



# Native Arabic Language Use Acceptability and Adequacy in Health Professional Instruction: Students and Faculty's Perspectives

Ghaith M. Alfakhry<sup>a,\*</sup>, Mayssoon Dashash<sup>b</sup>, Issam Jamous<sup>c</sup>

<sup>a</sup> Faculty of Dentistry, Damascus University

<sup>b</sup> Department of Paediatric Dentistry, Faculty of Dentistry, Damascus University

<sup>c</sup> Department of Fixed Prosthodontics, Faculty of Dentistry, Damascus University

Received 30 November 2019; revised 15 June 2020; accepted 18 June 2020

Available online 19 July 2020

## Abstract

**Purpose:** This study had three main purposes which were (a) to assess the adequacy and desirability of Arabic in health professional instruction by investigating students and teachers' perspectives and attitudes, (b) to explore aspects of Arabic medical translations which are not meeting expectations, and lastly, (c) to examine whether the level of education is a predictor of attitude.

**Method:** A questionnaire survey of medical and dental students at the undergraduate and postgraduate levels was carried out in 2019 at major universities in Damascus. Faculty members were also invited to participate. 346 respondents in total completed the questionnaires. Data were processed and analysed quantitatively and qualitatively. Attitude theory and Health belief model were employed to analyse and interpret the study findings.

**Results:** Overall attitudes toward Arabic as a language of instruction were relatively negative. Students consistently exhibited a preference for English as the language of instruction. The one-way Welch's ANOVA test found a significant difference among the main subgroups (undergraduates, postgraduates, faculty). Findings also showed that students and teachers suffer from the inadequacy of Arabic medical translations in quality and quantity. Respondents were generally dissatisfied with the proficiency of medical translators, and the majority agreed that there is a shortage of up-to-date Arabic study materials.

**Discussion:** Students' implicitly considered Arabic as a threat to their career advancement. Inadequacy of teaching in Arabic was more evident among postgraduates. Syrian students' desire to join the international medical community was one of the data implications. This study shed new light on the anomalous Syrian educational system as it provided a theoretical framework which could further understanding of the interaction between different concepts that affect attitudes towards the language of instruction. In terms of directions for future research, qualitative field research is recommended to give an idiographic account of students and teachers' subjective perception of the career threats posed by using Arabic as the medium of instruction in medical education.

© 2020 King Saud bin Abdulaziz University for Health Sciences. Production and Hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

**Keywords:** Language of instruction; Attitudes; Syria; Qualitative/quantitative analysis; Health belief model

**Abbreviations:** HPE, health professional education; AMI, Arabic as the medium of instruction; EMI, English as the medium of instruction; MOI, medium of instruction; UG, undergraduate; PG, postgraduate; F, faculty; SPU, Syrian private university; IUST, international university for science and technology.

\* Corresponding author. Ghaith M. Alfakhry, Faculty of Dentistry, Damascus University, Al-Mazze Highway, Syrian Arab Republic.

E-mail address: [ghaithalfakhry@gmail.com](mailto:ghaithalfakhry@gmail.com) (G.M. Alfakhry).

Peer review under responsibility of AMEEMR: the Association for Medical Education in the Eastern Mediterranean Region.

<https://doi.org/10.1016/j.hpe.2020.06.004>

2452-3011/© 2020 King Saud bin Abdulaziz University for Health Sciences. Production and Hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

In the 20th century, international communication shifted from the use of several languages to English prominently. In response to the global trend, many non-English speaking countries enacted educational policies which made English the language of instruction.<sup>1–3</sup> Health professions education was particularly affected due to the globalisation of the healthcare sector<sup>4</sup>, as well as the dominance of English in medical sciences through medical journals, international conferences, and study materials.<sup>5,6</sup>

### 1.1. The challenges of EMI programs for non-English students

The issue of the language of medical instruction has received considerable critical attention in non-English speaking countries over the past two decades. Despite the superiority of English medical materials in terms of being up-to-date and practicality, it has been argued that students are at a disadvantage in EMI programs owing to sociocultural factors as well as learners and instructors' lack of linguistic skills.<sup>7</sup> Classroom instruction is affected by teachers' proficiency to address subject content in-depth on the other hand. Poor classroom interaction is another issue. Students are more reluctant to ask in English.<sup>8</sup> In many cases, teachers use the native language to encourage interaction. As an adaptation to these challenges, students develop strategies to make up for the inadequate classroom instruction, exerting more effort outside the class along with relying on peer support and translated materials.<sup>8</sup>

### 1.2. English, or Arabic as the medium of instruction?

The existing accounts fail to resolve the contradiction between educators who advocate the use of Arabic and those for English as the medium of instruction (EMI). Some studies associated the use of English as foreign language with poor academic performance and lack effective patient communication.<sup>9–11</sup> In Amman, a comparative study reported that the use of Arabic instead of English enhanced students' comprehension in a less amount of time and effort.<sup>12</sup> Another research in Saudi Arabia looked into EMI from a sociopolitical lens pointing out the effect of "lingual imperialism" on teachers who overlook students' incompetence in English and their reluctance to use it. The study recommended revising policies and practices toward increasing the capabilities of the native language rather than replacing it.<sup>13</sup> In contrast, a questionnaire survey

in Egypt found that the majority of students were not pro-Arabic in lecturing owing to the lack of medical study materials in Arabic.<sup>14</sup> In Lebanon, a survey that looked into students' confidence in taking medical history in their native language was conducted. The results showed that most students reported positive self-evaluation on that task. However, this evaluation was attributed to students' engagement in history-taking tasks in their pre-clinical years.<sup>15</sup>

