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Collocational Competence Level of Medical English among Iranian Medical Students

SUMMARY

Collocational competence is considered to be an important factor of fluency in a language. In Iran, medical texts are mainly in English and medical students have to pass 6 credits of medical English. In these courses a large number of medical terms should be covered in addition to medical English. We compared medical English collocational competence level of the students before and after passing English for the students of Medicine 1 and 2 (ESM). Three groups of medical students who had passed only General English (GE), both GE and ESM1, and GE, ESM 1 and 2 were compared with each other. Total collocational competence level of the students was low which indicated that ESM courses did not have positive effect on their collocational competence level. Moreover, their overall receptive collocational competence level was higher than their productive competence. It was concluded that improving medical collocational competence level requires more exposure time, explicit emphasis on medical collocations in classrooms and offering medical English as a separate course from medical terminology.

Keywords: Collocational competence, Iranian medical students, English for students of medicine, collocations.

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Introduction

Medical students in Iran are offered nine credits of English courses, out of which three credits are general and six credits are English for the students of medicine 1 (ESM1) and English for the students of medicine 2 (ESM2). Despite learning the grammatical structures of English and memorizing a long list of words, medical students are not usually able to make correct English phrases and sentences. Consulting dictionaries, they stitch single words (adjective -noun, verb - noun) together merely based on their meanings and try to construct phrases and sentences under the influence of their mother tongue patterns. For example, instead of “taking medicine” and “being on a diet”, they use “eating medicine” and “having a diet”. These examples show that collocational competence is a problematic area for them. Miščin (2013: 610) quoting McCretton and Rider’s hierarchy of mistakes, claims that “a speaker can be understood if s/he makes a grammatical mistake. However, if s/he makes a lexical mistake there could be misunderstanding and the same problem occurs with mistakes in collocation. That is why it is important to teach collocations.” Deploying frequent collocations is “a key enabler of fluent comprehension and production” (Lindstromberg et al., 2016). Some researchers also believe that correct use of collocations indicates more proficiency of L2 learners (Boers et al., 2006; Dei and Ding, 2010; Schmitt, 2008: 340; Stengers et al., 2011 in Lindstromberg et al., 2016). Since collocational knowledge is an important part of fluency in a language (Nattinger and DeCario, 1992), and collocational mistakes are the most common ones made by nonnatives (James, 1998 in Miščin, 2013) studying, teaching and learning collocations are considered highly crucial.

Firth referred to collocation as a multiword combination and believed that “collocation is the elements that usually accompany words” (Firth, 1957: 183). However, all word combinations are not considered collocations. As indicated by Cowie and Howarth (1996) there are four different types of word combinations - *free combinations* (e.g. eat an apple), *restricted collocations* (e.g. meet the demand), *figurative idioms* (e.g. call the shots) and *pure idioms* (e.g. kick the bucket). Hill (1999) emphasized learning correct word combinations instead of memorizing the meaning of every single word and coined the term “*collocational competence*” and stressed that the acquisition of the lexis is not just about learning the overall meaning of a word but also its collocational span. Hill (2000: 53) states that “it is possible that up to 70% of everything we say, hear, read or write is to be found in some form of fixed expression.” Lewis (2000) claims that collocations are significant “prefabricated chunks” in the language.

In a study conducted by Shahrokhi and Moradmam (2014) lexical and grammatical collocations used in Iranian high school English textbooks with American

