Upgrading English Language Proficiency and Providing Optimum Nursing Care for Cardiac Patients: Perceptions of Non-native Nurses

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https://doi.org/10.24071/ijels.v9i2.6146
received 26 March 2023; accepted 12 September 2023

ABSTRACT
Linguistic competence and effective communication are essential for providing optimum care for patients. Cardiac care is among the high-alert settings that require highly proficient nurses to be attentive and provide the best possible care for patients with heart problems. This research aims to measure the perceptions of non-native nurses towards the correlation between upgrading their English language proficiency level and providing optimum nursing care for cardiac patients. To this end, a mixed-method research design, qualitative and quantitative, was adopted in the study. First, a questionnaire was constructed and disseminated to 210 Egyptian nurses working at the Magdi Yacoub Foundation (MYF) in Aswan, Egypt. Yet, 127 nurses responded to the questionnaire. Secondly, to ensure the reliability of the research results, observation and interviews with a selected number of questionnaire takers were used as data collection instruments. Findings revealed that upgrading the English language proficiency level is believed to contribute to enhancing the performance of cardiac care nurses, their professionalism, and their learning autonomy. In addition, a taxonomy of the nurses' uses of English for Specific Purposes has been constructed during the study. The proposed taxonomy was constructed from the data from the questionnaire, the interview, and the observation. It can be used to identify nurses' needs when designing English-for-nurses courses. It is recommended that further research is conducted to investigate the correlation between the level of English language proficiency and the performance of nurses in other medical sub-domains.

Keywords: cardiac patients, English, non-native nurses' education, Nurses' English proficiency

INTRODUCTION

The ubiquitous influence of English in almost every domain is becoming inconceivable nowadays. Yet, in this respect, Mahu (2012) argued that English is widespread in every corner of the world since it is used by around 380 million native speakers as well as 400 million non-native speakers. It is also the primary language of science, aviation, computer, and tourism. Moreover, Hejazi and Ma (2012) corroborated this view stating that it stimulates economic activity and growth among English-speaking countries and non-English-speaking countries. The former effect is called the intra-language effect whereas the latter is defined as the inter-language effect. On the individual level, Mahu (2012) stated that English enhances employability, widens the scope of understanding various cultures, and is a gateway to higher education and entertainment.

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Focusing solely on linguistic competence; i.e., on vocabulary, grammar, sentence structure, and textual organization in language teaching is far from sufficient. Language teaching should incorporate knowledge of the target language culture (Wang, 2018). Al-Obaydi (2019) similarly argues that living in a diverse environment increases learners' drive to acquire languages from other cultures such as English, which, in turn, encourages them to continue learning about and exploring other cultural aspects even when it is outside of their regular routines. In terms of knowledge, Rahman (2015) states that English for Specific Purposes (ESP) is conducive to knowledge in various scientific disciplines such as medicine, engineering, tourism, and nursing. English for Nursing Purposes (ENP), for instance, focuses on the usage of English in the context of nursing where nurses practice professional communication that includes speaking and writing in certain ways (Su et al., 2022).

The World Health Organization (2020, p. 9) coined a definition of the profession of nursing stating that it "encompasses autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all settings; it includes the promotion of health, the prevention of illness, and the care of ill, disabled and dying people". In addition, nurses constitute 59% of healthcare professionals in the globe making them the largest group in the healthcare sector. Another fact that exists in the report is that 27.2 billion US dollars are spent on nurses and midwifery education annually. In corroborating the notion of nursing education, the WHO report (2020, p.12) states that:

> Good work environments, safe staffing of nurses, and education in mixed-skill teams are correlated with reduced hospital length of stay, lower incidence of adverse events such as pneumonia, gastritis, upper gastrointestinal bleeds, pressure ulcers, and catheter-associated urinary tract infections, and reduced overall mortality.

Cognizant of the fact that the nursing roles have different dimensions, Brunner (2010) divided them into three categories: the practitioner role, the leadership role, and the research role. The first role is concerned with the actions taken by nurses to provide care for patients and their families. To perform this role, nurses utilize their skills to meet the needs of patients, raise the awareness of their families about providing the best possible care, and collaborate with other domains to receive the desired services. The second role, according to Brunner (2010), is the leadership role. It includes actions taken to hold accountability for the delivered care of patients. In performing this role, there are four components a leader has to keep in mind: decision-making, relating, influencing, and facilitating. The research role is implemented by nurses conducting research studies that are conducive to evidence-based practice or taking part in data collection processes to facilitate obtaining accurate results for research studies. Brunner (2010), maintained that communication encapsulates all of the nursing roles in all situations.

