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National licensing examinations and their challenges

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There are many countries in the world struggling with introducing national licensing examinations at both undergraduate and postgraduate levels. The Kingdom of Saudi Arabia is in good company in terms of its development on this issue, and in some ways already quite advanced. The discussions around the utility of national exams are sometimes highly polarizing and emotive. This was the reason for an Association for Medical Education (AMEE) symposium on the subject several years ago. There were proponents and opponents debating their case for licensing exams in Europe. This resulted in several informative publications presenting the arguments for and against the introduction of national licensing exams. Instead of repeating the arguments; the reasons explaining the utility of licensing exams will be presented, followed by a strategy for arriving there.

A common need for national licensing exams depends on the heterogeneity of the training programs in the medical education continuum of a country and in the training programs preparing learners to enter that continuum. Countries may vary substantially in terms of the heterogeneity of training. The Netherlands is an example of a country with very homogeneous training programs. There are state schools with strongly regulated programs leading to equally regulated exit exams. Thereafter, comes state-based undergraduate medical training that follows legally defined program outcomes. Combine this with a very strict national accreditation system for all postgraduate training programs governed by the Dutch equivalent of royal colleges elsewhere, and it is easy to understand the homogeneous character of the products from Dutch medical schools. Furthermore, the reforms of postgraduate training have been centrally driven and then accredited by a rigorous system.

From a Dutch perspective, will national examinations add much to this training continuum? Probably not. The situation in Saudi Arabia seems very different. Over the last 10 years there has been a trebling of medical schools in the Kingdom, both federally sponsored and private. Saudi Arabia does not have a national curriculum for medical training hence there is diversity in the existing training programs and even outcomes. There is also wide diversity in secondary school education available in the Kingdom, both private and federal, and many medical schools include the equivalent of a 1 year pre-professional program to ensure that all students admitted are brought to the same level before starting their medical studies. Even today the Saudi Commission for Health Specialties is starting an ambitious overhaul of the accreditation of postgraduate training, which has long been neglected. So in Saudi Arabia the educational continuum is very heterogeneous. Therefore, quality control in the form of national examinations seems to be justified in the Saudi situation, much more so than compared with the Dutch situation.

Greater freedoms, as espoused by the UK medical schools, can allow for schools to address individual needs within the whole healthcare system and not just one size, of product, fits all approach. Another very successful example is the New Mexico medical school that has successfully populated rural regions with their graduates by creating a curriculum unlike any other in the US just to meet the needs of producing primary care doctors.

The Saudi Commission for Health Specialties has made the decision to support the development of a National Licensing Examination to be taken by every medical graduate in the Kingdom. However, there will be many challenges ahead, of which the pivotal one is...
the production process of high quality test material. All other challenges are technical, but not to be taken lightly. There are basically two routes. The first is to actually ‘buy’ a licensing exam from one of the larger testing institutions around the world. The second is to develop licensing exams in house, and the Saudi Commission has chosen this route. The first route would have been relatively easy and can be done fairly quickly and it is suggested that it may be difficult to match the quality of the established testing services, at least for several years. However, the desirable approach is the one chosen by the Saudi Commission. There are many arguments but fundamentally they come down to three: ownership, capacity building and sustainability. Moreover, because assessment and teaching are two sides of the same coin, there must be an obvious linkage between any form of licensing examination and the teaching programs. This becomes more difficult to achieve when an off the shelf exam is purchased.

Ownership of testing is about tailoring the assessment to local circumstances and it will then drive the teaching system in a desired direction (according to the adagium “assessment drives learning”).[2] There will be an ongoing process of attuning the training program to the assessment and vice versa. The Saudi Commission for Health Specialties will also over time build credibility for this licensing process, while also creating capacity in item writing skills among local staff and educators. It is highly recommended that international expertise is also used where appropriate, rather than trying to re-invent the wheel.

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Medical journals and the Journal of Health Specialties

James Ware
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Medical Journals have been around for over two hundred years, hundreds have come and gone, but still thousands are in existence today, and more are being added every month. Formerly, many journals were associated with medical societies, and mostly of a general nature, but this has changed in the last century with the publication of specialist journals and then even single subject related journals. The Journal of Health Specialties (JHS) is an open access journal representing all the specialties under the Commission’s umbrella.

It is worthy of note that journals have frequently changed their name with time, for instance in 1840 a journal was launched called the Provincial Medical and Surgical Journal, later to become the British Medical Journal (BMJ) in 1888, and finally to adopt the abbreviated name, BMJ in 1988.

Journals have taken on various roles: educational, dissemination of research, debates of ethical and professional behaviour, the pressing politics of the day and even terms of work and professional codes of conduct, as well as reporting failures within medical society to live up to the ideals and standard of their professional. The Saudi Commission for Health Specialties represents over 76 different health-care professionals and this new journal shall attempt to represent their best interests, but of particular interest for the Commission is to provide a vehicle for the publication of research carried out as part of postgraduate training.

It is important to point out that while one attends a medical or nursing school just once, after graduation journals become one of the constants in the professional careers of most healthcare practitioners thereafter. Continuing Medical Education (CME) has become an important part of the published material available through current publications, and the JHS will publish educational updates and from time to time, “Expert Status Reports,” which will reflect current thinking, practice, and technology associated with today’s healthcare.

The JHS wishes to provide readers with good quality articles and currently only about 7% of submissions are being accepted, which is similar to the BMJ and other journals. Standards will not be compromised as this is a role that the Saudi Commission and JHS wish to uphold, that of setting standards. It is also notable that journals have played important roles in helping enforce research standards and ethical practice, and again the JHS will be using their editorial influence in this way. To help the Editorial Office the journal has a distinguished Editorial Board and International Advisory Group.

Over the last two decades, healthcare journals have increasingly gone online, and now offer mobile versions of their journals. The JHS cannot make any promises before even the publication of its first issue, but it is hoped that modern technology will be part of the journals strategy in the coming years.

The journal wishes to acknowledge the foresight and support given by the Secretary General and Deputy Secretary General without which there would not be a journal now.
Strategic approaches to simulation-based education: A case study from Australia

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ABSTRACT

This paper addresses some of the challenges met when developing widely distributed, broad spectrum, simulation-based education (SBE) for health professionals, such as resource duplication, inconsistent facilities utilization, discipline-specific silos, and the intersection of academic institutions and health services sectors. We examine three primary contributors to successful simulation-based practices – strategic planning, program development, and professional networks. Further, we provide examples of how each of these contributors function at different levels to assure comprehensive, yet sustainable approaches to implementing SBE for greatest impact at national, state, regional, and institutional levels. We draw on the example of Australia and its state and regional government structures, including the challenges in providing health services across a widely variable geography and population distribution. The types of health services and issues relating to health provision and management reflect those found in many western countries. Our hope is that the experiences gained at each level of governance within Australia may inform similar, successful development in other countries. We emphasize the importance of leadership and investment at the national level that serves to inform state, regional, and institutional efforts through a “trickle down” effect. Although evaluation of the strategic planning, program development, and professional networks described in this case study is still ongoing, their preliminary coordination has resulted in significant investment and support at all levels.

Keywords: Simulation-based education, strategic planning, Australian health, healthcare

INTRODUCTION

Simulation-based education (SBE) in healthcare is driven by ethical imperatives including reducing iatrogenic injury to patients and an increasing focus on quality and safety.¹ Additional drivers include the expanding numbers of health professional students and graduates concomitant with limitations on work time, a shift to competency-based education, and growing evidence supporting SBE as a strategic instructional approach.¹ Healthcare SBE has a long history that includes the use of tactile models and simulated (standardized) patients,²⁻⁶ however, significant developments in computer-driven technologies such as task trainers, manikin simulators, and virtual environments⁷⁻⁸ have expanded its uses across all health professions. To facilitate SBE, health services and academic institutions around the world have established infrastructure in the form of skills labs, simulated clinical settings, and mobile training spaces. Professional and regulatory organizations have begun to accept time spent performing simulation-based practice as a proxy for some clinical placements⁹⁻¹² and to provide credentialing for simulation-based operative skills.¹³⁻¹⁴ SBE has also emerged as an essential method for supporting inter-professional and team-based culture.¹⁵⁻²¹
In some cases, the rapid acceptance of healthcare SBE has led to a lack of coordination within and between health services, educational providers, and local and national governments. This, in turn, has resulted in inefficient simulator procurement and maintenance processes, as well as the duplication of activities. Further, although investment in infrastructure and equipment supporting SBE is necessary, the value of SBE is unrealizable without skilled educators and technicians. Academic programs and courses focusing on specific aspects of SBE (e.g., debriefing, scenario design, modeling, etc.), healthcare simulation conferences, other programs, and professional networks for simulation specialists are burgeoning parallel developments to support this need. Coordinated approaches to the development, implementation, and evaluation of healthcare SBE may lead to physical and human resource efficiencies, higher quality simulation practices, and improved outcomes for patients and care providers.

In this paper, we describe strategic approaches to investing in healthcare simulation across higher education and the health service sector, including strategic planning, programs, and professional networks. We draw on our experiences in Australia, in particular the role of a national health workforce organization. First, we describe contextual factors of Australia and its healthcare services. Second, we consider strategic planning at the national level by describing Health Workforce Australia (HWA), two related national programs that strategically invest in faculty development, and one professional association. Third, we move to state/territory strategic plans to consider two programs – the Queensland model for distribution and support of simulators and human resources and the Victorian Simulated Patient Network (VSPN) – and describe the Victorian Simulation Alliance (VSA) professional network. Fourth, we acknowledge the regional level strategic plans of the Gippsland Healthcare Simulation Network (GHSN), and fifth, review institutional policies from Monash University (Melbourne). These five approaches are outlined in Table 1. The examples are dynamic and as each matures they may take a different orientation. For example, the VSPN may take on planning and policy roles and further develop its professional association role. So the boundaries are somewhat artificial and arbitrary but seek to illustrate a coordinated approach to healthcare simulation.

The Australian healthcare context

Australia is the sixth largest country by land covering over 7.5 million square kilometers, almost the size of the USA and twice that of Western Europe. In 2012, the estimated population exceeded 22.5 million and the median age was 37.1 years. The Commonwealth of Australia was formed in 1901 to become two territories and six states [Figure 1]. The Federal and State governments pass legislation, whereas local governments oversee community services.

Health service and access

Australia provides a nationwide public health insurance scheme, Medicare, funded by a 1.5% levy to tax payers. All residents can access Medicare, which offers free or subsidized treatment by various medical, optical, dental, and allied health practitioners. Australian residents also receive free public hospital care. Private health insurance is also available, which provides reimbursements for other practitioners, and thus greater access health services. Statistics reporting the usage of health services in 2009 for persons over age 15 are included in Table 2.

Table 1: Examples of policies, programs and professional associations in strategic approaches to SBE

<table>
<thead>
<tr>
<th>Level</th>
<th>Locality</th>
<th>Planning and policy</th>
<th>Programs</th>
<th>Professional associations</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td>Australia</td>
<td>HWA</td>
<td>The AusSETT and NHET-Sim programs</td>
<td>Australian capitalise Society for Simulation in Healthcare</td>
</tr>
<tr>
<td>State</td>
<td>Queensland</td>
<td>Department of Health</td>
<td>Clinical Skills Development Service</td>
<td></td>
</tr>
<tr>
<td>Region</td>
<td>Gippsland</td>
<td>GHSN</td>
<td>Victorian Simulated Patient Network</td>
<td>Victorian Simulation Alliance</td>
</tr>
<tr>
<td>Institution</td>
<td>Monash University</td>
<td>Faculty of Medicine, Nursing and Health Sciences</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

AusSETT: Australian simulator educator and technician training, NHET-Sim: National health education and training in simulation.
Health issues

The Australian Institute of Health and Welfare identified the National Health Priority Areas (NHPAs) as diseases and conditions known to have the greatest burden for individuals and society, and where large potentials exist for health gains. The NHPAs include: arthritis and musculoskeletal conditions, asthma, cancer control, cardiovascular disease, diabetes mellitus, injury prevention and control, mental health, and obesity. In 2010, the five main causes of death in Australia were cancer, ischemic heart disease, stroke, dementia, and Alzheimer’s disease.

Health workforce

In 2006, 360,400 individuals were employed in the Australian health workforce, representing 3.5% of the total Australian workforce. This number is predicted to increase by an average of 1.7% annually, with 409,300 Australians expected to be employed in the health workforce in 2018.

Table 2: Health services usage for persons over age 15 during 2009

<table>
<thead>
<tr>
<th>Service</th>
<th>Percent of population using service</th>
</tr>
</thead>
<tbody>
<tr>
<td>General practitioner visit</td>
<td>80.8</td>
</tr>
<tr>
<td>Pathology test performed-referral by health</td>
<td>48.6</td>
</tr>
<tr>
<td>professional excluding tests as a hospital inpatient</td>
<td>31.3</td>
</tr>
<tr>
<td>Imaging test performed-excluding tests as a hospital inpatient and dental work</td>
<td>31.3</td>
</tr>
<tr>
<td>Three or more health professionals consulted for a single condition</td>
<td>24.4</td>
</tr>
<tr>
<td>Consulted with pharmacist</td>
<td>22.8</td>
</tr>
<tr>
<td>Hospital admittance</td>
<td>13.2</td>
</tr>
<tr>
<td>Hospital emergency department visit</td>
<td>13.2</td>
</tr>
</tbody>
</table>

NATIONAL LEVEL

HWA - strategic planning

HWA was established “to meet the future challenges of providing a health workforce that responds to the needs of the Australian community” under the Council of Australian Governments. It is federally funded but reports to the state government representatives. Like most Australian bureaucracies, HWA faces the challenge of ensuring equity within a nation that has the majority of the population centered in major coastal cities, yet has a huge geographical area. In addition, it has a broad focus, including issues such as enhancing clinical training, workforce planning analyses, and supporting the role of international health professionals. Its aims are to achieve self-sufficiency in the health workforce by 2025. HWA contributed AUD$ 93 million to enhancing SBE within Australia with a view to improving health workforce development as part of its “clinical training reform” program. In 2010, HWA contracted investigations of health professional curricula at medical and nursing schools with the purpose of identifying current and future uses of SBE. The reports indicated that a key issue was insufficiently trained faculty to maximize the benefit of SBE.

The Australian Simulation Educator and Technician Training (AusSETT) program

HWA funded a consortium of Australian organizations to develop a national train-the-trainer program for simulation educators and technicians in order to develop faculty who are competent in facilitating SBE. The resulting AusSETT Program aimed to provide experienced simulation educators and technicians with a curriculum and skillset to train others. The AusSETT Program was designed for those who worked with every form and level of health professional across Australia. HWA planned for these educators to support additional training for 6,000 further educators in local contexts through a separately funded program.

