



# Discrepancy of Medical Terminology Regarding Colorectal Surgery Between South and North Korea

Dayoung Ko<sup>1</sup>, Heung-Kwon Oh<sup>1</sup>, Jangwhan Jo<sup>2</sup>, Hyun Hui Yang<sup>1</sup>, Min-Hyun Kim<sup>1</sup>, Myung Jo Kim<sup>1</sup>,  
Sung Il Kang<sup>1</sup>, Duck-Woo Kim<sup>1</sup>, Sung-Bum Kang<sup>1</sup>

<sup>1</sup>Department of Surgery, Seoul National University Bundang Hospital, Seongnam; <sup>2</sup>Department of Surgery, National Medical Center, Seoul, Korea

**Purpose:** We aimed to investigate the extent of heterogeneity in medical terminology between South and North Korea by comparing medical terms related to the colorectal system.

**Methods:** North Korean medical terms were collected from the sections on diseases of the small intestine and colon in a surgery textbook from North Korea, and those terms were compared with their corresponding terms in a South Korean medical terminology textbook. The terms were categorized as either identical, similar, showing disparity, or not used in South Korea. In a subsection analysis, the terms were allocated to pathophysiology, diagnosis, symptoms and examination, drugs, testing, treatment, or others according to the categorization used in the textbook.

**Results:** We found 705 terms in the North Korean textbook, most of which were pathophysiological terms (206, 29.2%), followed by diagnostic terms (165, 23.4%) and symptom and examination terms (122, 17.3%). Treatment-, drug-, and testing-related terms constituted 15.5%, 5.8%, and 4.1% of the 705 terms, respectively. There were 331 identical terms (47.0%) and 146 similar terms (20.7%); 126 terms (17.9%) showed disparity. Another 102 terms (14.5%) were not used in South Korea. The pathophysiological terms were the least heterogeneous, with 61.2% being identical terms used in both countries. However, 26.8% of the terms in the drug category were not used in South Korea.

**Conclusion:** The present study showed that less than 50% of the terms for the colorectal system used in South and North Korea were identical. As the division between South and North Korea persists, the heterogeneity of medical terminology is expected to increase.

**Keywords:** Terminology; Colorectal surgery; Intestines; Language

## INTRODUCTION

As dedicated language for use in certain fields, technical terms

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Correspondence to: Heung-Kwon Oh, M.D.

Department of Surgery, Seoul National University Bundang Hospital,

82 Gumi-ro 173beon-gil, Bundang-gu, Seongnam 13620, Korea

Tel: +82-31-787-7105, Fax: +82-31-787-4078

E-mail: [crsohk@gmail.com](mailto:crsohk@gmail.com)

ORCID code: <https://orcid.org/0000-0002-8066-2367>

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play an important role in communication. Unlike the nomenclature of other fields, medical terminology has distinctive features, and the general public frequently uses medical terms [1]. Wide gaps have developed between the medical terms used in North and South Korea because of differences in systems, ideologies, and exchanges with the outside world since the division of the Korean peninsula [2]. Accordingly, challenges in communication between medical professionals and between patients and medical professionals can be anticipated when the countries are reunited owing to the linguistic heterogeneity. In this regard, overcoming differences in the medical terms of specialized fields used in North and South Korea is one of the most important challenges to tackle in preparation for a reunified Korea. More importantly, as the number of North Koreans who are defecting increases, the number of people requiring medical services in South Korea will also increase [3]. Hence, the need to identify discrepancies in medical

terminology between North and South Korea is more urgent than the need to identify discrepancies in terms used in other sectors.

Not until the mid-1990s were efforts initiated to standardize the technical terms used in North and South Korea across various fields. However, few studies have directly compared the medical terms used in North and South Korea, and the research findings thus far are limited to a few fields, such as anesthesiology, dentistry, and parasitology [4-6]. Thus, the aims of this study included the extraction and analysis of medical terms used in a textbook for colorectal surgery in North Korea. Another objective was to identify the South Korean counterparts of the colorectal terms used in North Korea in order to determine the differences and the levels of discrepancy.

## METHODS

To identify the terms used in colorectal surgery in North Korea, a textbook was used as the basis of the research data for this study. The textbook was deemed an adequate source because it is one of the most widely used books containing professional terms acknowledged by experts; furthermore, it is a key instrument of communication for those working in the medical field. Regarding data searched in the Information Center on North Korea under the Ministry of Unification, the findings of this study confirmed that the latest textbook of surgery in North Korea was published in 2000 [7]. In South Korea, medical terms used in the textbook of surgery have been compiled by the Korean Medical Association, which has taken the lead and published a book entitled *Medical Terminology*; the 5th edition of this work was published in 2009 and a revised edition was published in 2015 [8]. South Korean medical terms equivalent to the ones extracted from North Korean data were collected from this book. The terms collected for North and South Korea were compared on a one-to-one basis, and those that did not have counterparts were categorized separately.