As indicated by Ali and Watson (2018), the language barrier is conducive to several inconveniences concerning patients, among which are missed appointments, reading care leaflets, and treatment explanations. Such inconveniences occur if nurses lack linguistic competence, especially in education systems that rely, to a great extent, on rote learning as the Egyptian one. Therefore, effective linguistic competence and communication skills for nurses are central to providing optimum care for patients and ensuring their safety (Allan & Westwood, 2016). Thus, the nurse's ability to communicate in English is crucial for their ability to perform professionally. Enhancing organizational success requires effective English communication on all levels (Sursattayawong, 2006). In this sense, English is considered an important component in becoming a medical hub for the whole world (Sursattayawong, 2006; Lu, 2018).

A thorough review of the literature has revealed that there is a paucity of research on language education for nurses. Yet, English for nurses as a research area has been tackled by several prominent scholars and in various renowned studies. Shomoossi et al. (2013), for instance, evaluated the perceptions of Iranian student nurses about the usage of the English language generally, medically, and in research at Iranian universities. Lu (2018) stressed the importance of learning English for nurses since the Taiwanese government had the intention, at

the time, of being an international medical services (IMS) destination. It also investigated the needs and perceptions of Taiwanese nurses regarding their ESP courses. Lu (2020) explored how nurses learn medical English through their career journey in Taiwanese hospitals.

On the other hand, most previous studies dealing with the English language for medical purposes have focused on patients with Limited English Proficiency (LEP). Barwise et al. (2019), for instance, investigated the perception of Intensive Care Units (ICU) members on the factors affecting making decisions for end-of-life stage patients and their families whose English proficiency is limited. Marcus et al. (2020) investigated the perceptions of patients with LEP regarding the technologies used in interpretations. Kucirek et al. (2021) explored the challenges patients with LEP face in inpatient clinics and how they worsen their social isolation. Gulati and Hur (2022) explored the correlation between healthcare access and utilization for LEP patients.

None of the previous studies explored the contribution of English in providing the optimum nursing care for patients in a cardiac setting. Thus, the current study is an attempt to fill in this gap in the literature; it investigates non-native nurses' perceptions towards the correlation between upgrading English language proficiency level and providing optimum nursing care to cardiac patients. It seeks to answer the following research questions:

1. To what extent is there a correlation between upgrading English language proficiency level and providing better nursing care to cardiac patients?
2. What are the uses of English that enhance the performance of providing optimum nursing care to cardiac patients?
3. How can upgrading English proficiency enhance nurses' professionalism and professional autonomy?

METHODOLOGY

The study employed a correlational and mixed method (quantitative and qualitative) approach. It investigated the perceptions of non-native nurses towards the correlation between upgrading English language proficiency and providing nursing optimum care for patients.

Research Participants

The main data collection instrument, which was a questionnaire designed and constructed by the authors, was disseminated to 210 Egyptian nurses who are currently working at Aswan Heart Centre (AHC), Egypt, a cardiac center that is part of the Magdi Yacoub Foundation (MYF). Several 127 Egyptian nurses responded to the questionnaire. The research participants included 66 female nurses (52%) and 61 male nurses (48%). Participants were requested to select their level of English proficiency according to the Common European Framework Reference for Languages (CEFR). There was only one participant at the beginner level, 12 participants (9.4%) at the elementary level, 20 participants (15.7%) at the pre-intermediate level, 42 respondents (33.1%) at the intermediate level, and 26 respondents (20.5%) in the upper-intermediate level and a similar number in above B2 level (see Figure 1).

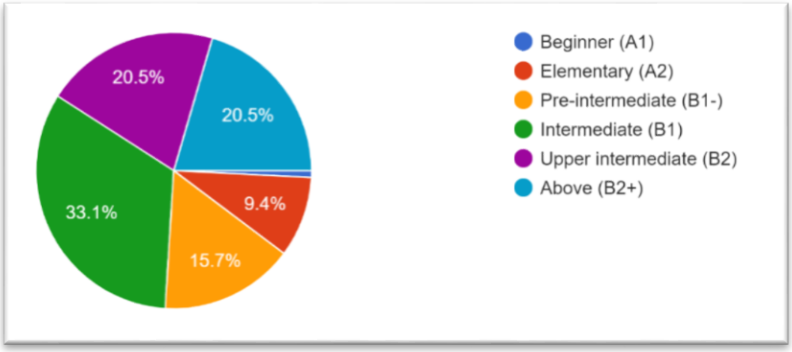


Figure 1. Nurses' levels of English proficiency according to CEFR

Out of 127 nurses, 58 nurses constituting 45.7% were between 15 to 25 years, 69 nurses comprising 54.3% between 26 to 40 years, and none of the participants were over 40 years. Concerning the participants' departments at the Centre, the Adult Cardiac Intensive Care Unit (ACICU) had the largest number of participants as they were 26 representing 20.5%, followed by the Pediatric Cardiac Intensive Care Unit (PCICU) with 15 participants (11.8%). The Operation Room (OR) had 14 participants (11%), and the Adult Ward (AW) and the Outpatient Department (OPD) were equal with 11 participants (8.7%) each. The rest of the participants were from other departments: Catheterization Laboratory, Specialty Unit, Education Department, Anesthesia Unit, Cardiac Care Unit (CCU), Pediatric Ward (PW), and New Ward (NW).

