Understanding and Acquisition of Modern Pharmaceutical Terminology at the Studies of Pharmacy in Serbia

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Abstract: The paper[1] explores the results of the survey applied during 2015 at the Faculties of Pharmacy in Belgrade, Novi Sad and Niš. The key goal was to explore the correlation between LGP and LSP in pharmaceutical technical language i.e. the level of understanding of the English pharmaceutical terminology by testing the students and teachers involved in teaching at the Faculties of Pharmacy in Serbia. In the first part, the survey included, both for teachers and students, four general questions focused on the acquisition of pharmaceutical terms and their applying in teaching and professional practice. In the second part, the students had twenty-six questions which covered four groups of technical terms aimed to test the level of understanding of the technical terms in a given context and the students' capacity to give an appropriate equivalent in both directions (Serbian/English/Serbian). The testing involved the terms including one- and two-lexemes with general meaning in the second and the third part of the testing and the terms including two- or three-lexemes i.e. abbreviations and collocations in the fourth and the fifth part of the testing. Bearing in mind that many pharmaceutical terms are used with transferred sense, thus many misinterpretations in translation come from misunderstanding of a technical lexeme which should give the appropriate technical sense to the lexeme with general sense. In the survey, both Fisher's test and Kruskal-Wallis test were applied. All the results were taken into consideration. The correlation among students' answers and teachers' answers for the general questions was pointed out as very significant. The correlations for other questions were made only based on the students' answers due to the fact that given corpus was extracted from the obligatory literature recommended by their teachers and used in lecturing and the English LSP courses. According to the results, the survey shows that understanding and translation of pharmaceutical terminology is very challenging task both for the students and the teachers at the pharmacy studies in Serbia.

Keywords: pharmaceutical terminology, transferred sense, given context.

Apstrakt: Ovaj rad prikazuje rezultate istraživanja sprovedenog tokom 2015. godine na Farmaceutskom fakultetu u Nišu i Novom Sadu. Ključni cilj je bio da se istraži korelacija između opšteg i stručnog engleskog jezika u farmaceutskom stručnom jeziku, npr. nivo razumevanja farmaceutske terminologije na engleskom jeziku testiranjem studenata i nastavnika na Farmaceutskom fakultetima u Srbiji. U prvom delu istraživanje je obuhvatalo, kako za nastavnike, tako i za studente, četiri opšta pitanja koja su se fokusirala na usvajanju farmaceutske terminologije i njenoj primeni u nastavi i profesionalnoj praksi. U drugom delu istraživanja studenti

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[1] The issues from this paper were presented on The Fifth international Congress ″Applied Linguistics Today −New Tendencies in Theory and Practice″, Faculty of Philosophy, Novi Sad, Serbia, 27th −29th November 2015

su imali 26 koja su obuhvatala četiri grupe stručne terminologije i koja su imala za cilj da testiraju nivo razumevanja stručne terminologije u datom konkekstu i sposobnost studenata da daju ekvivalente u oba smera (srpski-engleski i engleski-srpski). Test je obuhvatao termine od jedne ili dve lekseme opšteg značenja u drugom i trećem delu teksta i termine koji su su se sastojali od dve ili tri lekseme, npr. skraćenice i kolokacije, u četvrtom i petom delu testa. Imajući u vidu da se mnogi farmaceutski termini koriste u prenesenom značenju, mnoga pogrešna tumačenja u prevodu dolaze od pogrešnog razumevanja stručne lekseme koja treba da da smisao opštoj leksemi. U istraživanje su korišćeni Fišerov i Kruskal- Volisov test. Svi rezultati su uključeni u analizu. Korelacija između odgovora nastavnika i studenata po pitanju opštih pitanja je bila veoma značajna. Korelacija za ostalih pitanja kod studenata je zasnovana na činjenici da je dati korpus deo obavezne literature preporučene od strane nastavnika i da se koristi na kursu stručnog engleskoj jezika. Na osnovu rezultata istraživanja, možemo zaključiti da razumevanje i prevod farmaceutske terminologije veoma zahtevan zadatak kako za studente, tako i za nastavnike Farmaceutskih fakulteta u Srbiji.

Ključne reči: farmaceutska terminologija, preneseno značenje, dati kontekst

1. INTRODUCTION

Based on the prior experience in working with students of the Faculty of Pharmacy (University of Belgrade), and the effort to point out the problems with the acquisition of the state-of-the-art pharmaceutical terminology, the survey was carried out to provide an insight into the students' and pharmacists' familiarity with the English pharmaceutical terminology.

The testing of the familiarity with pharmaceutical terminology at all three faculties was performed in the period between March - July in Belgrade, Niš and Novi Sad in 2015. Comparatively 20 teachers were tested at the Faculty of Pharmacy - University of Belgrade and the Faculty of Medicine (Department of Pharmacy) - University of Niš. For technical reasons the same research was not performed at the Faculty of Pharmacy, University Business Academy in Novi Sad.

In this study, the total of 264 students participated: 170 students from Belgrade (65 first-year students and 105 fourth-year students), 79 students from Novi Sad (53 first-year and second-year students and 26 fourth-year and fifth-year students) and 15 third-year students from Niš.