English File books¹ were compared. They concluded that lexical collocations were more frequent than grammatical ones and more observable in American English File books. Alotaibi (2014) studied the relationship between language learners' proficiency level and comprehension of lexical collocations. He showed that both advanced and intermediate learners had little knowledge of collocations. Ward (2007: 26) believed that "collocations are more specialized and sub-disciplinary specific than the individual words themselves", and Hyland and Tse (2009) noted the discipline was related to the nature of collocations; therefore, it is necessary to draw students' attention to the collocations used in their discipline. Mudraya (2006) emphasized the integration of lexical approach in teaching English to students of technical sciences, especially students of engineering, and stated that sub-technical vocabularies should be focused on in the ESP classroom. Lindstromberg et al (2016) compared standard dictogloss with modified dictogloss techniques in teaching formulaic sequences (FSs) or collocations in order to find out the effectiveness of these techniques. They found that the learners in the modified dictogloss group used more FSs than the learners in the standard dictogloss group which reveals that the former technique was more effective in learning and using FSs than the latter. Marco (2000) has analysed collocational frameworks or discontinuous sequences of words, in a corpus of medical research papers and described the collocates which fill these frameworks. She concludes that there are certain collocations that are genre-specific and are, therefore, restricted set of lexical items for that specific genre. Karami (2013) in her study used two different methods (explicit and implicit) during a semester to find out which method proved more effective. Miščin (2013) investigated the most frequent verb collocations occurring in medical texts and explained why certain words occurred with certain nouns in a collocation. Takač and Miščin (2013) explored the collocational competence of non-native users of medical English. They compared the level of collocational competence of first and fifth year students and doctors to identify those collocations that required special attention in teaching medical language. It was indicated that being continuously exposed to medical English and actively using it results in an increase in the level of the learner's knowledge of collocations. *Henrikson (2013) in his study reported that many studies agree on the slow and uneven development of collocational competence as a result of exposure. In Gyllstad (2007) it was shown that a 6 month exposure did increase the learners' collocational competence but this was proved to be insignificant.*

Webb et al. (2013) studied the effect of repetition on learning collocations at Taiwan University where they found that more encounters with the target words did result in better learning. Considering the fact that ESP as an approach deals

1 Book 3 of Iranian high school English textbooks and Book 2 of American English File book series (an American English course with a communicative methodology) were used in this study.

with activities such as needs analysis, text analysis, and improving learners' technical vocabulary knowledge as well as reading comprehension proficiency (Gilbert, 2005; Leki, 2003a; Robinson, 1991 in Mehrabi et al., 2015), and that no study has been performed to assess medical collocational competence level of Iranian medical students, it was decided to carry out the present study. The aim was to determine the impact of ESM1 and ESM2 on our medical students' medical collocational competence level. The objective was to compare overall collocational competence level of medical students passing General English, ESM1 & ESM2. Our particular point was to show the effect of ESM1 and ESM2 on students' medical collocational competence level. Secondly, we wanted to evaluate which aspect of collocational competence (receptive, receptive-productive and productive) was more improved in Iranian medical students.

It is believed that passing GE, ESM1 and ESM2 would have an effect on the overall collocational competence level of the learners. It is also expected that both receptive and productive aspects of collocational competence are improved in Iranian students of Medicine after passing ESM1 and ESM2.

Method

This descriptive-analytic study was performed on 156 medical students of Hamadan University of Medical Sciences and Health Services in 2015. Fifty-three students had passed General English, 52 students both General English and ESM1, and 51 students had passed ESM2 in addition to General English and ESM1. In General English classes, students did not have a single textbook. They practiced English dialogues, mostly health related, which were chosen from web pages. In ESM1 and 2 classes, the 7th edition of "*Medical Terminology: An Illustrated Guide*", written by *Barbara Johnson Cohen* and *Ann DePetris* was the textbook. The book was a comprehensive one with 21 chapters organized in three parts - "*Introduction to Medical Terminology*", "*Disease and Treatment*" and "*Body Systems*". The first two parts were covered in ESM1 classes and the third part in ESM2. All of the students were Iranian, most of them had Persian as their mother tongue and a minority of them were bilingual speakers of Persian and Kurdish or Persian and Turkish. English was a foreign language for all of them and they had started learning English since guidance school², usually starting at the age of 12.

