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Medical Language – A Unique Linguistic Phenomenon

SUMMARY

Medical language is the language used by medical experts in their professional communication and incorporates more than 2,500 years of a development influenced mostly by Greek and Latin medical traditions. Its specific features and characteristics are studied from various aspects. It is closely connected with the immense development of technology and science that brings new concepts to the language; medical vocabulary is an open and continually changing phenomenon and its units often acquire new meanings. Learning English medical language that has become a lingua franca during the last few decades creates certain obstacles for learners in the form of collocations, irregular forms, existence of synonyms, doublets, abbreviations, false friends, etc. To manage medical language at an appropriate level requires looking for the most convenient teaching and learning strategies. Good proficiency of English medical language opens new horizons to medical professionals and offers various options of its application in practice. As an international means of communication it slowly penetrates into national medical vocabularies worldwide.

Keywords: English medical terminology, English for medical purposes, aspects of medical terminology, pitfalls in learning/teaching process, learning strategies.

Introduction

"Medicine uses one *lingua franca* but speaks with many tongues. Just as Latin emerged after the Renaissance beside the regional European languages as the unifying language of the healing arts, so has English now assumed a leading role as the international language of medicine" (Baethge, 2008, p. 37). Thanks to the immense development of science and technology, medicine has developed into many new branches. New discoveries have raised the need to name new diseases, their

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symptoms, possible therapeutic procedures, devices and instruments, medicaments, etc. With growth of medical knowledge, medical terminology has also been growing. Although the number of new terms seems to be enormous, the pace of its forming and standardisation is not quick enough (Jammal, 1988 cited in Fleischman, 2008).

Information about new discoveries has mostly been published in English, which has become the *lingua franca* of medicine and science in general and is expected to remain so in the future (Pavel, 2014). The number of publications written in English has profoundly increased, accounting for up to 80% of all the journals indexed in Scopus (Van Weijen, 2012) and roughly 9 of every 10 new journals included in Medline at present are in English (Baethge, 2008). The central position of English-language journals has formed the forum for scientific debate on important questions of current research (Ibid, p. 38).

Long before English became the *lingua franca* of science, Greek and Latin shaped the conventions of scientific, primarily medical writings for over 2,000 years (Bujalková, 2018). At the beginning of the 20th century in Europe, three languages were used in medical science: German, English, and French. The movement towards English started in the 1950s and put an end to linguistic confusion (Baethge, 2008). Today there are about 400 million native speakers of English and 1.4 billion who use it as a second or third language (Crystal, 2005). David Graddol (2006) estimated that by 2015, this number would have risen to 2 billion or more, nearly a quarter of the world's entire population. "Of the roughly 15 million people worldwide directly involved in scientific work, at least two-thirds are non-native speakers and users of this lingua franca" (Montgomery, 2009, p. 6). English is frequently the official language not only for many international conferences but also for a growing number of national journals. "Moreover, many healthcare professionals work or plan to work overseas in the Anglophone countries to extend their practice" (Pavel, 2014, p. 39).

Although importance of medical language has increased enormously, "there is no recognized discipline called medical linguistics" (Wulff, 2004, p. 187). Papers dealing with medical language are published in various scientific research journals, medical journals, linguistic journals, teaching journals, conference proceedings, etc. The language of medicine offers challenges to medical professionals, medical historians, linguists, translators, undergraduate, and postgraduate medical students (Karwacka, 2015; Montalt, Zethsen, Karwacka, 2018). Just as doctors are convinced of its importance so are medical students. However, there are students who after having passed a secondary school final examination in English think that they know English enough and take English courses at the medical faculty as wasting of time. In our paper we want to show the reader how diversed Medical English is. First we want to describe the characteristic features that make medical language so different

from colloquial language. Then we will try to provide a brief look at development of medical terminology and the most frequent methods of forming new terms, deal with some pitfalls in the teaching and learning process, and finally try to suggest some learning strategies to make the learning process faster and more interesting. At the end, the reader himself will be able to tell if it is worth to learn Medical English and assess the benefits of its mastering.

