Exploring Themes in English Language Teaching Publications in Iran's Medical Education: A Content Analysis

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Abstract- The present study explored the trajectories of themes in the English for Medical Purposes (EMP) studies in the Iranian medical education context. Informed with the frameworks of language planning, it juxtaposed the extracted themes with the pillars of English for Specific Purposes (ESP)-needs analysis, learning objectives, materials and methods, and evaluation. It explored the EMP themes in a corpus of 41 documents extracted from Google Scholar, Scopus, ISI, and PubMed databases. Then, the researchers performed a content analysis of the corpus based on a matrix incorporating the title, abstract, introduction, discussion, keywords, and the field of expertise of the author(s) of the documents. The analysis revealed the themes of learners' need analysis, language skills, learning strategies, cognitive and affective variables, teaching methodology, teaching materials, material evaluation, use of technology, evaluation of learners and learning, program evaluation, and evaluation of instructors. The juxtaposition of the themes with the mainstream pillars showed that although there was a match between the themes and the pillars, the size of the themes falling under each pillar differed. While utilizing technology and affective variables were the most frequent themes, learning materials, language skills, and learner variables were the least frequent ones. Most of the themes matched with the learning objectives pillar; the needs analysis pillar, on the other hand, had the fewest number of themes. Notable gaps, particularly in the areas of instructors' needs, administrative needs, learner variables, and instructor variables were discovered. The study also showed that EMP research predominantly focuses on English for medical academic purposes (EMAP) in the absence of studies on English for Medical Occupational Purposes (EMOP). The findings have implications for EMP research, policy setting, teacher education, and materials development, providing guidance for future research endeavors and contributing to the enhancement of English language education in the field of medical sciences.

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Acta Med Iran 2024;62(May-June):155-165.

Keywords: English for medical purposes (EMP); Medical education; Medical sciences universities; English for specific purposes (ESP); English for academic medical purposes (EAMP); English for medical occupational purposes (EMOP)

Introduction

English for Specific Purposes (ESP) courses focus on tailoring the learning and teaching content to the specific needs of learners and, unlike English for General Purposes (EGP) courses, distance the instruction of the English language from a focus on the general language proficiency (1,2). According to Paltridge and Starfield (3), ESP courses "focus on language, skills, and genres appropriate to the specific activities that learners need to do in English". Therefore, there is a constant need for the analysis of learners' needs, and "if there is no analysis, there is no ESP" (4). The analysis of learners' needs, in turn, has given rise to different types of ESP programs

(5,6) such as English for Academic Purposes (EAP), English for Occupational Purposes (EOP), and English for Medical Purposes (EMP).

In the same way as many other academic disciplines, where English language programs have been developed to meet related educational needs (7), English has become the lingua franca for communicating concepts in medical sciences (8,9). The English language is also "the de facto language of international medicine" and fluency in English would be a necessity to obtain the essential medical and scientific information (10). Medical scientists, physicians, and researchers need to learn English for teaching, learning, and publication purposes (11). It has been reported that the level of medical English used in lectures, textbooks, and journal articles has been increasing steadily (12). The necessity for learning the English language in medical education is not limited to the need for it for research and teaching purposes; the lack of or weak language competence might adversely affect the quality of medical care (13) as well, thereby highlighting the instrumental role of learning English for students of medical sciences and those engaged in health professions education (11).

In the Iranian higher education system, ESP courses are designed to prepare students to communicate in educational and professional situations at the national and international levels and mingle EAP and EOP (14). The courses mainly intend to close the gap between students' general proficiency in English and their ability to read authentic texts related to their field of study (15). In fact, reading and publishing academic articles is one of the most important goals of teaching English in higher education in Iranian universities (16). As per the curricula in different medical fields, students are required to take between one and six specialized language courses, which are planned by the Ministry of Health, Treatment and Medical Education.