We used a medical English test to compare the subjects' collocational competence level. The test was originally designed by Takač and Miščin in 2013 in Croatia. We

² The schooling system in Iran was traditionally divided into three levels: Primary school (ages 7 - 12), guidance school (ages 12 - 15) and high school (ages 15 - 19).

modified some items based on frequent collocational errors of our Persian speaking students and replaced Croatian sentences with Persian ones in the translation sections (appendix 1). It included 15 multiple-choice questions to evaluate students' receptive competence, 15 fill-in-the-blank questions and 15 translation tasks from English into Persian to test the students' productive competence and 15 translation tasks from Persian into English to test both receptive and productive knowledge of the students. We gave the test to the students at the end of the semester and asked them to answer the questions in 60 minutes while explaining the instructions in Persian. Participation in the test was not obligatory. We assigned one point to each correct answer and evaluated only the target collocations in translations, without considering grammatical and spelling errors. The total score for each section was 20.

Statistical analysis was conducted using SPSS version 20 (SPSS, Chicago, USA). Descriptive data were expressed as mean values with standard deviation. ANOVA was used to compare differences in variables among the groups. Post hoc comparison was used to compare two groups with each other and paired t-test for within group comparisons. All analyses were two-tailed and $p < 0.05$ was considered to be statistically significant.

Results

We used ANOVA test to evaluate our first research hypothesis, i.e. whether passing ESM1 and ESM2 has an impact on participants' medical collocational competence. The results of the test can be observed in Table 1. As the table shows, ESM2 students, despite passing General English, ESM1 and ESM2, received surprisingly lower scores than the other groups, however, the difference was not significant ($p = 0.122$).

Table1. Overall collocational competence.

level	N	min	max	median	mode	Mean	SD
General English	53	3	15	7/54	6	7.84	2.197
ESM1	52	3	14	7.21	5	7.78	2.490
ESM2	51	0	16	6.54	4	6.76	3.531
total	156	0	16	6.89	7	7.47	3.021

In the second step, with the use of post hoc analysis, we analysed the level of receptive, receptive-productive and productive collocational knowledge of the participants separately. Tables 2, 3 and 4 show the results of the participants' receptive, receptive-productive and productive knowledge, respectively.

Table2. Receptive competence.

level	N	min	max	median	mode	Mean (SD)
General English	53	5	17	10.67	11	10.84 (3.138)
ESM1	52	1	16	10.67	12	10.23 (2.791)
ESM2	51	1	17	8.00	8	8.89 (3.348)
total	156	10	17	9.33	8	10.00 (3.186)

Table 2 shows the receptive collocational competence of the students. Post-hoc comparisons showed that General English and ESM1 students' mean scores at receptive knowledge level were significantly higher than that of ESM2 students, respectively ($p=0.002$) and ($p=0.03$), but the difference between GE and ESM1 students ($p=0.313$) was not significant.

Table3. Receptive-productive competence.

level	N	min	max	median	mode	Mean (SD)
General English	53	1	15	7.33	6	7.33 (3.274)
ESM1	52	1	14	8.33	5	7.97 (2.828)
ESM2	51	0	17	5.33	5	6.41 (4.195)
total	156	0	17	7.33	5	7.24 (3.510)

Based on Table 3, ESM1 students performed statistically better than ESM2 students in receptive-productive competence ($p=0.023$), while we did not observe significant differences between GE students and ESM2 students ($p=0.175$), and GE students and ESM1 students ($p=0.346$) in this area.

Table4. Productive competence.

level	N	min	max	median	mode	Mean (SD)
General English	53	0	14	5.00	5	5.99 (3.426)
ESM1	52	0	15	3.75	4	5.12 (3.805)
ESM2	51	0	15	5.00	2	5.42 (4.110)
total	156	0	15	5.00	5	5.51 (3.780)

Table 4 shows that there was not any meaningful difference between groups in productive competence.

Within group a comparison was done by using Paired t-test and the results showed that in each group, level of receptive knowledge was higher than levels of receptive-productive and productive knowledge ($p=0.001$).