The survey was initiated bearing in mind that a term is defined not only as "a notion or a technical term, a terminological item, a word or a group of words of specific (scientific, technical or similar) language, which is built (accepted, adopted, etc.)

with the aim of precise interpretation of specific technical notions which nominate special objects" . It is also characterized by its "specificity (which) is not in its formal or semantic, but in its pragmatic and communicative markers". Thus "the relations between terms are depending on the correlations of two language environments (which is the core problem of many new approaches) and of the richness of both lexical corpora.

In the first part of the survey, both the students and the teachers were given four general questions concerning the level of understanding and acquisition of technical terms. The other questions (5-31) were addressed only to the students. They were asked to give the appropriate equivalents in both directions (Serbian/English/Serbian).

The focus of our attention was to see the correlation between LGP and LSP in the pharmaceutical technical language for the students and teachers as English non-native speakers i.e. how they understand and translate the English pharmaceutical terms in both directions.

We also intended to emphasize the importance of understanding the technical context and the transitive sense of the terms used in the state-of-the-art pharmaceutical branches with interdisciplinary approach. At the same time, in the research of terminology was encountered the problem of clearness or

ambiguity i.e. if a term means one or more notions depending on the context it is related to.

2. METHODOLOGY AND AIMS

To process the survey both Fisher's test (in which $p < 0,05$ was considered statistically significant) and Kruskal-Wallis test were used. All the statistical results were presented in the course of discussion. The tabular data presentation (31 tables) is not of utmost importance to understand the key points of the testing.

The extracted terminological corpus for this survey was based on the technical terms used in the professional literature of pharmacists which is obligatory and recommended for the students' examination, the terms used by the lecturers within the pharmaceutical compulsory subjects and the terms which are supposed to be acquired during the English LSP courses being compulsory or elective.

The aims of this survey were as follows:

▪ to see the level of knowledge and acquisition of the pharmaceutical terms both for students and teachers

▪ to identify the variety of misinterpretations in giving translations of the pharmaceutical terms from the extracted corpus

▪ to make final conclusions on the correlation between LGP and LSP in the pharmaceutical technical language at the faculties of pharmacy in Serbia

The methodology approach in the survey was based on the following facts:

▪ For the past two years at the Faculty of Pharmacy - University of Belgrade, the study of the English language has been focused on two elective subjects in the first and fourth academic year i.e. The English Language for Pharmacy Practice and The English Language for Medical Biochemists in the first year (one semester) and The English Language in Academic Communication (one semester) in the fourth year of study. Since 2006 the English language has been a compulsory subject in the first year and an elective subject in the fourth year.

▪ At the Faculty of Pharmacy - University Business Academy in Novi Sad, the subject English in Pharmacy is a compulsory subject in the first academic year and the subject Business English is an elective subject in the fourth and fifth academic year.

▪ At the Faculty of Medicine (Department of Pharmacy) - University of Niš, the subject The English Language is a compulsory subject in the third academic year.

▪ Within this testing both the multiformity of subjects and the fact that the English language is in different academic years were taken into account.

The survey based on the methodology proceedings included:

- 4 general questions on the acquisition and understanding of the pharmaceutical terms both for the students and the teachers involved in the survey (questions number 1-4)
- 27 questions including four groups of pharmaceutical terms only for the students (questions number 5-31)

The first part of the testing provides a broad insight into both the possibility of acquisition of the English pharmaceutical terminology and the level of familiarity with this technical terminology. The questions should lead to the objective evaluation of how much the student is interested in the English technical terminology, his abilities to master it in accordance with the available literature and the requests he was given. The first five questions were as follows:

1. Are the English technical terms involved in the lectures proceeding?
2. Is the study literature in English obligatory for the examinations at pharmacy studies?
3. Do you understand the English technical terms in a given technical context when there are no Serbian technical equivalents in use?
4. Are you interested in searching the appropriate equivalent of unknown technical terms when their

technical meaning is not available in the professional literature, the course manual or in the lectures proceeding?

- The second part contains direct question (5-13) about the understanding of the terminology. The terms that students should understand are divided into three categories: polymorphic lexemes with general meaning whose technical context can be easily understood (*drug safety, brand name, zero defect*), monomorphic and polymorphic lexemes with general meaning, in which a deeper understanding of transferred sense in the given context is required (*administration error, drug life cycle, benchmarking, outsourcing, renewal*). In this group of questions, we may include the dimorphic lexeme *bulk proizvod*, consisting of the English lexeme with general meaning *bulk* and the Serbian lexeme with general meaning (*proizvod*). The context of this term has a transferred sense given by the lexeme *bulk* used in its technical context in pharmacy. The aim of the choice of this group of terms is to test to what extent examinees are able to understand transferred meaning of simple and complex lexemes in the given context in pharmacy. Accordingly, the students

were given English terms that they supposed to translate into Serbian.

▪ The third part contains abbreviations (*OTC –over-the-counter drug, PTH –parathyroid hormon, HDL –high density lipoprotein, QRM –quality risk management, GMP –good manufacturing practice*) which are given so that the student would recognize their full name. They name the terms from different fields and different complexity, because they are used in the aspects of pharmaceutical care which cover all three levels of pharmaceutical protection (from primary, secondary to tertiary care, which is the most complex one). They consist of two to three lexemes and one of these lexemes determines the meaning to the others with its technical determinant (OTC - *over-the-counter drug*, PTH - *parathyroid hormon*, HDL - *high density lipoprotein*) or three lexemes with general meaning in which the technical context of the term will determine the familiarity with the certain field in which the lexeme is used. The aim of the choice of this group of terms is to test to what extent examinees are able to understand the abbreviations which indicate the technical determinants.