1. Features of medical language and medical texts

Medical terminology is considered to be one of the oldest specialized terminologies in the world. It is a linguistic discipline, which studies, analyses and describes a specialised area of the lexicon. Medical terminology has been studied from various aspects, e.g. **historical** – "the Greco-Latin core of the medical terminology is a result of the historical development of medicine as a science" (Doncu & Andronache, 2014, p. 348) and most linguists have accepted Jespersen's assertion that modern science borrowed heavily from Latin and Greek roots to create compound and derived words (Jesperson, 1931 cited in Van Dyke, 1992); **etymological** – explaining the origin and development of terms, e.g. *etymon* = origin of a word and + *logos* = word (Bujalková, 2013; Brown, 2014); **morphological** – by means of prefixes and suffixes (added word roots) different meanings of the word can be obtained (Džuganová, 2013); **semantic** – changes in meaning are as common as changes in form. Like the latter they can be internally or externally motivated. "There are changes on the semantic level – widening and narrowing of the meaning and on the **syntactic** level marked by frequent nominalization" (Gjuran-Coha & Bosnar-Valković, 2013, p. 128).

Medical terminology has been studied from both diachronic and synchronic points of views, using the terminological, stylistic, educational and linguistic **approaches** and **methods** (Uherová & Horňáková, 2013; Milosavljević, Vuletić, Jovković, 2015; Sinadinović, 2013; Barnau, 2014/2015; Barnau, 2015). The most frequently used research method is a comparative one when two languages, or two or more language aspects are compared (Poláčková & Džuganová, 2000; Poláčková, 2001).

Medical language, used by medical experts in their professional communication, is characterised by wide use of specialized vocabulary that comprises several layers: **technical vocabulary**, i.e. Latin and English medical terms used in anatomical descriptions, scientific papers (e.g. *acne vulgaris; tetanus; opisthotonos; diarrhoea*); **semi-technical vocabulary**, i.e. language used in communication among doctors (e.g. *acne; skin eruption; trismus*); **non-technical (colloquial) vocabulary**, i.e. medical English sometimes used by doctors in communication with patients without medical education *(pimples; red spots; rash; lockjaw; the runs)*.

The existence of technical, semi-technical and colloquial terms contributes to the existence of various **synonyms** of different origin. "Synonyms in terminology denote words or word combinations which differ orthographically and phonetically but express equal scientific concepts within a certain microsystem" (Mihaljević, 1998 cited in Gjuran-Coha & Bosnar-Valković, 2017, p. 9). Synonyms are used in different medical contexts *(myopia x short-sightedness; coagulation x blood clotting; oedema x swelling; initiate x begin; detect x find out).* While the former terms are preferred in scientific writing, the latter ones are more suitable in communication with patients. "Each functional style of language is marked by a specific use of language means, thus establishing its own norms which are subordinated to the norm-invariant and which do not violate the general norm" (Gjuran-Coha & Bosnar-Valković, 2017, p. 7).

A sharp unpleasant sensation usually felt in some specific part of the body is called *pain,* e.g. *The child was crying because of a pain in his knee.* A usually dull persistent *pain* can be described as an *ache* in someone's knee. Being *afflicted with aches*, one can start feeling *achy*. Merriam Webster Dictionary (2019) provides the following synonyms of the above mentioned sharp unpleasant sensation called *pain*: *ache, pang, prick, shoot, smart, sting, stitch, throe, tingle, twinge.* The wrong use of synonyms can often lead to misunderstanding and wrong interpretation (Gjuran-Coha & Bosnar-Valković, 2013). Synonyms are one of challenges in mastering medical terminology – see also section 5.

Another characteristic of scientific terminology is arguably less interest in morphological and lexical semantics in favour of syntax and specific syntactic structures. "Indeed, scientific writing is said to be typically prone to using nominalisations (Olohan, 2016; Rogers, 2015; Taylor, 2006 cited in Van Hove, 2017/2018, p. 28), which results in greater lexical density." According to Rogers (2015), this is partially the virtue of scientific writing: a large number of lexical units contribute to denser references, which allows for quicker distribution of knowledge. "This makes for an incredibly high level of condensed information both on a lexical and syntactic level. In sum, those characteristics that specifically pertain to scientific terminology are the Greco-Latin roots and the high level of nominalisations found in scientific writing" (Van Hove, 2017/2018, p. 28).

"A good style of writing can be defined as the maximum amount of information conveyed in the minimum number of words written in a pleasing way" Clifford Hawkins (Merne, 1989: Foreword).

