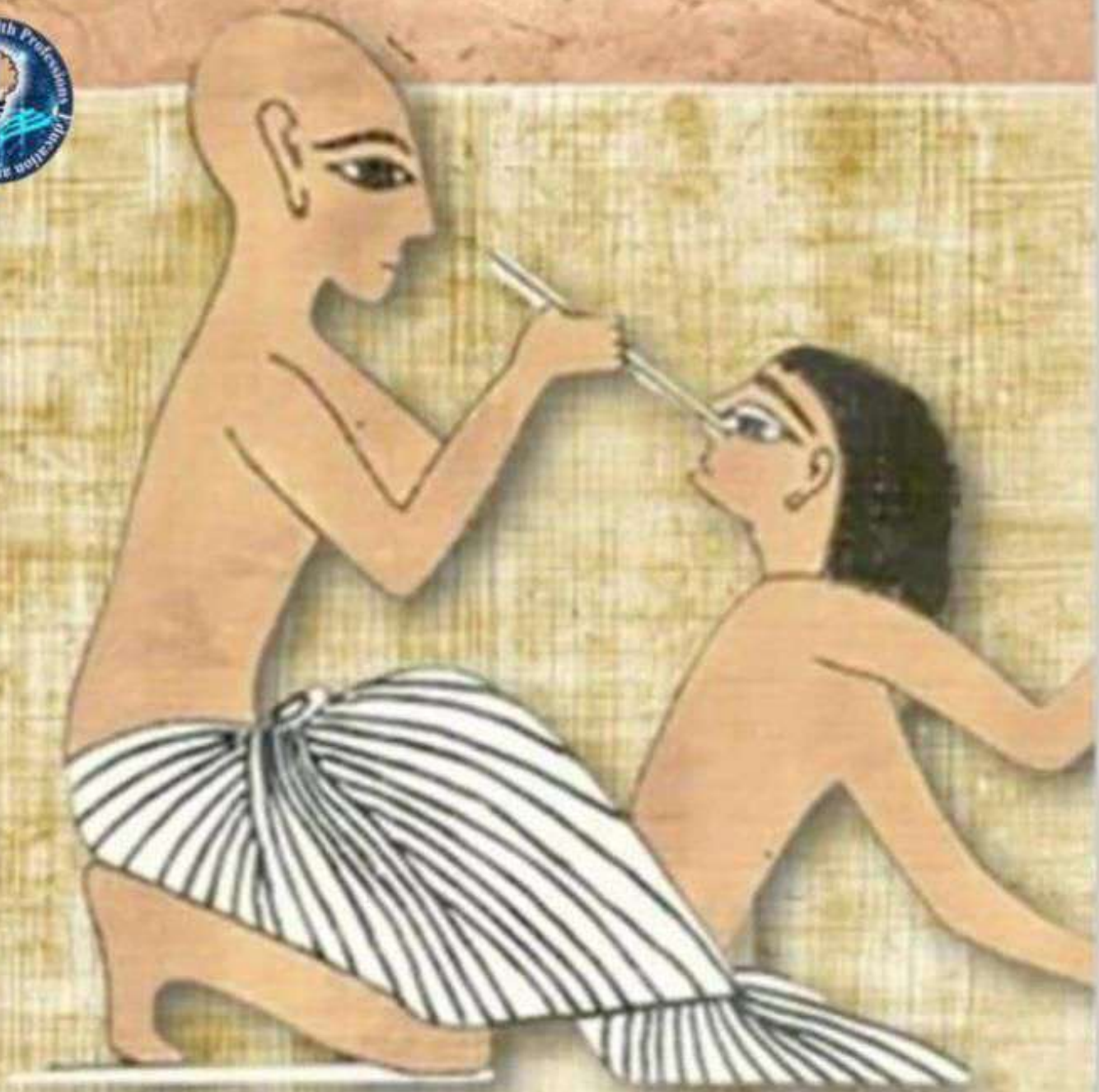


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RESEARCH ARTICLE

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# House Officers and Junior Residents' Formal and Informal Learning Experience during their Practical Year Compared to the National Competency Framework, a Qualitative Study

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## Abstract

### Background

In response to the national accreditation requirements, Alexandria Faculty of Medicine has implemented an integrated competency-based curriculum. However, the reform minimally affected the practical year which still lacks clear learning objectives and assessment methods. This study aims at exploring house officers' and junior residents' formal and informal learning experiences during the practical year and how they relate to the national competencies.

### Methods

Based on social constructivism epistemology this qualitative research included focus groups and personal interviews with a total of 22 house officers and junior residents from four different training and workplace locations in Egypt. The participants provided personal incident narratives about their formal and informal learning experiences during the practical year. We applied qualitative framework analysis to all narratives using Atlas Ti software program and conducted a narrative analysis of one exemplar.

### Results

We identified a total of 51 narratives taking place in 9 different hospital and geographic locations. The learning experience was shaped by other facilitators/ barriers including personal interest/ disinterest, gender, training location and relation with residents and peers. Participants highly valued formal learning and perceived informal learning as a burden rather than an opportunity.