The consortium members responsible for designing the AusSETT Program drew from four states and included some of the most prominent simulation and educational research groups in the country. The consortium designed a curriculum with two key features. First, the Program emphasized educational principles with explicit links to the published literature. Second, the Program explored the uses of various simulation modalities, including manikin-simulators, task trainers, simulated patients (SPs), and virtual environments. Instruction was facilitated through workshops and e-learning components. This approach ensured that AusSETT addressed the needs of diverse environments. The Program was free for participants and local HWA networks in the states and territories nominated participants. Between December 2011 and September 2012, 230 participants completed all AusSETT Program requirements.

The National Health Education and Training in Simulation Program (NHET-Sim Program)

The NHET Program is the next phase of this workforce investment, with aims to train 6,000 SBE instructors by the middle of 2014. Monash University is leading the NHET-Sim Program and has factored lessons learnt from the AusSETT Program into the program design. Specifically, the program was designed for entry-level experience, which includes local faculty co-teach in the program to improve contextual relevance and sustainability, and a fully online e-learning option to improve access to remote participants and busy clinicians. Seventy-five percent of participants will complete instruction through workshops and e-learning; 25% will participate using e-learning only. The NHET-
Sim Program is free for participants. Applicants must intend to use SBE to support the development of healthcare students and professionals.

The NHET-Sim Program consists of approximately 24 instructional hours completed over 3 months. Two core modules provide a foundation in simulation modalities, and eight elective modules allow learners to select relevant content for their respective roles [Table 3]. AusSETT alumni may apply to become NHET-Sim faculty, co-teaching with AusSETT faculty before teaching independently. Any organization supporting simulation is eligible to host NHET-Sim.

NHET-Sim represents a significant investment in the skills of simulation educators across Australia; however, there are major logistical challenges associated with rapidly coordinating training for numerous participants, faculty, and host facilities. Although enthusiasm is very high, it is critical for the NHET-Sim faculty to track the impact of the program on observable health practices to substantiate continued government investment in this type of national program.

**Australian Society for Simulation in Healthcare (ASSH) - professional association**

ASSH was established in April 2007 for the professional healthcare simulation community,[47] with a major goal to lobby government on healthcare simulation. ASSH has over 400 members and is aligned with Simulation Australia, a wider industry-based advocate, both of which indicate the emergence of a mature professional simulation community at a national level. ASSH has links with other national societies, but also hosts an annual conference and is a member of the Global Network for Healthcare Simulation, thus positioning the national simulation community in an international arena. ASSH serves as a networking resource for members, created a directory of simulation resources, “SimNet.” with HWA funding[48] and is developing standards for simulation educators and programs.

<table>
<thead>
<tr>
<th>Module</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Simulation-based education: Contemporary issues for the health professions</td>
</tr>
<tr>
<td>2</td>
<td>Being a simulation educator</td>
</tr>
<tr>
<td>3</td>
<td>Being a simulation technician</td>
</tr>
<tr>
<td>4</td>
<td>Simulator fundamentals</td>
</tr>
<tr>
<td>5</td>
<td>Technology-based simulators and simulations</td>
</tr>
<tr>
<td>6</td>
<td>Delivering technology-based simulations</td>
</tr>
<tr>
<td>7</td>
<td>Simulated patient methodology</td>
</tr>
<tr>
<td>8</td>
<td>Patient focused simulations</td>
</tr>
<tr>
<td>9</td>
<td>Virtual environments</td>
</tr>
<tr>
<td>10</td>
<td>Simulation learning environments</td>
</tr>
</tbody>
</table>

**STATE LEVEL**

**Victorian Simulation Strategy, Department of Health (DOH) - strategic planning**

The state of Victoria is located in the southeastern part of mainland Australia and has a population of over 5.6 million[44] [Figure 1]. In October 2011, the DoH published a strategy document for the development of SBE and training,[49] delineating priorities in three broad categories: management and organization, capacity and quality, and innovation and capability. The impetus for the strategy was to provide high quality educational opportunities while addressing the demands on clinical placements of entry-level professional trainees. The strategy aligns with other clinical placement initiatives and also acknowledges the role of SBE across the professional life span. In 2010, the DoH commissioned a study on existing simulation infrastructure specifically examining the type, capability, and use of simulators. Infrastructure was found to be sufficient although not fully utilized. Barriers to uptake included insufficient staffing and capability while governance issues between health services and education providers complicated or prevented sharing of resources. Coordination of all resources was strongly recommended.

**Clinical Skills Development Service (CSDS), Queensland program**

Queensland is the second largest state, encompassing approximately 1.7 million square kilometers of land in northeast Australia. Nine of the ten fastest growing local government areas are located along the coast, with seven of these located in the southeast of the state. The Queensland Health CSDS[50] provides integrated support facilitating local delivery of SBE. The CSDS includes an educational “hub” at a central location (3,600 m²) with 28 training rooms, as well as extensive online programs, and databases managing over 1,500 items of simulation equipment. The “hub” provides high throughput of standardized clinical courses for Queensland Health and external organizations (e.g. professional colleges). Many CSDS programs reduce workshop time through e-learning adjuncts that allow pre-learning by participants before attendance. The hub also supports smaller hospital-based simulation centers that deliver standardized clinical courses and local solutions to local challenges. These are complemented by “in situ” programs using mobile simulations or simulations embedded in clinical facilities. As these facilities are locally owned and staffed, the term “pocket” simulation site has arisen to describe the CSDS resources (simulation skills training, curriculum, simulators, and audiovisual) that are available to these sites. “Pocket” in situ simulations can be tailored to local needs, provide greater access for most clinicians, and...
afford higher contextual fidelity than can be produced in a simulation center.

The function of CSDS is to increase clinical skills development by optimizing access to high quality training opportunities. Their model of delivery is based on seven core functions [Table 4] designed to optimize economies of scale. The focus is on developing the right support processes, governance, and technologies to distribute instructional programs, while reducing overhead and duplications. This includes developing the right curricular activities, conducting train-the-trainer programs to provide skilled simulation educators, ensuring simulators are available for the right training, coordinating with health systems to target and increase training opportunities, and supporting simulation sites through a distributed model. The costs associated with constructing a simulation center are substantially greater than are required for setting up a “pocket” in situ site, yet the 35 “pocket” sites supported by CSDS conduct more simulations between them than does the hub. Cost-effective and efficient methods for distributing SBE, that retains local flexibility along with consistently high quality, will be critical to the expansion of healthcare simulation.

The VSPN, Victoria program

The VSPN\(^{[51]}\) is an online network for people interested in SP methodology. Funded by HWA through the Victorian DoH, the VSPN website is also a repository of resources to teachers, clinicians, program administrators, and SPs. Established in 2012 and led by Monash University, in collaboration with Holmesglen Institute and Southern Health, the VSPN aims to:

- Develop a sustainable statewide network for faculty in SP methodology
- Provide high quality resources in SP methodology
- Expand SP-based education across the state
- Increase the number of simulation educators through SPs
- Improve education in patient-centered care across the state

The website contains modules on various aspects of SP work [Table 5]. Modules include a variety of resources such as illustrations of SPs at work, scenarios, educational frameworks to support SP-based education, and links to key publications. The e-learning modules are accessible to anyone who registers and are free of charge. Each module is designed to take participants 2 hours and there is no formal assessment.

The VSA - professional association

In 2012, a small group of simulation enthusiasts founded the VSA. The VSA is modeled on the Bay Area Simulation Collaborative\(^{[30]}\) and seeks to “create an environment that fosters collegiality, collaboration, networking and sharing among those engaged in health professional simulation and research”.\(^{[52]}\) This mission will be achieved by:

- Creating a cohesive voice and a common language
- Facilitating professional development and education
- Information dissemination
- Identifying best practices
- Developing and sharing scenarios
- Fostering collaboration and partnerships
- Facilitating inter-organizational research
- Standard and policy setting
- Identifying opportunities and lobbying for funding
- Linking internationally\(^{[52]}\)

Membership to the VSA offers benefits such as newsletters, links to useful simulation resources, interactive forums,

| Table 4: The functions and deliverables of the CSDS |
|----------|--------------------------------------------------|
| Function                        | Deliverable                                                                 |
| Clinical education              | Lifelong learning across disciplines, teams and systems                      |
|                                 | Just in time training, short courses and programs                            |
| Simulation provider education   | Training simulation coordinators, educators and clinical faculty             |
|                                 | Short courses through to Vocational Graduate Certificate in Healthcare Simulation |
| Statewide simulation education access | Setting up and maintaining audiovisual equipment                             |
|                                 | Access to a large pool of simulation equipment                                |
|                                 | Access to an online curriculum and resource sharing database                 |
| Asset management                | Formalized process for evaluation of new simulation education technologies   |
|                                 | Simulators and related equipment are repaired, maintained, and tracked centrally by CSDS to lower direct costs and provide redundancy in available equipment |
| Research                        | Participate in and lead a range of research projects in collaboration with universities, clinicians, and government organizations |
|                                 | Focuses on improving clinical practice and education strategies, and improving clinical service delivery |
| Network engagement              | Strategies to engage with stakeholders and the international simulation industry to provide Queensland with accessible evidence-based simulation education |
| Service management              | Defined processes and databases to ensure effective service management       |
|                                 | The internal capacity to build and maintain databases to develop and manage eLearning and simulations recourses on a large scale |
INSTITUTIONAL LEVEL

Faculty of Medicine, Nursing and Health Sciences (FMNHS), Monash University simulation strategy - strategic planning

In 2010, Monash University employed nearly 1,900 full-time equivalent staff members to serve 7,617 full-time equivalent students studying courses in FMNHS. The faculty is organized into 10 schools and several institutes that comprise multiple departments and centers, distributed across six Victorian and three international campuses. In 2011, the Dean of the FMNHS commissioned development of a simulation strategy to have faculty wide application. Drivers included potential funding opportunities alongside anecdotal reports of duplication, poorly stipulated, and inconsistent utilization of SBE resources. The resulting strategic plan included a coordinated approach to SBE with integrated and shared practices wherever possible, provision of the highest quality SBE, positioning of the FMNHS as a leader in SBE, and development of a sustainable model of excellence. Where possible, the FMNHS strategy was aligned and/or complemented resources at healthcare services. Limited resources and the distributed nature of the FMNHS faculty and students meant that a virtual network was required to support existing SBE documentation and promote a community of practice. The establishment of a SBE committee (including health service providers) that reports to an overarching FMNHS Education Committee signifies the importance of SBE to the overall curricula.

DISCUSSION

The paper has presented three components of simulation practice in Australia – strategic planning, programs, and professional networks. Planning that occurs at multiple levels appears critical to the development, implementation, and evaluation of healthcare simulation. At all levels, strategic planning included initial scoping of the SBE landscape; however, the goals of each scoping exercise varied slightly and reflected nuanced differences in their respective missions. Although a high level and consultative detailed scoping may have streamlined these repeated processes, the multiple scoping may have served to triangulate results, adding weight to planning factors.

At the national level, the coordinated approach to training simulation specialists demonstrates unparalleled efficiencies and economies on a scale. Supporting the development of entry-level simulation educators will increase utilization of SBE across the wide geographical areas characteristic of Australia; a decision derived from scoping information. The national program also provides a foundation from which to develop...
certification mechanisms for practitioners, programs, and facilities. The extent to which SBE can address some of the health workforce issues remains untested but the scale of the HWA programs is impressive.

At each level, strategic planning reflects the need for engagement between higher education institutions and health services. Institutional strategy that connects to state level strategy, which further connects to national strategy, is important because this connectedness facilitates local engagement toward national objectives. Although the characteristics of health services are similar across the country, contextual issues are always relevant and administrative boundaries necessitate the multiple levels of planning. The examples of strategic planning and programs presented previously describe methods for implementing SBE where it is needed and when. The movement of simulators between sites is an obvious economy gained from scalable practice, as demonstrated by the approach taken in Queensland. There is much to be learned from this approach that is largely health service led.

The least enacted strategic planning component appears to be investment in research. This is unsurprising because assessment and evaluation of SBE-related variables requires a stable platform before relevant information can be obtained. However, established networks will facilitate multisite studies as the professional community focuses further attention on research.

The presence of these professional networks at national and state levels reflects the desire for accessible communities of practice, minimizing the risk of practitioners working in isolation. Although there is some overlap between the aims of the associations/networks, they largely function within their scope of geographic cover. For example, state-specific issues are unlikely to be addressed at the national level and vice versa. There are several examples of state and regional networks in the literature. Although these networks have some similarities, our example offers an alternative for strategic planning, programs, and professional networking.

We hope that the Australian experience illustrates the benefits of planning at a national level, while maintaining state and local “ownership” to enable contextualization and sustainable practices. The future must include investment in research to demonstrate best practices across all facets of SBE.

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ABSTRACT

Aim: To explore the development of nursing research and provide some examples of research relevant to clinical practice.

Background: Nursing research developed in the last century as did nursing theories and models. However, nursing research does not have the same high profile as, for example, medical research and has tended to lag behind medical, and other forms of research, in terms of funding and in the apparent impact it has on clinical practice.

Design: Discussion paper.

Methods: Using a popular nursing model based on activities of daily living, nursing research that is relevant to these activities of daily living is explored and exemplified using a few key examples. Some of these examples are historical and some are current.

Conclusion: Nursing research has developed greatly over the past century and continues to develop in the 21st century. Nursing research is relevant to the needs of patients and has had an impact on clinical practice.

Keywords: ADL, models, nursing, nurses, research, theories

INTRODUCTION

Nursing research has a long history and it would be hard to specify when it began. The person to whom the origins of modern nursing are commonly attributed, Florence Nightingale, conducted research of a kind when she used statistical methods – in which she was trained – to impress her point about the link between social deprivation and disease on British politicians of the 1800s. In the process, she made the first recorded use of the pie chart (http://www.bbc.co.uk/news/magazine-11798317; accessed 1 June 2012). However, Nightingale was from an aristocratic family, she had money and education and was already iconic in Victorian Britain for her work in the Crimean war where she implemented many changes to the care of wounded soldiers, which were applied to her design of hospitals throughout the British Empire. Nightingale was not typical and her work with figures could only loosely be described as nursing research; it was, essentially, about public-health.