▪ The fourth part (questions number 19 - 31) refers to translation of the collocations used in the technical context. These collocations contain two lexemes (a verb and noun or two nouns) in which one lexeme has a transferred meaning whereas the other one has a general meaning (English - *to respond* to treatment, *to perform* medical *check-up*, *to refrain* from overdose, *to administer* drug, *to undergo* treatment, *to induce* vomiting, *to contract* disease; Serbian – *sporedni* efekti, lek *visokog rizika*, *utvrditi* dijagnozu, pratiti zdravstvene *ishode*, prepoznati *površinsku infekciju).* The aim is to investigate to what extent students are able to recognize the correlation between general and technical terms.

3. RESULTS AND DISCUSSION ON THE THEMATIC UNITS IN THE SURVEY

3.1 GENERAL QUESTIONS

After studying the results of the survey it is obvious that pharmacy students use the English terminology within the technical subjects partly (50.4% - the first question). If the teachers' answers are taken into account they indicate that the majority of teachers use English terminology partly (50.7%), which implies that the estimation in terms of the available technical literature correlates with the students' answers. Thus, there are objective implications that studying of the English pharmaceutical terminology is of a great

importance and it is necessary. The survey also implies that the majority of students do not use the technical literature in the English language while preparing for the exams (45.8% - the second question). The teachers recommend it partly (50.7%), which means that this result correlates partly with the students' results. Also, it can be seen that the students (65.2% - the third question) understand the English technical terms partly when the translation is not offered. If the teachers' (70.0%) and students' answers (65.2%) are compared, it can be seen that both groups claim that they understand them partly, which shows that the teachers and students' answers correlate as well as there are certain problems in the light of understanding of the meaning of technical terminology. The answers of the majority of students to the fourth question (56.9%) further imply that there is an engagement in the search for the right translation of the technical term when the translation does not exist in the technical literature in Serbian. The answers of the teachers to the similar question yet show that the majority of teachers (34.65%) have an access to the technical literature that helps them become familiar with the technical words and phrases, but almost the same percentage of teachers claim that they partly have an access (32.6%) or do not have an access to the technical literature (30.6%), which means that this result

partly correlates with the students' answers.

3.2. TECHNICAL TERMS WITH TRANSFERRED MEANING

In the second part of the survey that refers to the technical terms with transferred meaning, on the basis of the answers to the fifth question, it can be seen that the majority of students (52.7%) are unfamiliar with the term _benchmarking_[2]. This is the lexeme with transferred meaning which is used in business marketing in general or in pharmaceutical marketing in pharmacy. The results show that understanding of this term is not to great extent linked to the different levels of knowledge of the technical subjects, because students who attend different academic years showed they do not understand this term, but to the fact that this is a lexeme with general meaning whose transferred sense can be recognized on the basis of the familiarity with the field in which the lexeme is used.

According to the given answers to the question what the term _renewal_ means, it can be seen that approximately the same number of students had a positive answer

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[2]The term refers to the practice of the comparison of one company′s strategic approach to dealing with the performance with other companies (leaders of that area). This is done in order to improve the work strategy and results (to establish its own marketing standards). − [Kerničan, 2016: 285]

(38.4%) and a negative answer (40.7%) while 55 students (20.95%) answered that they understood it partly. These underlined antitheses imply that students do not usually know the technical context[3] of this term in pharmacy, and therefore they translate it literally. If compared to the term *benchmarking*, the term *renewal* is of a more transparent meaning, so that is most probably why there are more positive answers to this question.

On the basis of the answers to the seventh question, it is clear that all the students are familiar with the term *drug life cycle*, i.e. that all the groups of students completely correlate. This term refers to the life cycle of a drug i.e. the steps of a drug development from the drug manufacture to the market launch of the drug. It is the collocation that contains dimorphic lexeme with general meaning *life cycle* and the third lexeme *drug* which can be considered as the technical determinant of the previous one. In comparison to other collocations the meaning of this collocation is clearer to students because of the way collocates are structured in this collocation.

In accordance with the results it is furthermore concluded that (the eighth question) the majority of students know

what the term *administration error* means, so that all the groups that had a positive answer completely correlate. They understand the correct meaning of the lexeme *administration* which in the context of the collocation *administration error* has a transferred meaning (application) and it refers to voluntary or involuntary omissions that occur during drug application (*administration error*[4]). The context of this collocation is not determined by one of the lexemes assuming that they both have a general meaning, but by the familiarity with the field in which the collocation is used. Given that this term is linked to the primary health care, this result is logical.

In the answers to the next question (the ninth question) which refers to the familiarity with the term *outsourcing*, it is obvious that the majority of students (106) understand this term, but also a significant number (83) understands this term literally or they do not understand (70). Bearing in mind that this is a lexeme with general meaning, it is concluded that the term is not clear enough to the students, because

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[3]Renewal - carrying out the activities or situations in order to start something again. In pharmaceutical practice: the drug that is prescribed again.