### Conclusions

Not only did house officers and junior residents feel best prepared for the clinical and procedural skills but they also valued them more than the other skills and competencies of the National Academic Reference Standards which reflects the hidden curriculum. Informal learning in the workplace was neither recognized nor appreciated it was rather taken for granted or "invisible".

**Keywords:** qualitative study, narrative inquiry methodology, house officer training, competency based medical education.

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## Background

Medical education in the 21<sup>st</sup> century is characterised by dramatic changes affecting health care delivery, patients, doctors and students themselves, the exponential growth of medical knowledge, increased multi-professional awareness, the growing role of information technology and the emergence of new diagnostic and therapeutic methods, well-informed patients, best evidence-based medicine, and the periodic re-accreditation of doctors requiring self-directed learning and continuing medical education (1).

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These challenges led to a wave of quality assurance initiatives and the need for accreditation systems and standardised definitions of quality in health care (2). In 2005, the World Health Organization (WHO) and the World Federation for Medical Education (WFME) recommended the establishment of accreditation systems that are "effective, independent, transparent and based on medical education-specific criteria" (2).

By the end of their education, health care professionals need to be equipped with a "broad set of competencies" to be prepared to deal with and "survive in today's changing environment" (3). As a result, competency frameworks have been developed to catalogue the full scope of all the necessary "skills, knowledge, and behaviours" (3). Competency frameworks exist for almost all the specialties of the health care professions, e.g. medicine (4), dentistry (5), nursing (6-8), pharmacy (9) and veterinary medicine (10) and also inter-professionally across different specialties (11).

Within medical education, competency frameworks have been developed for all phases ranging from undergraduate education (12) to postgraduate education (13) and continuing professional development and continuing medical education (14), not only for students, but also for faculty staff members (3). The scope of competency frameworks is also very wide; ranging from subspecialties, for example cardiothoracic surgery (4); family medicine (15), diabetes (8) and glaucoma (16) to inter-professional frameworks (11) and to global levels. Attempts have even been made to create a global competency framework for the global physician (17).

In Egypt the National Authority for Quality Assurance and Accreditation in Education (NAQAAE) was established in 2006 to assure the quality, continuous improvement and efficient performance of Egyptian education institutions in general and medical schools in particular. The NAQAAE developed a set of National Academic Reference Standards for the Bachelor's degree in medicine (NARS) in 2008 to ensure that all medical graduates achieve the skills and competencies needed to practice medicine (18). This competency framework is divided into two sections covering the undergraduate medical education including a final practical year and is adapted from international frameworks, such as Tomorrow's doctors and the GMC guidelines on good medical practice (18).

In response to the accreditation requirements, the Alexandria Faculty of Medicine introduced a curricular reform in 2009 in order to shift from the traditional discipline-based curriculum to an integrated system-based one. Curricular objectives and course specifications for the seven years of undergraduate medical education were formulated in alignment with the national competency framework.

However, the reform didn't include the seventh year, also called the practical or house officer year, where students are expected to share in the diagnosis and treatment of patients at the main university hospitals and put into practice the theoretical knowledge they have acquired. Unlike the first six years, the practical year lacks a formal or specific curriculum; no learning outcomes have been formulated for this stage of the medical training. Students have inconsistent learning experiences as learning is dependent on the personal experiences of each student, e.g. where, when and with whom they train. Each department has a different plan for training house officers ranging from organizing formal weekly teaching sessions to leaving students in the ward to observe and learn by their own.

House officers spend 12 months rotating between the different departments; they spend two months in each of the general surgery, internal medicine, paediatrics and obstetrics and gynaecology departments, and one month in each of the anaesthesia and surgical intensive care department, the emergency department, and two months in two elective rotations of their choice. Within the context of this competency framework, house officers are expected to achieve not only clinical and diagnostic, evidence based and infection control skills, but also team working skills and coping with the changing world environment (18).

Throughout this period house officers are facing the burden of the transition phase between the undergraduate education in a university setting and the postgraduate training in the workplace which is often characterized by uncertainty, disorder, and indeterminacy (19). Lacking previous clinical experience house officers may sometimes lack the confidence and ability to make decisions instinctively and correctly (20). The 'metamorphosis of medical students into junior doctors' is an important phase of their professional development that needs a "balance between support from colleagues, professional development through taking independent responsibility; and the strength of the view of internship as part of a



‘natural progression’, an inevitable evolution through the stages of medical training” (21).

Furthermore, this phase shapes the professional identity of the medical practitioner who can be considered a novice joining a new community of practice at the workplace in learning on the job process (22). The current study aims at exploring house officers’ and junior residents’ knowledge and understanding of the national competency framework as well as their formal and informal learning experiences compared to the national competency framework.

## Methods

### Study design and philosophical assumptions

This qualitative study is based on social constructivism epistemology where knowledge and attitudes about the national competency framework are explored as “being constructed through social interaction” (23). The qualitative approach lends itself to understanding the meaning of the participants’ learning experience and perceived learning needs in the natural setting minimally disrupting the participants’ daily routine (24). Consistent with the philosophical assumptions underpinning this study a narrative inquiry approach was taken. Within the context of the narrative inquiry approach data is generated in the form of stories that are interpreted and represented in a narrative or storied form to reflect the ‘essence’ of the learning experience during the practical year (25, 26).

