

## **Translation and Health Risk Knowledge Building in China**

Rapid advances in information technologies such as natural language processing and more recently, statistical machine translation tools have significantly changed the landscape of scientific and health translation. Translation Studies emerged as a rapidly evolving field of research which lies at the crossroad of social sciences, humanities, and information science. The current study of the translation, variation and cultural assimilation of health financial risk terms deploy empirical research methodologies widely used in corpus translation studies, which is one of the most dynamic research areas of contemporary translation studies. The translation phenomenon investigated in this book is the conceptual and formal variation of health financial risk terminologies in translation. In this book, variant translations of healthcare financial risks terms are defined as linguistic expressions used by different translators in the target culture and society. These culturally localised translations cannot be treated as conventional linguistic synonyms in the target language. By contrast, the corpus analysis shows that localised health translations tend to exhibit levels of conceptual and formal variations of the original English health terminologies. This can be examined in the use of these expressions in the Chinese formal discourses, for example, by looking at the distinct collocation patterns of the translated terms in large-scale databases of Chinese research publications, as well as their contrastive distributions across research disciplines of the target knowledge system.

This study argues that the wide existence of translation terminological variation of health financial risk terms in Chinese public health materials reflects the largely developing nature of the public health knowledge system in the country. It mirrors the cross-cultural communication process in the early stages of the introduction and translation of modern western sciences in China in the late nineteenth century. The establishment of a consistent scientific terminology system played an instrumental role in the development of modern sciences in China at the turn of the twentieth century. Amidst intensified historical cross-cultural and cross-lingual interactions, many translated scientific terms were created and used by different translators to bridge significant conceptual and cultural gaps between the source and the target languages.

Science translation has provided a focus of significant research in the study of science history and modernisation in China both inside and outside of the country. In the process of cross-cultural and cross-lingual contact and interaction, the co-existence and competition for standardisation and conventionalisation in the target language between different translation approaches and schools was well documented. Terminological variability reflects the developing nature of the Chinese science language, and the ongoing cultural and social transition and the establishment of modern sciences in the country.

This study argues that an important factor in the social or cultural selection and the establishment of new translated terms is the dissemination and cultural acceptance of particular translation options by the target audience. In early historical periods, the dissemination of translated materials was largely restricted to social and economic elites. The general public had restricted access to and knowledge of translated materials. That is, in these historical periods, the chief social function of translation was to provide referential materials for the administration and governing social groups, rather than inform the public.

With increasing cross-cultural communication and rapid advances in natural language processing and machine learning technologies since the mid-twentieth century, translation has

become an integral part of the everyday social life in many parts of the world, especially in developing countries where new scientific knowledge systems evolve at a level and speed rarely seen before. The study of the social functions of science translation which is instrumental to the ongoing process of globalisation has been given increased visibility and importance. This study is embedded within this larger social and cultural context. It intends to make useful efforts to explore the interaction and interplay between different approaches to cross-lingual and cross-cultural health research translation in general, and the development of public understanding and knowledge around healthcare financial risks in particular.

The book maintains that the translation of health policy materials requires an in-depth understanding of the existing cultural conventions and accepted communication styles in the target language and society. The empirical analysis in this book using both original longitudinal and contrastive (English and Chinese) linguistic databases suggests that health translation strategies should include first of all, an adequate cultural adaptation of health materials which highlights the consistencies and links between the source and the target health knowledge systems and social practices; secondly, effective cross-lingual translation methods which utilise and exploit typical linguistic resources of the target language such as conventionalised syntactic and lexicographical construction in the creation of new health terminologies. This proposed highly skilful translation and purposeful language transformation approach stands in contrast with the literal translation, i.e., translation word by word, and the heavily domesticated translation strategy. Neither of these two somewhat polarised methods can fulfil the important social and communicative function of health translation which is to deliver research-intensive knowledge and information in a responsible and effective way. The corpus analysis shows that health translations which were produced in line with such translation principles tend to be better understood, accepted and widely disseminated in the target language and culture.