However, much of the research up to now has been descriptive and lacking in terms of credibility. The generalisability of much-published papers is problematic; for example, data collected in countries where there is a divergence of spoken languages is not comparable to countries less culturally-open. Most research was geared toward finding solutions to the English programs rather than exploring problems in the ones that utilize the mother tongue as the MOI. The reason for this might be that most research on this issue was carried out in countries that have already enacted policies which made English the MOI. The research settings may have affected the way researchers approached this topic. Moreover, there has been little qualitative analysis. Qualitative approaches step out of the traditional quantitative description to the mindful explanation of the social phenomenon.

### 1.3. Attitude theory

In the "Attitude Structure and Function", an attitude has been defined as "an individual's disposition to respond favorably or unfavorably to an object, person, institution or event, or to any other discriminable aspect of the individual's world."<sup>16</sup> Attitude is rather an implicit construct. Direct observations fail to capture it. Thus, it should be inferred from responses which must be measurable and evaluative (pro-con, positive, negative).<sup>16</sup> The multicomponent view distinguishes between three component of attitude: the cognitive, the affective and the conative.<sup>17</sup> The cognitive category is made up of the individual's beliefs about an attitudinal object. The second category can be inferred from the emotional response toward an attitudinal object. Lastly, the conative component is the behavioural inclinations, intentions and predisposition to the attitudinal object.

### 1.4. The Arabic medical educational system in Syria

In the Arab World, the majority of universities teach medical sciences entirely in English; some of them have certain subjects taught in Arabic; on the other

hand, in Syria, Arabic has been the language of instruction for medical sciences at the Syrian University, which is currently known as Damascus University, since the academic year 1918–1919.<sup>18</sup> Syrian educational leaders hold the use of the native Arabic language in instruction in high regard, believing of its critical role for bringing the Syrian community together and preserving the sociocultural identity.<sup>19</sup> Nevertheless, many obstacles face the rationality of the Arabic as the MOI such as the outdated study resources, the unfamiliarity of Arabic terminology and the absence of a national centre for translations and Arabisation which could coordinate individual endeavours.<sup>7</sup>

The instructional native language is critically dependent on translations since most of the contributions to medical knowledge are expressed in English, making the use of native language only as efficient as the quality and quantity of translations. A survey by the American International Health Council (AIHC) pointed to some issues Syrian doctors addressed including the ‘accuracy and simplicity of medical materials’. Some medical materials used at the Faculty of Medicine proved to be hard to understand due to literal translations and the use of old, uncommon Arabic medical terms.<sup>20</sup> A published article in Syria highlighted the problem of lack of term standardisation and forewarned against the linguistic and scientific impreciseness in translations. The use of the original foreign term was recommended until an appropriate equivalent is found.<sup>21</sup>

Up to now, much uncertainty still exists about the appropriacy of Arabic as the MOI in the Syrian context. This indicates a need to understand the various unvoiced perceptions of the academic medical community.

### 1.5. Aims, objectives and research questions

This paper explored factors that could have affected the adequacy of Arabic as the sole language of instruction in medical and dental schools in Damascus by investigating students and teachers’ experiences with the AMI program, gaining their insight into the perceived contrast between English and Arabic as the MOI. The section 3 has been divided into two parts according to the following research questions:

1. What are students and faculty’s attitudes toward Arabic as the language of instruction in comparison to English?

2. What dimensions of Arabic medical translations are falling short from the perspectives of students and teachers?
3. Is the level of education a reliable predictor of attitude toward the language of instruction? (this question will be investigated in the light of the first two questions. Hence, a third subsection will not be added)

## 2. Methods

### 2.1. Study design

This exploratory study is cross-sectional, conducted from April 15 to April 29, 2019. By considering quantitative indicators, levels of acceptability for the Arabic as the MOI were explored. In the process of conceptualization, different dimensions of acceptability were specified including attitudes toward each program (Arabic, English), degree of satisfaction with Arabic study materials, usefulness for its purpose, and challenges reflected by the program. Appropriate levels of measurement were chosen for each variable, and scales were constructed to fit each item.

### 2.2. Sampling

#### 2.2.1. Population

The study was conducted at the medical and dental schools at Damascus University, IUST, and the SPU. First-year students have been excluded since their subjects are less specialized. Over 95% of the population was native. Students ages ranged between 20 and 25. Students entered universities based on their scores on the final exam in the 12th grade.

#### 2.2.2. Sampling method

River sampling along with snowball sampling were used. Platforms such as Facebook, WhatsApp and Telegram were used to invite respondents to the online questionnaire survey. Official Facebook groups for students at each university and school were identified and exploited to capture respondents. Faculty members were selected based on purposive sampling.