Teaching language courses has long been an important topic for Iranian education researchers (17). The programs, however, have hardly been developed and evaluated in light of a language planning framework and scarcely reflect the needs and attitudes of the community (18). Language planning frameworks like the one by Kaplan and Baldauf (19), which consists of access, curriculum, methods and materials, evaluation, personnel, and resourcing policy as its major components, can help the development and evaluation of language teaching programs. Despite the pivotal role of the English language in the education of Iranian students, teaching the language in Iran's higher education has not been successful due to inefficiency in the curriculum, teaching

materials, teacher competence, classroom-based learning (20) and lack of second language education policy (21). One way to discover the reasons for the ineffective teaching of English at Iranian medical universities can be the study of the documents including research documents in this area. Research contributes to the diagnosis of the problems of the education system, helps make a logical analysis of the problems, and aids in the identification of appropriate remedial actions (22). Research on teaching helps teachers learn and reflect on the criteria that would ultimately direct their teaching. It helps teachers identify the skills and strategies that they need to deal with educational problems (23).

The pivotal role of the English language is undeniable in the medical education of Iran. The achievement test of English language in the comprehensive basic sciences examination, English language assessment in the admission of students at postgraduate levels, assessment of English language proficiency in the promotion of faculty members, and the national test of the Ministry of Health Language Examination (MHLE), exclusively designed and administered in the ministry of health and medical education, are just some of the examples showing the importance of English language in the Iranian medical education. Thus, it is necessary to explore the themes of research on teaching specialized English language courses for the students of medical sciences. The exploration of the themes will contribute to the identification of Iranian EMP teachers' research concerns. It will also indicate whether the Iranian teachers are targeting mainstream EMP concerns such as learners' needs in their research. To the best of the researchers' knowledge, there is a paucity of research pinpointing the themes of the studies conducted on EMP. Indeed, there is a lacuna in the research on the themes of EMP research documents worldwide in general, and in Iran in particular. As the themes of EMP research including research on English for Academic Medical Purposes (EAMP) and English for Occupational Medical Purposes (EOMP), the specialty of the authors researching EMP, and many other educational areas have remained uncharted in the Iranian context, an investigation into the EMP studies will potentially have much to offer to the English language education researchers, teachers, curriculum developers, and policymakers. The findings of the present study can contribute to the development of English language programs that address the needs of the students of medical sciences in the Iranian context. Informed with the existing frameworks for the planning and analysis of language programs (19), this study aimed to explore the trajectories of themes in the EMP studies within the Iranian academic

context via a content analysis of the publications. It also intended to juxtapose the themes with the four pillars of ESP--needs analysis, learning objectives, materials and methods, and evaluation by Anthony (24). Needs analysis constitutes the starting point of any ESP course. The needs analysis pillar focuses on questions about the necessities, lacks, and wants of the target learners, instructors, administrators, the educational setting, and the target language setting. The learning objectives pillar deals with the analysis of the genre, language skills, and sub-skills, learning strategies, cognitive, behavioral, and affective domains of language learning, and sequencing learning in syllabus design and curriculum. The materials and methods pillar deals with what to teach the learners, and which teaching methodologies are likely to be successful with them. This pillar mainly deals with the adoption, adaptation and utilization of published materials, the creation of custom materials, and the use of different teaching and learning methods to present target materials and help learners to engage with them. The evaluation pillar, an umbrella term that covers all forms of assessment of all target groups, deals with the measurement of learner performance gains, the success of the ESP course itself, and also the quality of instruction, and the instructor's effectiveness. These pillars support a learning environment in which learners, instructors, and administrators interact and collaborate in unique ways to meet the aims of ESP programs (24). To make the analysis easier and more reliable, the four pillars were hallmarked as the theoretical tenet of the study. To address the purpose of the study the following research questions were formulated:

1- What themes have studies on English for Medical Purposes (EMP) focused on in the context of Iran?
2- What is the trend of studies on EMAP and EMOP in the context of Iran?

The findings of the present study may inform curriculum revision and policy-making in medical education by providing insight into current trends and concepts related to English for Medical and Academic Purposes. The findings could also inform EMP researchers to extend and fine-tune future research on EMP.