Data Collection

For data triangulation, three data collection instruments were used to achieve the primary goal of the present study: observation, a questionnaire, and interviews. A non-participant observation was conducted by one of the authors who is also an English language instructor at MYF in Aswan to elicit the various uses of English in the context of cardiac nursing at AHC. The author followed a schedule at certain times to see how nurses use English during their day shifts (see Appendix D). As part of the observation procedure, some notes were taken, and some nursing notes were selected as examples of the events that normally occur throughout their shifts. Furthermore, interviews were conducted with a number of the staff during their shifts in an attempt to know more about the uses of English in their daily life activities. Observation took not less than 6 months during one of the author's tenure at AHC as an English language instructor. For years, nurses in AHC have been struggling to provide the best possible treatment for cardiac patients in an attempt to save as many lives as possible. They finally concluded that this cannot happen unless they ameliorate their English language proficiency. In this respect, it is worth mentioning that English improves their knowledge, skills, attitude, and research skills which all go hand in hand with the Foundation's vision and mission. Therefore, it was recommended that an English language program be incorporated into their Continuous Professional Development (CPD) to improve their level of English language proficiency.

The questionnaire (Appendix A), which was constructed by the authors, is comprised of six parts: Demographic information, Knowledge, Skills, Attitude, Research, and Direct questions. All parts are based on a 5-point Likert scale (Strongly agree, Agree, Neutral, Disagree, Strongly disagree) except for the Demographic information part. To ensure the clarity of the questionnaire items, the questionnaire was peer-reviewed and then administered to a small group of nurses. Based on their feedback, slight modifications were made to some of the items. Next, the final version of the questionnaire was uploaded on Google Forms. The online link to the questionnaire was sent via mail to 210 nurses in different departments of AHC in Aswan who were asked to fill in the questionnaire and submit it. Out of the total number of participants, 127 responded to the questionnaire. It took the researcher two weeks to collect the responses of the participants.

For obtaining qualitative data, face-to-face interviews were conducted by the researcher/ language instructor with ten nurses representing a subset of the questionnaire takers. The semi-structured interview consisted of six questions (Appendix B): the first one asks directly whether learning English improves nurses' performance in terms of cardiac care or not, and the second question gives choices of the uses of English concerning the knowledge category with an explanation of how that happens. The third, fourth, and fifth questions give choices about the uses of English in the categories of skills, attitude, and research skills respectively. The last question was added for additional information by the respondents.

Data Analysis

Regarding the statistical procedures implemented in the study, the SPSS program was used to extract the percentages and the mean rank for each of the questionnaire items. In

addition, a reliability test (Cronbach Alfa) was conducted along with a validity test (Pearson Correlation) to confirm the consistency and accuracy of the measurement tool. Following that, the questionnaire frequencies were interpreted according to the researchers' hypothesized taxonomy.

Table 1. Validity of the questionnaire

Statement No.	Correlation	Statement No.	Correlation	Statement No.	Correlation
1	.498**	12	.598**	23	.637**
2	.412**	13	.595**	24	.674**
3	.507**	14	.413**	25	.705**
4	.537**	15	.534**	26	.614**
5	.497**	16	.409**	27	.584**
6	.605**	17	.633**	28	.571**
7	.543**	18	.591**	29	.549**
8	.610**	19	.618**	30	.637**
9	.463**	20	.677**	31	.626**
10	.539**	21	.725**		
11	.604**	22	.617**		

Note. "**. Correlation is significant at the 0.01 level (2-tailed)" "*. Correlation is significant at the 0.05 level (2-tailed)"

Following the analysis of the questionnaire frequencies by the SPSS program, a validity test was conducted (Table 1). The questionnaire administered to the nurses at AHC included 31 statements. All statements had a significant correlation at the ($P \leq 0.01$) level and none of the item correlation was significant at the level ($P \leq 0.05$) which leads to the fact that the questionnaire is valid. In addition, the reliability test of Cronbach Alpha for the 31 items of the questionnaire ($\alpha = .93$) revealed that the questionnaire is highly reliable and applicable.

The responses of the interviewees were analyzed thoroughly and then grouped as per their answers to the questions of the interview. Excerpts of the interviewees' responses were selected for analysis.