Different countries lay claim to the origins of nursing research but from a UK perspective – from which I write – the earliest work includes that of Doreen Norton on pressure sores, Stockwell on the unpopular patient and Hayward on the impact of information on the experience of pain. I am sure, even within those examples, that others in the UK could easily be named but these are landmark pieces of work that are still referred to and which have, largely, been upheld over the decades since they were carried out. A comprehensive summary of exemplary research in nursing and midwifery has been published by Rafferty and Traynor.

In this article, I intend to explore the nature of nursing research rather than its origins. However, the exemplars above do provide insights into the nature of nursing research and two will be referred to below.

BACKGROUND

Many people express surprise at the notion of nursing research on the misunderstanding that nurses do what doctors or senior nurses tell them to do and do not need research to inform their practice. Some who have heard of nursing research assume that nursing is merely trying to aggrandize itself or compete with other subjects and disciplines where research takes place. This is usually expressed in tandem with the view
that nurses have no need of a university education— which is where such research generally takes place—and only need to know how to care for people and that all the required skills are innate... and usually feminine. These views are merely the combination of ignorance and prejudice and while ignorance can be dispelled, prejudice is usually immutable; this article is not aimed at the prejudiced and does not judge the ignorant. Nursing has, traditionally, been quite poor at articulating its knowledge base and in explaining the value of nursing research.

Nursing research – unlike medical research – is rarely reported in the media. This is changing, however, and some publishing houses are having success with a few selected journals in bringing nursing research into the public domain. Nevertheless, nursing research rarely has the immediate impact of medical research; people want to hear about “miracle cures” (albeit that today’s “miracle cure” often transpires to be tomorrow’s health warning or current advice on disease prevention often transpires to be impossible to replicate). Nursing is rarely concerned, directly with curing disease, rather it is concerned with the care needed by people who have disease or distress and who are recovering from the adverse consequences of medical and surgical intervention. As such, nursing has no monopoly on care; it shares this domain with other professions such as medicine, social work, and the various therapies. However, nursing is almost uniquely about caring and its research, concomitantly, is almost uniquely about caring and the remainder of this article will explore selected areas of research related to this fundamental aspect of nursing.

Before proceeding, and for the person who may pick up a current issue of a nursing journal, a great deal of what passes for nursing research – or research conducted by nurses – may seem far removed from the everyday experience of patients and what people, including medical colleagues, consider to be nursing. Nursing research uses many mainstream research methods such as the clinical trial and the social survey. However, nursing research also espouses some of the more “exotic” methods of social research and the humanities including qualitative research and discourse analysis. It is apparent that nursing research has no specific methods of its own; it can, therefore, hardly be described as a discipline – a point which some may dispute. However, nursing adopts and applies these wider methods to try to understand and convey what nursing is about to itself and to others as it continues to explore and explain its professional identity. In this process, nursing research has made contributions to other fields and indeed, has had an influence on medical research and medical research bodies and leading medical journals now fund and publish research using methods other than clinical trials and quantitative surveys.

Research nurses or nurse researchers?
At this point, the identity of those who carry out research in nursing should be explored. Many are familiar in the clinical areas with research nurses. These are highly skilled and increasingly, highly trained nurses who conduct research but usually as part of and under the direction of a medical or surgical research team. Their purpose is data collection and in this role, they are the day-to-day managers of clinical trials, organizing the recruitment of patients, allocation to treatment and control arms and completing and recording the complex documentation that is required by clinical trials regulating bodies. Nevertheless, these are not nursing researchers nor are they normally engaged in nursing research. Nursing researchers are normally academics working in university nursing schools and who are graduates and often trained in research to PhD level. In the early days of nursing research, they commonly had first degrees in other disciplines and also had conducted their PhDs in other areas due to the shortage of university nursing schools and nursing degree programs. Increasingly, however, they have first degrees and higher degrees obtained in university nursing schools.

FUNDING
Obtaining funding for nursing research has always been difficult and models for funding vary across the world. From a UK perspective, it has been particularly difficult as there is no specific stream of research funding identified for research into nursing, and the situation deteriorates. The statutory bodies which govern nursing education and practice, variably called the National Boards or equivalent for the four countries of the UK which existed alongside the UK Central Council for Nursing, Midwifery, and Health Visiting and later merged into the Nursing and Midwifery Council, did provide funding for research into nursing education and aspects of professional practice, but they no longer do this. The UK government department, which runs the UK National Health Service also provided funding for research into nursing education and also had conducted their PhDs in other areas due to the shortage of university nursing schools and nursing degree programs. Increasingly, however, they have funding for research which nurses could apply for is rarely concerned, directly with curing disease, rather it is concerned with the care needed by people who have disease or distress and who are recovering from the adverse consequences of medical and surgical intervention. As such, nursing has no monopoly on care; it shares this domain with other professions such as medicine, social work, and the various therapies. However, nursing is almost uniquely about caring and its research, concomitantly, is almost uniquely about caring and the remainder of this article will explore selected areas of research related to this fundamental aspect of nursing.

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charities in the UK have funded nurses to do research but none fund nursing research as such and there are few charities – with very limited funding – which fund nursing research.

The UK situation contrasts with that in the USA where there is a dedicated branch of the National Institutes for Health which funds nursing research (http://www.ninnr.nih.gov/). In Australia and Taiwan, nurses fare very well in competition with other areas of research for generic government funding streams. This background is given to contextualize developments in nursing research, especially those in the UK where funding has not been extensive.

**NURSING THEORY**

The place of theory in nursing is disputed territory; nursing is a highly practical subject with little need for theory on a daily basis. In some cases there have been extreme developments in theory, especially in the USA where the concept of nursing as a discipline is more strongly defended. Nevertheless, if nursing is going to be taught and contextualized and researched, then some theory is essential.[11] Research questions and hypotheses emanate from theory and research findings can only add to a body of knowledge if that knowledge has some theoretical dimension to it. I will explore, briefly, one nursing theory; this has not explicitly guided the body of nursing research but the particular theory – of Virginia Henderson – and its application by Roper, Logan and Tierney, has had a profound influence on nursing education and practice, which persists, and as it is one way of encapsulating what nursing is and nurses do, it is a convenient way to present some selected examples of nursing research.

**VIRGINIA HENDERSON (1897-1996)**

Virginia Henderson was a North America nursing academic who developed a theory of nursing around 14 activities of living (ALs) which were at the core of nursing care. The relationship between these ALs and nursing was expressed in her maxim that the aim of nursing was “assisting individuals to gain independence in relation to the performance of activities contributing to health or its recover.”[12] Henderson’s theory has found its widest application through the work of UK nursing academics Roper, Logan, and Tierney who based their model on 12 activities of daily living (ADLs) and incorporated Henderson’s idea of assisting the patient by establishing a model in which deficits in patients’ abilities could be assessed and then a plan of nursing care initiated to help the patient recover, gain independence or die a peaceful death.[13] The nursing care plan was not static, rather, it was dynamic and this – in common with other nursing models – was operated within the framework of the nursing process. The nursing process was based on industrial quality assurance mechanisms and proceeds in a cycle of: assessment; planning; implementation; and evaluation, leading back to assessment and a further cycle of the process.

Turning to the Roper, Logan and Tierney model, the 12 ADLs are:

- Maintaining a safe environment
- Communication
- Breathing
- Eating and drinking
- Elimination
- Washing and dressing
- Controlling temperature
- Mobilization
- Working and playing
- Expressing sexuality
- Sleeping
- Death and dying

It is interesting to note how distinct these are from the medical domain or “the medical model” as it is often disparagingly referred to by some nursing academics. However, neither Henderson nor Roper, Logan, and Tierney were concerned about setting up an alternative model to medicine or to separate us from our medical colleagues. The intention was to encapsulate what was unique about nursing and to help nurses understand what they did and to help them do it better.

There is no particular hierarchy within these ADLs. Breathing is the only one of the ADLs related to a vital physiological function without which life is threatened. However, the notion of breathing in the model is more related to assisting the patient to breathe comfortably and without distress. This may well have physiological consequences but in nursing care is more related to the physical and psychological comfort of the patient. As such, these ADLs are often located within another layer of theory, that of Maslow’s hierarchy of needs which, essentially, says that the higher order ALs such as cognitive processes leading, ultimately, to self-actualization cannot be achieved without those “lower” order activities which are mainly about comfort and survival being met.[14] Put simply, it is hard to appreciate a good novel or film if you are in excruciating pain. Therefore, the ADLs are really essential aspects of care that are in the domain of nursing; some may refer to these as “basic” aspects of care; however, there is nothing “basic” in the ingenuity, patience and knowledge required, for example, to assess pain in a person with dementia and then to help them to eat and maintain their skin integrity, often against their immediate wishes and usually in an ethical and legal “minefield.”
EXAMPLE

Some of these ADLs will be used below to explore some aspects of nursing research. Some of the ADLs not covered include washing and dressing; mobilization; working and playing, while not at all irrelevant to nursing, these have moved to the domain of the therapists: occupational therapists; and physiotherapists. There is not such a large body of nursing research directly related to these areas despite the intimate involvement of nurses in each of these, especially washing and dressing, and mobilization, which nurses assist with on a daily basis.

Maintaining a safe environment

Nightingale (1860) exhorted nurses, principally, to do the patient no harm. She was well aware of the adverse consequences for some patients of coming into contact with medical services and while she wrote from an entirely different era – before, for example, the understanding of how infectious diseases spread – nevertheless, her words remain relevant. There are many adverse consequences of medical and indeed, nursing care and while these aspects of care may be applied with the best of motives, the consequences can be so serious as to render these aspects of care inappropriate. One prime example, within the realm of nursing care, is restraint. In the first instance, restraint may be considered necessary for the safety of the patient or those around the patient, including staff. Restraint may also be considered necessary to administer treatment in a resistant patient. Quite apart from the ethical and legal considerations around restraint, the physical and psychological consequences are all adverse if constraint is prolonged and this has been investigated and expounded on by Strumpf et al. Restraint may take many forms including direct physical restraint, the use of bed rails – which can have lethal consequences and chemical restraint. The consequences include: sensory deprivation; confusion; depression; physical damage; bone demineralization and muscle atrophy; incontinence; and immobility. The work of Strumpf and Evans has been largely responsible for alerting nurses to the adverse consequences of restraint and helping nurses to find alternatives. For example, in the case of bed rails, one solution is to lower the bed to its lowest setting and to remove the bedrails; the consequences are a reduction in patient falls and injury.

Communication

Good nursing requires good communication between nurses and patients, and this communication must be in both directions. Nurses are humans and have their likes and dislikes for particular patients and inevitably, patients who are pleasant and compliant are likely to be the ones with whom nurses spend most time and with whom they communicate best. Communication, for example in the area of pain, is known to have beneficial effects and this provides the opportunity to raise the work of both Stockwell and Hayward. Stockwell conducted a study and wrote a landmark book The Unpopular Patient, which was instrumental in drawing to the attention of nurses that we did view some patients as being unpopular and that this often had direct consequences in terms of ignoring the patient which was likely to have subsequent adverse effects on their care. Hayward was responsible for a study of the use of information about the likelihood of a patient experiencing pain and their subsequent experience of pain; essentially, the more information a patient had about a procedure and any painful consequences reduced their experience of pain and rather than hide these consequences in the hope that the patient will not notice or not comply with the treatment, it is now a standard aspect, for example pre-operatively, to inform patients of post-operative consequences including the likelihood, location and extent of pain. Thus, nurses and medical staff can communicate better with the post-operative patient and find solutions, including analgesic medication, for the pain.

Eating and drinking

With respect to eating and drinking I will refer to my own work in the field of dementia care. It is well known that older people with dementia almost inevitably experience difficulty in feeding themselves towards the later stages of the condition. This has obvious consequences for nutrition with sequelae such as severe weight loss, muscle atrophy and skin breakdown. Furthermore, for family and other carers, the fact that someone is not eating and losing weight is very distressing. Eating, in addition to its nutritional value, also has social and cultural significance.

The area of nutrition and feeding is of professional interest to a wide range of people such as dietitians, speech and language therapists, occupational therapists, and nurses. However, the problem of feeding difficulty in older people with dementia is definitely in the nursing domain as, once families are unable to cope with the person at home and they enter more formal care, then it is nurses who actually have to compensate for the lack of ability to self-feed.

There is no clear evidence on how best to intervene to help older people with dementia to feed themselves. Nurses can offer assistance but this hastens loss of independence; artificial tube feeding is possible but systematic reviews have shown that this is not a viable alternative as it leads to several dangerous outcomes such as aspiration and infection and therefore, may
hasten death rather than preserve life.\textsuperscript{[21]} Artificial feeding also requires restraint, an issue that was discussed earlier, and there are many legal and ethical issues to be considered.

Therefore, the study of feeding difficulty in dementia is warranted and when I entered this field as a staff nurse many years ago, there was no evidence base to guide practice and there was no valid method of assessing feeding difficulty and therefore, of measuring deterioration or improvement. Toward that end the Edinburgh Feeding Evaluation in Dementia (EdFED) instrument was developed and remains the only validated instrument in the world for measuring feeding difficulty in dementia.\textsuperscript{[22]} In addition to providing a measure of difficulty, the EdFED also provided an insight into how feeding difficulty develops along a specific and cumulative pattern which is highly reproducible across settings and cultures.\textsuperscript{[23]} The EdFED has been used as a measurement outcome on clinical trials of interventions to alleviate feeding difficulty and as a correlate of other measures such as body mass index.\textsuperscript{[24]} The EdFED correlates well with other measures and is a sensitive instrument for measuring improvement in feeding ability in clinical trials.\textsuperscript{[25]}

### Controlling temperature

Nursing research is not confined to “finding things out” but is often concerned with questioning established nursing – and even medical – practice. One example is the work of Purssell\textsuperscript{[26]} where he questions the value of routine administration of antipyretic medication to children with elevated body temperature. The actual incidence of convulsions is very low and while clearly distressing for parents, not usually fatal. Purssell\textsuperscript{[27]} follows this up with an evolutionary analysis of host and infective agent relationship, making the point that the response of the host to infection – which is often what we treat – has evolutionary and by implication, biological advantage. This is a prime example of the application of knowledge from other disciplines by nurses trained in scholarship outside of nursing and who can; therefore, speak with authority in these fields as well as nursing.

### Expressing sexuality

This has often been a misunderstood aspect of the nursing process but it does not, necessarily, refer to sex in the physical sense; although this is undoubtedly a legitimate ADL, it is about helping people to recognize their sexual roles in society in the face of impediments to this imposed by illness. For example, it is important for nurses to understand patients’ sexuality and also, for example, marital status and whether or not they have children. Nurses can do a great deal to facilitate patients in their roles related to these aspects of personal life; simple things such as making sure that spouses, partners and children can visit, for example, is important.