[4]Error-provoking conditions influencing administration errors included inadequate written communication (prescriptions, documentation, transcription), problems with medicines supply and storage (pharmacy dispensing errors and ward stock management), high perceived workload, problems with ward-based equipment (access, functionality), patient factors (availability, acuity), staff health status (fatigue, stress) and interruptions/distractions during drug administration. −[Keers N. Richard:2013]

they do not link it adequately with the areas in which it is commonly used: pharmaceutical marketing, pharmaceutical management and pharmacoeconomics. Its meaning implies the transfer of authorization in the manufacturing process to other executors and it is usually used in pharmaceutical industry. A very little number of students (5) did not answer to this question.

To the tenth question that refers to the term _drug safety,_ a great number of students from all the surveyed groups answered that they understood what it meant, so consequently they all correlate. This is a dimorphic lexeme in which _safety_ is a noun with general meaning and its context is determined by a lexeme _drug._ This term does not have transferred meaning (_the safety of a drug_) though within the pharmaceutical field, respectively in Good Pharmaceutical Practice, it may have a broader meaning.

In the further consideration (the eleventh question) it is clear that most of the students know what the term _brand name_ means, so that consequently all groups correlate. Although this term contains two lexemes or two determinants with the general meaning, it is pretty clear to the students that it refers to the marketing (brand) name of a drug. A very little number of the students (2) did not answer to this question.

Students' answers to the twelfth question which refers to the term _zero defect_ show that the meaning of this term is clear to a great number of students from all the surveyed groups, so that students who had a positive answer correlate. The collocation consists of two lexemes with general meaning, and in the given context it implies the absence of the side effects or other omissions in the manufacture of drugs. It is commonly used in pharmaceutical industry.

It is further concluded (the thirteenth question) that most of the students (124 – 47.1%) are familiar with the term _bulk proizvod (bulk product),_ but also a great number of students (87 –33.1%) do not understand it. This term is interesting because it consists of two lexemes, one is English (bulk) and the other one is Serbian (proizvod), both are with general meaning. The meaning of this collocation is not determined by one of the lexemes but by the context in which it is used, most commonly in pharmaceutical technology, respectively in pharmaceutical industry. It is translated into Serbian as _poluproizvod (half product)_ or _bulk proizvod_ (proizvod u balk-u/ _the product in bulk)._

3.3. ABBREVIATIONS

The third part of the survey refers to understanding of the abbreviations with technical meaning. The results show that all the surveyed groups of students

answered that they do not understand the abbreviation _QRM_[5] (in the fourteenth question). This abbreviation is translated into Serbian as _upravljanje rizikom u kvalitetu proizvoda_ or _menadžment rizika u kvalitetu_. It is used in pharmaceutical industry, so it is expected to be clearer to the fourth-year or fifth-year students because it requires a better knowledge of more complex aspects of pharmaceutical practice.

In the further analyses of the survey (the fifteenth question) it is obvious that a great number of students are familiar with the abbreviation _HDL (high density lipoprotein)_. It means that all the surveyed groups correlate. This term is of general importance to medicine and pharmacy, so it is logical that most of the students are familiar with its meaning. The lexeme _lipoprotein_ is the determinant of technical meaning in this polymorphic lexeme.

According to the given answers (the sixteenth question) furthermore is seen

that the majority of students (150 –56.8%) understand abbreviation _PTH (parathyroid hormone)_, which is logical, because it belongs to basic technical terminology students acquire at the beginning of their studies. On the other hand, its meaning is clear to students because all its determinants refer to technical context.

In the light of term OTC (the seventeenth question), it is clear that a great number of students understand this abbreviation (178 –67.7%). Its full name is _over-the-counter-drug_. It is a collocation with transferred meaning[6] which can be translated correctly only if this transferred meaning is understood in the given context in pharmacy, because a lexeme _drug_ cannot determine the context of the compound _over-the-counter_. Apart from this term as a synonym _non-prescription drug_ is used. Given that this is one of the basic terms about a drug, this result is logical, though it is important to mention that 59 (22.3%) of students do not know what this term means. This is not probably due to their unfamiliarity with English, but to the students' lack of both the familiarity with basic technical terminology in pharmacy and the ability to combine the terms in one meaningful unity.

On the basis of the results (the eighteenth question) it is obvious that the majority of students (the fourth-year and fifth-year

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[5]_Quality Risk Management_ is effectively utilized in many areas of business and government including finance, insurance, occupational safety, public health, pharmacovigilance, and by agencies regulating these industries. Although there are some examples of the use of quality risk management in the pharmaceutical industry today, they are limited and do not represent the full contributions that risk management has to offer. In addition, the importance of quality systems has been recognized in the pharmaceutical industry, and it is becoming evident that quality risk management is a valuable component of an effective quality system. −[Guidance for Industry − Q9 Quality Risk Management: 2006:1]

[6]A drug dispensed without prescription.

students) understand the abbreviation _GMP_[7] _(Good Manufacturing Practice)_. On the other hand, there are a great number of students (first-year students) who answered that they did not understand its meaning. The relation between the group that had a positive answer and the group that had a negative answer is 43.5>43.1. This implies that it cannot be claimed that the significant majority of students are familiar with this abbreviation. This abbreviation contains three lexemes with general meaning whose context is recognized on the basis of foreknowledge of the given field. The abbreviation is used in pharmaceutical management and marketing, in which better knowledge of health care system is required. Accordingly, this kind of terminology is usually studied in the fourth and fifth year.