According to Jean Parkinson (2000, p. 371) scientific texts are characterized by the following features: (1) Nominalization of verbs and adjectives, e.g. *Growing appreciation of the pro-inflammatory pathways and associated epidermal cytokine dysregulation that accompany various forms of psoriasiform dermatitis should foster*

more complete understanding of the endogenous and environmental factors that govern keratinocyte proliferation. (2) Technical phrases (medical jargon), e.g. *The patient presented with appendicitis.* (3) Extended nominal groups/collocations, e.g. *human immunodeficiency virus.* (4) Tentative language (hedging), e.g. *Reduced attachment in the face of polymorph infiltration might indirectly reflect aspects of the immune response...* (5) Causal and reasoning verbs, e.g. *Addiction is caused by heroin.* Impersonal language and passivisation, e.g. *Good agreement was obtained between the two tests.* (Mićić, 2013; Milosavljevič & Antič, 2015; Bujalková & Džuganová, 2015).

2. Medical terminology from a historical viewpoint

Hippocrates' writings from the 5th and 4th centuries BC are considered to be the oldest written sources of western medicine. They contain numerous medical terms that later penetrated to various national medical vocabularies, e.g. *diarrhoea, dyspnoe, podagra,* etc. At the beginning of the first century AD, Aulus Cornelius Celsus wrote *De Medicina* - an encyclopaedic overview of medical knowledge based on Greek sources. In his work, he either imported some Greek terms directly, latinized Greek words by replacing Greek endings with Latin ones, e.g. *stomachus* and *brachium*, or translated Greek terms into Latin, e.g. *kynodontes* (Gr.) > *dentes canini* (L) > *canines* (Engl.) (dog teeth). During the Middle Ages, at the time of the Renaissance, when Greek was no longer widely understood, the era of medical Latin began. "During the subsequent centuries almost all important medical works were published in Latin (e.g. those by Vesalius, Harvey and Sydenham)" (Wulff, 2014, p. 187). Gradually, however, national languages such as English, French, Italian, Spanish and German gained ground at the expense of Latin. National languages continued in coining new terms with Greek and Latin roots, e.g. *nephrectomy, ophthalmoscopy, erythrocyte, leucocyte,* etc.

Nowadays, in the language of medicine, there can be observed a trend showing the shift from a Latin and Greek influence on medical terminology to an English influence on the creation of modern international medical terms (Dobrić, 2013). It is because modern medicine has surpassed the boundaries of the Greco-Latin terms and new medical terms are composed partly or wholly of words borrowed from ordinary English; doctors from non-English-speaking countries now have the choice between importing these English terms directly and translating them into their own language, e.g. *bypass operation, screening, scanning* (Wulff, 2014). More and more neologisms are being coined from native roots a fact that can be attributed to "the decline in the teaching of classic Linguistics in western education systems", in other words "to the lack of knowledge of Latin and Greek in today's generation" (Brown 2014, p. 2).

Currently, several methods exist that one can resort to when coining new scientific terminology, such as "acronyms, blends, analogies, metaphors and, most typically, compounds" (Raad, 1989, p. 128).

According to Sakai (2007) the historical development of anatomical terminology (the oldest layer of medical terminology) can be divided into five stages: colloquial Greek words of that period used by Galen as anatomical terms; terms from the early 16th century, when Vesalius described the anatomical structures in his *De humani corporis fabrica*; terms from the late 16th century when Sylvius in Paris and Bauhin in Basel described muscles, vessels and nerves; terms from the 17th – 19th century when anatomical textbooks were written in Latin and later in other modern languages; terms from the end of 19th century, when the first international anatomical terminology in Latin was published as *Nomina anatomica* (Sakai, 2007; Bieliaieva, Lysanets, Melaschenko, 2017).

Within the English terminological system, there can be distinguished: non-assimilated Latin terms *(abdomen, appendix, dorsum, foetus, locus, nucleus, vena, uterus)*, non-assimilated Greek terms *(asthma, carcinoma, diabetes, emphysema, myeloma, osteoporosis, pneumonia, prophylaxis, sarcoma, trauma)*; Latinized Greek terms *(bronchus* from *Gr. bronchos; colon* from *Gr. kolon; bacterium* from *Gr. bakterion; embolus* from *Gr. embolos)*; assimilated Latin terms *(abuse, acid, gestation, muscle, intervention, ovary, pregnancy, pulse)*; assimilated Greek terms *(laparoscopy, lymphadenopathy, episode)*; terms with multiple assimilation – from Greek into Latin, from Latin into Old French, from Old French into English *(spamos – spasmus – spasme – spasm)*; hybrid Greek/Latin terms with English affixes *(nucleic, analgetic, spinal, crucial, premature, perinatal)*, etc. (Rollerová, 2012; Džuganová, 2013; Pavel, 2014).