A methodological innovation of this book is that it integrates both textual and contextual or social analyses in the corpus-based study of health translations. Translation Studies have long been divided between the two distinct sets of research agendas, i.e. micro-linguistic and macro-social translation studies. In this book, the detailed systematic linguistic analysis of health policy translation is first of all, preceded by a review of the social and cultural contexts in which healthcare reforms and policy research was introduced and carried out in China, and then followed by a quantitative and statistical modelling of the dissemination of newly introduced health risk concepts and knowledge in the target culture and society.

This book has significantly advanced a research area which has received little attention and has been explored to a very limited extent in Chinese translation studies. Specifically, this book suggests that the social selection and cultural acceptance of particular translations over other translation possibilities which form part of the so-called translation variation in this study can be measured and studied by comparing the statistical indicators provided by large-scale databases of Chinese formal publications. A longitudinal analysis revealed the shifting focus and varying levels of interest in specific health topics among researchers, media professionals and the public in China. By leveraging and integrating well-established research methodologies from information science, corpus linguistics and textual statistics, this book aims to explore new lines of research for corpus cross-lingual health translation. It represents a useful effort to advance latest empirical translation studies and to bring much-needed insights into the social role and function of the translation of health policy and research in a globalised contemporary world.

This study examines the development of health policy knowledge in China at an early stage of health policy translation in China, i.e., around the late 1990s and the early 2000s which was before the advent of the wide use of machine translation software such as web-based statistical translation tools like Google Translate and cloud translation terminology databases. It offers an empirical corpus analysis of different attempts and efforts made by translators to interpret and culturally contextualise English health risks terms in a typologically different language, Mandarin Chinese. Health translation entails the linguistic remoulding and shaping of the Chinese health policy language, and more importantly, the introduction and establishment of new concepts and idea sets of global health policy research in the native cultural and knowledge system.

The focus of the linguistic analysis is to identify and compare the different translation strategies that have been experimented within such an important process, instead of passing on a subjective judgement or criticism between good and bad translations, as health policy translation requires the combination of a range of highly specialised expertise and skills. The terminological variation detected in health policy translation points to the need and urgency of systematic research in this area, as well as possible directions for developing efficient and effective methodologies for the translation of global health policy as a field of growing social and research significance.

The proliferation of variant translations, the corpus analysis shows, is a wide-existing phenomenon in intensified cross-cultural and cross-lingual science interactions. The detected variation and variability of health translation terminology reflects the dynamics of the conceptual and language alignment between the source and the target societies and systems of knowledge. Different from text-based translation studies that tend to be qualitative and rely on limited case studies, the corpus-based approach to translation studies takes full advantage of the availability of large-scale digital resources and related corpus mining technologies and tools. The technical convenience afforded by monolingual and multilingual digital resources and tools can greatly facilitate the empirical analysis of health translation variation. This helps researchers to develop new translation evaluation methods which are fundamentally based on the cultural and linguistic acceptance and use of the translated concepts and terms among the target audiences. This book explains and illustrates this end-user-oriented research agenda which can be achieved through the integration of statistical analyses and modelling techniques in the empirical study of health translation materials.

The combination of methodologies used in corpus translation studies and data mining techniques can assist researchers of translation studies in the development of empirical measures and instruments to extract and analyse underlying patterns of the distribution and dissemination of translation materials. The methodologies developed in this book, particularly in Chaps. 4 and 5, draw upon the well-tested corpus linguistic methodologies. The corpus study will fill in the long-existing gap in the study of the impact of translation on the development of health risks knowledge in the target language, culture, and science knowledge system.

By using public health translation as a case study, this book illustrates the feasibility and productivity of integrating a range of interdisciplinary research methodologies for the study of health translation. For example, the use of corpus materials and corpus methodologies can effectively detect subtle yet important differences in variant health translations of key public health concepts. The combination of translation methods with data mining techniques can help to develop measurements to analyse the patterns of the growth and dissemination of health risk knowledge in the target society and culture, as influenced by translations. Again, the adaptation

and integration of research methodologies across disciplines from linguistics, translation studies, statistics and comparative social and cultural studies lies at the very heart of the original research efforts and contributions made in this book to advance global health policy translation. This book is divided into seven chapters. Chapter 2 outlines the study of health risk translation as a new research area and efforts made by this study to fill in a gap of knowledge in this critical research area. Chapter 3 provides a brief review of the development of the healthcare and social security system in China, and the use of specific public health terms and expressions in different historical periods in the country. English translations of selected original Chinese health materials are provided to demonstrate the features and characteristics of the developing Chinese healthcare system since the mid-twentieth century. The extraction of Chinese research resources was through using the keyword search function (yī liáo bǎo xiǎn zhì dù or healthcare system) to explore the largest publication database in China, the Chinese Knowledge Resources Integrated Network also known as CNKI.

