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СТРАТЕГИИ ТЕРМИНОЛОГИЧЕСКОЙ АДАПТАЦИИ В НАУЧНО-ПОПУЛЯРНОМ МЕДИЦИНСКОМ ДИСКУРСЕ

Для улучшения здоровья людей требуется распространение медицинских знаний, невозможное без адаптации медицинской терминологии к уровню обывателя. Данная статья является пересечением терминоведческих и дискурсивных исследований. В ней доказывается, что научно-популярный дискурс является сложным феноменом, который представлен разнообразием жанров. Таким образом, необходимо учитывать жанровые характеристики и ограничения при адаптации терминов для непрофессионального использования. Цель статьи состоит в том, чтобы установить соответствия между отличительными чертами научно-популярных жанров и стратегиями терминологической адаптации. Посредством дискурсивного анализа, жанрового анализа, семантического анализа дефиниций, а также анализа метафор в работе исследуются стратегии терминологической адаптации в таких жанрах, как: пациенто-ориентированная статья медицинском журнале, статья в медицинском блоге и научно-популярная книга. Анализ показал, что

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статья в журнале наиболее ограничена в выборе стратегий: в ней используются только замена терминов разговорными вариантами и упрощение дефиниций. Интернет-статья характеризуется использованием интерактивных ссылок, неформальной лексики и, часто, диалоговой формы. В научно-популярной книге облегчение понимания достигается за счет метафор и сравнений. Адаптация медицинских терминов в научно-популярном дискурсе представляет собой компромисс между адекватной репрезентацией медицинского знания и доступности для целевой аудитории, который можно достичь, лишь учитывая жанровые характеристики. Теоретические наблюдения в исследовании подкреплены убедительными данными о природе научно-популярного дискурса и функционировании терминов. В работе также предложены практические рекомендации для участников популяризации медицинского знания.

Ключевые слова: терминологическая адаптация, медицинская терминология, научно-популярный дискурс, медицинский дискурс, жанр, метафора

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STRATEGIES OF TERMINOLOGICAL ADAPTATION IN POPULAR-SCIENCE MEDICAL DISCOURSE

Improving the general health of people requires dissemination of medical knowledge, which is impossible without adapting medical terminology for laymen. The article, being an intersection of terminological and discourse studies, proves that popular-science discourse is a complex phenomenon comprising a variety of genres. Therefore, genre characteristics and constraints are to be taken into account while modifying terms for non-professional use. The aim of the present work consists in establishing a correlation between the distinctive features of popular-science genres and strategies of

terminological adaptation. By means of discourse and genre analysis, semantic analysis of definitions, and metaphor analysis, the present research studies terminological adaptation strategies in a patient-oriented article in a medical journal, articles in medical blogs, and in popular-science books. The analysis has demonstrated that a journal article has the most limited range of strategies and exploits only the substitution of terms with colloquial variants and simplified definitions. The internet article makes use of interactive links and informal language, often in a dialogue form. The popular-science book facilitates understanding of terms via metaphors and similes. Adaptation of medical terms in popular-science discourse is a compromise between an adequate representation of medical knowledge and accessibility for the target audience which is achieved via consideration of genre characteristics. The study backs up the theoretical observations with convincing data regarding the nature of popular-science discourse and functioning of terms and provides practical recommendations for those engaged in the popularisation of medical knowledge.

Key words: terminological adaptation, medical terminology, popular-science discourse, medical discourse, genre, metaphor

Introduction

The popularisation of medical knowledge is vital for promoting a healthy lifestyle since it addresses healthcare issues, helps prevent illnesses, and increases life expectancy in the long-term prospective. Dissemination of professional knowledge for non-professional audience is only possible when complex concepts are expressed in the form which is accessible and relevant for a layman recipient. As a verbalisation of a specialised concept, the term has to undergo adaptation procedures to transcend the borders of professional discourse to come into non-professional usage.

The recent works in the field of terminological and discourse studies demonstrate a particular interest in the functioning of terms in non-professional discourse, be it fiction (Anisimova & Karapetyan, 2022), opinion journalism (Anisimova & Kozhemyakina, 2025), the media (Istomina, 2023), or popular science (Filippov & Filippova, 2023). As regards medical terminology, the research into terminological modifications in popular-science discourse has been carried out on the material of Russian (Novodranova & Motro, 2011) and German

languages (Shamne & Shishkina, 2018). Thus, there is a need to fill the gap regarding the functioning of medical English terminology in popular-science discourse.