FINDINGS AND DISCUSSION

Findings

Observation

Assisted and guided by nurses in the Education Department, the English instructor/researcher categorized the uses of English into four divisions: **K**nowledge, **S**kills, **A**ttitude, and **R**esearch. They are referred to as the **KSAR** taxonomy (see Figure 2). There was considerable discussion and deliberation over the use of English in the context of nursing. The nursing education team drew attention to the fact that English learning improves the attitude of nurses toward other cultures, motivates them to gain more knowledge about nursing, and encourages them to apply that knowledge. In addition to that, the education nursing team was preparing their team to write research papers and posters properly thereby they could cross the boundaries of their hospital and participate in international conferences as in the past they only used to attend those conferences. It is worth mentioning that the nurses at AHC have recently published a few posters (see Appendix C) and abstracts, such as Mostafa et al. (2022), Eltayyeb et al. (2022), Hossam et al. (2022) and Abdelmalak et al. (2022), in renowned journals with high impact factor and about to publish research papers as well.

As revealed in the **KSAR** taxonomy, in terms of knowledge, nurses use English in nursing-related courses, read journal articles on updated procedures and newly discovered diseases, involved in peer and group discussions about cardiac diseases, watch nursing videos

and listen to podcasts, attend medical and nursing conferences and, finally, read internal and external organizational policies. As for the skills division, nurses use English in their daily, monthly, quarterly, and yearly documentation processes such as nursing notes, charts, and reports. In addition, they prepare presentations to impart their knowledge to their colleagues in different areas of the hospital to uplift their performance. They also need English for their checklists, whether to create or to fill them out. Concerning oral interaction, they perform the patient handover, interact with foreign patients, and listen to doctors' daily rounds of case discussions in English.

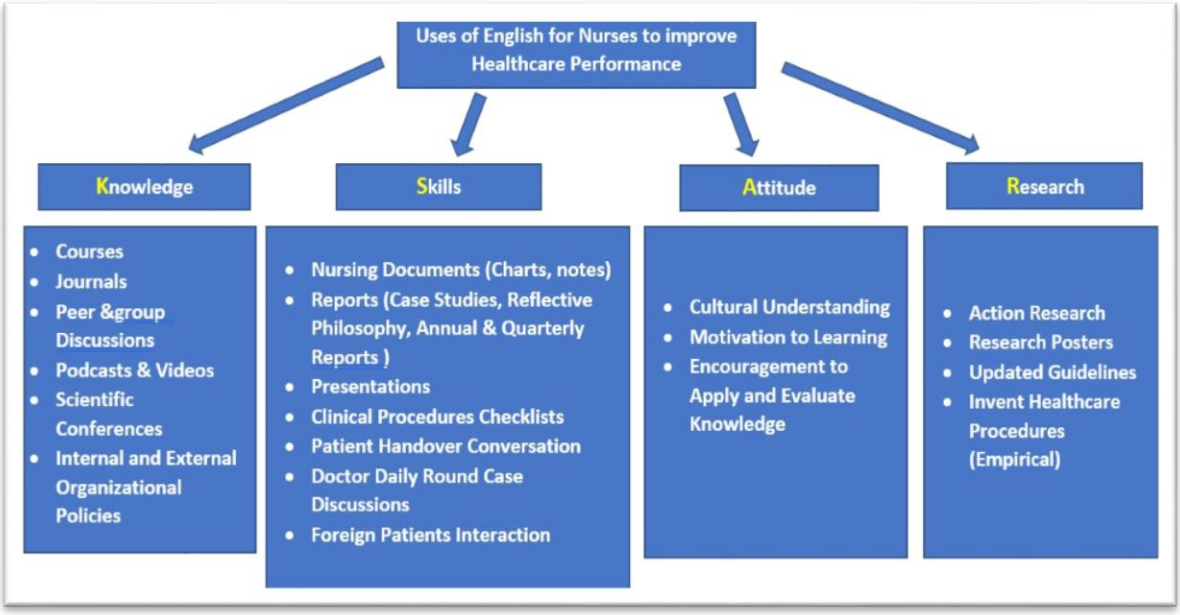


Figure 2. Uses of English for nurses to improve healthcare performance taxonomy (KSAR)

While learning English, nurses commenced their cultural discovery and awareness process. They started to grasp that language cannot be taught in isolation from culture. Cultural understanding and tolerance were two of the objectives of the English language course. Also, learning English contributes to the motivation of learning as the more nurses learn English, the more they feel motivated to learn about nursing. This, as well, serves and promotes the culture of AHC pertinent to their CPD. Finally, the English language considerably assists nurses in applying the knowledge they have previously gained in their context.

