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EQUIVALENCE IN SPECIALIZED TRANSLATION: MEDICAL TERMINOLOGY (ENGLISH – BULGARIAN)

Medical translation is a tool for dissemination research and knowledge in the world of academia. The present paper explores the Bulgarian translation equivalents of medical terms in a bilingual corpus of professional texts (surgery articles) for the compilation of topical vocabulary lists suitable for educational purposes. The corpus-based lexical approach is applied to compare the equivalence of English terms of Latin-Greek origin in original and translated texts as well as the translation strategies for rendering these terms in Bulgarian. Single and multi-term nominal phrases were explored in a parallel corpus with lexical analysis tools such as Sketch engine and WordSmith.

Keywords: expert discourse, medical translation strategies, professionally marked lexis

Introduction

Nowadays the borrowing of new concepts and words from English is a constant phenomenon in all social setting and types of communication (Myers-Scotton 2002).

The aim of the present study is to trace the variation in term usage in the resultative text (Bulgarian) and to observe the mechanisms of establishing functional proximity in the Bulgarian language of medicine. Our interest in specialized vocabulary (written medical communication) is provoked by the fact that there are no established criteria regarding the adaptation and integration of borrowed terms in Bulgarian. Many newly formed terms function as prospective terminological units without being described in specialized dictionaries, but are in active use in medical publications and in oral communication. This process of establishing term equivalents in the lexical system of the TL is supported by bilingual medical professionals, who in accordance with their native and foreign language competence formally reproduce and respectively introduce the loan words, complying intuitively with the norms of their native language (Danchev 1981: 190–204).

The focus is on the processes of adaptation and integration of the lexical borrowings from English for the achievement of formal equivalence in translation (English-Bulgarian). In the present article the term loan word is considered identi-

cal to a copy/replica of the English words as per the cognitive explanatory model, where the target language creates lexical copies of the original form in the process of interlingual transfer. The attention of many Bulgarian researchers is focused on interlingual transfer (Danchev 1989, Trifonova 2010, cit. in Krumova-Tsvetkova et al. 2013: 96, Pehlivanova 2014), the productive morphemes in the Bulgarian language (Pernishka 2008), the international tendencies in Bulgarian lexicology (Boyadzhiev 2005, Bondzholova 2007, Krumova-Tsvetkova et al. 2013), and the creation of symmetrical or equivalent terms (Simeonova 2011). These types of lexical borrowings are also defined as creative reproductions of foreign models, which are formed according to the morphological rules of the target language (TL) in order to be included in its lexicogrammatical system (Trifonova 2015). Borrowing lexical means as an attempt to reproduce certain standards in another language through phonological and morphological adaptation of foreign language structures is also described as lexical 'imitation' by Aleksieva (2006: 78–83).

The analysis revealed a higher level of lexical interference of the source text (English), direct translation and few reformulation strategies as per the norms of the target language. Thus, the English loan words, converted into Bulgarian by transliteration or transcription, co-existed with the established Bulgarian terminology in the translated text. The observed lexical variation may provide a choice between the available term pairs regarding register – the highly informative Bulgarian equivalents being suitable for the general reading audience (e.g. in doctor-patient communication), while the English loan terms pertaining to the professionally marked lexicon (medical jargon) in the Bulgarian language of medicine pertain to expert discourse (e.g. doctor-doctor communication). Lexical variation is systematically used in the translated texts, although domain-specific lexemes function as indicators of the formal register and scientific style conventions, relevant for the medical text sort. Such variation may also be indicative of the recent tendencies and changes in the Bulgarian language of medicine where newly coined linguistic forms are being adopted and accepted as the norm in medical communication. Therefore, the extracted terminological pairs with high frequency of occurrence in the medical corpus of surgical articles were included in self-study resources for educational purposes.