Moreover, the existing studies of popular-science discourse (Yakovleva & Kolesnokova, 2020) represent it as a homogenous entity while its genre variety has not yet been revealed.

The present paper seeks to single out the strategies of terminological adaptation across distinct genres within popular-science medical discourse. Thus, the subject matter of the research is terms in popular-science medical discourse. The work focuses on dental terminology since dentistry is an actively developing field of medicine which is closely connected with such spheres of public interest as healthy lifestyle, nutrition and appearance. The research comprises the written form of popular-science discourse, namely, the following genres; those of a journal article, a dental blog article, and a popular-science book.

The study proceeds from the hypothesis that the requirements of different genres affect the ways terms are modified for non-professional use. To address the research question, the following objectives have been put forward: to single out characteristics of popular-science genres; to analyse the semantic and stylistic features of terms used in popular-science discourse; to compare the findings across genres and to correlate the choice of strategies with properties of each genre. The theoretical section of the paper singles out key definitions of the term and approaches to terminological studies and defines the position of popular-science medical discourse in the system of discourse varieties. Then the research proceeds to the study of terminological modifications by means of discourse, semantic, and metaphor analysis and investigates the process under question in a journal article, an internet article, and a popular-science book. Finally, the paper summarises the distinctive features of terminological adaptation across the genres and outlines possible implications and prospects for further research.

Material and methods

Since the present paper covers terminological issues, terminological dictionaries have a fundamental role to play for the study and analysis. Oxford Dictionary of Dentistry (2010) provides over 4,500 definitions of dental terms. It also contains information regarding terminological variants, both professional and colloquial ones. Since our organism is a complex system with dental issues affecting the whole body, the analysis

cannot be confined to dental terms only, hence the need for the source of a medical terminological dictionary which embraces various fields of medicine. For this purpose, Webster's New World Medical Dictionary (2008) with 8,500 entries has been chosen for study and analysis.

The article examines strategies of terminological adaptation in the following genres on popular-science medical discourse: a medical journal article, a dental blog article, and a popular-science book.

Although journal articles represent professional communication, the Journal of the American Dental Association (JADA) includes *For the Patient* column chosen for study and analysis in the current paper. The column is run by professional dentists, members of the American Dental Association, but, unlike other JADA articles, it addresses the general reader. The column aims at popularizing medical knowledge via consulting the audience on possible reasons for dental diseases and existing variety of dental treatments as well as providing information on healthy lifestyle. The specific nature of the column justifies the use of this source as an example of popular-science discourse.

The analysis of a dental blog article is based on the material from the websites *Dental Associates* and *Dental.com.* The former belongs to Dental Associates clinic in the USA and seeks to advertise the services provided by the clinic. The article focuses on the *Dental Blog* section containing articles written by professional dentists to inform the general reader on dental diseases, the prevention of dental disease and ways of their treatment. *Dental.com* is a website of Virtual Dental Care organisation which offers dental software. The website also has a blog run by dental professionals describing dental diseases and suggesting possible solutions. Thus, both websites disseminate medical knowledge among broad audience in order to demonstrate expertise in the field and earn the trust of potential patients.

The genre of a popular-science book is represented by Steven Lin's *The Dental Diet: The Surprising Link between Your Teeth, Real Food, and Life-Changing Natural Health* (2018). The author is an Australian board-accredited dentist, speaker, and author who promotes awareness of health issues. The book focuses rather on prevention than on treatment. It covers dental health and nutrition issues, explains complex physiological processes in a humorous and accessible form.

Thus, the sources chosen for study and analysis represent a variety of genres in popular-science medical discourse.

The research has made use of the method of discourse and genre analysis to single out key characteristics of sample texts affecting the use of terms and strategies of their adaptation in various genres of popular-science medical discourse. Moreover, the article employs the method of semantic analysis, i.e. it compares the definitions provided by the terminological dictionaries and reference works and seeks to find out distinctions between them. Metaphor analysis reveals the role of metaphors in making professional knowledge more accessible for the general reader.