Research skills make up the final subcategory of the taxonomy of English terms used in the context of nursing. Since nurses conduct action research to find feasible solutions for their problems with patients, medical procedures, and professional communication between their different departments, they need to improve their English proficiency in terms of academic writing. Similar to research papers are research-based posters that are evaluated by the education department at AHC and published internationally in renowned platforms in an attempt to contribute to the extant literature and disseminate knowledge for the greater good (Appendix C). Nurses lay significant emphasis on research-updated guidelines in some of the nursing research areas such as Basic Life Support courses (BLS) that are continually improved by research. They even go for inventing new nursing procedures that may help relieve patients' pressure and pain such as the fixation kit of the drive line of the Left Ventricular Assistive Device (LVAD) to reduce the infection rate in patients with heart failure problems.

Questionnaire

The findings of the questionnaire provide quantitative data concerning the Egyptian nurses' perceptions of the relationship between upgrading English language proficiency level and providing optimum care for cardiac patients.

Table 2. Frequencies of questionnaire items on knowledge category

#	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	Mean Rank
1	I join online courses that use the English language in delivering their content.	37 29.1%	60 47.2%	24 18.9%	6 4.7%	0 0%	4.1
2	I join face-to-face courses that use the English language in delivering their content.	32 25.2%	59 46.5%	24 18.9%	12 9.5%	0 0%	3.87
3	I researched and read scholarly journals and articles in English to improve my nursing knowledge about cardiothoracic diseases and procedures.	45 35.4%	63 49.6%	17 13.4%	2 1.6%	0 0%	4.19
4	I join discussions with my peers and colleagues to improve my nursing knowledge in English.	37 29.1%	62 48.8%	23 18.1%	5 3.9%	0 0%	4.03
5	I watch videos that contain medical and nursing information in English.	52 40.9%	70 55.1%	4 3.2%	1 0.8%	0 0%	4.36
6	I listen to podcasts about medical and nursing procedures in English.	36 28.4%	68 53.5%	16 12.6%	7 5.5%	0 0%	4.05
7	I attend conferences in which English is used for presentations and speeches.	28 22.1%	49 38.6%	44 34.7%	6 4.7%	0 0%	3.78
8	I read nursing policies and procedures that enrich my knowledge of English.	42 33.1%	69 54.3%	13 10.2%	3 2.4%	0 0%	4.18

According to Table Two which presents frequencies of items on the uses of English in the knowledge category, the majority of the respondents either agreed or strongly agreed that they join online courses that use English in delivering their content (76.3 %), join face-to-face courses that use English in their content (71.7%), read scholarly articles in English to improve their knowledge about cardiothoracic diseases and procedures (85%), join discussions in English with their peers to improve their knowledge about the field of nursing (77.9%). In addition, most of the respondents either agreed or strongly agreed that they watch medical videos that contain information in English (96%), listen to podcasts about medical and nursing procedures in English (81.8%), attend conferences where English is used for presentations and speeches (66.6%), and read nursing policies and procedures that enrich their knowledge in English (87.4%).

Table 3. Frequencies of questionnaire items on nursing skills category

#	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	Mean Rank
9	I write nursing notes and charts in English.	81 63.8%	42 33.1%	2 1.6%	2 1.6%	0 0%	4.59
10	I write my nursing portfolio (CV, Philosophy, career summary) in English.	75 59.1%	46 36.2%	6 4.7%	0 0%	0 0%	4.54
11	I write quarterly, biannual, and annual reports in English.	60 47.2%	38 29.9%	21 16.5%	8 6.3%	0 0%	4.18

12	I prepare presentations about nursing in English.	57 44.9%	48 37.8%	17 13.4%	5 3.9%	0 0%	4.24
13	I read clinical checklists that use English as the primary language.	56 44.1%	47 37%	20 15.8%	4 3.2%	0 0%	4.22
14	I perform patient handover in English.	41 32.3%	57 44.9%	26 20.5%	2 1.6%	1 0.8%	4.06
15	I listen to doctor daily round case discussions in English.	49 38.6%	61 48%	15 11.8%	2 1.6%	0 0%	4.24
16	I interact with foreign patients in English.	45 35.4%	70 55.1%	7 5.5%	3 2.4%	2 1.6%	4.2

Table three demonstrates the descriptive data collected concerning the use of English in the nursing skills category. The majority of the participants conceded that they write their nursing notes and charts in English (96.9%), nursing portfolios in English (95.3%), and annual and biannual reports in English (77.1%). As for preparing nursing presentations in English, 105 nurses, constituting 82.7%, confirmed doing that, 81.1% of the respondents stated that they read clinical checklists that use English as their primary language, 77.2% approved that they perform their patient handover in English and 86.6% confirmed listening to doctors' daily round case discussions in English. Finally, 90.5% of the respondents stated that they interact with foreign patients using English as their means of communication.