"Contemporary medical English terminology has been diachronically influenced by several languages, in particular Greek, Latin, Latinised Greek, French and Arabic. This cross-influence is directly associated with the historical context in which medicine and its language developed" (Kujawska-Lis, 2018, p. 83). According to Turmezei (2012) cited in (Bujalková, 2018, p. 9) 89% of English anatomical terms are of Latin (65%) and Greek (24%) origin (33). Belialeva et al. (2017) state that up to 95% of English terms are borrowed or formed from Latin and Latinized Greek lexis. Therefore we can assume that English medical terminology cannot be reasonably mastered without basic knowledge of Latin. Latin and English medical terminologies have always formed an integral part of teaching at all faculties of medicine in Slovakia. Parallel teaching of Latin and English in the first year of medical studies is felt as an advantage both by students and teachers. It enables the students to transfer the

grammar rules, and vocabulary from one language to another, to compare differences and adapt similarities easily.

3. Formation of new terms

The word-stock of a language is an open and continually changing phenomenon and its units often acquire new meanings. The same holds for professional lexicons, and medical terminology is no exception (Lysanets, 2015). According to Peprnik (1992) cited in Džuganová (2013) vocabulary spreads in three possible ways: 1. forming new names; 2. forming new meanings and 3. borrowing words from other languages. Other linguists such as Poštolková et al. (1983) divide forming of new terms according to their way of formation: 1. morphological*:* (a) **compounding** *(breastbone, endocardium, gallbladder, haemophilia);* (b) **derivation** (*appendicitis, endocarditis, adenoma, gynaecology, ultrasound)*; (c) **acronyms** and **abbreviations** *(AIDS, HIV, CT, MRI)*; 2. syntactic: e.g. forming collocations *(typhoid fever, side effect*); 3. semantic, e.g. metaphoric and metonymic transfer of the previous meaning: *medicine* – science, *medicine* – drug/medicament (Lysanets, 2015), *mad cow disease, avian flu*; 4. linguistic borrowings from other languages: e.g. French: *diet, rheumatic, jaundice, migraine, manchette, nurse, tampon, ointment, pain, pipette, venom*; Italian: *belladonna, influenza, malaria, pellagra, scarlatina;* Arabic: *alcohol, alchemy, alkali, elixir* (Alcaraz Ariza, 2012).

The shift from Latin and Greek word roots in favour of native languages is accompanied by new descriptive terms, and consequently, new **abbreviations** and **acronyms** *(AIDS – acquired immunodeficiency syndrome, SARS – severe acute respiratory syndrome)* (Gjuran-Coha & Bosnar-Valković, 2008). "The usage of abbreviations is not reserved exclusively for the formal register" (Fabijanić & Malenica, 2013, p. 72). There is a tendency to adopt English acronyms or initialisms in national medical terminologies. "Some abbreviations can mean different disease entities; this fact can cause confusion and difficulty in the process of learning or translation. To illustrate this, *RS* may mean *Rett syndrome* in neurology, *Reye syndrome* in hepatology, *Raynaud syndrome* in rheumatology and *Rumination syndrome* in gastroenterology" (Badziński, 2018, p. 70).

Eponyms constitute a substantial amount of specialist terminology in medicine as testified by the numerous dictionaries of medical eponyms (Lončar & Anić Ostroški, 2014). For example Stedman's Medical Eponyms (2005) includes a list of about 18,000 medical eponymic terms. Eponymy is considered to be the highest level of acknowledgment in science. Eponyms perform the function of honouring a scientist, an inventor or a prominent physician who played a major role in describing the disease