Theoretical background

The term: definitions and approaches to study

The term is a complex phenomenon which has a variety of definitions highlighting different aspects of its nature. The Western school of thought understands the term in a broad way: *as 'a lexical unit consisting of one or more than one word which represents a concept inside a domain'* (Bessé et al., 1997, p. 151). The Russian scholars highlight the connection of the term with the professional sphere of use. Grinev-Grinevich (1993) defines the term as a nominative special lexical unit (a word or a phrase) of a special language, adopted for the exact naming of special concepts (Grinev, 1993, p. 309).

The diversity in definitions is caused by a number of factors. The term is studied in various disciplines and each of them elaborates a content of its own (Superanskaya et al., 2012, p. 11). Another factor is related to the development of terminological studies and the elaboration of opposite views on the nature of the term. According to the normative approach, the term is a special word which does not belong to the system of natural language. Hence, terminology is a system of artificial signs with the following characteristics: fixed content, accurate and unambiguous meaning, absence of synonyms (Wuster, 1931). The representatives of the descriptive approach define the term as a word in a special function and argue that terminology is subject to all the processes characteristic of the General language (Reformatsky, 1961). There is also an intermediate position which accepts the existence of homonymy, polysemy, and synonymy in the terminology while highlighting its special, autonomous character and patterns which are not typical of the General language (Superanskaya et al., 2012, pp. 17–18).

Despite the differences, the approaches mentioned above have one feature in common: the term is perceived as a purely lexical unit. Thus,

they are united under the framework of linguistic approach which resorts to lexicographic methods (Cabré et al., 2023). Linguistic approach focuses on the semantics and structure of terms and the position they occupy within a terminological system.

The formation of cognitive linguistics has affected terminological studies. According to the cognitive approach, the term is a lexical unit of a specific language for special purposes, denoting a general – concrete or abstract – concept of a theory within a specialised field of knowledge or activity (Leichik, 2009, p. 256). Cognitive terminological studies go beyond the terminological system or the terminological field and seek to embrace a conceptual scientific worldview (Khizhnyak, 2016, p. 98). The most productive methods in cognitive terminological studies include frame modeling which demonstrates a structural and dynamic character of professional knowledge, and discourse analysis which reveals pragmatic implications of the content and composition of texts within a particular system of human knowledge (Shpalchenko, 2024). Taking into account the key purpose of popular-science texts – dissemination of knowledge – and the role the term plays in this process, the present paper adopts the cognitive perspective on the term.

The position of popular-science medical discourse in the system of discourse varieties

The term *discourse* has been introduced by the French scholar Émile Benveniste who defines it as any utterance which takes into account both the speaker and the listener, with the former intending to influence the latter in some way (Benveniste, 1974, p. 241). The term has been elaborated in many works by Russian and foreign scholars and has been defined as a combination of texts (Serio, 1999) or as a text in a communicative situation (Karasik, 2002). One of the most famous definitions of this concept belongs to Arutyunova (1990) who states that discourse is speech immersed in life (Arutyunova, 1990, p. 136).

There are certain professional and non-professional types of discourse. The fundamental difference lies in the field of use: professional discourse, unlike non-professional one, is deals with professional activity. Hence the integral features of professional discourse are as follows: realization of a social mission and a system of basic values, a normative model of typical events and communicative roles, and a set of strategies and genres. Non-professional discourse lacks

all the characteristics typical of professional discourse (Biche-ool & Maltseva, 2017, p. 28).

The border between professional and non-professional discourse is not rigid and impenetrable. Popular-science discourse represents a border-line case since it has a hybrid nature and pursues two objectives: providing the recipient with scientific information and popularization of scientific knowledge (Shamne & Shishkina, 2018, p. 172). Due to its complex nature, it combines fundamental characteristics of academic discourse, on the one hand, and linguistic and pragmatic features of the media discourse, on the other hand (Bagiyan, 2014, p. 81). The informative function, characteristic of academic discourse, is realized via clichés, idioms, metaphors, similes, intensifying adverbs, rhetorical questions, humour, colloquial words, cohesion markers, allusions, and emphatic constructions (Verzhinskaya & Nikolaeva, 2020), i.e. linguistic means, typical of the media.