Discussion

In this study, we investigated whether passing ESM1 and ESM2 courses improved the level of Iranian medical students' collocational competence, and which aspect of Iranian medical students' collocational competence was improved. Our results showed that the students' overall collocational competence was low, which indicated that ESM courses did not have positive effect on students' collocational competence level. Moreover, their overall receptive collocational competence level was higher than their productive competence.

The first result can be attributed to the fact that three semesters do not provide enough exposure time for the students to master medical collocations. The results of the present study confirmed the findings in Henrikson (2013), Gyllstad (2007), Webb et al. (2013), and Takač and Miščin (2013). It was found that, although a small amount of exposure to collocations is effective in improving the learners' collocational level, it proves not to be significant, that is, more frequent and intense exposure is required for more meaningful results.

Aside from low level of medical students' overall collocational competence, the unexpected result of this study showed that General English and ESM1 students did better than ESM2 students. This unexpected result seemed to be due to different

teaching preferences in GE and ESM classes and the requirement of ESM courses to cover a long list of medical terminology in addition to medical English. The focus of teaching and learning in General English classes was on medical dialogues and reading comprehension. In these classes we explicitly emphasized collocations which were believed to improve students' collocational competence level. However, in ESM classes, on the one hand, a wide range of medical terms of different body systems should be covered without enough focus on medical collocations, and on the other hand, due to the students greater interest in medicine, they merely concentrated on medical terms and neglected the words accompanying them. So, it seemed that different teaching preferences in GE and ESM classes and the mixture of medical terminology with medical English were the leading causes of 4th semester medical students' lower level of collocational competence compared to the first semester medical students. This was in accordance with Myers and Chang (2009) and Xu et al. (2012) which found an association between collocations and the manner of teaching. In their studies they found that explicit teaching method leads to language learners' awareness which plays an effective role in the teaching and learning process. Karami (2013) found significant difference in the students' performance after studying explicit and implicit methods of teaching. Lindstromberg et al. (2016), after comparing standard and modified dictogloss techniques, concluded that modified version attracts L2 learners' attention to the FSs and results in more effective collocational performance.

The second result of our study demonstrated that receptive competence of medical collocations of our students was better than their receptive-productive and productive competence. This was in consistence with other areas of language in which productive skills follow receptive skills (Saville-Troike 2006, Richards 2008). Takač and Miščin (2013: 148) reported that learners showed better receptive knowledge in terms of collocations and that they showed lower level of knowledge at the productive level. However, at the level of receptive knowledge, the difference between participating groups was not significant. Some other previous studies found the same result. Begagić (2014: 53) studied the difference between the participants' productive and receptive knowledge of collocations and found that "the participants' productive knowledge of collocations lagged behind and did not develop as their receptive knowledge." She also mentioned that "it is not surprising that participants' receptive knowledge is much better than their productive knowledge, because evidence suggests that receptive typically precedes productive knowledge" (ibid: 54). Alsakran (2011) in his thesis comparing the productive and receptive knowledge of collocations by advanced Arabic-speaking ESL/EFL learners found that "the learners receptive knowledge of collocations was broader than their productive knowledge."

The results proving that passing ESM courses does not improve the students' collocational knowledge indicates that ESM classes do not emphasize the students' English knowledge enough. Thus, teachers need to concentrate on different aspects of English teaching than conveying medical information. They need to explicitly focus on medical collocations to make the students aware of appropriate word choices. This way they can put together the single words that they have memorized separately in their minds and will be ready to use medical English chunks. Moreover, it is advised to separate medical English classes from medical terminology classes, so as to have more time to practice medical English collocations.

Conclusion, limitations and recommendations

This study was a total, within-group and between-group comparison of medical collocational knowledge level among three groups of Iranian medical students. The importance of this study lies in the fact that higher levels of collocational knowledge help the students understand medical texts better and present their medical ideas in English more accurately.

Our findings suggest that the level of students' medical collocational knowledge is low. Comparison of collocational knowledge among the three groups showed that passing ESM1 and 2 did not improve their collocational knowledge level. It seems that it is the result of focusing on medical terms without much consideration of the medical English texts in ESM courses.