Nevertheless, nursing research must go beyond this into more sensitive areas of sexuality if we are to help solve some of society’s problems by helping individuals to understand their bodies and their relationships. In this sense, nursing moves beyond simple clinical care into a wider social role and nurses find themselves working alongside other professionals working in these areas. A much more profound understanding of social subjects is required and nurses must be less afraid to ask really difficult questions and to develop the concomitant research methods. For example, in the UK, there is a significant issue of teenage pregnancy due to the changing moral landscape and a decline in traditional marriage. Many teenagers cope well with this; however, many do not and these teenagers often come from socially deprived backgrounds and educational “black-spots.” Teenage pregnancy interrupts education – especially for young women – and reduces employability, thus creating a vicious cycle of deprivation and social problems. The work of Hayter and Christina\textsuperscript{[28]} provides important insight into why young men and women seek advice, or not, and especially their involvement in sexual relationships, often with attitudes that seem irresponsible to the rest of society. Without such an understanding, appropriate non-judgmental\textsuperscript{[29]} and effective services cannot be designed and delivered to this “hard to reach” sector of the population.

### Sleeping

Achieving a good night’s sleep is often difficult in hospital; patients are anxious and in pain and the environment often militates against sleeping. We have known this for a long time but are usually unaware of exactly how noisy hospitals are and what the precise sources of noise are. Studies by Christensen\textsuperscript{[30]} and Akansel and Kaymakçı\textsuperscript{[31]} have applied technological approaches to the problem which, given the implementation of their findings, could help hospitals to locate sources of noise and reduce them.

### Death and dying

Death and dying have long been in the domain of the nurse and this is one area where nurses have often taken the lead professionally and in research. The leading light in palliative care, as delivered by the hospice model, was Dame Cecily Saunders and it should be noted that she developed her approach to care of the terminally ill patient as a nurse and later qualified as a doctor (http://www.bmj.com/content/suppl/2005/07/18/331.7509.DC1; accessed 1 June 2012). The involvement of nurses – often leading multidisciplinary teams – in
Palliative care is now well established and the concept of palliative care has now extended well beyond the hospice and beyond cancer care. The need for palliative care, for example, in general hospitals is recognized but the deficiencies in the general ward environment for death and dying are being recognized as demonstrated recently by Brereton et al.[32]

CONCLUSION

Nursing research is developing and reaching a degree of maturity. I have tried to exemplify nursing research above using a theoretical framework that describes traditional nursing roles but nursing research and nurses researchers extend beyond this into work that is relevant to disciplines such as psychology, sociology, history, literature, and medicine and contribute significantly to cross disciplinary subjects such as gerontology and gender studies.

From my perspective as the Editor-in-Chief of a leading academic nursing journal I see the current trends in nursing worldwide as being around: the diminishing nursing workforce due to the ageing of the workforce and difficulty recruiting adequate and suitable students; the necessity to develop advanced nursing roles to enable all nurses to work at an advanced clinical level and also to compensate for shortages in medical staff; and the increasing development of nursing, especially, in South East Asia and China, to cope with natural disasters. Nurses are, increasingly, researching in these areas and making a contribution to global as well as local and national health.

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Advances in oesophageal cancer

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ABSTRACT

Adenocarcinoma (AC) of the oesophagus is an important disease in western communities in terms of its unprecedented recent increase in incidence and its relatively poor outcomes despite today's variety of treatment options. The increasing incidence of this deadly disease is probably related to the changing lifestyle patterns within affluent societies, in terms of diet and sedentary practices, obesity and the prevalence of gastro-oesophageal reflux disease. Barrett's oesophagus has been identified as a major risk factor and surveillance strategies for at-risk groups are being proposed, together with endoscopic management strategies for those with high-grade dysplasia or early and localised AC. It is recognised that the disease is better treated in high-volume centres under the guidance of a multidisciplinary team. Increasing availability and accuracy of sophisticated staging tools such as endoscopic ultrasound, endoscopic mucosal resection and positron-emission tomography (PET) have helped define treatment strategies. Endoscopic tools can identify patients who might be suitable for some form of local ablative therapy and PET scanning will often pick up metastatic disease missed with other imaging investigations. Refinement of the pathological staging system has also helped define treatment modalities. Although surgery may still be seen as the mainstay of treatment, its use is now more in context with adjuvant therapies. With the unwavering epidemic of obesity, it is likely that AC of the oesophagus is going to remain an important disease confronting healthcare and this paper deals with some of the current issues.

Keywords: Adenocarcinoma, oesophageal cancer, squamous cell carcinoma

INTRODUCTION

Changes in the incidence of carcinoma of the oesophagus and new strategies in its management have had a major impact on healthcare delivery for this important gastrointestinal tract cancer. For reasons that are not absolutely clear, incidence of the disease has increased out of proportion to that of many other cancers, particularly in white males. There have been a number of important recent changes in the approaches to its management in terms of screening, staging and treatment. This paper covers some of the current issues and developments.

EPIDEMIOLOGY

Cancer incidence

Oesophageal cancer comprises mostly two histological subtypes, adenocarcinoma (AC) and squamous cell carcinoma (SCC), the latter mostly a disease of the developing world and lower socioeconomic class. It is the eighth most common cancer in the world (estimated 480,000 new cases per year), with SCC predominating. It is the sixth most common cause of cancer death.

Over the last three decades there has been a dramatic increase in the incidence of oesophageal cancer. Whereas the rate of SCC is declining (reported incidence decreasing from 17.9 per 100,000 in 1973 to 8.9 per 100,000), AC has now become a relatively common cancer in many Western communities. In these regions there has been a 600% increase in the incidence of oesophageal AC since the 1970s - a far greater rate than for any other solid tumour. The reasons for this rapid increase are not absolutely clear, but are probably related to diet, obesity, gastro-oesophageal reflux and smoking. Recent population-based studies suggest that obesity, per se, is an independent risk factor for AC of the oesophagus.

Tumour location

Over the last 50 years, the pattern and distribution of
oesophageal and gastric cancers have changed with migration towards the oesophago-gastric junction (OGJ). Gastric cancers have migrated proximally and oesophageal cancers distally. The most marked change has been in Western males in whom the incidence of AC of the OGJ has increased from 1-2 per 100,000 to 8-12 per 100,000 over the last 35 years.\[9\]

**RISK FACTORS**

**Obesity**

The mechanism defining the link between obesity and oesophageal AC would appear to be an increased incidence of gastro-oesophageal reflux disease in the overweight population. However, the association between the two appears to be independent of symptomatic reflux and obesity might have a separate role as a risk factor.\[7,8\] On the other hand, it is possible that asymptomatic reflux occurs more frequently in obese individuals.\[10\] From the obesity perspective, there may be other possible mechanisms, including changes at the molecular level, such as upregulation of leptin, a hormone known to stimulate cell growth in oesophageal AC, and an increase in the prevalence of Barrett’s oesophagus in the obese.\[11,12\]

**Gastro-oesophageal reflux disease**

Gastro-oesophageal reflux disease predisposes towards the development of Barrett’s oesophagus and it is postulated that Barrett’s oesophagus is a pre-cursor of many - if not all - cases of AC of the oesophagus. Epidemiological studies suggest that gastro-oesophageal reflux and Barrett’s metaplasia occur more frequently among the affluent and overweight, and while these conditions have shown a five-fold increase in incidence in the Western countries in the last 30 years, they are now becoming more common in Asian countries, the latter probably being a reflection of their “westernisation” in terms of diet and lifestyle.\[13\]

Obesity contributes to hiatus hernia formation and encourages gastro-oesophageal reflux. Reflux promotes a metaplastic change in the lower oesophagus and thus the risk of malignant change.

**Barrett’s oesophagus - screening and surveillance**

Barrett’s oesophagus is defined as replacement of the normal squamous epithelium with columnar lining and intestinal metaplasia. Barrett’s is not common in Chinese and Asian communities, where most oesophageal cancers are SCC.\[14\] This observation again lends support to the hypothesis that Barrett’s oesophagus is an important aetiological factor in the development of AC. For a disease that has shown such a sharp increase in incidence, it might appear logical to identify and screen at-risk populations. Screening the population as a whole is unlikely to be cost-effective, but it might be feasible to target those at higher risk. If it is accepted that Barrett’s oesophagus is a sequelae of chronic reflux, then it might make sense to screen these patients. The risk profile for Barrett’s parallels that for AC and includes higher socioeconomic status, obesity and smoking.\[15\] There may be an inverse relationship between the presence of *Helicobacter pylori* and Barrett’s with high-grade dysplasia, suggesting that the relative achlorhydria of chronic *H. pylori* infestation may be exerting a protective effect in patients with gastro-oesophageal reflux.\[16\]

One problem with this proposition to screen at-risk patients is how best to identify them. The prevalence of Barrett’s oesophagus is less than 2% of the adult Caucasian population, and almost half of the patients who develop AC of the oesophagus do not present a history of any prior heartburn.\[17\] A random sampling of an otherwise healthy population found a prevalence of Barrett’s oesophagus of 1.6% in individuals with symptoms of gastro-oesophageal reflux and a very similar (1.2%) prevalence in asymptomatic individuals.\[18\]

While a patient with Barrett’s oesophagus has a 20-fold increased risk of developing AC of the oesophagus, the absolute risk for such a patient is less than 1 per 1,000 person years.\[19\] Confounding the issue even further is the observation that endoscopic screening has not improved the outcome for oesophageal AC.\[20,21\] A smaller high-risk group needs to be identified for a screening program to be viable and this may come in the form of novel biomarkers.\[22\]

Provided there is no dysplasia, the risk of a malignant change is probably no greater than for any patient without Barrett’s epithelium.\[23\] Current guidelines suggest that these patients only require endoscopic surveillance every 3-5 years.\[24\]

Barrett’s can be subdivided into long- (>3 cm) and short-segment (<3 cm), with the suggestion that there is a lower incidence of cancer in the latter.\[25\] However evidence is conflicting and any difference might represent observer error on what is short-segment Barrett’s and what is gastric epithelium in a small hiatus hernia. The risk of submucosal disease and with it, lymph node involvement, appears to increase with the length of an endoscopically visible tumour, particularly if nodularity or ulceration is present.\[26\]
High-grade dysplasia and early oesophageal cancer

The importance of this disease in medical practice is that among all malignancies, AC of the oesophagus is the one that appears to be increasing in incidence at the greatest rate and has a relatively poor prognosis with an average 5-year survival of 15-30%.[27-29] However, if the disease can be detected at an early stage, the prospects of survival are good.[30]

There is considerable inter-observer error in the distinction between high-grade dysplasia and intra-mucosal carcinoma, and it is suggested that such biopsies be assessed by at least two experienced gastrointestinal pathologists.[19] The presence of visible lumps or nodules increases the likelihood that the lesion is more advanced and endoscopic mucosal resection often leads to an upgrading of the final diagnosis with a consequent change in management.[21] Morphologically, Barrett’s can be divided into long- or short-segment disease, with the former having a greater risk of malignant change. A population-based study from Sweden suggested a prevalence of Barrett’s oesophagus of about 2% in the adult population.[18]

Treatment of high-grade dysplasia and early AC of the oesophagus is controversial. The risks of treating invasive disease or early disease with possible lymph node spread have to be balanced against the morbidity (and mortality) of oesophagectomy. Oesophagectomy is associated with an operative mortality rate of 2% and this must be taken into account when counselling patients with intra-mucosal carcinoma, where unexpected lymph node involvement will be found in 1-2% of patients undergoing resection.[32] However, endoscopic mucosal resection/surgical dissection, argon beam plasma coagulation and radiofrequency ablation are all effective strategies.[33]

ASSESSMENT AND STAGING

Multidisciplinary team (MDT) and specialist centres

Ideally, all cases of oesophageal cancer should be discussed by a local or regional oesophago-gastric MDT meeting, and this practice is now the standard of care. Clinical policy is generally agreed through a local cancer network. MDT members will comprise representatives of all disciplines likely to be involved in the management, with input from medical gastroenterologists, histopathologists, radiologists, oncologists, specialist cancer nurses, dieticians and palliative care physicians. Patients managed by an MDT are more likely to have appropriate and timely treatment, better trial recruitment and cancer outcomes.[34] High-volume centres (>10 cases per year) are associated with better 30-day mortality and morbidity, greater lymph node harvest and 3-year disease-free survival.[35-39]

Staging investigations

Accurate staging will help determine which patients might be best treated by some form of local ablative therapy (radiofrequency ablation or endoscopic mucosal resection), who might be suitable for a more radical approach and who would be better treated on a palliative basis.

Upper gastrointestinal endoscopy with biopsy and computerised tomography (CT) of chest, abdomen and pelvis remain mandatory staging investigations. Positron-emission tomography (PET) and endoscopic ultrasound (EUS) have been valued additions to the staging algorithm over the last decade.

Positron-emission tomography

PET assesses the physiological functions (and to a lesser degree anatomical details) of tumour cells by utilising radiolabelled 18F-fluorodeoxyglucose and conventional CT imaging.[40] Approximately 90-95% of primary oesophageal cancers are PET-avid.[41,42] This is in contrast to gastric cancers, which are approximately 60% PET-avid.[43]

The major benefit of PET-CT is in the detection of distant metastasis with a reported sensitivity and specificity of 67% and 97%,[44] Its role in detecting regional lymph nodes is less clear and results have been disappointing probably because of the close proximity of nodal disease to the primary tumour. A recent article evaluating 200 patients has shown that PET altered patient management in 17% of the patients.[45]

A novel role of PET is assessing tumour response to adjuvant treatment. Trials have shown that an observed response to neo-adjuvant chemo-radiotherapy on PET-CT was strongly associated with a better prognosis.[46,47] A systematic review assessing different modalities in assessing tumour response to neo-adjuvant treatment has also shown that PET is significantly better than CT at predicting tumour response and was associated with a better 5-year survival.[48] PET may be used to assess patients who are not responding to neo-adjuvant treatment, and whose treatment should be cut short and go straight to surgery to avoid the ongoing toxic effects of an ineffectual treatment.