As regards medical discourse, three approaches to define this term have been singled out in Russian and foreign studies. In the broadest sense, medical discourse is understood as a cultural phenomenon and a social action which forms medical institutions and extends beyond them. It is a discourse in and about healing, curing, or therapy; expressions of suffering; and relevant language ideologies (Wilce, 2009). Medical discourse in the second meaning – a psychotherapeutic discourse, the use of verbal means to diagnose and treat psychological pathologies – is mostly used by Western scholars (Forbes 2015). The third group of definitions refers to medical discourse as a linguistic phenomenon. In this meaning the term embraces oral and written texts concerning medical issues (Beilinson, 2009). Medical discourse in the third meaning is the object of the present study.

Medical discourse is classified as an institutional discourse, based on the communicative dyad *agent – client,* where the former represents a social institution while the latter addresses the institution to solve their problem (Karasik, 2002). Thus, this paper adopts the following definition of popular-science medical discourse: an institutional communication between professionals and broad audience aimed to distribute information regarding prevention of illnesses and maintenance of health (Kalendr, 2016, p. 140). Agents of popular-science medical discourse take its ambiguous nature into account, which means that professionals address not their colleagues but the representatives of the general public

who have the need for qualified medical guidance and advice (Shamne & Shishkina, 2017, p.145).

Study results

Terminological adaptation in the journal article

The need to adapt professional knowledge for non-professional recipients requires the implementation of numerous discourse mechanisms. They include thematic reduction (the choice of topics, relevant and attractive for a layman), the reduction of information density (the reduction of a number of terms and scientific facts), linguistic creativity (the use of idioms, slang, and other stylistic means), determinologisation, the use of evaluative elements, and the use of paratextual elements (verbal and non-verbal components framing the main text). These mechanisms serve to equalize cognitive levels of the author and the recipient (Bagiyan, 2017). Despite the simplification trends in popular-science discourse, it has to be persuasive which is achieved via the use of terms. They enhance the level of readers' credibility and form an integral part of a patient-oriented article in a medical journal.

The analysis of the section *For the Patient* in JADA has demonstrated that terms are often substituted with their colloquial variants. The most common examples include the use of *tartar* instead of *calculus*, *gum* instead of *gingiva*, *tooth decay* instead of *caries*, *milk* or *baby teeth* instead of *deciduous* or *primary dentition, chewing* instead of *mastication*.

Another way to enhance accessibility for the general reader is to explain the meaning of a term within the framework of the text. However, the definition provided in the article (1) differs from the one given by terminological dictionaries (2).

(1) Enamel is the hard outer coating on teeth.

(2) *Enamel n. The hard outer covering of the crown of a tooth overlying the dentine.*

Both definitions contain the same semantic element: *the hard outer covering/coating.* However, the dictionary definition includes the dentistry terms *crown* and *dentine* while the definition in the article exploits only a consubstantial term *teeth* for better accessibility to a layman.

The analysis has also demonstrated that a definition in the article tends to be more concise than a dictionary one in order not to overload

the general reader with excessive information. This effect is achieved via the omission of terms, which leads to the simplification of scientific facts:

(1) *Teeth have a thin film of bacteria, called plaque, on them.*

(2) *Plaque n. A biofilm consisting of an organized bacterial community, salivary mucins and proteins adhering to tooth surfaces, restorations, and prosthetic appliances.*

The definition from the article (1) mentions only one component of plaque – bacteria – while the dictionary definition is more comprehensive and accurate semantically (it includes another two constituents of plaque and various surfaces on which it is localized in the oral cavity). Moreover, the terms *biofilm, bacterial community, salivary mucins, proteins, restorations,* and *prosthetic appliances* put the concept *plaque* within the system of specialised knowledge.

The analysis has shown that even colloquial variants of dentistry terms (for example, *canker* - which is used instead of *aphthous ulceration*) are explained in the article:

(1) Canker sores develop inside the mouth, often on the lining of the cheeks, inside of the lip, or on the sides of the tongue. The sores are round with a yellowish center and a red border.

Since *canker* is a colloquial word, the dictionary entry for it contains the crosslink to the medical term *aphthous ulceration:*

(2) Canker n. A colloquial name for aphthous ulceration. → Aphthous ulcer. A discrete white or red ulcerated spot occurring on the mucous membrane.