Research Methodology

The present paper is based on two parallel texts: an authentic text (Brunnicardi et al. 2014) and its translation into Bulgarian for institutional use. The source text is an academic textbook, aimed at practicing doctors, containing up-to-date medical facts with reference to surgery techniques and procedures (Table 1). The lexical entries were extracted with Sketch engine and WordSmith lexical analysis software tools (Scott 2020) by the concordance function. Key words in context and parallel concordance were the main functions used as well as frequency counts and lexical patterning in the present analysis (Fig. 1). The corpus size is 373, 938 / words 316, 454. The identified key terms and multi-term phrases with recurrent usage were verified in the Bulgarian National Corpus.

Table 1. Parallel translation of Chapter 42, Neurosurgery (Schwartz 2014)

<p>5. Neurapraxia is defined as</p> <p>A. The disruption of axons and myelin.</p> <p>B. The disruption of axons and endoneurial tubes.</p> <p>C. The temporary failure of nerve function without physical axonal disruption.</p> <p>D. The temporary failure of nerve function with physical axonal disruption.</p>	<p>Answer: C</p> <p>Neurapraxia is defined as the temporary failure of nerve function without physical axonal distribution. Axon degeneration does not occur. Return of normal axonal function occurs over hours to months, often in the 2-to 4-week range. (see Schwartz 10th ed., p. 1726.)</p>
<p>5. Невроапраксията се дефинира като</p> <p>A. Увреждане на аксони и миелин.</p> <p>Б. Увреждане на аксони и ендоневрални тръби.</p> <p>В. Временна загуба на функцията на нерва без физическа аксонална увреда.</p> <p>Г. Временна загуба на функцията на нерва и физическа аксонална увреда.</p>	<p>Отговор: В</p> <p>Невроапраксията се дефинира като временна загуба на функцията на нерва, без да има физическа аксонална увреда. Не настъпва аксонална дегенерация. Нормалната аксонална функция се възвръща от часове до месеци, често в рамките на 2-4 седмици. (Виж Schwartz 10th ed., стр. 1726.)</p>

24 duodenal ...	34 splenic ...	44 coagulopathy
25 artery ...	35 iliac ...	45 ventricular
26 acidosis ...	36 hematoma ...	46 carcinoma
27 bile ...	37 mucosa ...	47 gallbladder
28 abscess ...	38 malignancy ...	48 cardiogenic
29 esophagus ...	39 laparoscopic ...	49 laparotomy
30 postoperative ...	40 dissection ...	50 aorta

Fig.1. Extraction of single term units, Sketch engine

Among the unique characteristics of medical language are:

- frequent use of single and multi-word terms and eponyms (*splenectomy* / спленектомия, *spherocytosis* / сфероцитоза, *lymphadenopathy* / лимфаденопатия, *chronic hemolytic anemia* / хронична хемолитична анемия, *staging laparotomy* / стадиращата лапаротомия, *Idiopathic thrombocytopenic purpura* / идиопатичната тромбоцитопенична пурпура, синдром на Елерс-Данлос / *Ehlers-Danlos syndrome*, синдром на Хърлър-Хънтър / *Hurler-Hunter syndrome*, синдром на Марфан / *Marfan syndrome*);

- frequent use of acronyms (*Hairy cell leukemia (HCL) / Космато клетъчната левкемия (HCL), polycythemia vera (PV)/ Полицитемия вера (PV), RBC / еритроцити*);
- modification of meaning by addition of Greco-Latin prefixes and suffixes (*hypercellularity / хиперклетъчно развитие, myeloproliferative disorder / миелопролиферативно заболяване, asymptomatic / асимптоматичен*);
- word compounding (*esophagogastroduodenoscopy (EGD) / езофагогастродуоденоскопия (EGD), transfusiondependent anemia / зависима от кръвопреливане анемия, tumor-associated symptoms / тумор-асоциирани симптоми*);
- nominalizations (*strangulation / странгулация, urinary retention / задържане на урина, decompression of the bladder / декомпресия на мехура*);
- complex sentence structure (*Among 880 patients undergoing inguinal hernia repair with local anesthesia only 0.2% developed urinary retention, whereas the rate of urinary retention was 13% among 200 patients undergoing repair with general or spinal anesthesia / Честотата на уринна задръжка при 880 пациенти, подлежащи на пластика на ингвинална херния с приложена само локална анестезия, е 0.2%, докато при група от 200 пациенти, подложени на пластика на ингвинална херния, при които е приложена обща или епидурална анестезия, честотата на уринна задръжка е 13%*);
- compression strategies (*The incidence of recurrence is the most-cited measure of postoperative outcome following inguinal hernia repair / Традиционно най-важното мерило за успеха от лечението и постоперативната оценка на процедурата за възстановяване на ингвинална херния е честотата на рецидиви*).