Table 4. Frequencies of questionnaire items on attitude category

#	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	Mean Rank
17	Learning English makes me understand how foreign patients think.	55 43.3%	61 48.0%	9 7.1%	2 1.6%	0 0.0%	4.33
18	Learning English raises my cultural differences awareness.	60 47.2%	59 46.5%	6 4.7%	1 0.8%	1 0.8%	4.39
19	Learning English makes me empathize with foreign patients feel their pain and understand what they say.	50 39.4%	65 51.2%	10 7.9%	2 1.6%	0 0%	4.28
20	Learning English makes it easy to learn therefore I learn more about nursing.	62 48.8%	58 45.7%	7 5.5%	0 0%	0 0%	4.43
21	I am always encouraged to apply the knowledge I learn in English.	51 40.2%	57 44.9%	18 14.2%	0 0.0%	1 0.8%	4.24

As for the attitude category, 91.3% conceded that learning English makes them understand how foreign patients think whereas 93.7% of the respondents stated that learning English raises their cultural difference. Concerning empathizing with foreign patients and knowing what they say, 90.6% of the respondents either strongly agreed or agreed. Also, 120 nurses representing 94.5% conceded that learning English motivates them to learn more about the field of nursing. Finally, 109 Participants (85.1%) confirmed that they are always encouraged to apply the knowledge they gained in English.

Table 5. Frequencies of questionnaire items on research skills category

#	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	Mean Rank
22	I perform action research to find solutions for some nursing problems.	37 29.1%	54 42.5%	26 20.5%	9 7.1%	1 0.8%	3.92
23	I sometimes write research posters on the findings of the action research in English.	27 21.3%	50 39.4%	35 27.6%	14 11%	1 0.8%	3.69
24	I sometimes write research papers on the findings of the action research.	28 22.1%	48 37.8%	33 26.0%	16 12.6%	2 1.6%	3.66
25	I read updated guidelines on nursing procedures in English.	38 29.9%	67 52.8%	17 13.4%	5 3.9%	0 0%	4.09
26	I invent and write nursing healthcare procedures in English.	35 27.6%	59 46.5%	26 20.5%	7 5.5%	0 0	3.96

Regarding the research skills category, 91 individuals, comprising 71.6%, confirmed they perform action research for their problems and 77 nurses (60.7%) conceded that they write posters on the findings of the action research in English. Similarly, 76 participants (59.9%) stated that they write research papers on the findings of their action research in English. In addition, 82.7% of the respondents stated that they read updated guidelines on nursing procedures in English. In terms of inventing and writing healthcare procedures in English, 94 nurses (74.1%) confirmed doing that whereas only 7 respondents disagreed.

Table 6. Frequencies of Questionnaire Items on Correlation between Learning English and Providing Optimum Care for Cardiac Patients

#	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	Mean Rank
27	Learning English improves my general nursing knowledge.	65 51.2%	56 44.1%	6 4.7%	0 0%	0 0%	4.46
28	Learning English improves my nursing skills.	54 42.5%	63 49.6%	10 7.9%	0 0%	0 0%	4.35
29	Learning English improves my professional and personal attitude towards people from other cultures, and people with different opinions and motivates me to grow professionally.	57 44.9%	64 50.4%	6 4.7%	0 0%	0 0%	4.4
30	Learning English improves my research skills.	62 48.8%	56 44.1%	9 7.1%	0 0%	0 0%	4.42
31	Learning English improves nurses' cardiac care performance in general.	58 45.7%	61 48%	8 6.3%	0 0%	0 0%	4.39

Table six confirms the responses of the nurses in the previous categories as it asks directly whether English improves the nurses' knowledge, skills, attitude, and research skills and ends up with a very direct question about the correlation between learning English and the improvement in the nurses' performance of cardiac care. Out of 127 nurses, 121 (95.3%) conceded that learning English improves their general knowledge about nursing whereas only

6 were neutral and none disagreed with 4.46 as the mean rank. Concerning the improvement in nursing skills, 117 participants, constituting 92.1%, stated that their skills have been improved, 10 of the respondents (7.9%) were neutral and none disagreed with 4.35 as the mean rank. As for the improvement of the professional and personal attitude towards other cultures, 121 (95.3%) agreed with the statement whereas none disagreed and only 6 (4.7%) were neutral with 4.4 as the mean rank. Also, 118 participants (92.9%) confirmed that learning English improves their research skills, none disagreed and 9 (7.1%) were neutral with the mean rank 4.42. The final item embeds the main answer for conducting this research. Several 119 nurses, constituting 93.7%, confirmed that learning English improves nurses' cardiac care performance whereas none disagreed and only 8 respondents (6.3%) were neutral. The mean rank for this question is 4.39.