North Korea's textbook of surgery consisted of sections and subsections related to diseases. The collected terms were divided according to the subsection titles into seven colorectal system categories: anatomy and pathophysiology, diagnosis, symptoms and examinations, drugs, testing, treatment, and other. The following four levels of discrepancy were used to compare terms for North and South Korea: completely identical terms based on morphological similarity, similar terms showing one or two different syllables, different terms, and terms not used in South Korea. In this study, whether the level of discrepancy between the terms used in North and South Korea varied among the different colorectal system categories was also explored. Because this study was not a human subject research, it was not eligible for IRB deliberation.

## RESULTS

The total number of medical terms relating to the colorectal field

**Table 1.** Examples of terminology discrepancies

English	Identical		Similar		Different		Absent	
	NT	ST	NT	ST	NT	ST	NT	ST
Small intestine	소장	소장	홍문	항문	비루스	바이러스	장계제	-
Large intestine	대장	대장	포이프-제거스 증후군	포이프-제거스 증후군	장검다리현상	지갈모양	중완	-
Appendix	충수	충수	념전	염전	오줌내기약	이뇨제	축삼리	-
Crohn disease	크론병	크론병	교약성	교약성	폴리포지스	폴립증	장판고정술	-
Mesentery	장간막	장간막	장요동운동	장연운동	신관신종	관상신종	진나이법	-
Intussusception	장중첩증	장중첩증	치열	치열	폴리프적출	폴립절제	역윤동성장이식	-
Endoscopy	내시경	내시경	장장문합	장문합	심지	배액관	정막하근총판막조성술	-
Laparotomy	개복술	개복술	위막성대장염	위막성결장염	약진	거즈	순상루	-
Middle colic artery	중결장동맥	중결장동맥	혈괴	혈종	듀케스 분류	듀크병기	준데검사	-
Hemorrhoid	치핵	치핵	복부양기나	복부양지나	쌍통식장루	이창장루	드레나제창	-

NT, North Korean terminology; ST, South Korean terminology.

in North Korea's textbook of surgery was 705. For this study, South Korean medical terms corresponding to North Korean terms were selected and compared. North Korean colorectal terms were categorized into native words, Sino-Korean words, foreign words, and terms formed from a mixture of native and Sino-Korean words. Representative examples of the terminology are shown in Table 1.

When the terms identified via the method above were divided into the colorectal categories used in the textbook, there were 206 anatomical and pathophysiological terms, 165 diagnostic terms, 122 terms related to symptoms and examination, 109 treatment terms, 41 drug terms, and 29 testing terms. When a word was used as a medical term, but it was difficult to infer or confirm its meaning, or when it was used in a medical explanation, but was widely used as a general term, it was categorized as "other." Thirty-three terms were included in this "other" category (Table 2).

Regarding the 4 levels of discrepancy for categorizing and comparing the colorectal terms used in North and South Korea, only morphological differences were considered, as opposed to whether each term's meaning could be understood and conveyed (Fig. 1). Words were categorized as identical only when they were completely morphologically identical (i.e., syllables and word order). There were 331 identical words out of 705 words (i.e., less than half at 47.0%). Further, there were 146 morphologically similar words (20.7%) (i.e., with 1 or 2 different syllables). Moreover, 126 different words (17.9%) had different morphological forms. Finally, 102 words were used in North Korea but not in South Ko-

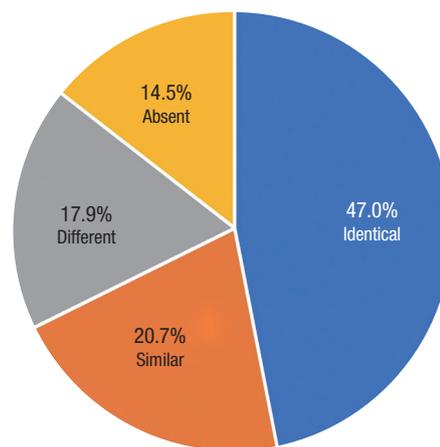
rea, accounting for 14.5%. According to the results of the analysis of the variation in heterogeneity among the colorectal system categories, the lowest level of discrepancy was found among the anatomical and pathophysiological terms. Completely identical terms accounted for 61.2% of the anatomical and pathophysiological terms whereas similar terms with 1 or 2 different syllables accounted for 18.0%. By contrast, terms not used in South Korea accounted for 26.8% of drug terms and 38.5% of treatment terms, demonstrating that the words not used in South Korea comprised a significant percentage of these 2 categories. In addition, completely identical terms were found at levels of 17.1% and 24.8% in the drug and the treatment categories, respectively, confirming a significant level of discrepancy (Table 3).