Materials and Methods

The corpus of documents

This study aimed to explore the themes of the EMP studies spanning from 2003 to 2021 in the Iranian context

and to juxtapose the explored themes with the four pillars of ESP, namely needs analysis, learning objectives, materials and methods, and evaluation through content analysis. For data collection, EMP research studies were identified on the basis of the available resources on databases and websites including Web of Science, Google Scholar, Education Resources Information Center (ERIC), Scopus, PubMed, Springer LINK Contemporary, Taylor and Francis Journals, Wiley InterScience Journals, Science Direct Journals, ProQuest Dissertations and Thesis Global, Emerald Journals, Oxford Journals Online, and Scientific Information Database (SID). The search query syntax used to spot relevant studies were: "Medical English", "EMP", "Medical ESP", "specialized language for medical sciences students", "English for medical purposes", "English for nursing and English for health sciences". The inclusion criteria were the language (Persian and English, only), the year (from 2003 up to December 2022), the focus (EMP in general), the type of study (original research articles; both qualitative and quantitative), and the location (Iranian context). The search results yielded as many as 55 studies. Four studies were removed before the screening phase. The studies were then screened to construct a corpus. Ten studies were removed from the analysis in the screening phase. The studies were excluded if the full-texts were not available, and if only their abstracts were in conference proceedings. The studies were selected by titles and abstracts and then screened based on inclusion and exclusion criteria. Those directly or indirectly relevant to EMP were selected for full-text evaluation. Finally, a corpus of 41 documents was compiled, which are shown in Table 1.

Data analysis

To analyze the data, a content analysis was conducted to explore the themes in the 41 studies. Content analysis is generally defined as the process of organizing information into categories related to the research questions (25,26). There are several definitions of content analysis; however, we adopted a relatively broad definition by Krippendorff (27). According to this definition, it is a technique for making replicable and valid inferences from a text in the context it is used (27). The researchers use analytical constructs, i.e., units for inferences, to extract data for answering the research questions. In this technique, texts and the context are independent, and the researchers make inferences from the texts to the context (27).

To begin with and to conceptualize the analysis into relevant theoretical frameworks, principles of language

planning by Kaplan & Baldauf (19, 28, 29) and pillars of ESP programs by Anthony (24) were carefully examined. The frameworks provide an account of the languages to be instructed, the person who should be the target of instruction, the age, intensity and duration of the instruction, the target proficiency levels, the methods and materials of teaching and evaluation, the characteristics of the instructors, needs analysis, learning objectives, materials and methods, and evaluation. Next, to make the replication easier and reliable we defined certain units of analysis. Accordingly, in view of the purposes of the study, needs analysis, learning objectives, materials and methods, and evaluation were adopted for units and categories of analysis. To analyze the data, the retrieved studies were examined to unveil their purpose and structure and to see how they were relevant to EMP. The

relevant text segments in the title, abstract, introduction, discussion, and keywords sections were highlighted. Then a three-level iterative coding process requiring several back-and-forth examinations of the text was performed. First, the highlighted text segments were coded on the basis of their content; the unit of analysis ranged from a sentence to a whole section; next, similar segments were clustered into categories; then, the categories were classified as themes. The corpus of the studies was coded in three rounds systematically and the codes were deeply reviewed and revised repeatedly until clear themes emerged. The analysis and coding was performed through an independent examination by two researchers and in case of any disagreement it was resolved by a discussion and consultation with the third researcher.