3.4. COLLOCATIONS

The fourth part of the survey refers to understanding and translation of

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[7] A GMP is a system for ensuring that products are consistently produced and controlled according to quality standards. It is designed to minimize the risks involved in any pharmaceutical production that cannot be eliminated through testing the final product. GMP covers all aspects of production from the starting materials, premises and equipment to the training and personal hygiene of staff. Detailed, written procedures are essential for each process that could affect the quality of the finished product. There must be systems to provide documented proof that correct procedures are consistently followed at each step in the manufacturing process - every time a product is made. [ISPE - The International Society for Pharmaceutical Engineering: ISPE Glossary of Pharmaceutical and Biotechnology Terminology]

collocations in both directions (English-Serbian / Serbian-English). On the basis of the results 42 (19.0%) students translated the collocation _to respond to drug_ (in the nineteenth question) correctly, 11 (5.0%) students gave incorrect translation and 168 (76.0%) students had incomplete translation. The majority of students (43) gave no answer to the question. If incomplete and incorrect translations are considered (included below), it can be concluded that misunderstanding of the transferred meaning in this collocation arose from the fact that the verb to _respond to_ is quite often translated literally _(odgovoriti na terapiju)_ so the linguistic and logical correlation existing in relation with the given context is lost. The correct answer would be: _reagovati na lek / terapiju._ The incomplete and incorrect answers that students gave are: _odgovor na lečenje ili terapiju; odgovoriti na tretman / terapiju / lečenje; odgovor na lečenje / terapiju / tretman; reakcija na tretman / terapiju; reagovanje na terapiju; odgovorite na tretman; odgovori na terapiju; u odgovoru na tretman; odgovara na lečenje / terapiju / terapiju, tretman; terapijski odgovor; reakcija na lek; odgovarati na lek; pružio tretman; prihvatiti lečenje; odgovarati na prepisani tretman; reaguje na lečenje._

The next collocation that was analyzed is _to perform medical check-up_. The results show that the majority of students (in the

twentieth question) translated the collocation correctly (100 –37%) as follows: *obaviti medicinski ili lekarski pregled, odraditi medicinsku proveru, izvoditi lekarsku proveru, izvršiti medicinski pregled, izvesti medicinski pregled, izvesti zdravstvenu proveru, uraditi medicinski pregled, sprovesti medicinski pregled*. However, providing that the majority of examinees (90–34,1%) gave no answer to this question, the conclusion is drawn, as in the previous example, where the incorrect interpretation is not the result of unfamiliarity with the given field in which it is used, but the result of misunderstanding of the phrasal verb *checkup*. The following are answers of the students who had incorrect (38 –14,4%) or incomplete (36 – 13,6%) translations: *provera stanja; izvršen sistematski pregled; pregledati; obavite medicinsku proveru / pregled; izvođenje medicinske provere; pratiti lečenje; medicinske kontrole; praktikovati proveru zdravlja; preventivna provera stanja; izvođenje medicinske provere / medicinskog pregleda; tražiti proveru zdravlja; medicinski pregled; otići na pregled; izvesti kontrolni pregled; izvršiti sistematski pregled; obaviti pregled; izvoditi medicinske provere; izvršiti medicinske promene; ići na sistematski pregled; izgraditi medicinski pristup; uraditi proveru zdravstvenog stanja; medicinski pregled; izvedi medicinski pregled; ići ili otići na kontrolu / pregled / medicinski pregled; medicinska kontrola; rutinska kontrola; pregledati se; obaviti kontrolu; pratiti zdravstvene ishode; medicinska provera; unaprediti medicinske preglede; osigurati medicinsku proveru; sprovesti pregled.*

According to the results it can be seen (the twenty-first question) that the collocation *to refrain from overdose* the majority of students (44 –41.1%) translated incorrectly, 32 students (29.9%) translated correctly and 31 students (29.0%) had an incomplete translation for this collocation. It is important to mention that more than a half of students gave no answer to this question (157). The students who had a correct answer wrote: *uzdržati se od predoziranja ili od prekomerne doze.* According to the incorrect and incomplete translations it is concluded that the majority of students do not understand what this collocation *to refrain from overdose* means, i.e. they do not understand the meaning of a verb to *refrain*[8]: *prekomerna doza; uzdržavanje od overdoze; izbegavati predoziranje; posledice predoziranja; nemojte da se predozirate; zbog prekomerne doze; ustručavati se od predoziranja; oporaviti se od predoziranja; oporavljanje od*

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[8]In the translations, it is obvious that there are other types of grammatical mistakes due to which the translation is partly correct or incomplete. This problem will be discussed in more detail in the conclusion.

predoziranja; oporavak od predoziranja; predozirati se; sprečiti predoziranje; izbeći predoziranje; suprotno od predoziranja, mogućnost od predoziranja; povratiti se od predoziranja; lečiti predoziranje, zaštiti se od predoziranja, predoziranje; paziti na predoziranje; ograditi se od predoziranja; ne prekoračiti doze; ne preterati sa dozom; povratak ili overdoza; uzdržavanje od predoziranja; paziti na količinu unosa određenog leka; posledice predoziranosti; nešto od predoziranja; oporavak od predoziranja; preživeti predoziranje, odvikavanje od prekomerne doze, pridržavati se preporučene doze, izbegnuti predoziranje; opasnost od predoziranja; oporaviti se od prevelike doze; obuzdati se od predoziranja; suzdržati se od predoziranja, izbeći predoziranje; opasnost od prekomerne doze.