Both definitions describe the appearance of pathology and its localisation but the terminological dictionary definition is more concise as the term *mucous membrane* encapsulates the content (cheeks, lips, and tongue) in a condensed form whereas the article specifies each location to be understood by the general reader.

Thus, the patient-oriented journal article is characterised with a limited range of adaptation strategies because a printed publication imposes size restrictions (the analysed articles do not exceed one page). Another deterrent is the broader communicative context. Although being patient-oriented, the articles are published in the journal mostly addressed to the professional community, which prevents the author from the use of slang, idioms, and other means of linguistic and stylistic creativity. Accessibility of the text is increased via using colloquial

variants for terms and providing terms with definitions. The definitions in the articles differ significantly from those given in terminological dictionaries: they omit terms, which, in its turn, results in the reduction of scientific information and a simplified version of professional knowledge representation.

Terminological adaptation in the internet article

Like many other traditional printed sources, articles on medical websites are restricted in volume. In case of dental blogs under analysis, size limitations are accounted for by the fact that a lengthy post can bore the general reader who might find the website by chance while surfing the Internet. The loss of interest on the part of the recipient is highly undesirable since the ultimate goal of these articles is not only to inform the reader but also to persuade them in the expertise of the organisation which owns the website and to advertise its services. However, the possibilities provided by the Internet make the article in a dental blog a more flexible genre. It offers additional content, often of non-verbal or multimodal nature, such as images, schemes, audio and video materials. Links provide interrelations between texts. High level of interactivity is reached via the possibility to rate an article, distribute it through the social media, and order advertised goods and services (Shamne & Shishkina, 2017, p. 145). All these factors enhance the reader's involvement and influence the use of terms and strategies of their adaptation.

The analysis has demonstrated that terms in dental blog articles are often accompanied with a colloquial variant: *a dental crown (**a tooth cap**); nitrous oxide **(laughing gas)***. This strategy enhances the informal colouring of the text and makes it closer to the reader.

The same purpose is achieved via the use of informal words (***clincher***) or even slang vocabulary (***rap***) and idioms *(**bottom line, at ease**)*:

- ***The clincher** is that tartar is much more difficult to remove than plaque.*
- *Root canal therapy gets a bad **rap.***
- ***Bottom line:** a filling treats cavities that are caused by tooth decay.*
- *Dental sedation helps put your mind and body **at ease** enabling you to get the treatment you need.*

The articles in dental blogs, like those in printed medical journals, employ the strategy of providing terms with definitions (1) differing

from dictionary ones (2) in order to make the text more accessible to the layman:

(1) ***Early gum disease (gingivitis)*** *may just cause minor bleeding when brushing, but if left untreated, it can turn into* ***periodontitis. This advanced stage of gum disease*** *can lead to tooth loss and has been linked to heart disease, diabetes, and other serious health issues.*

(2) *Gingivitis n. Reversible inflammation of the gingival tissue characterized by redness (erythema), swelling, false pocket formation, and a glazed appearance with loss of stippling.*
Periodontitis n. Inflammation of the supporting tissues of the teeth, resulting in permanent tissue destruction.

While the definition in the dental blog aims at highlighting the difference between the diseases and, thus, describes only the localisation (gums) and stage of illness (early vs. advanced), the dictionary definition specifies the reason (inflammation) and the symptoms of the disease. Furthermore, the localisation of the pathology is defined by the word of the General Language *gum* in the dental blog and by the term *gingival/supporting tissue* in the terminological dictionary.

Moreover, unlike definitions from terminological dictionaries (2) which start with a general term to place the denoted concept into the system of professional knowledge, definitions provided by dental websites (1) more often than not omit this part:

(1) *An overbite - when your upper teeth protrude or cover your lower teeth.*

(2) *Overbite n. The vertical* ***overlap*** *of the incisor teeth.*

(1) *Overcrowding - when your adjoining teeth lack the proper spacing that causes them to be misaligned or crooked.*

(2) *Overcrowding n. A* ***condition*** *in which there is insufficient room in the dental arch to accommodate all the teeth present.*

The definitions provided on dental web-sites are organised as a dialogue, i.e. a question & answer form, to make the style of the article more vivid. The use of second-person pronouns in the definition narrows the distance between the author and the reader, draws the attention of the latter, and makes them feel responsibility for their own health:

- *What is tartar? This oral health issue is the result of what happens when* ***you*** *allow plaque to harden on* ***your*** *teeth.*

- *What is gum recession? **Your** gums recede when the tissue begins to pull back from the surfaces of **your** teeth.*
- *So, what is malocclusion? Basically, the condition refers to the misalignment of **your** teeth or their position when **you** close **your** mouth.*

Unlike the journal article (no more than one page long), the article in a dental blog is more flexible in providing definitions. The text of the latter contains links referring the reader to the webpage with the definition of the term and additional information. For example, the following sentence in the article contains the link for the term *crown*: *A simple filling costs significantly less than a root canal, crown, or tooth replacement – all consequences of avoiding preventive care.* The link refers to the webpage which does not only provide the definition of the term but also describes the procedure of crown installation, enumerates types of dental crowns and highlights the benefits of the appliance. This approach allows the author to provide the reader with all the relevant information they might need without expanding the text of the article itself so as not to make it too bulky.

Thus, website articles are more flexible and variable in the choice of terminological adaptation strategies. Like articles in printed journals, they exploit colloquial variants of the term and provide terms with definitions. The definitions do not only use fewer terms, if any, but they also highlight those aspects of the phenomenon in question which represent more relevance for the general audience, i.e. they focus on the consequences rather than on generic concepts and related biological processes. To narrow the distance between the author and the reader a variety of stylistic means is used: question & answer form, personal and possessive pronouns of the second person, colloquial words, slang, and idioms. Size restrictions are overcome by means of interactive links.

Terminological adaptation in a popular-science book

Unlike a journal and a website article, the genre of a popular-science book has no strict limitations in terms of size. This enables the author to exploit a variety of terminological adaptation strategies.

Popular-science books are characterised with giving definitions of terms throughout the text to assist the reader in understanding professional concepts. More often than not the definitions in the popular-science book (1) are similar to those provided in the terminological dictionary (2):

(1) *Technically,* ***an apnea*** *is a temporary stoppage in breathing that usually happens during sleep.*

(2) ***Apnea*** *- Temporary stoppage of breathing during sleep, often resulting in daytime sleepiness.*

(1) *That could lead to distorted development of your jaws, face, and* ***airway*** *(the passage through which air enters and leaves the lungs) and to serious health problems later on—even to an early death.*

(2) ***Airway*** *n. The passageway allowing air to pass into and out of the lungs.*

The popular-science book also provides simplified definitions eliminating the concepts irrelevant for the general reader in a particular context in order to avoid informational overload, like the in the following definition of the term ***orthodontics***:

(1) *William Proffit, author of the most widely used textbook in* ***orthodontics, the part of dentistry focused on straightening crooked teeth,*** *pointed out the scale of the epidemic in the United States in 1998.*

(2) ***Orthodontics*** *n. The specialist branch of dentistry concerned with the growth and development of the face and jaws and the treatment of irregularities of the teeth.*

If compared with the terminological dictionary definition (2), that of the popular-science book (1) reduces the semantic scope of the denoted concept and omits the part related to the face and jaws, which results in the simplification of the text in order not to confuse the general reader.

The following example demonstrates the difference in the definitions of the term ***palate***:

(1) *That "right" environment, we argue, is created by tough foods, much hard chewing, and, when not speaking or eating, holding the mouth closed with teeth in light contact and the tongue resting on the* ***roof of the mouth (palate).***

(2) ***Palate*** *n. The bone and soft tissue that forms the roof of the mouth and separates the mouth from the nasal cavity.*

The popular-science definition is less detailed and omits the terms referring to the composition *(bone and soft tissue)* of the denoted concept and its location in relation to other organs *(nasal cavity)* since describing the position is enough for the general reader to understand what part of

the oral cavity is meant without being confused by a number of unfamiliar terms, with each of them requiring a definition of its own.