Results

According to Manolova (1984: 26), the qualities that a term must possess are unambiguity, accuracy, brevity, systematicity, grammatical correctness, stylistic neutrality and word formation capacity. The English loan terms function as non-equivalent loans (*graft / графт, fever / фебрилитет, excision / екцизия*); partial equivalents (*hospice / хоспис*); or equivalents (*obesity / затлъстяване*) in Bulgarian (Krumova-Tsvetkova et al. 2013: 238). The loan usually possesses a word-formation potential such as *persistent / персистиращ (персистирам, персистиране), reconstruction / реконструкция (реконструиран, реконструирам)*; is concise (*taxis / таксис / мануална редукция на херния*), and stylistically marked (*abnormal / абнормален, intermittent / интермитентен/периодичен*). Lexical copies in medical language are well-motivated – they facilitate communicative efficiency, brevity and adherence to writing conventions. Proper translation strategies for denotative equivalents such as *abdominal (абдоминален / корем), reconstruction (реконструкция / възстановяване)* and translation problems which refer to directional equivalence (one to many) could be solved by creating a lexical copy of the loan word or phrase. Finally, mention should be made of synonymy in medical lan-

guage, where such equivalents function as stylistic synonyms in terminology which have not been studied in a comparative aspect.

The sought after similarity in register and style (in terms of text sort conventions) between the SL text and the TL text facilitates the replacement of already existing medical terms and phraseological units with the English equivalents (*progressing* / *прогресиращ*, *incise* / *резицирам*, *evaluate for* / *ревизирам* и др.). Thus, the equivalence and the similarity in scientific writing style between the SL text and the TL text is a phenomenon of functional and formal approximation, which is observed on morphological level in expert discourse. The Bulgarian copy adds to the uniformity of the medical language but it may remain cryptic to the non-expert community.

Several strategies to render the terms and the specific vocabulary of the medical text were observed: a) translation with an existing word or expression (*survival* / *преживяемост*), b) descriptive translation (*off-label medication* / *лекарства извън разрешените за употреба* / *лекарства извън етикета* / *неразрешени лекарства*), c) direct borrowing through transcription (*predictor* / *предиктор*, *target* / *таргет*) or transliteration (*pattern* / *патърн*). There are few good examples of a descriptive and yet economical term formation such as *cerebrospinal fluid (CSF) leakage* / *изтичане на ликвор*. Well-represented in the bilingual corpus are complex nouns (*microcyst* / *микрочиста*, *macrocyst* / *макрочиста*), derivative nouns to express the category of ‘property’ (*abnormality* / *абнормност*, *subfraction* / *субфракция*), verbal nouns (*prevalence* / *превалиране*), verbs derived from adjectives (*potential* / *потенцирам*), and simple adjectives (Table 2). Participle forms (*positive* / *позитивиращ*) and complex adjectives (*intratumoral* / *интрадуморен*, *three-dimensional* / *тримензионален*, *predictive* / *предиктивен*, *proliferating* / *пролиферативен*, *longitudinal* / *лонгитудинален*) with added suffixes (-ан, -ен, -ивен, -ативен) prevail in the translation. Few equivalents were found in the Bulgarian lexical-semantic database *Bulnet* and the Bulgarian national corpus, which offer examples of key word use in medical texts, despite the fact that such entries are highly frequent in drug leaflets and scientific publications in Bulgarian medical journals.