#### 2.2.3. Sample size

346 respondents completed the questionnaires. Demographic information is presented in [Table 1](#).

Table 1  
Classification of respondents: descriptive statistics.

Students (n = 331)	Categories	n.	%	Faculty (n = 15)	Categories	n.	%
Branch of medicine <sup>a</sup>	Med.	134	40	Branch of medicine	Med.	6	40
	Dent.	192	58		Dent.	9	60
Level of education	UG	289	87	Academic rank	Assistant lecturer	5	33
	PG	42	13		Associate professor	3	20
					Professor	7	46
English Proficiency (self-evaluation)	Beginner	7	2	English Proficiency (self-evaluation)	Beginner	–	–
	Elementary	17	5		Elementary	–	–
	Average	71	21		Average	1	6
	Good	131	40		Good	5	33
	Very good	104	31		Very good	9	60

Acronyms and abbreviations. Med: medicine, Dent.: dental medicine, UG: undergraduate, PG: postgraduate, n: number of respondents, %: percentage.

<sup>a</sup> 5 respondents didn't specify their specialty.

### 2.3. Data collection

First, the researcher GA collected notes from personal observations, study materials provided for students, and conversations with medical and dental students and professors. Second, scientific papers relevant to the topic were reviewed. These steps helped inform the questionnaire items. Most responses were on 5-point semantic differential and Likert scale, and few were dichotomous. The questionnaire was first written in English, but due to the low response rate in the pretest survey, it was translated into Arabic. Three variations of the questionnaire were developed to address differences in population, (Damascus University, private universities, and another for faculty members). All subgroups were asked the same questions in the same way. The difference between Damascus University questionnaire and the private university one lies in the fact that students of private universities were asked extra questions that pertain to their slightly different training regime. However, we will not address these differences in this report. The questionnaires were designed via Google Forms<sup>22</sup> and made accessible from April 15 to April 29, 2019.

### 2.4. Data processing and analysis

Processing: All data were coded on excel 2016 then imported to SPSS 26 for analysis.<sup>23,24</sup> Items were grouped into two categories according to the research question they address. 5-point items were coded: (–2, –1, 0, 1, 2). The cut-off point for all scales is (0).

Dichotomous responses were dummy coded: (1, 2) with a cut-off point of (1.5).

Analysis: One-way Welch's ANOVA was performed to investigate differences between UG, PG and faculty with Games–Howell as a post hoc test. Single-sample and independent samples t-test were also conducted to compare the mean difference of two given groups. As for dichotomous items, Pearson Chi-square was used to test for association. Internal consistency of each questionnaire was measured using Cronbach's Alpha test. As for qualitative analysis, attitude theory and health belief model (HBM) were utilized to interpret the data.

### 2.5. Validity and reliability

GA and IJ held in-depth discussions on the relevancy of each item to the studied concept. Certain theoretical expectations about the way acceptability of the AMI program relates to other variables were developed (e.g., preferring English as the MOI could reflect dissatisfaction with the use of Arabic).

Pretesting: The questionnaires were sent out to 8 subjects<sup>1</sup> (3 staff members, 1 postgraduate, 2 dental students, 2 medical students). Based on their feedback, some items were deleted, others added and few were rephrased to increase clarity.

Reliability statistics: After coding the responses, and reverse coding items with negative implications, Cronbach's Alpha values for each questionnaire were calculated to measure internal consistency. All values were above 0.7; and this was considered acceptable in this exploratory study.

<sup>1</sup> Confidentiality was ensured for all 8 subjects.

Table 2  
One-way Welch's ANOVA comparing attitudes of UG, PG and faculty with post hoc tests.

Item	grp	n.	M.	SD	F	p	Post hoc: multiple comparisons		
							pairs	p	d
1. What's your evaluation of a program that uses Arabic as the MOI?(scale)	UG	288	0.34 (good)	1.14	14	0.000	UG*PG	0.12	0.32
	PG	42	-0.03 (bad)	1.11					
	F	15	1.26 (good)	0.70					
	Σ	345	0.34 (good)	1.15					
2. What's your evaluation of a program that uses English as the MOI?(scale)	UG	286	0.82 (good)	1.03	1.38	0.266	UG*PG	0.12	0.32
	PG	42	0.95 (good)	0.98					
	F	14	0.42 (good)	0.27					
	Σ	342	0.82 (good)	1.02					

grp: group, n: number of respondents, M: mean, SD: standard deviation, F: F-ratio, p: probability value, d: Cohen's d, UG: undergraduates, PG: postgraduates, F:faculty, Σ: Sum.

### 3. Results and Discussion

#### 3.1. Research question 1: what are students and faculty's attitudes toward Arabic as the language of instruction in comparison to English?

##### 3.1.1. Attitudes

As Table 2 shows, there is a significant difference among the three groups regarding item 1, ( $F = 14.1$ ,  $p = .001$ ). There is a small mean difference between UG and PG on both items, in contrast to faculty, who differed from both subgroups. Post hoc Games–Howell test indicated that the faculty group and the two other groups differed significantly in their responses to the first item with a large effect size ( $d > 0.8$ ). As for the second item, no significant difference among the groups was found ( $F = 1.38$ ,  $p = 0.26$ ). Students' overall views on item 1 cast doubt on the positive influence of the Arabic as the medium of instruction(AMI), whereas, UG and PG's attitudes weren't definitively positive nor negative.