Popular-science medical discourse is characterised with a frequent use of metaphors which do not only have an artistic, or aesthetic, value. Besides enriching the text, contributing to its expressivity, and attracting the reader, metaphors also perform a cognitive function (Yakovleva & Kolesnikova, 2020, p. 43). In popular-science medical discourse, metaphors describe and explain the functions of the denoted systems, organs and substances in a vivid way. However, the representation of professional knowledge via metaphoric, evaluative, and abstract imagery, relevant and accessible for a layman, reduces the accuracy of scientific perception of the phenomenon denoted by the term (Latu, 2017, p. 61).

The analysis has demonstrated a frequent use of metaphors throughout the book, for example:

- *This activates the sympathetic nervous system – the body's survival mode – which releases adrenaline and sends the body into constant stress.*
- *And while the gut calls most of the plays, the playbook is largely written in the mouth.*
- *Your mouth is the gatekeeper of your gut.*
- *There's one more piece to our puzzle of tooth and bone development: vitamin A.*
- *Vitamin D: the CEO of your bones, teeth, and immune cells*

There are two main domains for the coinage of metaphors: war and construction. The following metaphors depict the processes taking place in the oral cavity as the war between teeth and bacteria. The resemblance is highlighted via the use of such words as *allies* and *battleground*:

- *Fortunately, it has a couple of big allies to help protect it against decay. They're the two inner layers of the tooth: the dentin and the pulp.*
- *The dentin is the battleground of the tooth.*

The analogy drawn between bacteria and enemy in the war can sometimes impose a pejorative connotation on the term.

The following metaphors are based on the comparison of tooth formation with construction. The creation of dental tissue is compared with a building process. Therefore, substances participating in this

process are compared with workers, building instruments and materials, hence the use of such words as *raw materials, cement, scaffold, quality control, building project*:

- *It also helps supply our bones, teeth, and muscles with the raw material, the "cement," they need most to build themselves up: calcium.*
- *With the tongue moving away from its ideal resting place fully pressed against the palate (upper jaw), the dental arch loses its "scaffold" and becomes more crowded.*
- *Osteocalcin and MGP protein are like quality controls. They make sure the cement gets to the right building projects and doesn't clog up the water, electrical, and other moving systems.*

The Dental Diet also employs sustained metaphors, used throughout several paragraphs of the book. For example, two strains of the bacterium Helicobacter pylori are compared with tigers and cats:

It's as if some strains of H. pylori are house cats and some are tigers. Theoretically, you can keep both species as pets, as long as you keep the tiger chained or caged. But if the tiger somehow breaks free and is left to its own devices, it can inflict some serious damage.

Another example of a sustained metaphor is an analogy between the gut and the rain forest:

- *Your gu t— as diverse as the Amazon and as populous as the Milky Way*
- *Today, scientists understand that as an ecosystem, the human gut is as diverse and complex as a lush tropical forest.*
- *It's as if our body is the host of a super-organ – a veritable rain forest of trillions of microbes inside us – that we are only beginning to understand. The mouth and gut form the housing for these tiny inhabitants, and their health reflects how our bodies' relationship with them is working.*

Similes are also characterised with a great explanatory potential. They differ from metaphors only in form (they contain the conjunction *like*) but not in the function, which consists in explaining the meaning of terms via providing vivid images and analogies. Domains also remain the same: war (example 1), a construction site (examples 2—4) and nature (example 5):

(1) *Antibiotics are like bacteria grenades, and too many of them can do long-term damage to the bacterial landscape of the gut, leading to more systemic, chronic problems.*
(2) *As we've said, the mineral calcium is sort of like a cement our body uses to build and strengthen our teeth and bones.*
(3) *Vitamin D is like a truck that delivers the calcium where it's needed.*
(4) *Instead of the more straightforward job of protecting us from the outside world, like a wall, our gut has to do a lot more nuanced work and a lot more multitasking.*
(5) *Periodontal disease is extremely inconsistent and unpredictable. Like tooth decay, it spreads like wildfire.*

Thus, the popular-science book adopts a wide range of strategies to facilitate the understanding of terms. The author tends to explain the meaning of medical terms used throughout the text. The definitions provided by the author are in certain cases similar to those given in terminological dictionaries or omit terms and scientific facts. However, more often than not, the meanings of terms are explained to the general reader through drawing analogies in the form of metaphors and similes. The key domains for the coinage of metaphors and similes are war, construction, and nature. Although metaphors and similes make the narration more attractive and vivid, they also load terms with stylistic and evaluative connotations.