### Sampling and recruitment

Purposeful maximum variation sampling was designed for this research (27). Different participants (house officers and junior residents of different specialties) in various sites (university, ministry of health, private and military hospitals) were chosen to allow the study of a broad range of experiences and maximize opportunities to elicit data (28, 29). An estimated sample size of 20 participants (10 house officers and 10 junior residents) was chosen for this research. This decision aimed to strike a balance between the depth of the learning experiences and the breadth and variation of the different study participants and sites (24). Recruitment was mainly done by announcements on the corresponding social media groups for house officers. Additionally, a snowballing approach followed where participants recommended others who were interested and eligible to participate in this research. There was no pressure or coercion, and they could withdraw at any time during the discussion or refuse to answer any

questions. Volunteering students were contacted and focus groups were organized. Participants were given incentives in the form of soft drinks.

### Two groups of participants were included in this research:

**Group A:** Junior residents (relevant population size of about 1000) Junior residents were individuals who had just completed the house officer year and were on their first year of residency. Residents came from different specialty backgrounds (General practitioners, ENT, Anaesthesia and surgical intensive care, neonatology) and different locations in different rural and urban areas inside and outside Alexandria (Main University Hospitals, ministry of health hospitals, health insurance hospitals and military hospitals).

**Group B:** Current house officers (relevant population size of around 1000) Current house officers were individuals that were in the midst of their house officer training. At the time this research was conducted house officers were at an earlier stage of the practical year (between the third and fifth month). House officers were training in different departments in different locations (Alexandria Main University Hospitals and Ministry of health hospitals).

### Data collection and analysis

Focus groups were used for this study with the aim of delving into the feelings and attitudes of house officers and residents towards their learning experiences and the national competency framework (30). Data analysis occurred concurrently with data collection in an iterative data analysis process (27). Data was audio- recorded, transcribed and translated by the researcher MS from Arabic to English. A professional translator checked the accuracy of the anonymized transcripts. Translated transcripts were analysed using “framework analysis involving familiarization, identifying a thematic framework, indexing, charting, mapping and interpretation” (31). The authors MS and AD independently identified themes and then came together to discuss them. After the discussion, the authors then created an initial coding framework based on one interview and four focus group transcripts. For construction of the framework, we drew upon a priori items of the national competency framework as well as emergent issues raised by the study participants (31). A consensus process followed, and coding was continued with the remaining transcripts using ATLAS-ti (a computerized indexing system) until data saturation was



reached after 4 focus groups. In our study, data saturation was determined by systematically reviewing the transcripts to identify the point at which no new themes, concepts or repetitive information emerged. The coding framework was “revised and amended iteratively to reflect the data” (23).

This study was undertaken as a requirement for the Masters in Medical Education at the University of Dundee. Ethics This research was approved by the University of Dundee Research Ethics Committee and institutional approval was given by the Alexandria Faculty of Medicine. Anonymity was assured; a consent form was signed by participants, who also provided basic demographic information.

**Quality, rigour and reflexivity**

Being reflexive about the relation between the researcher and the participants and the way they interact is an important aspect of the quality of the research (32). The principal researcher and author MS in this case was an insider, having lived the experience of the house officer year herself, which may lead to a deeper and better understanding of the context as well as easier access to the research participants. However, it may also have some limitations, such as the researcher's personal experience influencing the coding and analysis of the data, whether negatively or positively. The researcher's experience of training as a house officer may be a source of bias/prejudice that shouldn't be eliminated, but rather considered and reflected upon (25). Potential biases were carefully addressed throughout the coding process, with the active involvement and thorough revision of the supervisor and the author, AD, thereby increasing the interrater reliability of the study. In addition, the author MS engaged in reflexive journaling to examine how her own experiences might influence the interpretation of the data, ensuring a comprehensive and nuanced analysis.

The research participants were students of the principal researcher and author MS at some point in their undergraduate education, which may also influence the interaction. The fact that the researcher and the participants have had similar experiences and belong to the same institution will help to build a relationship that includes connection, trust, and respect (27).

Two methods were used to ensure the validity of the current research. Triangulation was achieved by involving more than one stakeholder group (residents and house officers) to ensure comprehensiveness and more reflexive data analysis (25, 33). Riessman (34) described two levels of validity in narrative research: the trustworthiness of the data, i.e. the story told, and the validity of the analysis conducted by the researcher. Relevant to narrative research is the constructive alignment between the research questions, the epistemology underpinning the research, and the methods used. Upon completion of data collection, transcription, translation, and analysis, a significant number of house officer participants had already graduated. Consequently, the feasibility of conducting a member check was compromised due to the temporal advancement in the participants' professional statuses.

**Results**

**Participants**

Eleven junior residents and eleven house officers participated in seven interviews (six focus groups and one personal interview) across different hospitals in different geographic locations. The focus groups took place face to face in the Alexandria University facilities and lasted between 44 and 94 minutes for residents and between 92 and 122 minutes for house officers. Demographic data of study participants is summarized in Table 1.

