hadith is an important aspect for Muslims to learn and reveal important knowledge and information from the Prophet Muhmmad's (s.a.w) practices. There has been research focused on judging Hadith Isnad as in [1], [2], [3] and electronic Hadith encyclopedias. Some of these works have used ontology to represent knowledge in a more meaningful manner for humans and machines. Ontology captures information regarding ideas and concepts and the relationships among them to provide a framework and extract conclusions from the structured information. Nevertheless, to our knowledge, there is no ontology created for Tibb Al-Nabawi.

In this paper, we design a domain-dependent ontology called TibbOnto Ontology for Tibb Al-Nabawi in the Hadith domain. We structure Tibb Al-Nabawi Hadith concepts into a set of equivalent classes, properties, and relationships. One such concept is disease and treatment during the time of the Prophet. The developed ontology is considered a basic building block in the development of a complete ontology-based TibbOnto system.

The paper is organized as follows: Section 2 presents some related works; Section 3 is the problem statement. Section 4 presents the ontology development process consisting of five steps and Section 5 concludes the paper.

## 2. Literature review

Our review of similar research papers reviews some of the Islamic ontology that has been proposed, specifically previous research related to Hadith science.

An interesting work was conducted in [1] that proposed developing an automatic e-NARRATOR software tool for Prophet Hadith to generate a full narration tree. Their system consisted of several components: creating a natural language lexer, performing shallow parsing, building a syntactic analyzer, and applying semantic processing to correctly select the narrators' name. Then, they generated a narration chain of names through their ontology model and finally represented the chain as a complete tree. Their approach was tested by various Hadith and produced excellent results.

Another study built on the e-NARRATOR work was published[2]. The authors built an ontology-based Isnad Judgment System (IJS). The motivation of their study was to differentiate between accepted and rejected Hadith that was generally performed manually by Hadith scholars. The aim of the study was to provide an automated Isnad judging system based on the knowledge base of narrators and Hadith; the system generates a suggested judgment of Hadith Isnad based on the known rules that are used by Hadith scholars. The system was evaluated according to Hadith scholars. They tested the system and produced excellent accuracy.

Another study presented in [3] used association rules to extract the ontology of Prophetic Narrations (Hadith). Their primary text was Sahih Al-Bukhari. First, they structured Sahih Al-Bukhari to extract concepts and relations among the Sahih Al-Bukhari corpus. Then, they used association rules to identify semantic related relationships. Their process consisted of the following: extract a set of concepts from Sahih of Bukhari books, tag all the words of the Hadith texts, and apply a stemming operation to extract the ontology terms. Then, they used association rules to discover the relations among the extracted concepts. Finally, they applied an *a priori* algorithm to identify the itemsets and accepted rules. These rules represented the semantic Hadith ontology of their approach.