Discussion

The research findings align with the perception of the term as an encapsulation of professional knowledge, adopted in cognitive terminological studies. The frequent and consistent use of terms throughout the texts belonging to popular-science discourse confirms their role in transcending specialised knowledge to the general reader. In accordance with the previous research in the field of discourse studies, popular-science medical discourse has proved to occupy an intermediate position between professional and non-professional communication. Being an institutional type of discourse, it requires the alignment of the agent's (the medical specialist) and the client's (the patient) cognitive levels, which is realised through terminological adaptation.

The research has revealed a variety of genres used in popular-science medical discourse which dictate the choice of terminological adaptation strategies. The comparative discourse analysis of patient-oriented journal articles, internet articles on dental websites, and a popular-science book

has demonstrated that the most common adaptation strategies include the use of colloquial variants of the term and providing definitions within the text. However, these definitions differ from those of terminological dictionaries. Terminological dictionary definitions are based on other terms, which demonstrates the relation of the concept in question to other concepts within the system of professional knowledge. Definitions in popular-science discourse avoid using terms which might confuse the general reader and require further explanation. This strategy leads to the simplification of medical knowledge and omission of scientific facts but saves the reader from cognitive overload and provides them with information, relevant for non-professional use.

The journal article demonstrates the least variety of terminological adaptation strategies due to the restrictions in size and style. They resort only to colloquial variants and adapted definitions. Website articles exploit flexibility of the media and adapt the professional content via interactive links and stylistic modifications. They place the term in informal surroundings (informal words, slang, and idioms) and present definitions in a question & answer form with pronouns of the second person to bridge the gap between the author, specialised in the field, and the reader, devoid of professional knowledge and, sometimes, of deep interest in the topic.

The popular-science book encourages the implementation of linguistic creativity. The meaning of the term is explained not only by means of definitions but also through analogy, which takes the form of either a metaphor or of a simile based on such domain areas as war, construction and nature. This strategy represents professional knowledge in an engaging and accessible form but sometimes results in connotations that terms acquire.

The research has been confined to the written form of popular-science medical discourse. Further study could embrace the oral discourse and analyse strategies of terminological adaptation in podcasts and videos dealing with medicine with an emphasis on the role of non-verbal means and multimodal character of the media. Furthermore, the study of materials in other languages would make cross-linguistic comparison possible and might reveal culture-specific features in the implementation of terminological adaptation strategies.

Conclusion

Popular-science medical discourse is a complex phenomenon comprising a variety of genres. Their characteristics influence the way professional content is tailored to the needs of the non-professional recipient. The journal article is the most restricted genre from the point of view of choosing terminological adaptation strategies. It exploits only substitution of terms with their colloquial variants and simplified definitions. Strategies of this kind are also used in articles on medical websites and popular-science books. These two genres are more flexible and diverse in conveying medical knowledge to the reader. The internet article enhances the reader's involvement and provides the accessibility of the text via interactive links and features of informal oral communication: questions, second person pronouns, informal words, slang, and idiomatic expressions. The popular-science book uses cognitive potential of metaphors and similes. Placing terms in such contexts helps the readers to comprehend their addresses needs. Thus, terminological adaptation is a compromise between an adequate representation of professional knowledge and a simplification of scientific facts for the dissemination of knowledge among non-professional audience.

The research contributes to the discourse studies as it reveals the complex nature of popular-science discourse and genre diversity within it. As far as terminological studies are concerned, the present work demonstrates the influence of genre conventions on the use of terms. As regards practical implications, the research findings can be beneficial for journalists, writers, educators, and medical specialists involved in the popularisation of medical knowledge and promotion of healthy lifestyle, as well as for providers of medical services willing to reach potential customers and persuade them in their expertise. Effective transmission of professional knowledge to the lay audience requires a systemic use of terminological adaptation strategies suitable for the chosen genre.

To conclude, popularisation of scientific knowledge requires a combination of procedures to explain complex concepts without overloading the recipient. This purpose can be achieved via systemic adaptation of terms in accordance with the genre conventions. Future research of oral genres within popular-science medical discourse, the study of multimodal means, and a comparative analysis of popular-science texts in other languages can ensure better understanding of terminological patterns within professional knowledge.

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