Endoscopic ultrasound

EUS utilises a small ultrasonic transducer (either radial or linear) on the tip of an endoscope. Its primary role is accurately staging the depth of local tumour involvement (T-stage), the length of tumour and the
presence of nodal (N-stage) metastasis.\textsuperscript{[49]} With respect to loco-regional disease, EUS is superior to PET and CT, and is as effective as PET and better than CT in assessing the response to neo-adjuvant therapy.\textsuperscript{[48-52]}

EUS has a key role in its ability to differentiate between T1a, T1b and T2 lesions.\textsuperscript{[53]} If suspicious, tissue can be obtained from loco-regional lymph nodes for cytological analysis, thereby increasing the accuracy of this staging investigation.\textsuperscript{[54]} Limitations of EUS include its inability to negotiate tightly stenotic tumours and its operator dependency.\textsuperscript{[55,56]}

Endoscopic mucosal resection has allowed detailed histological analysis of early lesions and better staging accuracy than EUS, and may supersede its role.\textsuperscript{[57-59]} Accurate T-staging is critical as the incidence of lymph node involvement rises from less than 2% with T1a lesions to about 20% with T1b lesions.\textsuperscript{[60]}

**Pathological Staging**

The seventh edition of the American Joint Committee on Cancer (AJCC) Cancer Staging Manual was published in 2009 and is universally used for staging oesophageal cancer.\textsuperscript{[61]} One of the main goals of the revision was to dismantle the ambiguity surrounding OGJ cancers. OGJ cancers, including those arising within 5 cm of the proximal stomach and crossing the OGJ, are staged as oesophageal cancers. Those not crossing the OGJ are classified as gastric cancers. T1 tumours have also been subdivided into T1a (tumour invading the lamina propria or submucosa) and T1b (tumour invading submucosa). The importance of this is that T1a tumours have a 2% chance of lymph node metastasis compared with T1b in which lymph node metastasis of 25% has been seen.\textsuperscript{[62]} Node status has also been reclassified: N0 (no nodes), N1 (1-2 nodes), N2 (3-6 nodes) and N3 (>7 nodes).

**Sentinal Lymph Nodes and Micrometastasis**

The sentinel lymph node is the first lymph node receiving lymphatic drainage from a tumour and should in theory be the first site of metastatic tumour spread. The sentinel lymph node concept is well established in breast cancer and malignant melanoma, but is less well defined in oesophageal carcinoma due to the variation in lymphatic drainage patterns of oesophageal cancers.

According to the current AJCC TNM classification, it appears that prognosis is more closely related to the number of lymph nodes involved rather than their site or tumour depth.\textsuperscript{[63]} Methodologies are now being developed to apply the sentinel node principle to oesophageal cancer.\textsuperscript{[64]} In a report from the UK examining 1667 lymph nodes, the sentinel lymph node was identified in all 57 patients with lower oesophageal cancer. In this report, the sensitivity of the sentinel lymph node in determining lymph node metastasis was 96%.\textsuperscript{[65]}

Using techniques similar to that of sentinel node biopsy in breast cancer, such nodes can also be identified by both methylene blue dye and radioscintigraphy.\textsuperscript{[66]} Preliminary studies have shown that sentinel nodes can be identified in vivo and ex vivo in patients with oesophageal cancer undergoing resection with conservative lymphadenectomy. There are conflicting views on the efficacy of these techniques, with a false-negative rate of 15% reported using the patent blue and trans-hiatal oesophagectomy, but a sensitivity of 90% with the radiolabelled technique.\textsuperscript{[66,67]} If such nodes can be identified with certainty and subsequently biopsied, it might be possible to avoid resection for early-stage disease - and perhaps even T2 disease. Such decisions are likely to be influenced by the degree of accuracy of lymph node staging, with the recognition that the traditional single-slice sectioning of nodes may lead to under-staging and serial sectioning of targeting sentinel nodes may be more appropriate.\textsuperscript{[68,69]}

**Management of Oesophageal Cancer**

Management options will be determined by the mode of presentation, the stage of the tumour and the general state of health of the patient. With increased sophistication in staging, availability of new treatments, use of MDTs in decision-making and the recognition that better outcomes can be expected from high-volume centres, the management of oesophageal cancer is very different to what it was two or three decades ago.\textsuperscript{[14-36,39]}

Recognition of T1a and T1b disease is of crucial importance in terms of determining treatment and likely outcome due to the increase incidence of lymph node involvement in T1b disease. Where there is a significant chance of lymph node involvement, some form of neo-adjuvant therapy might be appropriate, patients with true T1a disease could go straight to surgery. Thus an accurate histological diagnosis is essential and endoscopic mucosal resection has an important role in assessing the stage of disease, providing sufficient tissue for thorough pathological assessment and determination of the depth of tumour invasion.\textsuperscript{[26]}

**NEO-ADJUVANT TREATMENT**

**Chemo-radiotherapy**

The proposed advantages of neo-adjuvant therapy are tumour down-staging, increased resection rates with clear microscopic tumour margins, and early targeting of distant and local micro-metastasis prior to surgery.
For the last 20 years, concomitant chemo-radiotherapy (CRT) has been the gold standard in the USA and Australia.\textsuperscript{[70-72]} Walsh \textit{et al.},\textsuperscript{[73]} showed improved median survival from 11–16 months with the addition of neo-adjuvant CRT and this forms the backbone of the treatment protocols in the USA, central Europe and Australia.

It is accepted that CRT offers significant survival advantage over surgery alone, but it is still disputed if it is superior to chemotherapy alone particularly with respect to AC. van Hagen \textit{et al.},\textsuperscript{[74]} recently published an RCT comparing CRT and surgery vs. surgery alone in a mixture of SCC and AC. Pathological complete response rate was 29% and with a significantly better 5-year survival in the CRT arm (hazards ratio 0.65). Criticism has been that significance was only due to the inclusion of SCC, which comprised 25% of all the cases. It did however conclusively show that surgery can be performed safely after CRT with no increase in morbidity or mortality. These findings have also been replicated in a meta-analysis.\textsuperscript{[74]}

**Chemotherapy**

The major trials comparing chemotherapy and surgery vs. surgery alone have been conducted in the USA and UK.\textsuperscript{[75-78]} A more recent randomised trial from Europe also showed that addition of neo-adjuvant chemotherapy increased 5-year disease-free survival from 21–34% for gastric and lower oesophageal AC. The Medical Research Council (MRC) MAGIC trial compared neo-adjuvant chemotherapy and surgery vs. surgery alone for gastric cancer and included lower oesophageal AC. Five-year survival favoured chemotherapy (36% vs. 23%) and as a consequence changed practice in the UK.\textsuperscript{[79]} A French study (ACCORD-07) confirmed these findings but results have not yet been fully published.\textsuperscript{[80]}

The most influential study in Europe showed a 5-year survival benefit in favour of neo-adjuvant chemotherapy (23% vs. 17%) with a relative risk reduction in death of 26%.\textsuperscript{[77,78]} This has been supported by an updated Cochrane review of 11 randomised, controlled trials and as such is the standard of care in the UK.\textsuperscript{[81]}

The MRC 0E05 trial compares the standard 0E02 regime (cisplatin and 5-fluorouracil) with four cycles of epirubicin, cisplatin and capecitabine (ECX) chemotherapy based on the positive results from the MRC MAGIC trial. Early results are expected next year.

**Biological therapies**

Detailed discussion regarding modern biological therapies is not within the scope of this article. However, the most promising work so far appears to be with epidermal growth factor receptor and vascular endothelial growth factor, although most evidence is from phase-II trials.\textsuperscript{[62-66]} The ToGA trial is a randomised phase-III trial investigating trastuzumab (a monoclonal antibody against human epidermal growth factor receptor) for treating HER-2-positive advanced or metastatic gastric and gastro-oesophageal reflux disease. It showed improved median survival of 13.8 vs. 11.1 months (hazards ratio 0.74) and is now utilized widely in Europe.\textsuperscript{[89]}

**Assessing tumour response**

The key to neo-adjuvant therapy is assessing the “responders”. Up to 29% of patients receiving CRT can achieve a pathological complete response. The need for surgery following pathological complete response remains uncertain. Bedenne \textit{et al.},\textsuperscript{[90]} randomly assigned “responders” following CRT to receive further CRT or surgery. Mortality was greater in the surgery arm and survival data were the same for both groups as was QOL data.

Identifying tumour response, especially pCR, remains elusive. PET-CT has been investigated for this purpose and results have been conflicting. PET has been shown to be effective in assessing tumour response to neo-adjuvant chemotherapy treatment.\textsuperscript{[47]} The group showed that metabolic responders achieved a 58% histological response and this translated to a better 5-year survival. They also showed that stopping treatment in the non-responders and proceeding to early surgery had no undue consequence. The authors advocated that PET may be used to develop a response-guided algorithm for neo-adjuvant treatment. Similar results have not been achieved with CRT. Possible explanations for this are the local inflammatory response to the radiotherapy increasing \textsuperscript{18}F-fluorodeoxyglucose uptake.

**Surgery**

The mortality and morbidity rates for oesophageal cancer surgery have decreased over the last two decades due to better preoperative staging, peri-operative care, patient selection and surgical techniques. Mortality for oesophagectomy is reported at approximately 5% with 5-year survival of approximately 30–35% across all pathological subgroups.\textsuperscript{[74,91,92]}

**Lymph node resection**

Debate continues regarding lymph node clearance. Some surgeons believe that nodal disease is a surrogate marker of metastatic burden and therefore radical nodal dissection confers no benefit to patients. Others believe that some patients can be cured with radical dissection even in the presence of nodal burden.\textsuperscript{[93,94]} Improved 5-year survival has been linked to the total number of
nodes resected. Clearly the key is to identify those patients with a low nodal burden who stand the best chance of cure with radical surgery.

**Minimally invasive oesophagectomy**

Minimally invasive oesophagectomy comprises an abdominal laparoscopic approach and thoracoscopic oesophageal mobilisation with intra-thoracic anastomosis or neck anastomosis. The technique is well described and appears to have comparable short-term outcomes to conventional oesophagectomy but perhaps with fewer pulmonary complications and less operative blood loss.

**FUTURE STRATEGIES**

Oesophageal cancer is a changing disease and is now primarily a disease of a westernised society, with obesity and gastro-oesophageal reflux disease being the most important aetiological factors.

Future approaches to improving cancer survival must include primary prevention and reducing exposure to aetiological risk factors. Detection of high-grade dysplasia and early oesophageal cancer is also of paramount importance in achieving improved disease-free survival. Effective strategies to treat and potentially cure early oesophageal cancer now exist and these include endoscopic mucosal resection/surgical dissection, argon beam plasma coagulation and radiofrequency ablation.

For surveillance programs to be effective we need the ability to target the truly “high-risk” groups and this may be achieved through new genetic and novel biomarkers. For example, detection of abnormal cell DNA content within Barrett’s mucosa has been shown to be a predictive marker of disease progression. Technical and financial barriers currently prevent its mainstream use, but it is likely to become routine in the future.

Recurrent disease following treatment with curative intent remains commonplace and effective second-line therapies are desperately needed. This is likely to come from ongoing clinical trials in the form of second-line chemotherapeutic agents and new biological therapies.

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ABSTRACT

Context: Nationally, there is no clear scope of practice for nurses working in Saudi Arabia identifying their role legitimacy as the Nursing Board in the Saudi Commission of Health Specialties has not yet formalized a scope of nursing practice. Role legitimacy can be identified either by a supervisory body or by an agreement that may exist among individual groups.

Aims: This study aimed to identify nurses’ role legitimacy in Saudi Arabia from the view of nurses, doctors, and patients.

Settings and Design: A large survey was undertaken in 2008 in 10 hospitals located in the Eastern Province of Saudi Arabia related to three major healthcare sectors (government, military, private).

Materials and Methods: A quota sample of nurses (n = 614, RR = 61.4%), doctors (n = 130, RR = 26.0%) and patients (n = 322, RR = 64.4%) was undertaken, utilizing a self-administered questionnaire that drew upon the King’s Nurse Performance Scale.

Statistical Analysis Used: A descriptive analysis was undertaken, using the Chi-square test to compare the views of the participants.

Results: The domains of physical care, professional aspects and care management formed a major focus of the nurses’ role, with no evidence of role legitimacy regarding the psychosocial and communication aspects of patient care.

Conclusions: There was a traditional view of the nurses’ role within acute care delivery which will need to be addressed if nurses are to contribute significantly to promoting the health of people in Saudi Arabia.

Keywords: Nursing practice, role legitimacy, role of nurses, Saudi Arabia

INTRODUCTION

Nursing within each country holds the responsibility of defining nursing and role legitimacy of nurses in a manner which is consistent with accepted international definitions and relevant to their population’s health needs. It has been estimated that more than 60% of nurses working in Saudi Arabia are expatriates recruited from a range of countries, specially from Philippines and India, and while they are required to speak English, they have varied cultural, training, and experiential backgrounds, suggesting different levels of skills. This has an impact on healthcare delivery particularly as Saudi Arabia has only established standards of practice for physicians and dentists.

Thus, with the absence of scope of nursing practice mandated at a national level, the role legitimacy of nurses and associated knowledge and skills are not clearly defined. Role clarification by a supervisory body would be necessary to support the range of knowledge and skills that nurses have and also maximize their contribution to patient care, thereby facilitating the provision of quality care. The Saudi Commission of Health Specialties was founded in 1992 to act as a supervisory body for all health professions with the nursing board joining the commission in 2002. Although the nursing board set criteria for registration and licensure in 2003, developed accreditation standards for training and continuing education programs, and formed a code of ethics, a scope of nursing practice has not yet been formalized.
Machin and Stevenson\cite{8} stated that role legitimacy is concerned with the appropriateness and scope of professional practice in given practice areas. Formalized role legitimacy is seen when aspects of role responsibility are defined in statute or when professional bodies (such as nurse supervisory body) recognize legitimate areas of practice. Non-formalized concerns the “greyer” areas of practice due to role overlap. Informal negotiation and “understanding” may need to exist between individual groups regarding what is or is not legitimate practice. Role legitimacy is important to consider from within a given discipline at individual, peer, subgroup, and professional levels. It is also important to consider it from outside the specific discipline, from other professional groups, managers, client groups, and the general public. Within this context, this study aimed to identify the role legitimacy of nurses working in Saudi Arabia from the view of nurses, doctors, and patients.

**BACKGROUND**

The role of nurses across countries has always been the subject for debate despite there being a clear standard for the role of nurses issued by the International Nursing Council. For example, nurses are often expected to do non-nursing duties due to a strong pressure from the management that are undertaken by porters, clerics, or domestics.\cite{8} It could be argued that the determination of the role of nurses is based more on expert opinion rather than research. For example, McCloskey\cite{10} described nursing as a profession of multiple images which include the “ideal role,” the “real role,” and the “public image.” The characteristics of the “ideal role” of nurses comprise empathy, autonomy, and assertiveness, whereas the “real role” places nurses as being somewhere between autonomous practitioners and physicians’ assistants. The “public image” of the role of the nurse is either as physicians’ assistants or employees of doctors highlighting the potential for role conflict experienced between nurses, other healthcare personnel and patients.