Table (1): Demographic Data of study participants

Category	Residents	House officers
Number	N=11	N=11
Gender	Male/Female: 4/7	Male/Female: 3/8
Hospital location	Main university hospital: 2 Ministry of health hospitals: 7 Health insurance hospitals: 1 Military hospital: 1	Main university hospital: 10 Ministry of health hospitals: 1
Geographical location	Alexandria center: 3 Alexandria suburbs: 6 Cairo: 1 Damanhur: 1	Alexandria: 11



Specialty/ department of training	Neonatology: 3 Ear Nose and Throat:1 Intensive Care Unit:1 Anaesthesia: 1 General practitioners: 5	General surgery: 5 Paediatrics: 2 Urology: 1 Orthopaedic surgery:1 Obstetrics and gynaecology: 1 Emergency medicine: 1
Previous departments of house officer training		Anaesthesia: 6 Emergency medicine: 5 Obstetrics and gynecology:2 Internal medicine: 2 General surgery: 2 Paediatrics: 1 Cardiothoracic surgery: 1 Radiology: 1
Average age	26 years	24 years

**Coding framework**

The final coding framework was composed of five major themes that are summarized in table 2. Themes 1-4 included fragmentary coding (narrative as well as non-narrative fragments of data) of content related themes

about the NARS, learning experiences, opportunities, barriers and facilitators to achieve NARS items. Theme 5 included narrative coding of a total number of 51 whole personal incident narratives.

Table (2): The six themes of the coding framework

Theme	Theme title	Coding	Descriptor/definition
1	Knowledge and opinion about the National Academic Reference Standards (2 subthemes)	Fragmentary coding of all interview data (narrative and non-narrative)	This theme contains residents’ and house officers’ comments about the NARS in general and some of its specific competencies in particular.
2	Formal and Informal learning opportunities ( 3 subthemes)	Fragmentary coding of all interview data (narrative and non-narrative)	This theme discusses the sources that house officers use for their learning including teaching sessions officially organized and announced by the faculty of medicine, serendipitous informal teaching and autonomous learning efforts
3	Meeting/ not meeting specific competences of the National Academic Reference Standards (10 subthemes)	Fragmentary coding of all interview data (narrative and non-narrative)	This theme explores house officers and residents achievement of the NARS competencies such as clinical and procedural skills, team work and inter-professional work, time and resource management and cost effectiveness.
4	Barriers and facilitators of learning (6 subthemes)	Fragmentary coding of all interview data (narrative and non-narrative)	This theme elaborates factors helping/ hindering house officers to achieve the required skills and competences including personal interest/disinterest, gender, department, residents, peers/teamwork and knowledge about the NARS.
5	Personal incident narratives	Holistic coding of narrative data	This theme presents stories of the learning experience of house officers and residents in the Main University Hospital and Ministry of health hospitals and their impact whether positive, negative, or neutral.

**Theme 1: Knowledge and opinion about the National Academic Reference Standards**

Awareness of the NARS was initially low. However, when shown the printed document, participants reported having read it by chance on social media (Table 3,

Quote 1). There was a good consensus among study participants in both groups about the usefulness, appropriateness, and value of the NARS competencies



in preparing house officers for residency (Table 3, Quote 2). Some house officers even drew some parallels between the NARS and some international board exams, making the NARS valuable in preparing house officers not only for the national but also for the international labour market (Table 3, Quote 3). However, participants had mixed views on some of the competencies, such as applying evidence-based medicine in patient management (Table 3, Quote 4) and making cost-effectiveness decisions (Table 3, Quote 5). Both were considered irrelevant for the placement year as house

officers are not directly involved in patient management decisions. The complexity and controversy involved in these decisions was considered inappropriate at this stage of medical training. There is a link between theme 1 (knowledge and opinions about the NARS) and theme 4 (the barriers/facilitators of learning). Lack of knowledge about the standards was perceived as a significant barrier to achieving them. House officers cannot achieve competencies they don't know about (Table 3, Quote 6).

Table (3): Quotes to illustrate theme 1 (Knowledge and opinion about the NARS)

	Quote	Participant
1	"There was a pdf file on Facebook posted by our senior colleagues. I'm not sure if it was the faculty or our colleagues who posted it. But they wrote down the things we should achieve by the end of this year".	Female house officer, Location 1
2	"This is exactly what house officers should learn"	Female resident, Location 2
3	"For me, I read about the PLAB (Professional and Linguistic Assessments Board (PLAB) test for the assessment procedure of overseas doctors or international medical graduates) and I read about the requirements and the criteria of the skills, and I knew then that these are the things I should learn. I read about what's expected of me clinically, theoretically, and so on. And these are the main things they ask for in the exams, so it's very reasonable".	Female House Officer, Location 1
4	"I see a problem with using evidence-based medicine in management and decision making: it is very difficult for house officers to use evidence-based medicine, how can they use it? They should know basic medicine, not evidence-based medicine, and later during their residency they can learn to use evidence. House officers shouldn't be expected to use evidence-based medicine, it's all about reading articles and they can't be expected to do that at this stage of their training. They should learn where to find evidence, not how to use it. They shouldn't be exposed to the many controversies of evidence-based medicine."	Male resident, Location 1
5	"Cost effectiveness, well it is difficult for a house officer to decide on the cost effectiveness of certain drugs in certain patients. There are some drugs with the same efficacy, the same response rate, and if we balance all the factors in 2 patients and then choose which drug to prescribe based on the cost effectiveness, ...this is very difficult for a house officer to decide, even the resident finds it difficult to make these decisions in the 1st and 2nd year of residency".	Female resident, Location 1
6	"That is the problem; most of us are just passing through without clear common goals. Each of us has our own personal goals that we want to achieve by the end of each rotation, and that's it. But it's better if there's a doctor who sets these goals with us."	Female house officer, Location 1