Interviews

Responses to the interview questions confirmed the results of the instructor/researcher observation and the questionnaire frequencies for the reason that nurses stressed the importance of English in enhancing their knowledge, skills, attitude, and research skills which consequently improves their performance. All nurses agreed to the first question, that is, about whether English improves their cardiac care performance or not. For the knowledge question, respondents stated that English enables them to read research articles, join courses in their various forms, online and on campus, as well as watch videos or listen to podcasts in which their content is in English. Furthermore, they understand their colleagues' opinions when attending scientific conferences or when being involved in peer or group discussions. They can even understand internal and external organizational policies. Following is a sample of the interviewees' responses to the knowledge-related questions:

- "English builds up my knowledge as I know which type of articles I should read and I understand more about the cardiac field"
- "If I know English, I perform well in nursing because I understand the content of the courses and videos"
- "I listen to my colleagues' opinions in conferences as an infection control specialist. I understand what they say. I teach nursing students in the orientation course, and we have something called a 5-minute talk in English to discuss infection control matters"
- "Policies make us understand one another as nurses and they are all written in English and they make all processes easier to all of us, so not being able to use English will be a big problem for all of us"
- "English helps me share knowledge with my colleagues through discussions"
- "I am a tissue viability specialist, so I have to read more about wound plan management and dressing updates. It is all in English "
- "I share my knowledge about daily cases and in weekly meetings with my workmates in English because all medical terms are in English"
- "I participate in a weekly journal club at AHC so I have to read a lot of articles to present them to my colleagues and I attend Cardio Alex which is a scientific conference about the recent updates in the cardiac field and I discuss the internal policies with my colleagues to make processes easier"

In terms of nursing skills, according to the respondents, nurses confirmed their utilization of English in writing their various reports, their professional portfolios, and preparing PowerPoint presentations. This, also, enables nurses to fill out clinical checklists, perform patient handover correctly, listen to the doctors' daily discussions, and communicate their thoughts and procedures to foreign patients. Below are some of the responses to the questions related to nursing skills:

- "I write regular daily documentation in English; I prepare presentations about cardiac nursing for my colleagues"
- "I write nursing notes, I hand patients over to my colleagues, and interact with foreign patients in English"

- "I write infection control policies and deliver one presentation a month and discuss cases in the daily round with doctors and interact with observer students the infection control matters in English"
- "Accurate English conveys the right meaning which maintains patients' safety and gives us a professional image"
- "I can read and write advanced reports and transfer knowledge into skills by applying what I learned"
- "We have a lot of paperwork and we prepare presentations in English to discuss some nursing topics"
- "I make daily rounds for pre-and post-operative patients and write their treatment plans in English"
- "Nursing terminologies are all in English so I have to hand the patient over to my next-shift colleague in English and I listen to the doctors' treatment plan in English"

The nurses' responses show that upgrading the English language would lead them to intercultural awareness that enables them to tolerate differences with others to understand their needs and eventually finish their tasks to the best of their abilities. It also motivates nurses to learn more as mastering English makes it much easier for them to gain knowledge through articles, videos, audio, and interaction with all its miscellaneous forms. Yet, they are encouraged to apply and evaluate the knowledge they gain through understanding its weaknesses and strengths usefulness, and usability as well. Following are some extracted responses for the attitude-related questions:

- "I deal with different cultures as we always have African patients whom we deal with in English. I understand their needs"
- "I understand foreign patients and I always evaluate the knowledge I gained"
- "English motivates me to learn because it is hard to get the CBIC (Certificate Board of Infection Control) unless you know English very well"
- "We focus on knowledge evaluation to know weaknesses and strengths of any piece of information and whether we can apply it or not in our setting"
- "Foreign patients are coming from Africa, Italy, and other countries. English helps us interact and explain to them their treatment plans"
- "I deal with foreign patients to teach them the after-discharge healthcare plan and how to do it in English"
- "I try to reassure foreign patients and empathize with them and teach them about their health"

Concerning research skills, nurses identified points by which English improves their research performance: carrying out action research for their recurring clinical issues to increase the hospital's efficiency, writing research posters and abstracts for research, reading nursing updated guidelines, and inventing empirical healthcare procedures that would be, to a great extent, efficient and assists patients to be discharged whenever possible from the hospital. Following are some extracted responses:

- "English helps me differentiate between good and bad research; I learn more about the updated guidelines in the cardiac nursing field. I write research posters"
- "I am now pursuing my MSc in infection control and I am writing my thesis findings in English"
- "Sometimes we invent our procedures which require us to be accurate when we write them in English and we have to differentiate between the past, present and future"
- "I write posters based on research implemented"
- "I try to improve and update my research skills by knowing English"

- "Now I am reading the updated guidelines about the reduction of surgical site infection to make a research poster about it"
- "Acting for a patient is sometimes a problem and there are conflicting points, so we have to research the case before taking an action"

Discussion

The quantitative results have revealed that upgrading the English language proficiency level is highly correlated with the improvement of care provided for cardiac patients since it helps to enhance nurses' knowledge, nursing skills, personal and professional attitudes, and research skills. Based on the findings, 95% of the nurses who participated in the questionnaire confirmed that learning English increases their comprehension and knowledge of the nursing field, 74% stated that it upgrades the dexterity of their nursing skills, 95% approved that it raises their awareness about the professional and personal attitude towards other cultures and learning and almost 89% approved that it improves their research skills. The qualitative findings of the interviews and the observation by the English language instructor/ researcher are largely in agreement with the quantitative results of the questionnaire.