(e.g. *Down syndrome, Parkinson's disease, Alzheimer's disease).* There are many types of eponyms, e.g. eponyms proper, toponyms, auto-eponyms (Brunt 1998), biblical eponyms (*Job syndrome),* mythological eponyms (*Proteus syndrome, Andromeda strain*), fairy tale characters (*Cinderella syndrome, Cinderella dermatosis* (Canziani, 2011). Each eponym carries a hidden story of its development. These stories are often studied not only by linguists but also by physicians themselves, such as the American Professor Robert B. Taylor, MD (2017) or the Polish doctor Eugeniusz Józef Kucharz, MD (2017) because "until recently, the history of medicine was, with some notable exception, the special province of retiring physicians" (Kushner, 2008, p. 1). The wide use of eponymous terms caused scientific debate and disagreement among specialists and linguists on their use in medicine (Wright, 1991; Whitworth, 2007; Woywodt, Matteson, 2007; Mora, Bosch, 2010; Popescu, 2010; Shalajeva, 2017; Lysanets, Havrylieva, 2017). Although one of the advantages of eponyms is their brevity, different groups of scientists, specialists in medicine and linguists have quite opposite standpoints upon their use in medicine.

4. Purposes of medical language learning

Like all languages, medical terminology has changed over time. The basis for medical terminology, however, has remained the same (Dobrić, 2013). While the roots of written medical language can be traced back to the 5th century BC, the spoken language of medicine has naturally existed ever since the establishment of the medical profession itself (Dirckx, 1983). It took about 25 centuries till the phenomenon of English for Medical Purposes (EMP) as a university teaching subject and an academic field of research appeared. In the 1980s English for Specific Purposes began to be consciously researched as an independent linguistic area, a bibliography on the subject appear and the establishment of dedicated and regular academic teaching training courses for professionals, journals and conferences worldwide followed shortly afterwards (Dobrić, 2013; Grego, 2014). In Slovakia EMP was introduced into the curriculum at medical faculties in 1990 when social and political changes led to an enormous interest in English.

English language plays a significant role in medical education not only for learning purposes and seeking knowledge but also for presenting research activities in an international field (Piroozan, Boushehri, Fazeli, 2016). The significant role of English in medicine is reinforced by the fact that much of the scientific, technological and academic information is globally published or presented in English. English in today's communication era serves as a medium of sharing knowledge. "Therefore, motivating medical students and doctors to learn English is very much instrumental"

(Milosavljević, 2008, p. 441). "English is the *de facto* language of international medicine", and fluency in English is a necessity to get the essential medical and scientific information (Heming, Nandagopal, 2012, p. 485).

Studying English for medical purposes (EMP) has become one of the priorities in medical education (Cargill & O'Connor, 2006). Today in order to keep pace with researches in medicine and clinical practice, a healthcare professional has to use English in their work (Mitrofanova et al., 2018). Carrying out research and getting information are not the only factors that highlight the role of English language in medical education, however. Lack of medical language competence in foreign doctors working in some English-speaking countries may have a negative impact on the quality of provided medical care (Grego, 2014). Increased interest in ESP has brought an improved level of medical English used in lectures, textbooks and journal articles thanks to the immense amount of teaching materials including medical textbooks tailored to students' needs (Barnau, 2018; Barnau, Džuganová, Malinovská, 2018).

5. Some pitfalls in the teaching/learning process

It has been argued that one of the most significant aspects of learning the vocabulary of a particular language are **collocations**. Therefore, several researchers have stressed the significance of the acquisition of collocations by EFL (English as a Foreign Language) learners from different linguistic backgrounds (Alotaibi, 2014). Collocations are divided into two major categories: grammatical collocations (Sam is *in agony,* I met him *by chance,* Mary is *angry at* him) and lexical collocations *(inflict a wound)* (Alotaibi, 2015). If a speaker makes a grammatical mistake, he or she can be understood. However, if he or she makes a lexical mistake, there may be misunderstanding. The same problem occurs with mistakes in collocations. Collocations usually present a huge problem to non-native speakers due to interference with their mother tongue (Miščin, 2013; Pavičić Takač & Miščin, 2013). "Collocation competence is considered to be an important factor of fluency in a language. Despite learning the grammatical structures of English and memorizing a long list of words, medical students are sometimes not able to form correct English phrases and sentences because they try to construct these phrases and sentences under the influence of their mother tongue patterns" (Vahabian, Asghari, Esna, Mazaheri Laghab, 2018, p. 9). According to Carl James (1998) collocation mistakes are the most common ones made by non-natives. For example, instead of *taking (someone's) temperature*, *responding to treatment* and *being on a diet*, non-natives often use *measuring temperature*, *answering to treatment*, and *having a diet*. These examples show that collocation competence is a problematic

area for EFL learners and collocations should become part of medical language teaching and learning.