To facilitate understanding of the parallel growth of the international and native Chinese public health policy research, Chap. 3 provides the social and contextual background to the translation and introduction of public health risk terms in official documents of the WHO in China in the 1990s. In Chap. 3, discussions on the Chinese health research context and the international health research environment are developed using keyword analysis of Chinese and English publications, a research method which is widely used in corpus linguistics and corpus translation studies.

Chapter 4 introduces the construction of a parallel English Chinese corpus of WHO health translations. It gives details of the practical consideration in the collection of corpus materials to build the parallel corpus. The construction of the parallel corpus facilitates the identification and extraction of English health risk terms which gave rise to competing translations or the detected terminological variation in health translation, the translation phenomenon which is highlighted in this chapter and discussed at length in this book. The variant translations extracted in the parallel corpus exploration were grouped into different clusters of health risk terminologies that underscored the development and building of new health risks knowledge among the target audiences.

The conceptually defined clusters of health terminologies were used in the following chapter for the corpus analysis of the semantic and usage differences between variant translations of imported health risk terms and concepts. The linguistic analysis of parallel corpora of original English texts and their Chinese versions revealed that semantic and terminological variability, as indicated by variant translations, widely exists in health financial risk translation. This reflects a critical gap in current health translation practice and research. The corpus analyses found that among variant health translations within the same conceptual cluster, some were new expressions developed based on the English source texts; and some linguistic expressions had strong linguistic and cultural roots in the target Chinese language.

Chapter 5 deploys large Chinese databases to analyse the collocation and disciplinary distribution patterns of variant translations of health terms in Chinese research publications. The corpus-based longitudinal analysis compares over an extended period newly created health expressions with health translations adapted from or simply borrowing existing culturally conventionalised terms in Chinese formal discourses. The corpus-based empirical analysis suggests that culturally and linguistically localised expressions of health financial risks tend to be better construed and established in the target Chinese knowledge system. The corpus analysis of variant health risk translations also reveals that the focus and specific approaches

to critical health topics such as healthcare financial risks exhibit different patterns at the international and national levels. This book makes a useful effort to discuss and analyse this important social and research issue from the perspective of quantitative translation studies as a rapidly developing field of empirical translation studies which came to the fore in the early 2000s.

Chapter 6 provides a corpus-based exploration of the distribution of health translations using a trend analysis and the subsequent statistical modelling of variant health translations in Chinese research publication. It was found that health terms which form the culturally adapted translation group occurred much more frequently in Chinese research publications, when compared to entirely newly created translations or word-by-word literal translations without adequate cultural and linguistic adaptation. It was interesting to notice that in some cases, despite temporal decrease in the frequency of occurrence of certain culturally rooted and linguistically remoulded translations in the databases, often as result of the introduction of new translations in certain periods of time and a surge in public interest in specific health topics triggered by social events and the media, the temporary decrease of such translations may be reversed over a larger timespan. This is a corpus-based finding which again testifies to the importance of developing and establishing culturally and linguistically appropriate health policy translation systems and strategies.

Chapter 6 utilised the statistical measures produced by large-scale databases to develop useful indicators for the study of the patterns of the distribution of health translation variants in the target language and social context. These indicators can furnish a set of useful measures to gauge the social impact and significance of health translation materials in the target cultural and knowledge environment. The research findings presented in this chapter thus yield useful insights into the process through which the purposeful use of translation methods and techniques may affect the academic dissemination rate (ADR) and media dissemination rate (MDR) of the original source materials in the targeted health research environment. These two indicators, i.e., ADR and MDR, may in turn collectively influence the rate of growth and the patterns of information dissemination, in this case, healthcare financial risk knowledge in the Chinese society as measured by the statistical indicator of academic growth rate (AGR).