**Theme 2: Formal and Informal learning opportunities**

Formal teaching (in the form of lectures, workshops and simulation sessions) was the most commonly discussed theme in the fragmentary as well as the narrative coding (9 narratives were about formal compared to only 5 about informal teaching). Although highly valued by participants some teaching sessions were seen as rather useless due to the busy ward environment; house officers either didn't know about the session, couldn't attend it or the session was completely cancelled (Table 4, Quote 1). Clinically relevant content was particularly more valued than theoretical content (Table 4, Quote 2) and the fact that most of the formal teaching was based

on personal efforts of individual staff was a barrier against continuity. There was no fixed teaching schedule which made different cohorts having unequal learning experiences each year (Table 4, Quote 3).

Residents were considered the main source of informal teaching, within the house officer narratives. Unlike the findings of the fragmentary coding where informal teaching by residents depended very much on the different personalities of the individuals or was negatively influenced by their busy lifestyles and overwhelming duties (Table 4, Quotes 4 and 5), the





narratives reported were all perceived as positive experiences. Although not occurring in any of the whole narratives, the nurses' and the peers' teaching role was important for house officers. Nurses sometimes had more time, patience and experience than junior residents (Table 4, Quotes 6 and 7) Autonomous learning (in the

form of reading patient's documents, observation of peers, nurses and residents and books and internet sites) was the least preferred source of learning by house officers who felt forced to overcome the lack of teaching rather than seeing it as an opportunity to be a self-learner (Table 4, Quote 8).

Table (4): Quotes to illustrate theme 2 (Learning opportunities)

	Quote	Participant
1	"I didn't know about the lectures, for example. And there was a lecture every now and then in the emergency department, but in the emergency department it is really difficult. One time we were at a lecture and the doctor was explaining when suddenly he got a call from the resident asking where the house officers were. He asked him where the house officers were because they were urgently needed in the emergency room. So the lecture was cancelled."	Male house officer, Location 1
2	"I only benefit and remember practical things. I don't benefit from the lectures; I just sleep there to be honest".	Male house officer, Location 1
3	"As a house officer, I attended ECG lectures organised by an ICU staff member, about 3 or 4 lectures. It was last year, but this year he is not giving these lectures anymore. It's not regular because it's not part of a system, one year there's a lecture and it's never repeated. The assistant lecturer was available last year, but this year he has something else to do, it shouldn't depend on the personal efforts of an assistant lecturer to explain everything".	Male resident, Location 1
4	"It is very much a question of luck: who will you have the shift with. Of course, I know that motivation plays a role, if I'm doing something I like it will be different, but at least the difference shouldn't be huge. It's not like one person wants to teach everything and the other doesn't bother at all."	Female house officer, Location 1
5	"We sat with a resident once and she explained it to us and I felt she was really keen to explain. It was good. But then someone called her to check on the patient and she went and that was it."	Female house officer, Location 1
6	"After a caesarean, the doctor leaves you to sew up the skin, it's usually subcutaneous. The nurse stays with you and tells you what to do... Some doctors are very patient in teaching, others are not".	Female house officer, Location 1
7	"We actually taught each other. If someone learnt something about ECG, for example, they would come and explain it to us, and we would discuss it together. It was the same with ABG. If someone read about it in a book, they would come and explain it to us."	Female resident, Location 2
8	This is our only option because the doctors do not explain anything".	Female house officer, Location 1

**Theme 3: Meeting/ not meeting specific competences of the National Academic Reference Standards**

There was considerable variability in the value placed on different skills by study participants. Accordingly, skills could be placed on a continuum ranging from skills that had a significant impact on the participants' learning experience (clinical and procedural skills), to skills that were less valued by participants (communication skills), to skills that were not mentioned at all unless explicitly asked by the interviewer. When asked about meeting/not meeting the NARS competencies, participants in both groups automatically talked about clinical and procedural skills (Table 5, Quote 1).

Within this category there is a similar continuum, ranging from clinical skills that were described as met

by almost all participants, such as taking blood samples, giving injections, and suturing wounds (Table 5, Quote 2). Others were described as partially met, for example ECG and basic bedside blood laboratory tests (Table 5, Quote 3), and others were not met at all, for example respiratory function tests and performing normal labour procedures (Table 5, Quote 4). NARS competencies that were not considered important by study participants appeared only sporadically in the fragmentary coding and not at all in the personal incident narratives, including the use of evidence-based medicine in management decisions, safety and infection control measures, and patient confidentiality.