Table 2. Morphological and grammatical adaptation of single terms and multi-term nominal phrases (English-Bulgarian translation pairs)

English terms/phrase	Bulgarian term/phrase
<i>atypicality</i>	атипизъм (noun)
<i>detection</i>	детекция (noun)
<i>alteration</i>	алтерация (noun)
<i>premedication</i>	премедикация (noun)
<i>immersion</i>	имерсия (noun)
<i>cranium</i>	краниум (noun)
<i>relaxing</i>	релаксиращ (adjective)

<i>hereditary</i>	хередитарен (adjective)
<i>flexional</i>	флексионен (adjective)
<i>pulmonary</i>	пулмонарен (adjective)
<i>obliterated</i>	облитерирен (adjective)
<i>chronic</i>	хронифицирам (verb)
<i>stigma</i>	стигматизирам (verb)
<i>revalidate</i>	ревалидизирам (verb)
<i>randomized trial</i>	рандомизирано изследване
<i>mastectomy patient</i>	мастектомиран болен
<i>ductal carcinoma</i>	дуктален карцином
<i>malignant process</i>	малигнен процес
<i>benign behaviour</i>	бенигнено поведение
<i>suppressor gene</i>	супресорен ген
<i>target therapy</i>	таргетна терапия
<i>alternative splicing</i>	алтернативен сплайсинг
<i>tumorigenic potential</i>	туморогенен потенциал
<i>cranial sutures</i>	крениални сутури

Single terms and multi-term nominal phrases were verified in the Bulgarian national corpus to establish their context use. Specific verb and noun searches returned no relevant samples (*target / мапзем*), while the adjective *intermittent* (*интермитентен*) occurred in 36 concordance lines (Fig. 2), the noun *predictor / предиктор* – in 22 concordance lines (Fig. 3), the loan verbs remaining the least represented in the Bulgarian national corpus (Fig 4):

11.	...имптомите той може да бъде класифициран и като интермитентен алергичен ринит и персистиращ алергичен ринит.	+
12.	...имптомите той може да бъде класифициран и като интермитентен алергичен ринит и персистиращ алергичен ринит.	+
13.	...птомите той може да бъде класифициран и като 11 интермитентен алергичен ринит и персистиращ алергичен ринит.	+
14.	...томите той може да бъде класифициран и като 39 интермитентен алергичен ринит и персистиращ алергичен ринит.	+
15.	...а симптомите на алергичен ринит (включително на интермитентен и персистиращ алергичен ринит) и уртикария, независимо о...	+
16.	...а симптомите на алергичен ринит (включително на интермитентен и персистиращ алергичен ринит) и уртикария, независимо о...	+
17.	...а симптомите на алергичен ринит (включително на интермитентен и персистиращ алергичен ринит) и уртикария, независимо о...	+

Fig. 2. Key word adj. *intermittent* / *интермитентен*, Bulgarian National Corpus ¹

¹ Български национален корпус <http://search.dcl.bas.bg>

- | | |
|-----|--|
| 15. | ... под долната граница на откриване, е доказан 178 предиктор на траен отговор. |
| 16. | ...К под долната граница на откриване, е доказан 28 предиктор на траен отговор. |
| 17. | ...НК под долната граница на откриване, е доказан 3 предиктор на траен отговор. |
| 18. | ...К под долната граница на откриване, е доказан 53 предиктор на траен отговор. |
| 19. | ...К под долната граница на откриване, е доказан 53 предиктор на траен отговор. |
| 20. | ...К под долната граница на откриване, е доказан 78 предиктор на траен отговор. |
| 21. | ...НК, които са под долната граница на откриване, е предиктор на траен отговор. |
| 22. | ...чната ефективност е значим социално когнитивен предиктор на утвърждаващо здравето поведение. |