## DISCUSSION

North and South Korea have spent over half a century since the division under separate political, social, educational, and social conditions without mutual exchanges. Accordingly, the situation has led to significant variations in the use of language even though the 2 countries share a common language. In the early days of the

**Table 2.** Terminology differences between different categories

Category	No.
Anatomy and pathophysiology	206
Diagnosis	165
Symptoms, examination	122
Treatment	109
Drugs	41
Testing	29
Other	33



**Fig. 1.** Levels of discrepancy for categorizing and comparing the colorectal terms used in North and South Korea.

**Table 3.** Terminology difference between different classifications

Level of discrepancy	Terminology classification						
	Anatomy, pathophysiology	Diagnosis	Symptoms, examination	Drugs	Testing	Treatment	Other
Identical	126 (61.2)	83 (50.3)	59 (48.4)	7 (17.1)	16 (55.2)	27 (24.8)	15 (47.2)
Similar	37 (18.0)	48 (29.1)	21 (17.2)	13 (31.7)	2 (6.9)	22 (20.2)	3 (9.1)
Different	37 (18.0)	24 (14.5)	33 (27.0)	10 (24.4)	8 (27.6)	18 (16.5)	4 (17.9)
Absent	29 (6.8)	10 (6.1)	9 (7.4)	11 (26.8)	3 (10.3)	42 (38.5)	11 (14.2)
Total	229	165	122	41	29	109	33

Values are presented as number (%).

division, both countries used Sino-Korean words borrowed from the Japanese in a similar fashion; however, since the 1960s, North Korea and South Korea have advocated for the use of munhwao (North Korean standard language) and pyojun-eo (South Korean standard language), respectively [9]. Furthermore, North Korea has implemented nationwide language refinement programs, so not only common words but also technical terms have changed, though few analyses of the changes have been done. Although identifying linguistic dissimilarities between North and South Korea is important in preparation for reunification and future exchanges, grasping the status of medical terms is also important as they are more easily accessible to the general public than are the terms from other fields. Specifically, a study on saeteomins (North Korean new settlers in South Korea), who directly experience the discrepancies between North and South Korea, reported that although medical support was identified as being the most needed service, 41.4% of this group had difficulty communicating because of loanwords used in South Korea [3].

Comparing technical terms between North and South Korea requires an analysis by experts in the field, and almost no studies have investigated the medical terms used in the 2 countries. A 1995 study on terms used in anesthesiology and parasitology and a 2000 study on dentistry terms were noted, but the number of terms compared was not very high [4-6]. Therefore, the colorectal terms in North Korea's textbook of surgery and South Korea's *Medical Terminology* were collected in this study, with a total of 705 terms being compared to determine the level of discrepancy between the 2 countries.

Huh [4] reported that different medical terms used in North and South Korea in the field of parasitology did not lead to failures in communication; in fact, a safe assumption was that they were almost identical. However, that study collected parasitological terms from only 1 academic paper published in a North Korean academic journal and analyzed them only when equivalent terms were used in South Korea. According to a report by Heo [5], the differences in dentistry terms for Sino-Korean words were few, but the discrepancies were many when terms included native Korean words. The present study confirmed that only 47.0% of the colorectal terms used in North and South Korea were completely identical. The morphological differences shown in this study deviated considerably from what has been reported in previous studies. The potential reasons for this inconsistency are as follows:

First, owing to language refinement programs in both countries, discrepancies in the language would have arisen. For instance, when munhwao was established in North Korea, the word hongmun—considered a dialect word in South Korea—was designated as a standard word. Whether the initial consonant rule was applied also led to morphological differences between the 2 countries. The language refinement program in North Korea was implemented to eradicate illiteracy and consolidate the regime's grip on power; native Korean words were actively introduced to re-

place difficult ones. As a result, medical terms that include native Korean words are more numerous in North Korea than in South Korea, which seems to have contributed to morphological dissimilarities.

Second, differences in the foreign words used in the 2 countries could be a factor. Because they derive from Western medicine, medical terms are largely comprised of foreign words. South Korea has mostly borrowed English terms whereas North Korea has incorporated Russian terms. These discrepancies were also found among the colorectal terms in this study, which accounts for much of the heterogeneity.

Finally, dissimilarity arising from different medical systems is another reason. The aim of the natural and applied sciences, including medicine, is to continuously advance based on research and exchanges among researchers. South Korea has continued to embrace the latest findings and advancements in medicine and to apply them to clinical practices. By contrast, North Korea has been slow to accept new breakthroughs in medicine because of the restrictive nature of the regime and because traditional Korean medicine is recognized as one of the most important components of treatment. This context could explain this study's findings that the most significant levels of discrepancy in the medical terminology were found in the drug and the treatment categories.

The data from North Korea used for this study were made available in 2000; therefore, an inherent limitation is that the data do not accurately reflect the status of terms currently used in the country as compared to the South Korean data, which were published in 2009 and revised in 2015. Moreover, the comparison of terms in this study focused only on the colorectal field. Therefore, future follow-up studies should address these limitations. Nonetheless, the study is meaningful because of its thorough collection of terms (from a textbook of surgery), which enabled a comparison of the largest number of medical terms thus far in studies of North and South Korea.

To conclude, in this study, the heterogeneity between the terms used for the colorectal system used in South and North Korea was greater than expected. As the division between South and North Korea persists, the dissimilarities in medical terminology and the ensuing difficulties in academic communication will only be exacerbated.

## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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