Table (5): Quotes to illustrate theme 3 (Meeting/ not meeting the NARS skills and competencies)

	Quote	Participant
1	"Procedures and technical skills, that's what we focus on during our house officer year, mainly the manual skills."	Female resident, Location 2
2	"You learn to do ABG, ECG, cannulation, intramuscular and subcutaneous injections, etc. You must master all these skills. And I learnt them during my internship year".	Female resident, Location 2
3	"The ABG, for example, we can take it and have it analysed, but we cannot interpret it. No one has ever explained to us why it is useful or how to interpret the results."	Female house officers, Location 1
4	1: "And the respiratory function tests: we don't do them. I have only heard about them in theory, but I have never seen anyone do them." 2: "Nor normal labour."	Female house officers, Location 1

#### Theme 4: Barriers and facilitators of learning

Personal interest/disinterest was the most frequently discussed facilitator/barrier to learning. It not only shaped the learning experiences of the house officers, but also influenced the behaviour of the residents. Residents teach and rely on house officers who are particularly interested in learning (Table 6, Quote 2). This is evidenced by the frequent repetition of the phrase 'if you want to learn, you will learn' in discussions between residents and house officers (Table 6, Quote 1).

Almost all participants agreed on the double-edged nature of personal interest. While house officers put more time and effort into attending extra, unofficial shifts in specialities they were particularly interested in or saw as potential career options (Table 6, Quote 3), they were sometimes reluctant to learn other skills they were not interested in, for example urinary catheterisation and normal childbirth (Table 6, Quote 4).

Learning experiences were influenced by the different locations of training, between different departments within the same location and even between different units within the same department (Table 6, Quote 5).

Participants also had mixed views about the role of residents and peers in facilitating/impeding their learning. Although they were seen as an important source of learning, residents and peers were also competitors for the learning opportunities available (Table 6, Quote 6). Competition with peers was even described by one participant as 'survival of the fittest' (Table 6, Quote 7).

Gender appeared to have a significant emotional and educational impact on house officers, whereas it was not mentioned at all by residents (Table 6, Quotes 8 and 9). Female gender was an important barrier to achieving certain skills, particularly suturing and CPR (Table 6, Quote 10).

Table (6): Quotes to illustrate theme 4 (Barriers and facilitators of learning)

	Quote	Participant
1	"But to be fair, if you want to learn, you will learn. If you want to learn, you will learn. If you really want to learn, you will stay in one place and annoy the residents until they teach you."	Male house officer, Location 1
2	"The residents have to get the impression that you are really interested, and you spend a long time there to start teaching them. I did 5 shifts a week for 12 hours each. It was a very long time. And when they had exams, there is a shortage of junior doctors, so they can give you more responsibility if they know you have become competent enough."	Female resident, Location 2
3	"When I did my paediatric rotation, I also went to the ICU at the very beginning of my training...when I did my ICU rotation, I went there for another 2 months and after we finished our placement, I went there twice a week until I had learnt everything. When I did my anaesthetic training, I always went with them to the emergency ward, 2 days a week, and I was in the theatre once a week".	Male resident, Location 3
4	"The fault is in me because I didn't want to learn some of these skills. I wasn't interested in learning certain things and people didn't teach me how. The problem is not always with the residents, it's a problem with our motivation and whether we want to learn or not".	Female resident, Location 2
5	"However, it depends a lot on the department you train in. Each department gives you a different experience: some departments don't mind if you don't attend at all, others are strict, some are boring, others are interesting and so on. It depends on the department."	Female house officer, Location 1



6	"Q: And why did you not live up to your expectations? 3: There was no chance. Junior residents are the ones who are supposed to learn. They are just starting their residency and they are supposed to learn, the middle senior residents have just come back from their military service, and they are also supposed to learn. They don't let house officers learn. They are the priority".	Female house officer, Location 1
7	"Teamwork isn't easy because it's like survival of the fittest, especially among boys. It's much worse for boys than for girls."	Female house officer, Location 1
8	"It was really hard in the first month and especially in the first week it was so hard to convince them that even though I am a woman I want to learn. But later they were convinced, and I really started to learn. I did a lot of chest tubes, and I was really happy, that month was one of the best times of my life. I was very optimistic."	Female house officer, Location 1
9	"Terrible sexism that you will never imagine. And what is it based on? It's based on the idea that a woman shouldn't do this and that. We are doctors! What would you say if you were not a doctor? What are ignorant, illiterate people supposed to think? And even older professors. There is an old professor in the cardiothoracic surgery department who asked me and my friends: "Do you think it is socially acceptable for women to go to medical school?" And there was a resident in orthopaedic surgery who used to bother me during a night shift and tell me that women should not work. And if they insist on working, they can choose something light, something easy, because she is delicate".	Female house officer, Location 1
10	"1: It's never us who do CPR. 2: Even if there is a patient in cardiac arrest, they give the chance to men and not to women... Many girls wanted to try CPR, but they say that boys are physically stronger. It's very sad".	Female house officer, Location 1

### Theme 5: Personal incident narratives

A total of 51 narratives were identified: 31 from house officers and 20 from residents. The narratives could be divided into two halves, with positive and negative events occurring in different hospital and geographical locations. Different themes that appeared in the house officer narratives included learning opportunities (14 narratives), interprofessional communication and communication with colleagues and patients (9 narratives), clinical and procedural skills (7 narratives) and patient confidentiality (one narrative).