Some words, called also **false friends** can have the same or nearly the same morphological form in two languages, for instance Slovak and English, but have different meanings in each language (Poláčková, 2006), e.g. *ambulancia* in Slovak means *outpatient's department* in English and *ambulance* in English means *sanitka* in Slovak; the Slovak adjective *aktuálny* has to be translated as *topical, current, contemporary,* or *relevant* but not *actual* which means *real, factual*; *rekord* in Slovak has a narrower meaning = to achieve the best result in the sport *(to set a record, to break a record, to be world a record holder)*, in English it also has the meaning *to keep a record of sth.; a medical record*. In case of uncertainty of the exact meaning of an individual term, it is advisable to consult a comprehensive medical dictionary.

The irregular plural occurs both in standard English (tooth – *teeth*, foot – *feet*, mouse – *mice*, goose – *geese*, woman – *women*, man – *men*, child – *children*, half – *halves*, knife – *knives*, calf – *calves*) as well as in medical terms of Greek or Latin origin. In some medical terms, even doublets can occur, e.g. *formula – formulae/formulas, scapula – scapulae, vertebra – vertebrae; focus – foci/focuses, foetus – foeti/foetuses, uterus – uteri/uteruses, locus – loci, nucleus – nuclei; datum – data, bacterium – bacteria, curriculum – curricula, medium – media; apex – apices/apexes, appendix – appendices/appendixes, index – indices/indexes, radix – radices/radixes, analysis – analyses, thesis – theses; criterion – criteria; caries – caries, series – series, species – species, cervix – cervices/cervixes; sarcoma – sarcomata/sarcomas*, etc. (Rollerová, 2012). The existence of doublets complicates learning the irregular plural forms because students have a tendency to 'invent' regular plural forms even in cases where only Greek or Latin ones exist.

A lot of medical terms from clinical branches denoting negative signs, symptoms, defects and diseases carry an explicitly negative meaning expressed by means of negative prefixes (Džuganová, 2006). Most of the **negative prefixes** are of Latin or Greek origin. The most frequent negative prefixes in medical English are a- *(apepsia, anaemia)*, dis- *(dislike, disease)*, dys- *(dyspepsia, dyspnoe)*, in- *(inorganic, intolerant)* with its three variants – il- *(illegal, illegible)*, im- *(impossible, immobile)*, ir- *(irrational, irregular)* – mis- *(mistake, misunderstanding),* non- *(nonsense, non-nucleated)*. Un- *(unpleasant, unsafe)* is the only negative prefix of Anglo-Saxon origin. Sometimes more than one negative prefix may bind with the same word, e.g. *non-effective x ineffective, dissatisfied x unsatisfied, non-human x unhuman x inhuman, abused x misused x unused,* and form either slightly or very different meanings (Džuganová, 2008).

English medical terminology can occasionally be confusing due to the simultaneous existence of both Latin-based (sometimes Greek-based) and English-based terms referring to the same body part, symptom or disease, e.g. *cerebrum x brain, cranium x skull, leucocyte x white blood cell, insufficiency/deficiency x lack, carcinoma x tumour/ cancer, neoplasm x neoplastic disease*. Such terms have a very similar or near-synonymous meaning. **Synonymy** is closely connected with calques and borrowings (loanwords) (Džuganová, 2013). Synonymous expressions can have different stylistic values and validity and are used in different medical contexts (Kujawska-Lis, 2018). In contact with patients, doctors use English-based terms, descriptive terms taken from everyday language rather than "learned" expressions, e.g. *shingles* instead of *herpes, bleeding* instead of instead of *haemorrhage, clotting* instead of *coagulation* (Mićić, 2013).

6. Language learning strategies

Language learning strategies deal with how to facilitate learning Medical English, especially its vocabulary. In the last four decades a lot of strategies of teaching and learning medical language have been developed. "A common approach among students towards learning the terminology is via rote memorization, often with little success" (Brown, 2004, p. 1). Studies in language learning advocate various mnemonics such as a word analysis that breaks down words into their morphemes (prefixes, roots, and suffixes) and allows for improved lexical access, as well as greater knowledge retention and transfer abilities to other words in the same morpheme families (Džuganová, 1998; Brown, 2004).