Table 1. The studies meeting the inclusion criteria

No.	Title	Author	Year	Journal
1	Evaluation of the ability of dental students of Guilan University of Medical Sciences in understanding educational movies in English	Yousef Jahandideh Amir Mahdi Zafarghandi	2003	Iranian Journal of Medical Education
2	Evaluation of dental students in terms of ability to read scientific-technological texts	Yousef Jahandideh Amir Mahdi Zafarghandi	2005	Prose study of Persian literature
3	Assessment of medical students' potential on understanding the concepts of English educational CDs	Golrokh Ebadi Fard Azar	2005	Journal of Qazvin University of Medical Sciences
4	Students viewpoints about the sequence of university language courses: a Survey in Shahid Sadoughi Medical University.	Mohamad Reza Mozaian Saeed Mazloomi Mohsen Asgar shahi	2005	Iranian Journal of Medical Education
5	Investigating the effect of English language learning strategies on reducing test anxiety in students of Sabzevar Faculty of Medical Sciences	Mohsen Kooshan Nematallah Shamoosi Mohamad Hasan Rakhshani	2006	Journal of Sabzevar University of Medical Sciences
6	The Study of problems of learning English lesson in students of Health School of Ahvaz Jundishapur University of Medical Sciences in 2009	Hosein Jafari Mina Keshtkar Kamal Shakhi Hamid reza Maharloo	2009	Development of Jondishapur education Bi-quarterly journal of the Center for Studies and Development of Medical Sciences Education
7	Investigating the type of motivation to learn English in medical and dental students of Rafsanjan University of Medical Sciences	Zahra Hashemi Maryam Hadavi Mohsen Rezaeeian	2012	Journal of Rafsanjan University of Medical Sciences
8	The attitude of medical students and English professors towards the specialized medical language book; Implicit challenges and applications for professors specialized language courses	Masoumeh Mohebbi Gholamreza Hesami Giti Karimkhanlooee	2013	Journal of Medical Education Development
9	Investigating the level of motivation of medical students in learning English	Giti Karimkhanlooee	2013	Journal of Medical Education Development
10	Problems of English for Specific Purpose course for medical students in Iran	Alireza Boniadi, Morteza Ghojazadeh Neda Rahmatvand	2013	Khazar Journal of Humanities and Social Sciences
11	The effect of task-oriented teaching on English reading and comprehension skills of midwifery students	Mojgan Mesbah Masoumeh Faghani Masoumeh Adib Fatemeh Salamat	2014	Journal of holistic nursing and midwifery
12	Medical students' views on the most used strategies to understand English texts in Guilan University of Medical Sciences in 2012	Ensieh Mir Hojati Sedigheh Fallah	2014	National conference of medical science education
13	Comparing the average grades of foreign language and pre-university language courses with the percentage of English language in the medical, dental and pharmacy entrance exams of Shahid Sadouqi University of Medical Sciences, Yazd	Mohammadreza Heidari Abas Ali Jafari Marzieh Nikoonejad Farimah Shamsi	2014	National conference of medical science education

Cont. table 1

14	English for Specific Purposes: Proposing an Innovative Approach to Teaching English to Medical Students	Nargess Hekmati Hossein Navidinia	2015	Iranian Journal of Applied Language Studies (IJALS)
15	The attitude of medical students and professors regarding English language books related to the field: assessment of needs in English with special purposes	Parviz Ajideh, Ali Akbar Ansarin Leila Fekri	2015	Thesis Ministry of Science, Research and Technology - Tabriz University - Faculty of Literature and Foreign Languages
16	Effect of Self-Assessment Reading Strategies on the Function of Paramedical Science Students in Comprehension Drills	Arash Gholami Saleh Abadi Mohsen Khajeh Mahboobeh Taghizadeh	2015	Journal of Educational studies
17	A review of English for medical purposes for Iranian EFL learners	Afsoon Piroozan Elham Boushehri Ramin Fazeli	2016	Journal of Advances in English Language Teaching
18	An Analysis Of The English Language Needs Of Medical Students And General Practitioners: A Case Study Of Guilan University Of Medical Sciences	Fereidoon Vahdany Leila Gerivani	2016	International Journal of English Language and Literature Studies
19	Breadth or Depth: The Role of Vocabulary Knowledge in Iranian EAP Students' Reading Comprehension Performance	Esmail Faghi Faezeh Nemati	2016	The Journal of Applied Linguistics
20	The effect of the type and order of language assignments on the learning of ESP words on students of the University of Medical Sciences	Maryam Shirzad Abas Eslami Rasekh Aziz Allah Dabaghi	2016	Journal of Shahrekord University of Medical Sciences
21	The study of English Educational Needs of Students Studying in Isfahan University of Medical Sciences: Students' perspective	Zahra Akbari	2016	Development Strategies in Medical Education
22	Evaluation of Newly Developed EAP Textbooks for the Students of Medicine Published by SAMT	Vahid Shahidipour Mohammad Hassan Tahririan	2017	Journal of Modern Research in English Language Studies
23	The effect of the simultaneous presence of the professor of medical physics and English language on the learning of the specialized language course of radiology students	Mehdi Aghabeghaeri Fatollah Bozorjmehri Masoud Mirzaee Mahdi Kalantra	2017	Journal of Medical Education and Development
24	The comparison of Vocabulary Learning Strategies among First Year and Senior Students at Rafsanjan University of Medical Sciences	Zahra Hashemi Maryam Hadavi Zahra Asadollahi	2017	Community Health Journal
25	The Effects of Syllabus-based General English Language Teaching on Learning English Language Motivation, Attitude and Self-efficacy in Students of Birjand University of Medical Sciences	Mohsen Ayati1 Mohammad Akbari Fereshteh Paydar Sorayya Rodi Aliabadi	2018	Journal of Birjand University of Medical sciences
26	The Medicine Faculty ESP Curriculum: Perspective of Students and Faculty Members.	Reza Torabi Ahmad Moin zadeh Darioush Nejaz Ansari	2018	Iranian Journal of Medical Education
27	Investigating the Cognitions and Practices of Iranian Language Teachers' and Content Teachers' Materials Preparation in EAP Courses at Medical Sciences Universities: A Nationwide Study	Reza Taherkhani	2018	Journal of Foreign Language Research
28	Evaluating the educational usability of Telegram as an SNS in ESAP programs from medical students' perspective	Iman Alizadeh	2018	Education and Information Technologies
29	Discovering the identity and suitability of electronic learning tools students use in English for specific purposes (ESP) programs	Iman Alizadeh	2018	CALL-EJ
30	English for Medical Purposes: An Investigation into Medical Students' English Language Needs	Nargess Hekmati, Mohammad Davoudi, Gholamreza Zareian, Mahmoud Elyasi	2019	Iranian Journal of Applied Language Studies (IJALS)
31	English for Medical Purposes: a Review of the Research Process and Visualization of Relevant Literature Using Word Co-occurrence Analysis	Nematullah Shomoossi Mostafa Amiri Mansoureh Feizabadi Mostafa Rad Esmaeil Vaziri	2019	Conference Proceeding :The first international conference on English language studies