Students are generally predisposed to like Arabic as it is their mother tongue and the one used in religious rituals – for the Muslim majority – (conative component), but it's not strengthened by the cognitive nor the affective components. Students have low quality, outdated study materials: this could have contributed to evaluating it negatively. Moreover, they also find it hard to stereotype Arabic positively as they might feel like an outgroup who is distant to the larger medical community. In the same way, the globalization of English and its arguable position as the lingua franca of medicine may be a reason for the positive attitudes toward English as the medium of instruction (EMI) in the 2nd item.

##### 3.1.2. Preferences

To investigate differences among groups, the Chi-square statistic was conducted. Table 3 shows that there is a significant difference among the three groups with a small effect size ( $0.1 < r_{\phi} < 0.3$ ). The multiple comparisons column demonstrates that faculty preferences were in stark contrast to students' who showed an inclination toward English and English language

Table 3  
Chi-square analysis of preference among UG, PG and faculty with post hoc tests.

Item	grp	n.	M.*	SD	p	r $\phi$	Post hoc: multiple comparisons		
							pairs	p	r $\phi$
3. If it was up to you, which language would you choose for the medical/dental educational system? (Dichotomous)	UG	286	1.59 (Eng)	0.49	0.001	0.2	UG*PG	0.009	0.14
	PG	41	1.80 (Eng)	0.40					
	F	15	1.27(Arab)	0.45					
	Σ	342	1.61 (Eng)	0.49					
4. In your opinion, which is the better choice investing in medical translation or English language education? (Dichotomous)	UG	281	1.73 (ELE)	0.44	0.000	0.27	UG*PG	0.03	0.12
	PG	42	1.88 (ELE)	0.32					
	F	15	1.20 (AMT)	0.41					
	Σ	338	1.72 (ELE)	0.44					

r $\phi$ : Phi correlation coefficient, Eng: English language, Arab: Arabic language, ELE: English language education, AMT: Arabic medical translation.

Table 4  
One-way Welch's ANOVA comparing perspectives of UG, PG and faculty on the quality of medical Arabic translation with post hoc tests.

Item	grp	n.	M.	SD	F	p	Post hoc: multiple comparisons		
							pairs	p	d
5. How unusual do you find Arabic medical terms? (scale)	UG	288	−0.36 (unusual)	1.14	3.12	0.05	UG*PG	0.97	0.03
	PG	42	−0.31 (unusual)	1.11			UG*F	0.05	0.65
	F	15	0.4 (usual)	1.12			PG*F	0.1	0.63
	Σ	345	−0.32 (unusual)	1.14					
6. 'A lot of AMT these days are transliterated. How often do you use transliterated medical terms? (scale)	UG	284	0.60 (often)	1.29	6.27	0.005	UG*PG	0.002	0.50
	PG	42	1.23 (usually)	1.03			UG*F	0.91	0.08
	F	14	0.71 (often)	0.99			PG*F	0.23	0.51
	Σ	340	0.68 (often)	1.26					
7. 'English Medical terminology uses acronyms and abbreviations extensively, whereas Arabic rejects them, and uses the full description instead. This makes the use of Arabic terms time consuming, difficult to use and hard to remember, in comparison to their English counterparts. (scale)	UG	281	0.53 (agree)	1.13	11.3	0.000	UG*PG	0.25	0.26
	PG	40	0.82 (agree)	1.05			UG*F	0.001	0.95
	F	15	−0.54 (disagree)	0.91			PG*F	0.000	1.32
	Σ	336	0.5 (agree)	0.14					

education. Moreover, the post hoc illustrates that there is a significant difference between UG and PG ( $p < 0.05$ ,  $r\phi < 0.2$ ). PG maintained thematic consistency in their overall responses.

To better understand this trend, more background information needs to be given on the nature of post-graduate programs. Even though the formal language in PG programs is Arabic, students' actual exercise in Arabic is mostly limited to interaction with patients. Lectures, research projects and a good part of their clinical performance and decision making is critically dependent on English materials. In short, linguistic inability compromises scholastic achievements. The need for translations is ever evident and necessary to help students with poor linguistic skills.

### 3.2. Research question 2: what dimensions of Arabic medical translations are falling short from the perspectives of students and teachers?

Turning now to the subject of medical translations, Table 4 shows different perspectives of UG, PG and faculty members on the quality of translations. Item 5

addresses the issue of familiarity with Arabic medical terms. Statistics show that students find Arabic medical terms unusual with no significant difference between UG and PG, whereas the mean of the faculty differs from UG and PG with a medium effect size ( $0.8 < d < 0.5$ ). Means of groups on Item 6 show that all respondents use transliterated terms frequently, especially PG ( $M = 1.23$ ). Item 3 asks participants if the inability to use acronyms in Arabic affects the language practicality. Welch's ANOVA showed a significant difference among groups ( $F = 11.3$ ,  $p = 0.000$ ). Post hoc Games–Howell test showed that this significance is the result of the contrasting opinions of students (UG, PG) and faculty with a large effect size ( $p < 0.05$ ,  $d > 0.8$ ).