The residents' narratives, on the other hand, included only two themes: communication with patients (one narrative) and clinical and procedural skills (19 narratives). The latter was further categorised into positive, negative, and neutral narratives based on the residents' sense of preparedness and the impact of the story on them. Accordingly, the narratives could be divided into almost two sections, eleven positive and nine negative stories.

The narrative presented in Figure 1 was provided by a female junior resident in training at site 2. Although this narrative does not follow the typical structure of abstract, orientation, complicating action, and coda (35), it is a fairly typical example of the narrator's demographics. It is also typical in terms of theme, providing an example of the clinical and procedural

skills narratives that were the focus of most of the study participants.

We chose this particular narrative because it serves as a representative example of the prevailing views expressed by the majority of residents regarding their experiences with clinical and procedural skills. This narrative was considered illustrative because of its ability to demonstrate the complex interplay between documented National Assessment of Readiness for Service (NARS) scores and the tangible sense of readiness experienced by junior residents immediately after graduation. It also highlights the critical consequences associated with meeting or failing to meet established standards, highlighting the potential risks to the safety of care provided by junior doctors, particularly in rural areas where they often work without direct supervision.

Although affected by translation, this narrative contains some examples of emotional speech and subtle devices to establish an emotional tone; primarily that of disappointment and frustration, in addition to some elements of regret and sadness. Due to language limitations, we could not carry out a full discourse analysis of the narrative, but we have highlighted the main uses of pronouns and emotional words.



### Themes

This narrative event took place in a primary health care unit in a rural area in front of the nursing staff (Figure 1). It begins by describing the incident in which the resident felt unprepared to deliver a woman in labour. The narrative includes a number of event themes identified around the resident's actions: inter-professional collaboration (the nursing staff delivered the woman when they realised that the doctor was incompetent (line 2), learning to assist in normal labour through observation (line 5), which was obviously not enough to successfully achieve this competency (line 13), and how the resident regretted it (lines 12-13). In relation to this action, the use of language and pronouns shows how the resident sometimes identifies herself separately from the nursing staff "I" and "they/they" (line 8) and "the nurses" and "doctor" (line 2) and sometimes as a team "our unit" (line 1) and "we" (line 12).

### Emotion:

The resident uses negative emotion words throughout the different sections of the narrative, particularly when

assessing the impact of the story: "upset" (line 8), "very upset" (line 13), demonstrating the negative emotional impact of the experience. Emotions also include regret and disappointment, which are expressed through the repetition of the phrase "doctor please help, no I don't know what to do" (lines 5-6).

Not only the language but also various subtle devices establish the emotional tone, such as the use of direct speech (lines 2-3), the use of the intensifier 'very' (line 13), the use of repetition (lines 2-3 and 5-6), the negatives 'didn't/can't' (lines 1, 3, 4, 5 and 6) and the judgements (line 13) (36).

In summary, the lack of achievement in some skills can leave graduates unprepared to deal with patients, especially when working without adequate supervision. Not only does this have an emotional impact in terms of confusion and lack of confidence, but more seriously it can have an impact on patient safety, particularly in relation to skills required in acute and emergency situations.

1 Sara\*: One patient came to our unit and she was in labor pains. I didn't know how to  
 2 deliver her. The nurses are the ones who delivered her. They asked me: "Doctor,  
 3 please help". I told them: "I cannot help; I don't know what to do". I didn't know what I  
 4 should do in normal labor. They delivered her. I don't know the details. I only  
 5 observed it twice but I can't do this, I don't know how to deliver the placenta. "Doctor,  
 6 please help" ... "No, I don't know what to do"  
 7 Q: And how did you feel?  
 8 Sara: I was upset. They delivered her, they were trained and experienced. She was on  
 9 her way to another hospital but they brought her to us by mistake. The driver didn't know  
 10 the way to the other hospital.  
 11 Q: Is your hospital equipped to deal with normal deliveries?  
 12 Sara: It's a small health office, we should be equipped, but we don't do it. I should have  
 13 been mastering the basic skills to deliver her, but I didn't. I was very upset. I should  
 14 have been trained on normal labor during my house officer training; I think this was a  
 15 very important thing to learn. What would have happened if the nurses didn't know how  
 16 to deliver that lady? I would have improvised...

Fig. 1 Example of narrative: "I don't know what to do"

\*Pseudo name for anonymity



## Discussion

This study explored house officers' and junior residents' knowledge and understanding of the National Academic Reference Standards (NARS) in relation to their formal and informal learning experiences during the placement year. Although participants initially denied any knowledge of the NARS, they came to appreciate its potential role in preparing them for their work as junior residents, both nationally and globally, which may be related to the development of the NARS and the aim of making them 'comparable to international standards'. The minor role played by students in the development of the NARS may be a possible explanation for their lack of awareness of it.