Based on the surveyed answers (the twenty-second question), it is further clear that the collocation *to administer drug* 84 students translated correctly (53.2%), 61 translated incorrectly (38.6%), 13 students (29.0%) gave incomplete translation (8.2%) and the majority of students gave no answer to this question (106 –40.2%). The majority of students (84) translated correctly: *dati ili primeniti lek.* The students who had incomplete (13) or incorrect answer (61) wrote: *proizvođač leka; primeni lek; primena leka; uzeti lek; izdati lek; administrativni lek; uneti lek; administrovati lek; vodeća droga / lek;*

proizvođač leka; primljen lek; lek koji podleže administraciji; primenjeni lek; dat lek; raspodela leka; propisati lek; raspoloživost leka; upravljanje lekom; upravljati lekom; administrativni lek; zakonski lek; administracija (registar lekova); oficinalni lek; odobren lek; poznata supstanca; prodavac leka; upotreba droge; korišćenje leka; preporučen lek; administraciona droga; prepisati lek; glavni lek; registrovan lek; administriranje leka; oficinalni lek; primeni lek; lek za upotrebu; lek koji se trenutno primenjuje; fabrički lek; glavni lek; administrator leka; priznati lek. On the basis of the insight into the students' answers and the minor differences in the number of the correct and incomplete answers, as well as the fact that the majority of students gave no answer to this question, it is obvious that the students do not understand the meaning of the verb *administer* in the given context. In conclusions will be discussed other obvious mistakes made in the answers to this question.

According to the survey results (the twenty-third question) only 34 students translated collocation *to manage disease* correctly (*kontrolisati tok bolesti, držati bolest pod kontrolom, pratiti bolest, upravljati bolešću, obuzdati bolest, "nositi se" sa bolešću, tretirati bolest, izboriti se sa bolešću, nadzirati bolest),* while most of the students gave incomplete (48) and

incorrect translations (74): *lečiti bolest; baratati bolešću; menadžerska bolest; utvrditi obolenje / bolest; izboriti se s bolešću; rukovoditi bolešću; bolest; preboleti bolest / obolenje, kontrola bolesti; neželjena reakcija; boriti se protiv bolesti; otkriti bolest; savladati zarazu; savladati bolest; pozabaviti se bolešću; upravljati dijagnozom; tretirati bolest; rešavati slučaj; glavna bolest; uspešno izlečenje; boriti se protiv bolesti; lečiti bolest; doza; utvrditi / otkriti bolest ili dijagnozu, održavati bolest na određenom nivou; upravljanje bolestima; dovodi do bolesti; tretiranje bolesti; uočiti bolest; poboljšati ili unaprediti bolest; menadžerska bolest; zaraziti se.* A significant number of students gave no answer to this question (108). Therefore, it is obvious that students make no correlation between *manage* and given context. Other mistakes that can be spotted here will be discussed in the conclusion.

According to the results shown herein (the twenty-fourth question) 52 students translated <u>undergo treatment</u> correctly as follows: *podvrgnuti se / izložiti se lečenju / tretmanu / terapiji, sprovesti terapiju.* Almost the same number translated it incorrectly (51 –43.7%) or gave an incomplete answer (16 –13.4%): *otići na tretman; lečenje pod lekarskim nadzorom; podleći lečenju; početi terapiju; primate terapiju; neuspela terapija, odvikavanje od*

droge; dobiti tretman; biti pod tretmanom; podleći tretmanu; otići na lečenje; početi tretman; biti lečen; pretrpeti tretman; po završenom tretmanu; postojeći tretman; oglušiti se o terapiju; tretman van bolnice; pod tretmanom; podleći tretmanu / lečenju; krenuti na lečenje; zaustaviti terapiju; blaži tretman; lečiti se; tretman ispod doze; pretrpeti tretman; posledice od lečenja; početi terapiju; eksperimentalno lečenje; lečenje na svoju ruku, terapija ispod očekivanja; tretman u toku; neodgovarajuća terapija, priprema za lečenje; biti lečen; podleći terapiji; ići na terapiju; tok tretmana; terapija koja ide loše. A great majority (145 –54.9%) gave no answer to this question. From the supplied, it can be clearly concluded that students do not understand the transferred meaning of verb *undergo*. Other types of mistakes that are obvious in these answers will be analyzed in the conclusion.