Cardiac nurses strive to better their comprehension of nursing and cardiac diseases as they advance in their careers for the sake of saving as many lives as possible. The findings of the research have revealed that this is, to a great extent, carried out through either online or on-campus courses, peer and group discussions, medical videos and podcasts, attending conferences, and reading policies. In such situations English is used as the medium of content delivery: videos and podcasts are recorded and presented to the audience in English, the courses' tutors are either from English-speaking countries or use English in the delivery of the course content, and all of the learning resources that upgrade the nurses' knowledge are written in English: books, articles and links to web resources. Regarding nursing skills, English is utilized in nurses' writing including writing reports, charts, personal portfolios, and presentations. It is used while filling out checklists, listening to doctors' daily discussions on various cases, and finally for communication while interacting with one another during the handover of patients and with foreign patients.

Observation by the English language instructor/ researcher has revealed that having a good command of the English language is likely to improve nurses' attitudes as they empathize with foreign patients and become increasingly aware of cultural differences. To maintain, their attitude becomes even better towards learning as they become motivated to learn more because of their English skills as it is the language of science nowadays. Last but not least, nurses use English in performing and writing action research papers and posters and they become capable of reading updated guidelines of nursing procedures and even inventing those procedures. All of these uses have been categorized in a taxonomy constructed by the researchers assisted and guided by the Nursing Education department at AHC (see Figure 2).

Eid et al. (2018) stated that professionalism involves several concepts that comprise its core such as the code of conduct, professional relations, and competence and communication skills. In this sense, upgrading knowledge and nursing skills would inevitably lead to enhancing nurses' professionalism since they will be able to communicate their ideas in a global language used and understood by the majority of the population in almost every region of the world. When nurses learn English, they become able to communicate appropriately, tolerate and accept others' opinions and cultures, and read and apply codes of conduct such as policies that are written in English easily. In addition, comprehensible and meaningful communication among the nursing staff ensures a peaceful environment thereby enhancing professionalism.

Moreover, the concept of nursing professional autonomy revolves around accountability and decision-making (Pursio et al., 2021). English would enhance their professional autonomy as reading, listening to, writing, and speaking English would enable nurses to make the right decisions concerning their cardiac patients aside from the doctors' orders in their designated areas concerning their clinical issues only. Since all the nursing reports, records, and other sorts

of collected data are in English, the decision-making process is managed more easily and accountability becomes clearer to all individuals taking part in the nursing care process.

CONCLUSION

The study has investigated non-native nurses' perceptions of the correlation between language proficiency and providing cardiac patients with optimum nursing care. As per the research findings, it is believed that there is a high degree of correlation between upgrading language proficiency levels and improving the performance of non-native nurses in a cardiac care clinical setting. The research might contribute to the existing literature on English-for-nurses since none of the previous studies explored the correlation between English proficiency level and the performance of non-native nurses in providing cardiac care. A taxonomy of the needs for English was constructed with the help of the Nursing Education Department team at AHC that conduces to the identification of the uses of English in the cardiac care setting. Another finding is that English enhances decision-making for nurses and, thereby, improves professional autonomy as well as professionalism as it improves their writing skills in terms of their portfolios (CV, personal philosophy, career summary, reports).

ESP and EFL instructors are advised to make use of the taxonomy proposed in this study while designing and developing materials to deliver English-for-specific-purpose courses for cardiac nurses in different hospitals around the globe. It serves as a framework for designing and constructing English courses for cardiac nurses. It can be used to extract authentic reading texts and listening recordings related to nurses' academic and scientific knowledge of different topics to expose them to the specific language used in the field. Nurses can then write documents, deliver presentations, use checklists participate in doctors' daily rounds and discussions, and easily communicate with foreign patients to enhance their skills. In addition, ESP instructors can ask nurses to conduct some research, certainly if applicable, on the problems they encounter in their departments and develop guidelines for implementing the best practices in terms of providing care for patients.

Scholars are encouraged to conduct further studies on how English improves nurses' performance in other medical sub-fields and, yet, add other uses of English to the proposed taxonomy if applicable.

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