This perception was reflected in Saudi Arabia in the early 1990s. For example, Mansour’s\cite{11} survey of medical, dentistry, and pharmacy students (n = 43) and their parents (n = 34) was noted using a questionnaire with items rated on a 3-point Likert scale. The findings suggested that the majority of the sample reported inaccurate information about nurses’ giving medication and psychological care of patients. Moreover, the majority of the sample was uncertain as to whether nurses could be involved in healthcare administration, education, or research. Sixty-one percent of the students and 50% of the parents reported that nurses could not make critical decisions and 62.8% of the students and 67.7% of the parents reported that nursing was mainly carrying out following physicians’ orders. These findings highlight that the role of nurses in Saudi Arabia was perceived in a similar way to McCloskey’s\cite{10} description of the “real role” and the “public image.” However, knowledge about the role of nurses has changed since Mansour’s\cite{11} study.

Al-Omar\cite{12} conducted a survey of high school students (n = 479, response rate, 79.8%; 54% males and 44% females) in Riyadh city. The majority reported that nurses provide a comfortable environment for patients (72.9%) and promote and maintain health (72.2%). More than two-thirds of the sample (70%) reported that nursing was based on scientific knowledge and that nurses are well educated and able to educate people (60%) and provide emotional support (61%). In addition, 55% of the students reported that nurses were able to use their own initiative in their work, although less than 50% reported that nurses plan individual care in collaboration with patients. This increased knowledge regarding nurses’ role indicates a step toward role legitimacy as interpreted by Machin and Stevenson.\cite{8}

**MATERIALS AND METHODS**

A quota sample of nurses, doctors, and patients was recruited from 10 hospitals across three healthcare sectors (government, military, and private) in the Eastern Province of Saudi Arabia. A minimum of 50 nurses, 25 doctors, and 25 patients being the target sample from each selected hospital. The overall response rate was 53.3% (n = 1066): nurses (n = 614, 61.4%), patients (n = 322, 64.4%), with the number of doctor participants being less than desired (n = 130 out of a target of 250).

The King’s Nurse Performance Scale,\cite{13} which was measuring clinical nurse performance, was utilized for this study. The King’s Nurse Performance Scale was developed to produce a generic set of observable nursing actions that reflected nurse performance in clinical settings in the UK. The scale has a good estimate of reliability (Cronbach’s alpha of r = 0.93).\cite{13} A translated version of this scale was successfully used in a large survey in Jordan to investigate the role of medical-surgical nurses. The Cohen’s Kappa coefficient for the translated version ranged from 0.61 to 1.0, suggesting substantial agreement or almost perfect agreement (0.81-1.0) for the majority of the items.\cite{14} This scale includes 83 activity items within four main domains: physical needs of patient care (36 activity items), psychosocial and communication aspects of patient care (14 activity items), professional aspects of patient care (17 activity items), and patient care management (16 activity items). Participants were asked to assign each activity under each domain to the role of nurses if they thought that it should be performed by nurses or leave the activity unassigned.
Although the questionnaire items were derived from a validated tool, content validity was tested in order to ensure the appropriateness of the questionnaire content using a panel of experts. Further, although the second language in Saudi Arabia is English, a decision was made to translate the patient questionnaire into the Arabic language to aid response rates. However, the nurse questionnaire and the doctor questionnaire were maintained in English as it is the universal language of Saudi Arabian hospitals. Therefore, the patient questionnaire was translated following the technique recommended by Flaherty (1988), which is independent translation and back-translation. In addition, the questionnaire was submitted to Arabic-speaking experts who agreed that the content of the questionnaire, in terms of the language, was clear and comprehensive. In this study, the reliability of the questionnaire was measured using the “test-retest” procedure. A few items (14 out of 532) had computed Kappa results at moderate (0.41-0.60) and fair (0.21-0.40) levels with agreement less than 80%.

Ethical approval and permission to access the sample were obtained from each hospital. The purpose of the study was explained in each questionnaire front sheet emphasizing on voluntary and anonymous participation.

The data were analyzed quantitatively using the Statistical Package for the Social Sciences (SPSS, 15.0) IBM software. Analysis of participants characteristics focused upon the demographic and personal profiles of each sample group (nurses, doctors, and patients), along with the professional profiles of nurses and doctors. The nursing practice data analysis was focused upon comparing the responses of the participants regarding the assignment of activities under each domain to the role of nurses, using Chi-square test. A decision was made that more than 50% of the responses represented the majority of the sample. Thus, when more than 50% of the participants assigned an activity item to the role of nurses, this activity item was considered a role assignment. Vice versa, when more than 50% of each sample group did not assign an activity item to the role of nurses, this activity item was not considered a role assignment.

RESULTS

Sample
The sample characteristics are detailed in Table 1a-c. The gender, ethnicity, and age group of the participants varied across the three sample groups.

Physical needs of patient care
As can be seen in Table 2, there was consensus (>50%) among all participants (nurses, doctors, and patients) regarding the assignment of 32 out of the 36 activities in the domain of physical needs of patient care to the role of nurses. Despite this consensus, the Chi-square test suggested that there were no significant differences by sample group for only two items: “carrying out urine testing on the ward” (\(P = 0.267\)) and “carrying out venous cannulation” (\(P = 0.447\)). The significant differences for the remaining 30 items where there was also consensus can be accounted for by the differences in the extent to which all participants identified activities as being the role of nurses. The adjusted residuals “*” showed that a greater proportion of nurse participants assigned 19 activities to the role of nurses compared to either the doctor or patient participants, with a greater proportion of both nurse and

Table 1a: Nurses’ characteristics

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<tr>
<td>Military</td>
<td>218</td>
</tr>
<tr>
<td>Private</td>
<td>203</td>
</tr>
</tbody>
</table>
doctor participants assigning 10 activities to the role of nurses compared to the patient participants. There was only one activity “extracting blood by venipuncture” that the nurse participants were less likely to assign to the role of nurses ($n = 413, 70.6\%$) than either the doctor ($n = 105, 82.7\%$) or patient ($n = 273, 88.3\%$) ($P < 0.0005$) participants.

### Psychosocial and communication aspects of patient care

Table 3 shows that there was only consensus (>50%) among all participant (nurses, doctors, and patients) regarding 2 out of the 14 activities in the domain of psychosocial and communication aspects of patient care. The majority of the participants viewed the activity of “informing the patient of his/her diagnosis and prognosis” and “referring the patient to other healthcare team members if required” as not being the role of nurses. Despite this consensus, the Chi-square test suggested significant differences in the views of the participants which can be accounted for by the differences in the extent to which they did not identify these two activities as being the role of nurses. The adjusted residuals **” showed that the doctor participants were less likely to assign either activity ($n = 12, 9.4\%; n = 19, 15.0\%$) to the role of nurses compared to either nurse ($n = 113, 18.9\%; n = 237, 40.3\%$) or patient ($n = 69, 22.4\%; n = 108, 36.9\%$) participants.

### Professional aspects of patient care

Table 4 shows that there was consensus (>50%) among all the participants (nurses, doctors, and patients) regarding assigning all the activities (17 activities) in the domain of professional aspects of patient care to the role of nurses. Despite this consensus, the Chi-square test suggested that there was no significant difference for only one item: “maintaining the privacy and dignity of patients”
Table 2: Participants’ views regarding the role of nurses in the domain of physical needs of patient care

<table>
<thead>
<tr>
<th>Activities</th>
<th>Nurse</th>
<th>Doctor</th>
<th>Patient</th>
<th>Total</th>
<th>2 df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attending to patients’ personal cleansing needs when indicated</td>
<td>453 (75.4%)</td>
<td>52 (40.6%)</td>
<td>165 (53.2%)</td>
<td>670 (64.5%)</td>
<td>80.09</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Attending to patients’ dressing needs when indicated</td>
<td>502 (84.5%)</td>
<td>73 (57.0%)</td>
<td>198 (64.9%)</td>
<td>773 (75.3%)</td>
<td>67.68</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Ambulating patients post-operatively</td>
<td>525 (88.2%)</td>
<td>90 (70.3%)</td>
<td>254 (82.2%)</td>
<td>869 (84.2%)</td>
<td>26.77</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Encouraging patients to rest when condition indicates</td>
<td>550 (92.7%)</td>
<td>101 (80.2%)</td>
<td>181 (60.1%)</td>
<td>832 (81.6%)</td>
<td>141.46</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Moving patients who are bedridden regularly to prevent complications</td>
<td>527 (80.0%)</td>
<td>94 (72.9%)</td>
<td>260 (84.1%)</td>
<td>881 (85.0%)</td>
<td>19.19</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Assisting patients with elimination</td>
<td>387 (65.3%)</td>
<td>49 (38.3%)</td>
<td>181 (58.6%)</td>
<td>617 (59.9%)</td>
<td>32.22</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Inserting urinary catheters</td>
<td>507 (85.4%)</td>
<td>87 (69.0%)</td>
<td>213 (69.8%)</td>
<td>807 (78.7%)</td>
<td>37.02</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Removing urinary catheters</td>
<td>552 (92.3%)</td>
<td>103 (81.1%)</td>
<td>211 (70.1%)</td>
<td>866 (84.4%)</td>
<td>76.22</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Carrying out urine testing on the ward</td>
<td>478 (81.7%)</td>
<td>97 (77.0%)</td>
<td>232 (77.9%)</td>
<td>807 (80.0%)</td>
<td>2.64</td>
<td>0.267</td>
</tr>
<tr>
<td>Monitoring bowel habits of patients who are at risk</td>
<td>566 (95.8%)</td>
<td>107 (84.9%)</td>
<td>222 (74.7%)</td>
<td>895 (88.3%)</td>
<td>85.88</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Administering suppositories</td>
<td>568 (94.8%)</td>
<td>108 (84.4%)</td>
<td>231 (75.7%)</td>
<td>907 (87.9%)</td>
<td>70.85</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Administering enemas</td>
<td>550 (92.1%)</td>
<td>118 (92.2%)</td>
<td>249 (82.7%)</td>
<td>917 (89.4%)</td>
<td>19.85</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Weighing patients</td>
<td>477 (79.9%)</td>
<td>65 (50.8%)</td>
<td>215 (70.7%)</td>
<td>757 (73.6%)</td>
<td>47.77</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Assisting patients with eating</td>
<td>391 (65.7%)</td>
<td>45 (35.7%)</td>
<td>143 (46.9%)</td>
<td>579 (56.4%)</td>
<td>54.15</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Inserting naso-gastric tubes</td>
<td>468 (80.0%)</td>
<td>80 (63.0%)</td>
<td>192 (62.5%)</td>
<td>740 (71.6%)</td>
<td>29.08</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Feeding patients via naso-gastric tubes</td>
<td>561 (93.7%)</td>
<td>107 (84.3%)</td>
<td>239 (79.9%)</td>
<td>907 (88.5%)</td>
<td>39.42</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Assessing patients’ dietary intake</td>
<td>498 (84.0%)</td>
<td>92 (73.6%)</td>
<td>132 (43.3%)</td>
<td>722 (70.6%)</td>
<td>161.29</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Monitoring diabetic patients’ blood sugar on the ward</td>
<td>561 (93.8%)</td>
<td>114 (89.8%)</td>
<td>269 (87.3%)</td>
<td>944 (91.4%)</td>
<td>11.30</td>
<td>0.004</td>
</tr>
<tr>
<td>Ensuring patients receive a diet appropriate to their condition</td>
<td>505 (85.9%)</td>
<td>99 (78.0%)</td>
<td>183 (61.2%)</td>
<td>787 (77.6%)</td>
<td>69.49</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Administering intravenous fluids as prescribed</td>
<td>575 (96.2%)</td>
<td>124 (97.6%)</td>
<td>279 (92.1%)</td>
<td>978 (95.1%)</td>
<td>0.17</td>
<td>0.010</td>
</tr>
<tr>
<td>Checking and adjusting rates of intravenous infusions at the beginning</td>
<td>576 (96.6%)</td>
<td>123 (96.9%)</td>
<td>255 (84.2%)</td>
<td>954 (93.0%)</td>
<td>51.31</td>
<td>0.0005</td>
</tr>
<tr>
<td>and regularly during the shift</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charting fluid intake and output when indicated</td>
<td>566 (95.1%)</td>
<td>115 (90.6%)</td>
<td>225 (75.3%)</td>
<td>906 (88.7%)</td>
<td>79.12</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Carrying out venous cannulation</td>
<td>547 (91.8%)</td>
<td>116 (90.6%)</td>
<td>273 (89.2%)</td>
<td>936 (90.9%)</td>
<td>1.61</td>
<td>0.447</td>
</tr>
<tr>
<td>Extracting blood by venipuncture</td>
<td>413 (70.6%)</td>
<td>105 (82.7%)</td>
<td>273 (88.3%)</td>
<td>791 (77.5%)</td>
<td>38.75</td>
<td>0.0005</td>
</tr>
<tr>
<td>Administering prescribed medications</td>
<td>575 (96.2%)</td>
<td>122 (96.1%)</td>
<td>220 (72.1%)</td>
<td>917 (89.0%)</td>
<td>126.67</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Administering prescribed oxygen therapy</td>
<td>565 (94.5%)</td>
<td>118 (92.9%)</td>
<td>252 (82.6%)</td>
<td>935 (90.8%)</td>
<td>34.71</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Taking vital signs</td>
<td>511 (85.5%)</td>
<td>102 (81.6%)</td>
<td>227 (76.7%)</td>
<td>840 (82.4%)</td>
<td>10.56</td>
<td>0.005</td>
</tr>
<tr>
<td>Identifying physical signs in patients which are due to illness or</td>
<td>523 (89.1%)</td>
<td>80 (63.0%)</td>
<td>190 (63.5%)</td>
<td>793 (78.3%)</td>
<td>96.04</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessing patients for pain</td>
<td>559 (94.4%)</td>
<td>95 (74.2%)</td>
<td>152 (50.8%)</td>
<td>806 (79.1%)</td>
<td>230.41</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Giving prescribed analgesics and assessing their effect</td>
<td>553 (92.8%)</td>
<td>118 (92.2%)</td>
<td>202 (66.3%)</td>
<td>874 (84.9%)</td>
<td>116.14</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Checking and giving prescribed blood transfusions</td>
<td>559 (94.1%)</td>
<td>110 (86.6%)</td>
<td>187 (62.5%)</td>
<td>856 (83.9%)</td>
<td>147.64</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Providing a safe environment for patients and others</td>
<td>560 (94.8%)</td>
<td>99 (78.0%)</td>
<td>190 (63.3%)</td>
<td>849 (83.4%)</td>
<td>145.00</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Dressing wounds aseptically</td>
<td>541 (91.7%)</td>
<td>105 (84.0%)</td>
<td>258 (85.7%)</td>
<td>904 (89.0%)</td>
<td>10.86</td>
<td>0.004</td>
</tr>
<tr>
<td>Supervising cleansing of patients’ environment</td>
<td>462 (78.2%)</td>
<td>100 (78.7%)</td>
<td>172 (56.0%)</td>
<td>734 (71.6%)</td>
<td>52.36</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Escorting patients to operating theatres and X-ray departments</td>
<td>512 (86.3%)</td>
<td>81 (63.8%)</td>
<td>252 (82.1%)</td>
<td>845 (82.3%)</td>
<td>36.52</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Filing patients’ test results in their notes</td>
<td>510 (85.9%)</td>
<td>92 (74.2%)</td>
<td>252 (81.6%)</td>
<td>854 (83.2%)</td>
<td>10.75</td>
<td>0.005</td>
</tr>
</tbody>
</table>

*Adjusted residual result

(P = 0.602). The significant differences (P < 0.0005) in the participants’ views for the remaining 16 activities can be accounted for by the differences in the extent to which the participants identified the activities as being the role of nurses. The adjusted residuals “*” showed that a greater proportion of nurse participants (n = 554, 94.5%) assigned the activity of “establishing a professional relationship with the patient and family” to the role of nurses compared to the doctor (n = 99, 78.0%) and patient (n = 174, 60.2%) participants, with a greater proportion of both nurse and doctor participants assigning the remaining 15 activities to the role of nurses compared to the patient participants.