The results of the survey (the twenty-fifth question) imply that the majority of students (104) translated the collocation <u>to induce vomitting</u> correctly: *izazvati povraćanje; izaziva mučninu; naterati nekoga da povrati; naterati na povraćanje; indukovati povraćanje; podstiče povraćanje; navesti na povraćanje; inicirati povraćanje; podstaknuti povraćanje.* The rest of the students translated it incorrectly (15) or had a partly correct answer (35): *povećano povraćanje; smanjiti povraćanje;*

smanjeno povraćanje; izazvano povraćanje; sprečiti povraćanje; izazvati povraćaj; uzrokovati povraćanje; indukovati pogoršanje; indikovati povraćanje; ne izaziva povraćanje; indukovanje povraćanja; smanjiti povraćanje; suzbiti povraćanje; indukovano povraćanje; indukuje povraćanje; sprečiti povraćanje; forsirano povraćanje; uzrokovati povraćanje. It is important to mention that the majority of students gave no answer to this question (110). In comparison to other tasks this one was easier to complete because the verb *induce* has general meaning and it is often used in Serbian with the meaning *izazvati (cause), podstaći (encourage).*

Based on the further results (the twenty-sixth question) 36 students (36.4%) translated the collocation <u>to contract disease</u> correctly: *zaraziti se, razboleti se, "zakačiti" bolest, dobiti bolest, oboleti, preneti bolest ili zarazu.* Most of them translated it incorrectly (47 –47.5%) and 16 students gave incomplete translation (16,2%): *zarazna bolest; profesionalno obolenje; anamneza; susresti se sabolešću; sprečiti zarazu, bolest koja se prenosi dodirom; suzbiti bolest; bolest kontrakcije; prenosiva bolest; zaustaviti bolest; zarazne bolesti; smanjiti bolest; prenosive bolesti; menadžerska bolest; razboleti se / prepoznati / dijagnostikovati bolest; kontaktna bolest; sporedna bolest; ugovor o bolesti; prenosiva bolest;*

smanjivanje bolesti; zarazne bolesti; uhoditi bolest; preneti bolest; hronična bolest; sporedna bolest; ugovor o bolesti; zarazna bolest; uhoditi bolest; preneti bolest; izveštaj o bolesti; razbolevanje; izaziva bolest; kontraktivna bolest; nuspojava; kontrakovati bolest; ugovorska bolest; izazvati zarazu. A great majority gave no answer to this question (165). These results therefore imply that the meaning of this collocation is mostly unclear to the students. Given that the verb *contract* is mostly linked to the common context *ugovoriti* (*colloc. - to make a business contract*) or *ugovor* (a business contract) it is obvious why the students understand the verb *contract* i.e. the collocation in this way as well. Others do not understand the verb and give an incorrect equivalent or simply use the morphological adaptation of the verb: *kontrakovati.*

The results (the twenty-seventh question) shown that the majority of the students (172 –91. 9%) translated correctly the collocation *sporedni efekti* as follows: *side effects, collateral effects.* 16 students (8.4%) gave incomplete translation, while five students (2.6%) translated incorrectly. Here are the incorrect or incomplete translations: *another effect, adverse effect, unpleasant effect, usual effects, minor effects.* Many students gave no answer to this question.

The collocation *lek visokog rizika* (the twenty-eighth question) most of the students (170 –91.9%) translated as follows: *high risk drug / medicine / medication, drug with high level of risk, drug of high risk.* Seven students (3.8%) gave incomplete translation and eight students (4.3%) translated incorrectly: *the risk medicine, remedy high risk, high risk off drug, high risk level drug, drug high risk, highly risk medicine, high level risk medicine, medicine high risk, drug from high risk, cure high risk, drug high risk, high risk treatment.* It is important to point out that many students (79 –29.9%) gave no answer to this question. This collocation is certainly a part of basic pharmaceutical terminology referred directly to drug, thus many correct responses are expected. It is specific because both of the lexemes carry general meaning. The context of polymorphic lexeme *high risk* will be determined by the lexeme *drug*.

Further analysis (the twenty-ninth question) shows that collocation *utvrditi dijagnozu* 53 students translated correctly (42.4%): *establish diagnosis, set up diagnosis, make a diagnosis, diagnose.* There were also 32 students who gave incomplete translation (25.6%) and 40 students who gave incorrect translation (32%): *confirm diagnose; check diagnose; manage diagnose; have a diagnose; diagnose confirmation; find diagnose;*

established diagnosis; to check out diagnose; get know diagnose; check diagnose; manage diagnose; give diagnose; found out diagnose; diagnose. Great many students gave no answer to this question (139 - 52. 7%). Given that more students translated correctly compared to those who translated incorrectly and the high percentage of those (52%) who gave no translation, we concluded that this collocation isn't clear to the majority of students. As was seen in the previous examples, when one of the lexemes has general meaning, the collocation is incorrectly translated because the students probably don't understand the real meaning of verb *utvrditi* in Serbian, or they don't know the most appropriate English equivalent for the same.

On the basis of the provided results (the thirtieth question) the collocation *pratiti zdravstvene ishode* most of the students (65) translated correctly: *to follow health outcomes, to monitor health outcomes, to follow health outputs;* 27 students gave incomplete translation and 21 students translated incorrectly. The incorrect and incomplete translations are as follows: *to follow health / the development of health / health results / health issues / responding to drugs; follow medical consequences / medical outcome / medical treatment / medical results / outcomes of medication / the health effect / medication / health*

protocols / health consequences / health effects / the medical results; checking health signs, track the health outcome, pay attention to medical outcomes, monitoring health care effects, perform medical check up, check health, to follow the health outcomes / medical results; track medical effects, monitor medical outcomes, therapy monitoring, to manage health outcomes, monitor health income, therapy monitoring, monitoring therapy, undergo treatment, check up treatment results, follow medical signs, control medical state, perform medical check up. There were also 151 students who gave no translation and this number exceeds the number of those involved in the translation. This collocation is very common in pharmaceutical management and marketing.