Items 5, 6 and 7 focus on familiarity, acceptability and adequacy of Arabic medical terminology respectively. These are all dimensions of the same concept, which is the current fitness of Arabic terminology. Item 7 obliquely addresses acceptability. The frequent use of transliterated terms could be an indicator of many things, some of which are related to the popularity of English terms, and others pertain to the quality of some

Table 5  
Comparison of medical and dental undergraduates' perspectives on the multiplicity and practicality of medical Arabic terms (independent samples t-test).

Item	Branch	n.	M.	SD	MD	p	d
8. Multiple Arabic medical equivalents to the same English term can be found. How much do you suffer from this problem? (scale)	Med.	120	−0.6 (mildly)	1.2	0.4	0.006	0.33
	Dent.	166	−0.2 (mildly)	1.3			
	Σ	286	−0.4 (mildly)				
9. How practical are AMT? (scale)	Med.	120	−0.1 (not practical)	1.0	0.2	0.05	0.23
	Dent.	164	0.2 (practical)				
	Σ	284	0.05 (practical)				



Arabic equivalents which can be inaccurate, unfamiliar, or all in all missing.<sup>25</sup> An illustration of this is the use of transliterated terms of “influenza”, “prostate”, and “leukemia” despite the availability of Arabic equivalents. Students’ responses can be understood in light of the non-existence of formal logistical support to medical Arabic translations in Syria.<sup>7</sup> Other studies also reported these flaws which are connected, in a way, to the intrinsic difficulty of translations.<sup>26</sup>

Table 5 is quite revealing. Firstly, unlike the other tables, it compares UG medical students’ responses with their dental counterparts. On the issue of multiplicity and practicality of Arabic terms,<sup>25</sup> medical UG views stand in contrast to dentistry students. Table 5 shows an effect size of 0.3, 0.2 on items 8 and 9 in the given order. These values may indicate a real possibility of finding more statistically significant differences among students of different specialities. On paper, dental students are viewed similarly to their medical counterparts as part of the same population of health professionals, but in reality, they differ on many levels. Dental education is heavily constructed on practice, and dental UG are exposed to communication-based learning at an early stage. In contrast, medical UG greatly depend heavily on the theory part. Even practical exams, what faculty at Damascus University erroneously call “OSCE”, is merely a written exam divided into parts and spread across different stations. It would be valuable to assess the effect of speciality on attitudes toward the language of instruction in future studies.

Item 10 highlights an important issue that pertains to a variable that affects the quality of translations, which is the competency of translators. Table 6 demonstrates a clear agreement among subgroups on item 10 ( $p > 0.05$ ,  $r_\phi = 0.06$ ) and 11 ( $p = 0.04$ , 0.13). The slight statistical difference on item 11 is the result of the high percentage (92%) of PG who ticked (yes). These views are indicators of the lack of specialisation

and competence of translators and the great shortage in up-to-date Arabic study materials.

Translation in many cases fails to convey the same ideas accurately and concisely, due in part to the lexical discrepancy between languages and the dominance of English (source language).<sup>26</sup> Nearly all study materials at medical and dental schools are translated in Syria, yet not by qualified medical translators and without proper revision; moreover, they do not adhere to translation-quality standards.<sup>20</sup> These substandard translations might hinder the learning process, explaining participants’ bias in favour of English as the language of instruction.

Careful comprehensive analysis of data in Fig. 1 could recapitulate the position of each subgroup on the AMI program. We could also partially evaluate it based on the successfulness of Arabic medical translations. In the abstract, Arabic medical translations is clearly falling short, and this has been studied and discussed in many papers.<sup>7,20,26,27</sup> Nevertheless, these shortcomings are not handed out equally. As Fig. 1 demonstrates, postgraduates were more affected than undergraduates who did acknowledge the shortcomings of medical translations, but in a lesser at a lesser degree. Ambivalence was a theme that run through the attitudes of faculty members. The line which represents attitudes of faculty members fluctuates dramatically. The main attitudinal component that could generally account for faculty’s positive position on the AMI is the conative one. Firstly, faculty members are predisposed to use Arabic since they were educated traditionally, and it’s hard to let go of tradition. The political policy also plays a rule in this disposition. As one faculty member put it “it’s the party’s decision” (referring to the use of Arabic as the MOI). Secondly, teachers are motivated by the supposed effectiveness of the AMI in medical education. Faculty were inclined to assess medical translations as “meeting standards” when addressing intrinsic issues of Arabic translations

Table 6

Chi-square analysis of perspectives on translators and the quantity of medical Arabic references among UG, PG and faculty with post hoc tests.