Patient care management

Table 5 shows that there was consensus (>50%) among all the participants (nurses, doctors, and patients) views regarding 13 out of the 16 activities in the patient care management domain. The majority of the participants viewed 12 of these activities as being the role of nurses, while they viewed the activity of “diagnosing a range
of common conditions” as not being the role of nurses. Although there was consensus in the participants’ views regarding 13 activities, the Chi-square test suggested significant differences ($P < 0.0005$). Again, these can be accounted for by the differences in the extent to which the participants identified the activities as being or not being the role of nurses. Where there was consensus but a statistically significant difference (13 activities), the adjusted residuals “*” showed that a greater proportion of nurse participants assigned six activities to the role of nurses compared to the doctor and patient participants, with a greater proportion of both nurse and doctor participants assigning a further six activities to the role of nurses compared to the patient participants. For the activity of “diagnosing a range of common conditions,” the adjusted residuals showed that doctor ($n = 37$, 28.9%) and patient ($n = 99$, 33.4%) participants were less likely to assign the role to nurses compared to the nurse participants ($n = 260$, 45.5%).

**DISCUSSION**

**Physical needs of patient care**

The participants assigned almost all the activities listed in the domain of physical needs of patient care to the role of nurses. Interestingly, the participants identified activities that were previously performed by doctors, (e.g., catheterization, venous cannulation, venipuncture, and administration of intravenous medication/liquid) to be within the role of nurses. This suggests evidence of a shift relating to higher levels of technical care activities to substitute for doctors, who are not ward-based healthcare personnel. The inclusion of these activities within the role of nurses promotes continuity of patient care by reducing the fragmentation of activities to deliver the total care of the acutely ill adult. This doctor-shift of role has occurred in developed healthcare systems. In addition, the participants assigned some activities, (e.g., ambulating patients, dressing patients, and weighing patients) that were recently perceived as support workers’ role, (e.g., nurse aide, healthcare assistant, and practical nurse) to the role of nurses. Thus, the findings of the role assignment suggest that nurses in Saudi Arabia have achieved role legitimacy within the domain of meeting the physical care needs of patient care.

**Psychosocial and communication aspects of patient care**

In contrast to the data relating to the physical needs of patient care, nurses appeared to have no legitimate role within the domain of psychosocial and communication aspects of patient care.
Table 4: Participants’ views regarding the role of nurses in the domain of professional aspects of patient care

<table>
<thead>
<tr>
<th>Activities</th>
<th>Nurse</th>
<th></th>
<th>Doctor</th>
<th></th>
<th>Patient</th>
<th></th>
<th>Total</th>
<th></th>
<th></th>
<th>2 df</th>
<th></th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishing a professional relationship with the patient and family</td>
<td>554</td>
<td>94.5*</td>
<td>99</td>
<td>78.0</td>
<td>174</td>
<td>60.2</td>
<td>827</td>
<td>82.5</td>
<td></td>
<td>160.37</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Establishing a professional relationship with hospital staff</td>
<td>534</td>
<td>92.1*</td>
<td>111</td>
<td>87.4*</td>
<td>171</td>
<td>62.0</td>
<td>816</td>
<td>83.0</td>
<td></td>
<td>122.23</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Showing respect to patients irrespective of age, gender, social status or disease</td>
<td>563</td>
<td>96.6*</td>
<td>125</td>
<td>97.7*</td>
<td>240</td>
<td>81.6</td>
<td>928</td>
<td>92.3</td>
<td></td>
<td>67.49</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Maintaining confidentiality of patients</td>
<td>566</td>
<td>96.4*</td>
<td>117</td>
<td>92.9*</td>
<td>189</td>
<td>66.8</td>
<td>872</td>
<td>87.6</td>
<td></td>
<td>175.60</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Exercising accountability in practice</td>
<td>504</td>
<td>90.8*</td>
<td>103</td>
<td>84.4*</td>
<td>179</td>
<td>65.6</td>
<td>796</td>
<td>82.7</td>
<td></td>
<td>81.91</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Maintaining the privacy and dignity of patients</td>
<td>569</td>
<td>98.1*</td>
<td>118</td>
<td>92.9*</td>
<td>233</td>
<td>78.2</td>
<td>920</td>
<td>91.5</td>
<td></td>
<td>101.19</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Complying with hospital regulations and policies relating to patient care</td>
<td>567</td>
<td>97.3*</td>
<td>122</td>
<td>95.3*</td>
<td>235</td>
<td>79.4</td>
<td>924</td>
<td>91.8</td>
<td></td>
<td>85.28</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Maintaining a professional attitude through clean and neat personal appearance and presenting self with appropriate demeanor</td>
<td>554</td>
<td>95.5*</td>
<td>123</td>
<td>96.1*</td>
<td>253</td>
<td>86.3</td>
<td>930</td>
<td>92.9</td>
<td></td>
<td>27.09</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Being aware of ethical guidelines related to patient care</td>
<td>548</td>
<td>95.5*</td>
<td>120</td>
<td>96.0*</td>
<td>231</td>
<td>81.1</td>
<td>899</td>
<td>91.4</td>
<td></td>
<td>54.06</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Acknowledging practice limitations by seeking guidance when needed</td>
<td>516</td>
<td>91.7*</td>
<td>115</td>
<td>92.7*</td>
<td>188</td>
<td>69.4</td>
<td>819</td>
<td>85.5</td>
<td></td>
<td>79.24</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Being aware of action, dose and side effects of administering drugs</td>
<td>564</td>
<td>96.9*</td>
<td>112</td>
<td>87.5*</td>
<td>199</td>
<td>66.1</td>
<td>875</td>
<td>86.5</td>
<td></td>
<td>161.70</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Teaching other members of staff</td>
<td>550</td>
<td>94.5*</td>
<td>118</td>
<td>92.9*</td>
<td>184</td>
<td>64.1</td>
<td>852</td>
<td>85.5</td>
<td></td>
<td>149.93</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Updating knowledge and practice skills through continuing education</td>
<td>544</td>
<td>93.0*</td>
<td>119</td>
<td>93.7*</td>
<td>202</td>
<td>71.4</td>
<td>865</td>
<td>86.9</td>
<td></td>
<td>84.31</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Demonstrating practicality in care delivery by operating effectively within resource constraints</td>
<td>490</td>
<td>89.9*</td>
<td>115</td>
<td>92.7*</td>
<td>220</td>
<td>80.3</td>
<td>825</td>
<td>87.5</td>
<td></td>
<td>19.00</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Reporting to superiors circumstances in the ward which could jeopardize standards of care</td>
<td>535</td>
<td>95.5*</td>
<td>115</td>
<td>91.3*</td>
<td>214</td>
<td>74.0</td>
<td>864</td>
<td>88.6</td>
<td></td>
<td>88.25</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Critically reflecting on the practice of self and others in order to improve practice</td>
<td>538</td>
<td>96.4*</td>
<td>117</td>
<td>92.9*</td>
<td>174</td>
<td>62.8</td>
<td>819</td>
<td>86.1</td>
<td></td>
<td>178.61</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
<tr>
<td>Actively seeking continuing professional development to advance knowledge and practice</td>
<td>441</td>
<td>97.6*</td>
<td>93</td>
<td>91.2*</td>
<td>223</td>
<td>78.2</td>
<td>757</td>
<td>90.2</td>
<td></td>
<td>74.11</td>
<td>&lt;0.0005</td>
<td></td>
</tr>
</tbody>
</table>

*Adjusted residual result

Aspects of patient care as there was no clear consensus across the participants’ views. However, there was clear consensus that the two activities: “informing the patient of his/her diagnosis and prognosis” and “referring the patient to other healthcare team members if required” were not the legitimate role of nurses.

Within this domain, there were different views between nurse participants and doctor and patient participants regarding assigning activities to the role of nurses. For example, the nurse participants assigned most of the activities listed in the domain of psychosocial and communication aspects of patient care to the role of nurses, whereas doctor and patient participants assigned no activities to the role of nurses.

Although there was consensus in the doctor participants’ views regarding assigning most of the activities in the physical needs of patient care domain to the role of nurses, they were reluctant to assign many activities in the psychosocial and communication aspects of patient care domain to the role of nurses. Their reluctance may be due to their beliefs that patient education and interdisciplinary communication involves the control of knowledge which should be the role of doctors as they are in a superior position. Similarly, patient participants assigned no activities to the role of nurses which may reflect their beliefs that these activities should be the role of doctors who may have better knowledge of their medical condition than other lower grade healthcare personnel such as nurses. This has been noted by others[22,23] with patients preferring doctors over nurses as providers of information related to their health status.

The reliance upon expatriate nurses[15,24,25] who may not be able to communicate effectively with patients resulting in language difficulties which may become one of the hindering factors of providing effective patient education[26] and communication affecting patients’ satisfaction in receiving information.[27,28] This may explain some of the doctor and patient participants’ reluctance to assign activities within the domain of psychosocial and communication aspects of patient care to the role of nurses. Having language competence is essential for optimum clinical practice involving psychosocial support.[29-33]
Interestingly, these contrasting role assignments that lead to unclear role legitimacy are not unique to the Saudi Arabian healthcare system. In Jordan, Shurique[14] investigated the role legitimacy of medical-surgical nurses from the perspective of nurses, doctors, and patients. She also noted that all activities listed in the domain of psychosocial and communication aspects of patient care were not assigned to the role of nurses. Both Shurique’s[14] findings and those of this study highlight that doctors and patients located in different areas of the Middle-East hold the same views regarding the role of nurses in providing health-related information, which may suggest underlying cultural beliefs regarding healthcare roles.

**Professional aspects of patient care**

The study findings suggested role legitimacy for nurses in the domain of professional aspects of patient care. There was consensus across participants’ views regarding all activities belonging to the role of nurses. All activities in the domain of the professional aspects of patient care represent three principle elements of nursing ethics: respect for human rights, accountability for practice, and development of competence by continuing education.[34] The role assignment indicated a general consensus across the healthcare personnel (nurse and doctor participants) working in Saudi Arabia and patient participants regarding role legitimacy within the domain of the professional aspects of patient care, which suggests the emergence of professionalism of nursing in Saudi Arabia. Thus, professionalism is not only about competency in practicing the profession but also about conduct of ethical practice.[34,35]

**Patient care management**

The findings suggested incomplete role legitimacy for nurses in the domain of patient care management. According to the data, nurses working in Saudi Arabia were expected to carry out assessment, planning, implementation, and evaluation of patient care, which are all elements of the nursing process, but were not expected to carry out “diagnoses” although it is a key element of the nursing process.[36] Normally, “diagnoses” is the responsibility of the doctor; however, nurses gather a lot of information when they assess their patients so that they are able to make nursing decisions.[17]

Indeed, the ability of nurses to process information and make sound judgments has been identified as one of the key components of quality practice.[20] This activity “diagnosing a range of common conditions” may have had a dual meaning to the participants as the nursing process includes a nursing diagnosis prior to care planning and is an essential component of nursing practice which draws upon nurses’ cognitive skills. However, it may be the case that the study participants considered the term “diagnosis” as not belonging to the nurses’ role.

This incomplete role legitimacy may affect the future of the nursing profession in Saudi Arabia as nurses are not decision makers. Decision making advances nursing practice as nurses are able to demonstrate
more effective integration of theory practice and experiences along with increasing degrees of autonomy in judgments and interventions.\(^{[37]}\) In addition, the ICN (2012)\(^{[32]}\) identified decision making as part of the nurses’ role in order to be able to perform collaborative care. Therefore, healthcare policy makers in Saudi Arabia should consider empowering nurses to become decision makers. Nurses in Saudi Arabia need to be allowed to perform the nursing process in its entirety (assessment, diagnosis, planning, implementing, and evaluation) in order to improve their critical thinking/analysis and develop their decision-making skills.\(^{[38,39]}\)

This may also ultimately have a positive impact on the nurses’ job satisfaction and the quality of patient care being delivered.\(^{[40]}\) Interestingly, this incomplete role legitimacy was also noted in a study of Jordanian nurses.\(^{[14]}\)

As a conclusion, the consensus that emerged across all participants regarding nurses’ practice suggested that nurses achieved role legitimacy within the domain of meeting the physical needs of patient care, the professional aspects of patient care, and patient care management, with unclear evidence of role legitimacy regarding the psychosocial and communication aspects of patient care. The doctor and patient participants compared to the nurse participants were reluctant to assign activities within the domain of the psychosocial and communication aspects of patient care to the role of nurses perhaps reflecting medical domination, patients’ preferences, and nurse–patient communication barriers.