Cont. table 1

32	Using an LMS in Teaching English: A Qualitative Content Analysis of Medical Sciences Students' Evaluations and Suggestions of Medical Sciences Students' Evaluations and Suggestions	Iman Alizadeh	2019	The Qualitative Report
33	Investigating medical students' readiness for technology-mediated autonomous learning situations in ESP programs	Iman Alizadeh Farideh Ebrahimi	2019	Education and Information Technologies
34	Iranian Medical ESP Practitioners' Reading Comprehension Assessment Literacy: Perceptions and Practices	Mozhdeh Shahzamani Mohammad Hassan Tahririan	2020	Iranian Journal of English for Academic Purposes
35	Investigating English Teachers and Content Instructors' Tests in the ESP Exams at Medical Universities	Iman Alizadeeh Fereidon Vahdany Seyedeh Shiva Modallalkar	2020	Iranian Journal of English for Academic Purposes
36	Rethinking English for Medical Purposes in Iran: Investigating the effectiveness of the status quo from stakeholders' perspectives	Nargess Hekmati Mohammad Davoudi Gholamreza Zareian Mahmoud Elyasi,	2021	International Journal of Language Studies
37	Traces of Critical Thinking Ability in the English for Academic Purposes Textbook for the Students of Medicine	Mavadat Saidi Mobina Shaghaghi	2021	Iranian Journal of Learning and Memory
38	Using technology in English for medical purposes: Eliciting instructors' attitudes	Mavadat Saidi Motahareh Afshari	2021	Informatics in Medicine Unlocked
39	An Investigation into English Language Teaching Textbooks Used at Medical Sciences Universities: Implications for Educational Justice	Iman Alizadeh Fatemeh Shafaee	2021	International Journal of Research in English Education
40	Using Metaphors to Explore Iranian Medical Sciences Students' Conceptions of Learning English	Iman Alizadeh Azar Darvishpour	2021	Journal of Cognitive Science
41	Creating Medical Terminology Flashcards for Use in Specialized Language Courses at Medical Sciences Universities	Iman Alizadeh, Yasaman Ramazanzad Safoura Sharifi	2021	Research in English Education

Results

The primary purpose of the study was to explore the themes of the EMP in the corpus of studies spanning from 2003 to 2021 in the Iranian context. Table 1 shows that the EMP documents address a variety of issues and have been performed with different frequencies over the years; they have been published mostly in Iranian journals (N=33).