Fig. 3. Key word n. *predictor* / *предиктор*, Bulgarian National Corpus

- | | |
|----|--|
| 2. | ...есеца трябва да ида в Карлово и Стара Загора да ревизирам читал[ищните] съюзи, след това в 6 села да ръководя читал[ищн... |
| 3. | ...бяха изтощени и болнави и всички ме замолиха да ревизирам присъдите им. |
| 4. | ..., способен да ограби някой музей, ме накараха да ревизирам мнението си. |
| 5. | ...тих над него през цялото време, защото, опитах да ревизирам предишното ни мнение, че онази първата фабрика на север раб... |
| 6. | ...ация ден прибирах палатката си, бях принуден да ревизирам своето становище и в дневника си покръстих делтата на „Къмпи... |
| 7. | ...де съвсем лош — кима важно. — Ще трябва да — ревизирам всички ония неща, които си мислех за тебе. |
| 8. | ... вратичка. — Тази вечер заминавам за Хилдейл да ревизирам тамошната банка — каза той. — На връщане ще мина през Чапа... |
| 9. | ...жов отидох денем в къщата дето седеше четата да ревизирам дали отива някой при четниците. |

Fig. 4. Key word v. *evaluate for (revise)* / *ревизирам*, Bulgarian National Corpus

Affixation is the preferred strategy in the process of adaptation of the field-specific vocabulary into Bulgarian (semantic content is accepted by default). Due to word-formation (adding affixes and endings to loan bases for the lexemes to belong to certain parts of speech) we found morphological (*инактивация*) and syntactic hybrids (*чувство на абнормност*) that offer the advantages of being short and international, but are puzzling and obscure in the translated text (Fig. 5).

Не толкова строги изисквания към околната среда, определени в точка 3 са приемливи, където: а) е приложена утвърдена система за микробна **инактивация** или утвърден процес на тълно стерилизиране; б) е доказано, че излагане на среда от категория А оказва пагубно въздействие върху необходимите свойства на съответните тъкан или клетки;

Fig. 5. Key word n. *inactivation* / *инактивация* in context, Bulgarian National Corpus

Discussion

The study of bilingual medical texts reveals a conscious orientation or alignment of the Bulgarian with the English text in terms of lexical choice, which can be defined as an approach oriented to the SL and adherence to the principles of functional equivalence and pragmatism in translation (as with the eponyms and their equivalents: *Adam's apple*, *Lyme disease*). However, there are cases when eponymous terms can also have synonyms, e.g. the term *Pica* can be translated as *Лука* / *алотрофагия* / *геофагия* / *компулсивно разстройство*.

The need for specialization of meaning, economy of language resources and convenience are among the main reasons for the process of the lexical 'copying' of the English lexemes with specialized meaning and their collocations. In the Bulgarian language of medicine, lexical equivalents coexist with the established terminology (*sphenoid bone* / *сфеноидна кост* / *клиновидна кост*), where the active formation of new terminological units through morphological adaptation of borrowed lexical material is a manifestation of the tendency for internationalization.

Further on, we may suppose that the preference for the loan entries is a result of style conventions, extending to the translated medical text in Bulgarian (transfer of conventions). Since the formation of new terms in the TL is considered an act of secondary nomination, it can be argued that such terms are parallel forms designed to maintain a formal resemblance to the source language. Our corpus-based analysis highlighted the preferred choice for concise and compact in form terms (erudite terms) as a term-forming mechanism in the TL. The Bulgarian publications in highly ranked medical journals are a convincing evidence of its successful application in practice.

Conclusion

We believe that the results of this study will facilitate translators in the selection of the appropriate lexical equivalent when working with medical texts without violating text sort conventions where professionally marked lexis is a distinguishing code (with an inevitable imprint on the Bulgarian language). The strife to achieve functional equivalence results first in equivalence at lexical level.

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