Item	grp	n.	M.	p	$r_\phi$	Post hoc: multiple comparisons		
						pairs	p	$r_\phi$
10. Many of the translated medical texts and references are translated by health professionals who are not specialized linguistically, or linguists who are not specialized medically, and this leads to the production of inaccurate texts. (Dichotomous)	UG	286	1.78 (agree)	0.806	0.06			
	PG	42	1.85 (agree)					
	F	15	1.83 (agree)					
	$\Sigma$	343	1.82 (agree)					
11. Do you suffer from the lack of updated Arabic references? (Dichotomous)	UG	281	1.78 (yes)	0.04	0.13	UG*PG	0.04	0.11
	PG	38	1.92 (yes)			UG*F	0.15	0.08
	F	13	1.61 (yes)			PG*F	0.009	0.36
	$\Sigma$	332	1.77 (yes)					

Table 7

Faculty perspectives on the quantity of Arabic study materials and availability of qualified translators. (one-sample t-test).

Item	Sub.	n.	M. <sup>a</sup>	SD	MD	p	D
12. Are the currently available Arabic medical references enough for students' needs? (scale)	F	12	-0.50 (not enough)	1.16	0.5	0.16	-0.43
13. There is a great need for specialised medical translation departments in every school. (scale)	F	12	1.25 (strongly agree)	0.45	1.25	0.000	2.76
14. The use of English as the language of instruction threatens the Arabic language and culture. (scale)	F	11	-0.19 (disagree)	0.75	0.18	0.44	-0.24

<sup>a</sup> Test value: 0 (neutral).

(e.g., familiarity), but when questions addressed extrinsic issues (e.g., quantity of translated books), they were in concurrence with other subgroups.

Data from Table 7 can be compared with the data in Table 6. The statistics of one-sample t-test on items 12 and 13 show that there was a significant difference between the faculty mean and the hypothesized neutral population mean ( $M_H = 0$ ). Data analysis of items 12, 13 is similar to the analysis of items 10 and 11.

#### 4. General discussion

Syrian universities are the only universities in the Arab World which use Arabic as the main language of instruction in medical/dental schools.<sup>3</sup> Syrian medical educational system is known to have produced good doctors in general,<sup>9</sup> yet most of the instructional materials in Syrian universities are out-dated and unsatisfactorily translated.<sup>7</sup> The war in Syria has made the situation even more substandard in numerous aspects. A case in point is the wave of large-scale emigration, which made medical/dental schools greatly lacking in terms of staff. As one expert (2016) states: “The pipeline of doctors and nurses in Syria has been destroyed.”<sup>28</sup>

#### 4.1. Connecting the phenomenon to the context

From an interpretivist point of view, reality is subjective.<sup>29</sup> Adopting one solution that resonates with different ideologies held by different groups is arguably beyond reach. Curriculum developers should make a clear distinction between what is wanted by decision makers and what is needed by stakeholders. Teaching in the native language may seem logically sound and more convenient than using a foreign tongue from a pedagogical perspective,<sup>8</sup> but decision makers should also consider whether the logistical infrastructure of the national educational system is capable of funding and organizing efforts to translate the ever-growing medical literature. Running successful medical programs which use Arabic as the medium of instruction requires multinational cooperation in the Arab World along with long-term massive investments in medical translations.<sup>27</sup> As for stakeholders' attitudes, students consistently alter the way they think and react to experiences and challenges they encounter based on cognitive constructivism.<sup>29</sup> Indicators of attitudinal changes toward evaluating AMI negatively are present in the current study results. Postgraduates' position towards AMI in comparison to their

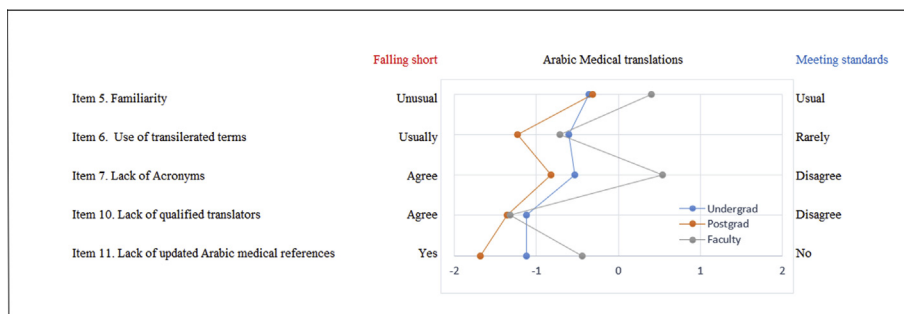


Fig. 1. An image profile showing means of each subgroup on items 5, 6, 7, 10 and 11 which focus on Arabic medical translation. Items 10 and 11 means were rescaled to 5 points (using a rescaling formula) for easier comparisons.



undergraduate counterparts manifested this attitudinal change. Postgraduate students’ academic demands and needs are much greater than their undergraduate counterparts. Apparently, these demands were not met by the system, and this negligence on the system part could explain the observed shift in postgraduates’ attitudes away from Arabic.

#### 4.2. Connection to literature

One questionnaire survey in 2009 examined the trend toward studying dentistry in English at Damascus University. The survey reported that almost all students (97%) were interested in studying in English, and the majority of them (88%) wanted to pursue further academic education overseas.<sup>19</sup> In contrast to our results, a professor of applied linguistics with other colleagues in Saudi Arabia argued in a study published in 2016 that whereas instructors want English, Saudi students want to get rid of English as the language of instruction and replace it with their mother tongue (Arabic), and he points out that students’ question the necessity of English as the MOI. In the same vein, they stated in this study that most Saudi students “do not have any intention of going abroad for higher education, employment or immigration.”<sup>13</sup> Obviously, the Syrian context is different to the Saudi one.