To unpack the themes in the corpus of studies, the researchers, informed with existing frameworks for language education planning (19,28,29), scrutinized them by identifying, analyzing, and reporting repeated patterns of meaning across them. The content analysis resulted in the emergence of 15 themes: learners' needs analysis, language skills, learning strategies, learner variables, cognitive variables, affective variables, teaching methodology, teaching materials, evaluation of materials in EMP, utilizing technology, evaluation of learners, evaluation of learning, evaluation of program, evaluation of instructor, and reviews. The themes along with their frequency are given in Table 2.

The study also aimed to juxtapose the explored themes with the four pillars of ESP, namely needs analysis, learning objectives, materials and methods, and evaluation, to discover the extent to which the themes meet the aims of EMP courses and programs. The pillars and their underlying themes are shown in Table 2.

As Table 2 shows, utilizing technology and affective variables were the most frequent themes which were followed by learning strategies and program evaluation themes. On the other hand, language skills and learner variables were the least frequent themes discovered. It was also found that most of the themes matched with the learning objectives pillar; however, the needs analysis pillar had the fewest number of the themes.

It was discovered that learning objectives were more frequently investigated by EMP researcher in the Iranian context. However, the topics related to "Needs analysis" appeared to have low appeal to Iranian researchers. Figure 1 below shows the common themes and their frequency.

The juxtaposition of the derived themes with the mainstream pillars indicated that, as for the needs analysis pillar, only three studies were on learners' needs and setting needs, instructors' expectations and administrative expectations as main subcategories of the needs analysis pillar were missed.

As for the learning objectives pillar, affective variables, learning strategies, cognitive variables language skills, and learner variables were the focus of five and four, two, one and one studies, respectively. However, there was a lack of studies on instructor variables as one of the sub-categories of the learning objective pillar.

With regard to the materials and methods pillar, it was shown that teaching method, teaching materials, evaluation of materials and utilization of technology attracted 3, 1, 2, 2, and 5 studies, respectively.

Regarding the evaluation pillar, the highest number of research was conducted on the evaluation of programs which was followed by evaluation of learners and instructors with three studies. The least popular theme in the evaluation pillar was the evaluation of learning which only was investigated in two studies.

The study also examined the magnitude of research on EMAP and EMOP branches. The results showed that research on EMP predominantly focused on EMAP in the absence of studies on EMOP. Regarding the researchers' fields of specialty, a significant number of the studies were conducted by ELT researchers (i.e., 54.3%) and 48 researchers were by specialized in non-ELT fields (i.e., 45.7%).

Table 2. The frequency of the themes, authors and references

| N	Pillars	Themes	Frequency	Author(ELT/non-ELT)	References
1	Needs analysis	Learners' needs analysis	3	7 ELT 3 non-ELT	18, 21,30
2	Learning objectives	Language skills	1	8 ELT 19 non-ELT	19,12,16,24,6,40, 5, 7,9,25, 8,15,37
		Learning strategies	4		
		Learner variables	1		
		Cognitive variables	2		
		Affective variables	5		
3	Materials and methods	Teaching methodology	3	ELT: 22 Non-ELT:9	11,14,29,33,38,3 2,41,23,22,39,28
		Teaching materials	1		
		Evaluation of materials in ESP	2		
		Utilizing technology	5		
4	Evaluation	Evaluation of learners	3	18 ELT 14 non-ELT	1,2,3,4,20,-, 10,13,26,36,27,3 4,35
		Evaluation of learning	2		
		Evaluation of program	4		
		Evaluation of instructor	3		
5	Outlier	Review studies	2		31,17
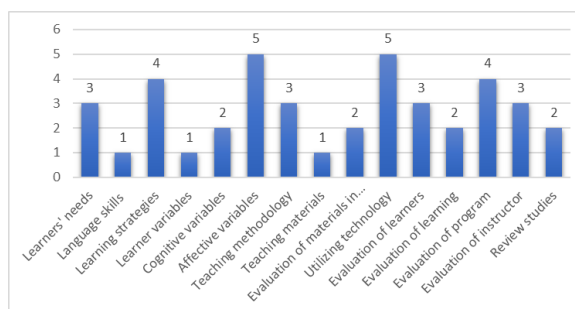
Figure 1. Frequency of the Common Themes

Discussion

There has been a burgeoning interest in the studies on EMP at the university level over the past few decades (30-44). However, the themes of investigations on English for specialized purposes in medical sciences particularly in the Iranian context seems uncharted. The present study attempted to demarcate the nature and the themes of EMP investigations and compare the themes with the mainstream pillars of ESP.