According to I.S.P. Nation (2001) a good strategy is supposed to increase the efficiency of vocabulary learning and vocabulary use. Rebecca Oxford (1990) considers strategies to be tools that make sense only when students are willing to take greater responsibility for their own learning, which is not often the case, due to the passive cultural and educational system they may be part of. The teacher should choose the most useful strategies and present them to students with several examples of their use (Sinadinović, 2013).

Learning is an individual process, and what works for one person may not work for another. Many teachers apply either a visual or an auditory style. Studies show that only certain parts of the brain are activated during learning; visual learning activates a different part of the brain than olfactory learning, for example. In a report by D. G. Treichler, as cited in the journal "Trends in Cognitive Sciences" (Shams & Seitz, 2008, p. 5), he stated that "People generally remember 10% of what they read, 20% of what they hear, 30% of what they see, and 50% of what they see

and hear." Combining the senses, therefore, is of benefit to students of all learning styles. Songs, flashcards and YouTube short videos on medical terminology (see for instance: YouTube – Medical terminology – The Basics; Medical Terminology, Shortcuts for Pronunciation; Medical Terminology Concerto) or on medical topics are suitable supplementary tools for this visual-auditory teaching/learning strategy (Barnau, Džuganová, Malinovská, 2018).

Conclusion

Montalt et. al (2018) state that appropriate use of medical terminology is one of the core conditions for successful communication in monolingual and multilingual healthcare communities. Marečková, Šimon and Červený (2001) emphasize that medical students need to learn what medical terms mean, how they are used, and how they are pronounced. Bujalková (2018, p. 8) confirms their statement by writing "it is difficult to argue that one can successfully learn anatomy, physiology, and many other aspects of Medicine without basic working knowledge of Latin". Basic information about word-formation and word-analysis enables the learners to manage medical terminology in a more effective way (Džuganová, 1998) and the awareness of anatomical etymologies may enhance the enjoyment and understanding of human anatomy both for students and teachers (Turmezei, 2012). Instead of memorizing lists of terms they can easily predict the meaning of other terms. "A knowledge of important Latin and Greek roots and prefixes will reveal the meanings of many other words" (The Free Dictionary, 2019).

Medical students need to learn English, not only because it is the medium of teaching and learning, enabling them to draw medical knowledge from other sources written in English, but also because it is the medium of publishing their research work later on when they become doctors. For every student or professional whose first language is not English, reading scientific medical literature, monitoring the development and progress in medicine, searching for clinical answers within literature, writing research articles, manuscripts, letters, mails, preparing oral presentations, and collaborating with other scientists in English is much more challenging and demanding than it is for native speakers of English. Healthcare practitioners are in high demand not only in EU but also throughout the world (Tomak & Šendula-Pavelić, 2017). For doctors and medical students alike, it is well worth being prepared for future working opportunities.

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Medicinski jezik – jedinstven lingvistički fenomen

SAŽETAK

Medicinski jezik je jezik kojim se služe medicinski stručnjaci u svojoj profesionalnoj komunikaciji, a obuhvaća više od 2500 godina razvoja na koji su najviše utjecale grčke i latinske medicinske tradicije. Njegove specifičnosti i obilježja proučavaju se s različitih aspekata. Usko je povezan s golemim razvojem tehnologije i znanosti koja donosi nove koncepte u jezik; medicinski vokabular otvoren je i stalno se mijenja, a njegove jedinice često dobivaju nova značenja. Učenje medicinskog engleskog jezika koji je u posljednjih nekoliko desetljeća postao *lingua franca* stvara određene prepreke za učenike u obliku kolokacija, nepravilnih oblika, postojanja sinonima, dubleta, kratica, lažnih prijatelja itd. Usvajanje medicinskog jezika na odgovarajućoj razini zahtijeva traženje najprikladnijih strategija poučavanja i učenja. Dobro poznavanje medicinskog engleskog jezika otvara nove vidike medicinskim stručnjacima i nudi razne mogućnosti njegove primjene u praksi. Kao međunarodno sredstvo komunikacije, medicinski engleski jezik polako prodire u nacionalne medicinske rječnike širom svijeta.

Ključne riječi: medicinska terminologija na engleskom jeziku, medicinski engleski, aspekti medicinske terminologije, zamke u procesu učenja / poučavanja, strategije učenja.