House officers and junior residents in our study felt most prepared for certain clinical and procedural skills, but less prepared for others. These findings support the work of Watmough et al. (37) and Trejo Mejía et al. (38), who also reported on the positive influence of practical training on house officers' sense of preparedness and actual skills performance; the work of Matheson and Matheson (39), who reported on house officers' deficient clinical and practical skills as assessed by consultant registrars and consultants; and the work of Calman and Donaldson (40) and Evans et al. (41) who reported on the deficient clinical skills of house officers. These findings provide practical evidence for the debate about the value of competency frameworks. The fact that house officers are provided with a clear map of transparent standards ensures that they have clear expectations and feel well prepared for the task (3, 42). On the other hand, they become more focused on achieving the 'minimum acceptable standards' rather than 'thinking critically', sometimes leaving them feeling unprepared to respond to the complexities of real clinical situations (42).

Another important finding was that most of the formal teaching was mainly aimed at achieving clinical skills. This supports the evidence in the medical education literature that many courses designed and implemented for teaching in the practical year focus on clinical skills, such as basic surgical skills and the management of acutely unwell patients (43-45). The Faculty of Medicine's focus on clinical skills was reflected in the attitudes and perceptions of the study participants, who automatically focused on this chapter of the NARS and didn't talk about the other skills unless explicitly asked by the researcher. Medical school policy can be seen as an important element of the hidden curriculum (46). The

hidden curriculum is reflected in the attitudes of both groups of participants, who valued clinical and procedural skills more than the other aspects of the competency framework.

Another interesting finding of this study is that most participants attributed their poor learning experiences to a lack of formal education. They equated "learning with formal education and training", perceiving work, and learning as two different activities that "never overlap" (47). Accustomed to traditional lecture-based teaching, house officers often miss important opportunities for implicit learning that occur as a normal part of working life. Raupach et al demonstrated that the factual knowledge of house officers increased significantly after the practical year, even though there was no formal teaching of factual knowledge (48). They attributed the increased test scores to informal teaching and exposure to clinical cases on the wards.

The results showed how gender can act as a barrier to female house officers achieving certain competencies, particularly in surgery. Gender issues have been reported in medical education literature around the world (49, 50). However, women's exposure to negative attitudes goes beyond discouraging them from choosing a particular 'male-dominated' career and is a problem that affects the quality of health care provided if it prevents them from achieving basic surgical or CPR skills.

### Limitations of the study

Language translation was the main limitation of this research. As it is recommended to conduct focus groups in the native language of the study participants, and as the research team consists of one Arabic-speaking and one non-Arabic-speaking researcher, we had to translate the entire data set from Arabic to English. The impact of translation on narrative data has been discussed in the literature by Riessman (34) who described three levels of knowledge construction within a narrative inquiry framework. Translating the transcripts is not a purely technical task as meaning is constructed rather than expressed through language. The choice of the word that best expresses the meaning is a result of the interaction between the languages, the researcher, in this case the translator, and the people they represent. Although double-checked by a professional translator, translation compromises a complete discourse analysis because participants use certain expressions or proverbs to



express their emotions that are difficult to understand in translation. It was also not possible to listen to the tapes while reading the transcripts, a step that would have ensured more accurate interpretation (27).

Another potential limitation is that although this study includes the main stakeholder group, it neglects other important groups such as staff, nurses, and patients. This compromised breadth is in the interest of providing greater depth to the study, which was primarily designed to explore house officers' and junior residents' perceptions of NARS, especially as they played a minimal role in its development.

### Suggestions for further research

Exploring the preparedness and level of satisfaction of house officers with their learning experience can be seen as a first step in assessing the educational effectiveness of the internship training. Future research could be directed towards assessing whether house officers have actually achieved the skills, measuring the actual impact and practical training (51). Assessing the actual skills and competencies achieved during the practical year will not only help to evaluate the educational effectiveness of the programme but will also contribute to the current medical education literature by being one of the few studies to compare confidence with competence, feelings of preparedness with actual knowledge and skill levels, a possible future study. In addition, this research can be seen as a first step in the design of a formal structured curriculum for the practical year. Further research can be directed towards a more comprehensive needs assessment to analyse the needs and gaps in training as perceived by other key stakeholder groups such as staff, nurses, and patients.

The participants in this study are house officers/graduates of the traditional curriculum at the Alexandria Faculty of Medicine. In the future, this research can be used as a comparative study to evaluate the impact of the new curriculum on the learning experience of the practical year.

### Statements and declarations

#### Ethics approval and consent

This research was approved by the University of Dundee Research Ethics Committee (UREC 14066). Institutional approval was given by the Alexandria Faculty of Medicine. Anonymity was assured; a consent form was signed by participants.

### Availability of data and material

Data supporting the current study are available from the corresponding author upon a reasonable request.

### Conflict of interests

The authors declare that they have no conflict of interests

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### Authors contributions

MS designed the study, collected, transcribed, translated, and analysed the data. AD supervised the design and data collection. Both authors contributed to data interpretation. MS wrote the first draft of manuscript. Both authors contributed to revisions of manuscript. Both authors read and approved the final manuscript.

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