The findings showed there has been 41 studies on EMP in the Iranian context between 2003 and 2021. The number of publications compared to the number of medical sciences universities and language department in the Iranian context (44) seems to be low. One of the reasons for the low number of publications could be the low number of faculty members at medical sciences universities. There are 485 English language instructors

at 31 universities of medical sciences of whom 61 (12.57%) are English language faculty members (44). The second reason for the low number of publications can be the practice of non-ELT specialists in the field of teaching specialized medical language courses. As many as 424 (87.43%) instructors who are either medical specialists teaching English language courses (191; 39.3%) or non-faculty part-time (guest) lecturers (233; 48%) at practicing at them medical sciences universities (44). These instructors hardly perform research on EMP issues. As the findings of the present study showed the number of non-ELT researchers was lower that the number of ELT researchers (Figure 2). One of the reasons for non-ELT researchers disinterest in EMP research could partly be promotion regulations that restrict faculty members, irrespective of their expertise, from publishing their research in prestigious journals. In the following sections, the findings with regard to the four pillars of ESP will be discussed.

Needs analysis

It was observed that despite the significance of such issues as instructors' needs and administrators' needs and setting needs in the EMP programs (24), they were missing in the studies performed in the Iranian context, which in turn led to the low number of studies on needs analysis. That needs analysis was the least frequent theme in the research on English for medical purposes studies runs contrary to the mainstream trend in EMP where Needs analysis is prior to any other aspects (24). Furthermore, what makes the issues in the area of EMP in the Iranian context more concerning is the paucity of studies on instructors' expectations analysis, administrators' expectations analysis, and instructor variables. Needs analysis is known to be an essential and primary step that helps to determine the needs, wants and prerequisites of learners. In addition, it recognizes their language background and preferences in designing an effective course. Dudley–Evans (37) argues that the main goal of the specialized language courses is to meet the explicit needs of learners. Ramirez (38) also hold that specialized language courses are designed "to meet the specific needs of learners". It has been emphasized that, unlike English for general purposes, the specialized courses are more goal-driven, and it requires an appropriate methodology to meet learners' needs (39). Specialized language courses like EMP approach should be based on the needs of learners in their respective subject areas (2). Likewise Smoak (40) argues that specialized English language courses are "based on the actual and immediate needs of learners. ESP is needs-

based and task-oriented" (*P*:27).

Materials and methods

According to our findings, under the pillar of materials and methods the most frequent theme was the use of technology. Interestingly, before 2018 the studies addressed the use of technology by primary tools such as movies, and CDs; however, after 2018, the studies focused on the use of high-technology such as LMS and social media which could be due to the rise and integration of e-learning in medical education (Tables 1 and 2). Although Bastürkmen and Bocanegra-Valle (41) and Ahmed (42) emphasize the use of appropriate and authentic materials to meet the learners' intrinsic needs, there are only 6 studies addressing ESP textbooks which are mainly on the evaluation of the published textbook; there is no study on the textbook development (Table 1 and 2). Teaching method is comparatively less considered. As Figure 3 shows, there are only 3 studies on teaching methods which needs more attention in future studies.
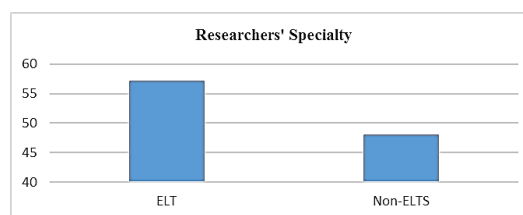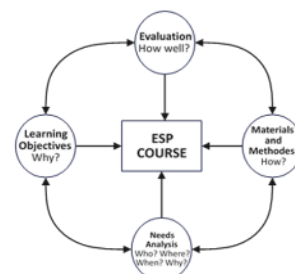

Figure 2. Number of ELT and non-ELT Researchers

Figure 3. The four pillars of ESP by Anthony (24)

Learning objectives

Among the four pillars, learning objectives showed the highest number of themes. Our findings indicate that the highest number of studies (N= 13), and the most frequent themes were found under the learning objectives (N= 5). As Table 1 shows, affective variables with a frequency of five studies followed by learning strategies with a frequency of four are the main focus of EMP researchers, probably due to ease of examining. However, a few studies are conducted on cognitive, learner variables and language skills suggesting that

research related to psycholinguistic issues lacks sufficient attention from EMP researchers.