Therefore, regarding the importance of collocations in learning a foreign language and Iranian medical students' weakness in this problematic area, we advise to draw the students' attention to collocations, specifically medical collocations, in ESM classes. We as teachers should revise our teaching preferences and emphasize medical collocations more systematically and explicitly. On the other hand, students should be urged not to memorize medical terms in isolation and purposefully practice collocations in medical texts. If policy makers of educational system take this research seriously, they should offer two separate courses, a medical terminology course and a medical English course.

One of the limitations of this research study was that we compared different students in different classes. So, the results might not show the exact effect of ESM courses on medical students' collocational competence level and might reflect the students' different previous proficiency levels. To remove this limitation, it is recommended to conduct a longitudinal study in which the same students are compared in successive semesters after passing GE, ESM1 and ESM2 courses. Although the time span of the present study covered only a limited number of semesters during which time

the learners were exposed to medical texts, the effects of ESM 1 and 2 as the only two courses where students of medicine are expected to gain a good knowledge of medical collocations were at the centre of attention in this study. Since the results of the present study are only preliminary, a longitudinal study focusing on more intense and/or frequent exposure to medical collocations would be necessary in order to be able to draw appropriate conclusions regarding the learning and use of medical collocations by the learners.

How these courses helped learners' receptive and productive competences regarding medical collocations was another focus of the study. The results could be of benefit to syllabus designers and lecturers at university level to try and find ways to tackle such problems and compensate for the learners' limited competence in this respect.

The second limitation was that although the subjects of our study were Iranian students, their native languages were different. They were Persian, Kurdish or Turkish speakers. Future studies on medical students whose mother tongues are the same will reveal the pure effect of passing ESM courses on students' medical English collocational competence level aside from different mother tongues interferences in this process. Moreover, in future studies we can compare medical English collocational errors of our Persian, Kurdish or Turkish speaking medical students to find the different possible effects of these languages on the students' medical English collocational competence level.

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Appendix – Test

Which courses of English have you already passed: GE, ESM1, ESM2?

.....

I Circle the correct answer:

1. She is well to treatment. a) responding b) answering c) recovering
2. He a new kidney from his brother. a) had b) received c) obtained
3. Playing football only his knee injury. a) impaired b) deteriorated
c) aggravated
4. The doctors the patient's hip. a) changed b) replaced c) exchanged
5. Some people want and need to weight. a) get b) gain c) grow
6. My uncle malaria when he was working in Africa. a) contracted
b) obtained c) received
7. The doctor the diagnosis of heart failure. a) performed b) did
c) established

8. The ability to pain may change with age. a) suffer b) tolerate
c) experience
9. Each doctor will physical examination in different orders. a) do
b) make c) perform
10. The authors recommend a wide range of foods to physical fitness.
a) maintain b) hold c) sustain
11. Similar procedures may be used to a person's prognosis after a
heart attack. a) predict b) foresee c) determine
12. The doctor the pulse in arteries in the neck, beneath the arms...
a) feels c) touches c) tests
13. Antacids relief more quickly than H2 blockers. a) give b) offer
c) provide
14. Respirators can some risk for people with heart or lung ailments.
a) represent b) show b) pose
15. Steam inhalation can effectively secretion. a) weaken b) loosen
c) lessen

II Put a verb in the gaps.

1. When you are pregnant you should alcohol consumption.
2. The bandage should be regularly.
3. A bedsore can in hours and may take months to heal.
4. Each time you give blood a doctor blood samples for safety tests
in the labs.
5. The electrocardiogram (ECG) is an important and sometimes central tool used to
..... the diagnosis of myocardial ischemia.
6. NSAIDs are often used to headache pain.
7. The patient was to hospital due to terrible injury.
8. Antibiotics are used to infection.
9. He has severe head injury.