#### 4.3. Perceived beliefs in the benefits of learning in English

The health belief model could explain Syrian medical/dental students inclination to learn in English. This model conceives individual behaviour as the result of interaction between a person’s perception of a threat and beliefs about an action that could mitigate or avert that threat.<sup>30</sup> Fig. 2 illustrates the components of this model in the context of learning medicine/dentistry in English instead of the native Arabic language from the perception of students. This theory, i.e. HBM, was considered apt for this study as teaching/learning in Arabic was framed as a perceived career threat. Each box represents a construct. Illustrative examples were included in each box. These examples are inspired by the current study results and the previous literature on this topic.<sup>19,26,28</sup>

#### 4.4. Strength and limitations

There are several important areas where this study makes an original contribution to the topic of the language of instruction in HPE in non-English countries. First, it sheds new light on the anomalous Syrian educational system which is the only one in the Arab World that preserved the use of Arabic in health professional instruction. Second, it provides new insights on

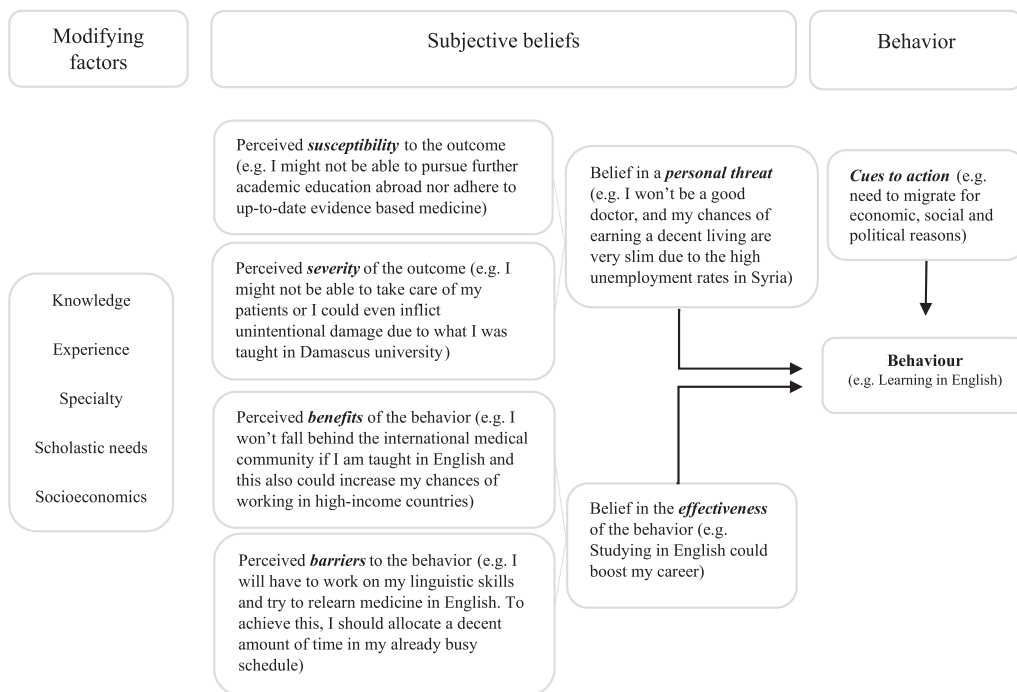


Fig. 2. Explaining Syrian medical/dental students’ propensity to learn in English through Health belief model. (Adapted).<sup>29,30</sup>

the variables which could affect the attitudes of students toward the language of instruction. Further, this report yields a conceptual framework, that could direct future endeavours on this topic trying to fathom stakeholders' attitudes toward the MOI. A note of caution is due here since nonprobability sampling was used.

## 5. Conclusion

This research was set out to evaluate the viability of using the native Arabic language in health professional education, and explore preferences and attitudes in respect of the choice of the language of instruction. Within the limitations of the study, results showed an overall negative attitude toward the use of Arabic in HPE and a greater preference toward instruction in English. Level of education has emerged as a reliable predictor of attitude. Taken together, these results suggest that Syrian medical schools are missing many elemental factors in their choice of language, such as providing or training professional medical translators. This research has thrown up many questions in need of further investigation. Future research on this topic should use qualitative interviewing or focus groups to investigate career threats posed by the inadequacy of Arabic use in health professional instruction.

## Ethical considerations

The participation in the questionnaire survey was voluntary and anonymous.

## Funding

None.

## Declaration of competing interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Acknowledgement

Our deep sense of gratitude to all those who participated in the survey. The authors would like to thank Mohammad Ani for helping us revise the language of the paper, and we would also like to extend thanks to Diaa Al-Fattal and Khattab Mustafa for their good advice and guidance.