Evaluation

Our findings showed that there were 12 studies on evaluation which examined learners, learning, program and instructors with a relatively comparable number of studies. Interestingly, there are two studies comparing content teachers and EMP teachers, while one study is on the simultaneous presence of content teacher and EMP teacher, suggesting that culture of collaboration is appearing in the EMP research. Another significant finding of the study was that although over 54 percent of the research in the different areas of EMP had been performed by ELT researchers, over 45 percent of the research in the different areas of EMP had been performed by non-ELT researchers. non-ELT researchers' attraction to the research on ELT, irrespective of its potential positive or adverse effects, can originate from the teaching practice of specialized English language courses at medical sciences universities in Iran, where a majority of courses are taught by non-ELT teachers. In line with the findings of our study, Pourhaji *et al.*, (43) reported that a significant number of English for specialized courses at medical universities, despite being developed to satisfy the language needs of the students in their respective disciplines, are taught by content specialists rather than language specialists. This can, in turn, help the introduction of such non-ELT teachers to the field of ELT research, where they might have little if any knowledge or expertise of the principles of language teaching and research. Moreover, the research by non-ELT teachers, unfamiliar with the tenets and literature on specialized language course teaching, is mainly based on their perspectives and intuitions on the course, rather than their academic education and subsequent practice in the field of language teaching. As a result, as the findings of the present study witness, most of the research on teaching medical English courses, become distant from the mainstream issues of the EMAP and EMOP purposes.

Another finding of the study was the lack of research on English for Occupational Purposes (EOP) which, according to Sezer (44), aims to meet the occupational English language needs of learners in their occupational settings. Moreover, EOP courses are developed within the framework of professionalism (45), are focused on improving job-related English language skills (46), and highlight the functional and communicative aspects of language use in the world of work (47).To specify such aspects of language in the field of medicine, one needs to

research them. A lack of research on areas of significance in the EOP programs causes students' future occupational needs to remain untouched.

Informed with the principles of language planning (19,27,28), this study investigated the themes in teaching EMP research in the Iranian context. The themes were then juxtaposed with mainstream issues in the ESP research. The content analysis of a corpus of 41 studies extracted from relevant databases resulted in the emergence of 15 themes: learners' needs analysis, language skills, learning strategies, learner variables, cognitive variables, affective variables, teaching methodology, teaching materials, evaluation of materials in EMP, utilizing technology, evaluation of learners, evaluation of learning, evaluation of program, and evaluation of instructor. It was discovered that EMP research predominantly centered on EMAP in the absence of studies on EMOP. The juxtaposition of the themes with the mainstream pillars of ESP showed that although there was a match between the themes and the pillars, the size of the themes falling under each pillar differed. While utilizing technology and affective variables were the most frequent themes, language skills and learner variables were the least frequent ones. Most of the themes matched with the learning objectives pillar; the needs analysis pillar, on the other hand, had the fewest number of themes. Although there were a few studies on the language needs of the Iranian medical sciences students, other aspects of needs analysis pillar, including instructor's needs, and administrator's needs, were neglected. The findings suggest that non-ELT researchers have contributed to the production of nearly half of the investigations on EMP mainly due to their involvement in teaching specialized language courses.

The study concludes that the trend of research on EMP is hardly on the right track and needs urgent reform so that the academic English language needs and the occupational English language needs of medical sciences students are identified and met. After specifying the needs, carrying out investigations on the mainstream pillars rather than intuitive subjective areas of research seems to be of necessity. Moreover, a large number of the researchers of EMAP and/or EMOP are required to be trained on the tenets of English language teaching and research as profound background knowledge of critical issues on language teaching and learning, material development and evaluation can provide researchers and teachers with more sophisticated and relevant insights. It is also recommended that policymakers reconsider regulations on publications related to faculty promotion so as to direct the publications to the right track and give

EMP teachers a true professional research identity which is in line with their academic specialty. The findings of the present study can be used in the development and evaluation of EMP curriculum and program in the Iranian medical education by providing insight into current trends and concepts related to English for medical and academic purposes.

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