10. If you experience a severe allergic reaction e.g. with breathing difficulty
 medical attention urgently.
11. Tony Snow will surgery on Monday to remove a small growth.
12. The doctor will penicillin or other antibiotics by pill or by
 injection.
13. The task of a nurse is also to a patient's temperature.
14. Health visitors visit families to check-ups on young children.
15. I think I've the flu bug that's going round.

III Translate into Persian. Pay special attention to underlined words.

1. The victim regained consciousness after 2 months of coma.

2. You should induce vomiting.

3. A person can quickly go into shock and die because of internal bleeding.

4. Chemotherapy can sometimes extend survival to 8 months.

5. Deep breathing may produce pain.

6. He strained his back lifting the table.

7. Treatment is directed against eradicating infections.

8. Glucocorticoids suppress inflammation in the human placenta.

9. Over two hundred thousand Americans undergo kidney dialysis.

10. There is a higher percentage for men to develop kidney stone than women.

11. She detected a lump in her left breast.
.....
12. Smoking in midlife may impair memory.
.....
13. Some medications can abort migraine headaches.
.....
14. Vomiting relieves nausea right away.
.....
15. Alcohol can speed the onset of hypothermia.
.....

IV Translate into English. Pay special attention to underlined words:

- 1- برادرش مبتلا به بی اشتهاهی است.
- 2- مزاجم خوب کار می کند.
- 3- من آسم دارم.
- 4- معده ام درد می کند.
- 5- من سابقه خانوادگی سرطان دارم.
- 6- آنها را از علائم هشدار دهنده آگاه کنید.
- 7- دکتر برای من دارو تجویز کرد.
- 8- پیام شکسته است.
- 9- روزی دوبار این قرص ها را بخورید.
- 10- این داروها به صورت درون وریدی به بیمار داده می شود.
- 11- ایمنی اکتسابی از طریق واکسن زدن، ایجاد می شود.
- 12- سیگار کشیدن از عوامل آغازگر سرطان است.
- 13- شریان کاروتید خارجی، به صورت و پوست سر خون رسانی می کند.
- 14- حالم به هم می خورد.
- 15- رژیم دارم.
- 16- دو کیلو وزن کم کردم.

Razina kolokacijske kompetencije engleskoga jezika medicinske struke kod studenata medicine u Iranu

SAŽETAK

Kolokacijska kompetencija smatra se važnim čimbenikom tečnosti jednog jezika. U Iranu su medicinski tekstovi uglavnom na engleskom jeziku, a studenti medicine moraju ostvariti 6 bodova iz kolegija Engleski jezik medicinske struke. Na tim kolegijima, osim engleskog jezika medicinske struke, trebao bi se učiti i velik broj medicinskih pojmova. Usporedili smo razinu kolokacijske kompetencije engleskog jezika medicinske struke prije i poslije polaganja kolegija Engleski jezik za studente Medicine 1 i 2 (ESM). Tri su skupine studenata medicine koji su položili kolegij Opći engleski (GE), Opći engleski i Engleski jezik medicinske struke 1 (GE i ESM1) te Opći engleski i Engleski jezik medicinske struke 1 i 2 (GE, ESM1 i 2) međusobno uspoređene. Ukupna razina kolokacijske kompetencije studenata bila je niska, što je ukazalo na to da kolegiji Engleskog jezika medicinske struke (ESM) nisu imali pozitivan učinak na njihovu razinu kolokacijske kompetencije. Štoviše, njihova ukupna razina receptivne kolokacijske kompetencije bila je veća od njihove produktivne kompetencije. Zaključeno je da unaprjeđenje razine kolokacijske kompetencije medicinske struke zahtijeva više vremena, eksplicitan naglasak na kolokacijama medicinske struke u učionicama i posebnu ponudu engleskog jezika medicinske struke kao zaseban kolegij, odvojen od medicinske terminologije.

Ključne riječi: kolokacijska kompetencija, studenti medicine u Iranu, engleski jezik medicinske struke, kolokacije.