Considering the results from the last question (the thirty-first) a lot of students gave correct translation of the phrase *prepoznati površinsku infekciju* as follows: *identify superficial infection, recognise superficial infection, recognise external infection, recognise topical infection, recognise surface infection, recognise local infection;* 20 students gave incomplete translation and 24 students gave incorrect translation: *recognise body infection / outside infection / infection on surface / an infection / external infection / dermal infection; see surface infection; recognize infection / skin infection /*

infection superficially / superficiant infection / subcutaneous infection / side infection / infection / focal infection / superficially infection / inflammation / surfice infection; discover cutaneous infection. Accordingly, we may conclude that the majority of students (61.1 % from 113 totally involved) gave correct translation. There were also 151 students (57, 2% from 264 totally involved) who gave no translation. This implies that the students are not quite familiar with the meaning of this collocation.

4. CONCLUSION

This questionnaire emphasized the terminological problems which our students have in the acquisition of LSP and paid attention to their specifics. Based on the survey results the next conclusions on the level of acquisition of the English technical language were made:

1. The acquisition of the English technical language and the English language for general purposes has been discontinuous for years at the faculties of pharmacy in Serbia.

2. The problems in the acquisition of LSP are seen both in the teaching process as well as in the professional applying of technical

terminology by the teachers and the students.

The specifics of LSP acquisition at the faculties of pharmacy in Serbia based on the survey results of students in conclusion may be presented as follows: students mostly don't understand two-lexemes collocations with general meaning *(ex. administration error, brand name, zero defect, drug life cycle, benchmarking, outsourcing)*; they don't understand the complex meaning of the abbreviations used in pharmaceutical management which consist of two or three lexemes with general meaning (Good Manufacturing Practice - GMP, Quality Risk Management - QRM); they are more familiar with the abbreviations used as technical terms (PTH, HDL,OTC) in basic pharmaceutical sciences and primary health care; they translate literally or incorrectly, making inappropriate correlations in the given context with a noun in collocations where a verb has general meaning (ex. in English phrases, where to *manage* is translated as *lečiti, baratati, utvrditi, rukovoditi, zaraziti se,* etc.; when *to respond* is translated as *odgovoriti;* when *to administer* is translated as *upravljati, izdati, primeniti;* also with Serbian verbs, when *utvrditi* is translated as *confirm, manage, check out, get know, etc.*; they also don't identify noun and verbal collocations in the given context and translate them into Serbian as: *manage disease / menadžerska bolest, kontrola bolesti,* etc.; they make spelling mistakes *(ex. surfice)*; they don't realize the difference between an adjective and an adverb *(ex. superficially infection)*, and add the termination *–ly* to adjectives (ex. superficially infection).

In conclusion, the survey emphasizes the importance of the research in these less investigated technical fields in order to see the correlation of LGP and LSP in the light of specific professional purposes. The English technical language may be evaluated and implemented at academic levels as the vital segment of students' professional education which is recommended to be involved in all technical aspects of professional education.

Additionally, which is very relevant for all segments in the professional development, there is of utmost importance to acquire on the technical terminology as the knowledge which is indispensible for successful professional communication of pharmacists at all levels of professional activities, especially in the interdisciplinary aspects of pharmaceutical care and education.

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UNDERSTANDING AND ACQUISITION OF MODERN PHARMACEUTICAL TERMINOLOGY AT THE STUDIES OF PHARMACY IN SERBIA - SURVEY RESEARCH

Summary: This paper is based on the comprehensive and deep analysis of pharmaceutical terminology development with a critical overview on the acquisition of English pharmaceutical terminology in the modern period (80'of the XX century until today). Modern pharmaceutical terminology may be classified as: basic terminology which includes classic medical terminology; clinical terminology which includes medical terminology and social interdisciplinary aspects of their usage; social pharmacy terminology as the most complex segment, comprising basic, clinical and social approach in pharmaceutical care. Basic terminology today still includes a great number of general medical terms, within the most of

them are Latin-derived terms with minimal phonetic and morphologic modifications. Clinical terminology is partly derived from Latin medical terms and an increasing number of English technical terms making reference to the interdisciplinary context of clinical practice. The terminology of social pharmacy also includes a great number of English technical terms. They are monolexemic or polylexemic terms with semi-general meaning used in a specific context. The technical meaning of these terms is identified according to a precise technical interpretation in a given science. In order to analyze the level of understanding and acquisition of Serbian pharmaceutical terminology, special attention was given to the acquisition of modern pharmaceutical terminology by the students and teachers studying and working at the faculties of pharmacy in Serbia. The results have identified many difficulties in the process of acquisition and understanding of this terminology, as well as the fact that the level of understanding mostly depends on the clarity of transitive sense of the lexemes with general meaning used in technical context. Most of the mistakes are related to technical collocations and abbreviations, in the examples with polylexemic terms where both or only one of the lexemes has general meaning. These results lead to the conclusion that is very important to understand the increasing complexity of modern pharmaceutical science which requires a deep understanding of a new methalinguistic structure which is less investigated in the language for specific purposes.

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