## References

1. Doiz A, Lasagabaster D, Sierra JM. *English-medium instruction at universities: global challenges*. Multilingual Matters; 2012.
2. Dearden J. *English as a medium of instruction-a growing global phenomenon*. British Council; 2014.
3. Taguchi N. English-medium education in the global society. *Int Rev Appl Ling*. 2014;52(2):89–98.
4. Mittelman M, Hanaway P. *Globalization of healthcare*. Los Angeles, CA: SAGE Publications Sage CA; 2012.
5. Maher J. The development of English as an international language of medicine. *Appl Ling*. 1986;7(2):206–218.
6. Hamel RE. The dominance of English in the international scientific periodical literature and the future of language use in science. *Aila Review*. 2007;20(1):53–71.
7. Badinjki T. The challenge of Arabization in Syria. *Am J Islam Soc Sci*. 1994;11(1):108–112.
8. Yang M, O'Sullivan PS, Irby DM, Chen Z, Lin C, Lin C. Challenges and adaptations in implementing an English-medium medical program: a case study in China. *BMC Med Educ*. 2019;19(1):15.
9. Kaliyadan F, Thalamkandathil N, Parupalli SR, Amin TT, Balaha MH, Ali WHAB. English language proficiency and academic performance: a study of a medical preparatory year program in Saudi Arabia. *Avicenna J Med*. 2015;5(4):140.
10. McLean M, Murdoch-Eaton D, Shaban S. Poor English language proficiency hinders generic skills development: a qualitative study of the perspectives of first-year medical students. *J Furth High Educ*. 2013;37(4):462–481.
11. Mirza D, Hashim M. Communication skills training in English alone can leave Arab medical students unconfident with patient communication in their native language. *Educ Health*. 2010;23(2):450.
12. Al-Asal MS, Smadi O. The effect of the language of instruction on university participants' acquisition of scientific terms. *Eur Sci J*. 2011;25:5–28.
13. Al-Kahtany AH, Faruk SMG, Al Zumor AWQ. English as the medium of instruction in Saudi higher education: necessity or hegemony? *J Lang Teach Res*. 2015;7(1):49–58.
14. Sabbour S, Dewedar S, Kandil S. Language barriers in medical education and attitudes toward Arabization of medicine: student and staff perspectives. *EMHJ*. 2010;16(12):1263–1271, 2010.
15. Raad VA, Raad K, Daaboul Y, et al. Medical education in a foreign language and history-taking in the native language in Lebanon—a nationwide survey. *BMC Med Educ*. 2016;16(1):298.
16. Eagly AH, Chaiken S. *Attitude structure and function*. 1998.
17. McGuire WJ. *Attitudes and attitude change. The handbook of social psychology*. 1985:233–346.
18. Al Kateb B. *Review of the history of the teaching of medicine in Arabic*. 1999.
19. Dashash M, Youssef M. Does the level of knowledge delivered in 'English in dentistry' affect the quality of future dental education?. In: *Paper presented at: ICERI 2009 proceedings*. 2009.
20. An-Nayef M. Strategies used by Syrian postgraduate medical students when translating an English medical text into Arabic. In: *Paper presented at: second international TEFL conference on literature: toward better intercultural communication, ESP Centre, Damascus University, May*. 2002.

21. Al-Shaarani F. تصويب الأخطاء الشائعة في تداول مصطلحات طب الأسنان [Correction of Common Mistakes in Using Dental Terms]. *Damascus Univ J Health Sci.* 2017;1(33).
22. Google Forms [computer program]. February 6, 2008.
23. Microsoft Excel [computer program]. 2016.
24. SPSS 26 [computer program]. 2019.
25. Al-Jarf RS. Multiple Arabic equivalents to English medical terms. *Int Ling Res.* 2018;1(1). p102-p102.
26. Argeg G. *The problems of translating medical terms from English into Arabic.* Durham University; 2015.
27. Alshareef M, Mobaareek O, Mohamud M, Alrajhi Z, Alhamdan A, Hamad B. Decision makers' perspectives on the language of instruction in medicine in Saudi Arabia: a qualitative study. *Health Prof Edu.* 2018;4(4):308–316.
28. Kaylin J. *In the midst of war, future Syrian doctors trained with help from Yale Faculty, Students.* Yale School of Public Health; 2016.
29. Cleland J, Durning SJ. *Researching medical education.* John Wiley & Sons; 2015.
30. Glanz K, Rimer BK, Viswanath K. *Health behavior and health education: theory, research, and practice.* John Wiley & Sons; 2008.

**Ghaith Muhammad Alfakhry** is a graduate student from the Faculty of Dentistry, Damascus University, Syrian Arab Republic. Alfakhry is also a part-time ESL (English as a second language) teacher with over 4 years of experience.

**Mayssoon Dashash** is an associate professor at the Department of Paediatric Dentistry, Faculty of Dentistry, Damascus University, Syrian Arab Republic. She is also the general director of Measurement and Evaluation in the Syrian Arab Republic and the general manager of the Medical Education master's program in the Syrian Virtual University.

**Issam Jamous** is a lecturer at the Department of Fixed Prosthodontics, Faculty of Dentistry, Damascus University, Syrian Arab Republic. He is also a faculty member in the Medical Education master's program in the Syrian Virtual University.