Thus, the role legitimate of nurses in Saudi Arabia appeared to be shaped within the traditional role of nursing as they are not involved in patient education and intrapersonal communication. This traditional role needs to be addressed if nurses are to contribute significantly to improving the health of patients. Unlike other countries, Saudi Arabia faces a number of challenges to improve the role legitimacy of nurses. For example, the healthcare policy makers need to consider: empowering nurses to be decision makers in order to advance nursing practice in Saudi Arabia; reforming the nurse registration requirements to ensure language competence; recruiting more nurses from other Middle-East countries, thereby assuring the sharing of the same language with patients; providing a good quality interpretation service to improve nurse–patient communication; and increasing the number of Saudi nurses in the nursing workforce.

In addition, more research is needed to understand the nature of nursing practice in the Middle-East and Saudi Arabia in particular, and the perspective of patients as consumers of nursing practice.

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Differences in the perception of characteristics of excellence of clinical tutors among residents and consultants at an emergency medicine residency program a qualitative research

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ABSTRACT

Introduction: Defining exactly what characterizes a clinical tutor as excellent and another less effective, is an important task in assessing the effectiveness of clinical training and guiding faculty development.

Aim: We aimed to evaluate those characteristics and measure differences in their perception among accomplished and non-accomplished consultants and residents in the Emergency Department. We also compared perceptions between the different groups of participants.

Methods: The characteristics measured were extracted from an extensive search of previously published studies summarized in a review article. A qualitative study was conducted, using a 20 item questionnaire piloted from the refined characteristics (good indicator of reliability; Cronbach’s Alpha = 0.86). The questionnaire was distributed among all consultants and residents in Saudi Board of Emergency Medicine.

Results: No significant difference between consultants’ and residents’ perception was found. “Sincere” was an exception 87.8% versus 55.1%, \( P = 0.013 \). Consultants’ specifications did not seem to affect perception on overall scores and its component sub-scores.

Conclusion: Since results showed no relation between accomplished and non-accomplished consultants in perceiving those qualities, we excluded the lack of knowledge of those characteristics as a cause of being accomplished or non-accomplished. We suggest a greater dedication from program developers towards creating more opportunities to involve more consultants in basic Emergency Medicine training.

Keywords: Clinical tutors, characteristics, emergency program, teaching

INTRODUCTION

Defining exactly what characterizes a clinical tutor as excellent and another less effective, is an important task in assessing effectiveness of clinical training. This has a great impact on guiding faculty development and subsequently, the overall quality of training.

Many attempts have been made to find out the behaviours and characteristics of excellent clinical tutors. Most studies have focused on the clinical tutors’ perception of these characteristics, while others focused on resident, student perceptions or both.\(^1\)\(^{-}\)\(^5\)

Most of these studies were carried out in ambulatory care settings.\(^1\)\(^,\)\(^6\)\(^{-}\)\(^9\) Other well-defined studies were carried out in ward settings in medicine, paediatrics, and surgery and one studied all healthcare professions including, nursing, and schools of thought in counseling and psychotherapy.\(^2\)\(^,\)\(^10\)\(^{-}\)\(^16\)

Despite the paucity of related published studies in
all departments, to our knowledge there is only one published Emergency Department (ED) research on the characteristics of clinical tutors. However, the study involved only accomplished clinical tutors’ perception with no comparison of other tutors’ or residents’ opinions.

The present study was carried out to measure and evaluate the differences in the perception of characteristics of excellence for accomplished (those who had received any teaching awards or have been promoted on the basis of their teaching activity) and non-accomplished consultants and residents in ED. There was also an attempt to compare the perception between the different groups of participants. The characteristics, we measured were extracted from an extensive search of previously published studies summarized in the review article.

METHODS

A qualitative research method was implemented, using a well-constructed measuring survey tool. The data were collected through the survey questionnaire that was distributed by papers, E-mail id, or through the Survey Monkey collecting tool to all attending consultants and residents working in the Saudi Commission for Health Specialties accredited Emergency Medicine (EM) training centers in Riyadh.

Questionnaire

The perception of characteristics of excellence of clinical tutors was assessed using a 20-item self-administered questionnaire. The questionnaire items were based on our review article in which we collected characteristics identified in the literature as potentially important; the list was composed of 20 attributes of effective clinical teachers. The list was reviewed and agreed upon subsequent to several brainstorming sessions involving both faculty members and residents from different residency training programs.

Each item (question) has five possible graded responses (Likert scale): not important, less important, undecided, important, and very important. The questionnaire items were categorized into four components; teaching skill (5 items), personality (7 items), attitude (6 items), others (2 items). The questionnaire had a good indicator for reliability (Cronbach alpha, 0.86).

Statistical analysis

Characteristics of residents and consultants working in the Saudi Board of Emergency Medicine (SBEM) program were described as a proportion for categorical data and means and standard deviations for continuous data. The percentages of the five possible responses of each of the 20 items of the perception questionnaire were compared between residents and consultants using the Chi-square test. Possible responses were given a score of one for not important, two for less important, three for undecided, four for important, and five for very important. Overall score and component sub-scores were estimated by summing up individual item scores and were expressed as mean and standard deviations. The maximum overall score was 100 points. Higher scores represent a higher perception of the importance of excellent tutor characteristics under study. Differences of overall score and component sub-scores by different characteristics of residents and consultants were tested using non-parametric tests: Mann–Whitney U test for two-level characteristics and Kruskal–Wallis ANOVA for more than two-level characteristics. All tests were two-tailed and the P value <0.05 was considered significant.

RESULTS

The questionnaire was distributed to a total of 50 consultants, 30 of whom replied (response rate = 60%), there were difficulties reaching all consultants in

<table>
<thead>
<tr>
<th>Table 1: Characteristics of the participants</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>62 (78.5)</td>
</tr>
<tr>
<td>Female</td>
<td>17 (21.5)</td>
</tr>
<tr>
<td>Position</td>
<td></td>
</tr>
<tr>
<td>Consultant</td>
<td>30 (38.0)</td>
</tr>
<tr>
<td>Resident</td>
<td>49 (62.0)</td>
</tr>
<tr>
<td>Qualifications*</td>
<td></td>
</tr>
<tr>
<td>FRCP or FACEP</td>
<td>10 (34.5)</td>
</tr>
<tr>
<td>SBEM</td>
<td>10 (34.5)</td>
</tr>
<tr>
<td>Others</td>
<td>9 (31.0)</td>
</tr>
<tr>
<td>Additional training</td>
<td></td>
</tr>
<tr>
<td>Master’s degree</td>
<td>3 (10.3)</td>
</tr>
<tr>
<td>Teaching courses</td>
<td>4 (13.8)</td>
</tr>
<tr>
<td>Subspeciality training</td>
<td>6 (20.7)</td>
</tr>
<tr>
<td>Neither</td>
<td>16 (55.2)</td>
</tr>
<tr>
<td>Teaching awards</td>
<td>10 (34.5)</td>
</tr>
<tr>
<td>Years in practice</td>
<td>9±9 (5 years)</td>
</tr>
<tr>
<td>&lt;10 years</td>
<td>17 (68.0)</td>
</tr>
<tr>
<td>10 years</td>
<td>8 (32.0)</td>
</tr>
<tr>
<td>Resident: Level</td>
<td></td>
</tr>
<tr>
<td>R1</td>
<td>14 (28.6)</td>
</tr>
<tr>
<td>R2</td>
<td>15 (30.6)</td>
</tr>
<tr>
<td>R3</td>
<td>12 (24.5)</td>
</tr>
<tr>
<td>R4</td>
<td>8 (16.3)</td>
</tr>
<tr>
<td>ER service before program</td>
<td>14 (28.6)</td>
</tr>
</tbody>
</table>
different centers at an early stage of the study. Using the Survey Monkey tool at later stage of the study improved the overall response. A total of 70 residents received the questionnaire, 49 of them responded (response rate = 70%). Residents response was better probably due to the easy access to all program residents during joint program activities of the total participants. Of the 49 (62.0%) residents and 30 (36.0%) consultants who completed the perception questionnaire [Table 1], the majority (78.5%) were males. Females were more likely to be residents (26.5%) than consultants (13.3%), however, this did not reach statistical significance \( (P = 0.166) \). About one-third (34.5%) of the consultants had SBEM certification. Only 44.8% of the consultants obtained additional training in the form of subspecialty training (20.7%), teaching courses (13.8%), or master’s degree (10.3%). A total of 10 (34.5%) consultants had won teaching awards. Almost one-third (32.0%) of the consultants had Fellowships of the Royal College of Physicians, UK or Fellowships of the American College of Emergency Physicians and another one-third (34.5%) had SBEM certification. Only 44.8% of the consultants obtained additional training in the form of subspecialty training (20.7%), teaching courses (13.8%), or master’s degree (10.3%). A total of 10 (34.5%) consultants had won teaching awards. Almost one-third (32.0%) of the consultants had ≥10 years in practice. All residency levels were represented among resident respondents with 28.6%, R1; 30.6%, R2; 24.5%, R3; and 16.3% of R4. Only 14 (28.6%) out of the 40 residents had some ER service before starting the SBEM program.

The majority of consultants and residents considered all characteristics examined of an excellent clinical tutor as either very important or as less important [Table 2]. There were no significant differences of perception for overall teaching-skill characteristics, including being prepared, updated, effective, reflective, and accessible, between consultants and residents who perceived all of them as very important characteristics. With the exception of being sincere that was considered a significantly more important characteristic by consultants compared to residents (86.7% vs. 55.1%, respectively, \( P = 0.013 \)), all other personality characteristics, including being enthusiastic, respectful, confident, humble, humanitarian, and compassionate, were equally valued as very important or as less important by both consultants and residents. Likewise, a similar perception of attitude characteristics, including being a health advocate, encouraging, non-judgmental, aware, and tidy, was observed in both groups. However, being a good role model was marginally more valued as a very important characteristic by consultants compared to residents (76.7% vs. 53.1%, respectively, \( P = 0.070 \)). Being healthily or scholarly active were not considered as very important characteristics by consultants and were perceived to a lesser extent by residents.

Table 2: Responses to different items of the questionnaire by the position of participant

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Consultant (N = 30)</th>
<th>Resident (N = 49)</th>
<th>( P ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teaching skills</strong></td>
<td>(Not important)</td>
<td>(Less important)</td>
<td>(Undecided)</td>
</tr>
<tr>
<td>Prepared</td>
<td>0.0</td>
<td>3.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Updated</td>
<td>0.0</td>
<td>0.0</td>
<td>3.3</td>
</tr>
<tr>
<td>Effective</td>
<td>0.0</td>
<td>0.0</td>
<td>3.3</td>
</tr>
<tr>
<td>Reflect</td>
<td>0.0</td>
<td>0.0</td>
<td>3.3</td>
</tr>
<tr>
<td>Accessible</td>
<td>0.0</td>
<td>0.0</td>
<td>6.7</td>
</tr>
<tr>
<td><strong>Personality</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enthusiastic</td>
<td>0.0</td>
<td>0.0</td>
<td>10.0</td>
</tr>
<tr>
<td>Respectful</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Sincere</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Confident</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Humble</td>
<td>0.0</td>
<td>0.0</td>
<td>6.7</td>
</tr>
<tr>
<td>Humanitarian</td>
<td>0.0</td>
<td>0.0</td>
<td>3.3</td>
</tr>
<tr>
<td>Compassion</td>
<td>0.0</td>
<td>0.0</td>
<td>13.3</td>
</tr>
<tr>
<td><strong>Attitude</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health advocate</td>
<td>0.0</td>
<td>3.3</td>
<td>13.3</td>
</tr>
<tr>
<td>Good role-model</td>
<td>0.0</td>
<td>0.0</td>
<td>10.0</td>
</tr>
<tr>
<td>Encouraging</td>
<td>0.0</td>
<td>0.0</td>
<td>6.7</td>
</tr>
<tr>
<td>Non-judgmental</td>
<td>0.0</td>
<td>0.0</td>
<td>6.7</td>
</tr>
<tr>
<td>Aware</td>
<td>0.0</td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td>Neat</td>
<td>3.3</td>
<td>3.3</td>
<td>16.7</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthily active</td>
<td>3.3</td>
<td>3.3</td>
<td>20.0</td>
</tr>
<tr>
<td>Scholarly active</td>
<td>13.3</td>
<td>6.7</td>
<td>23.3</td>
</tr>
</tbody>
</table>
The overall score of all study participants who represented a higher perception for the importance of the constituents of excellent tutor characteristics was 88.2 ± 7.3. The possible sub-scores were the highest for teaching skills (93.3%), followed by personality (90.1%), attitude (85.9%), and finally other characteristics (75.1%). Overall score as well as sub-scores of teaching skills, personality, and attitude were similar for consultants and residents. The overall score was 88.5 ± 7.6 for the consultants and 87.9 ± 7.2 for the residents, NS. The sub-score determined by the last 2 items, being healthily or scholarly active, was slightly lower among the consultants compared to the residents (7.1 ± 1.7 vs. 7.8 ± 1.4, \( P = 0.047 \), respectively) [Table 3]. Males had a slightly higher perception of the attitude sub-score compared to females (26.1 ± 3.2 vs. 24.7 ± 2.2, \( P = 0.032 \), respectively). The overall score and component sub-scores were not significantly different after stratification by consultants’ characteristics (including qualifications, additional training, winning teaching awards, and years in practice). Similarly, overall scores and component sub-scores were not significantly different after stratification by residents’ characteristics (including \( \text{FRCP: Fellow of the Royal College of Physicians, FACEP: Fellow of the American College of Emergency Physicians, SBEM: Saudi Board of Emergency Medicine} \).
DISCUSSION

Surprisingly, this study did not find any difference between the perception of importance of characteristics for the excellence of clinical tutors between consultants and residents in an EM residency program, unlike family medicine residency program where residents and their faculty showed a strong level of disagreement for some qualities as showed by Buchel and Edwards. However, we found that being “sincere” was an exception as it was more significantly valued as important by consultants compared to residents (87.8% vs. 55.1%, respectively). A similarly strong agreement in medical student responses was shown by Haghdoost and Shakibi in their comparison of the value of qualities of good clinical lecturers by medical students and their academic staff. A published general surgery residents’ experience by Robert Patterson also showed how residents value the quality of being non-judgmental in their tutors and how a resident remembered his residency as a negative experience probably because of the judgments made by his attendant.

Unlike previous assumptions, consultants’ specifications (i.e., qualifications, additional training, winning teaching awards, and years in practice) did not seem to affect the perception of the characteristics of excellence on the overall score and in its component sub-scores. Experience was linked to the lesser value of being “available” as shown in the family-residency program in contrast to our finding. Unfortunately, we do not have a comparison to be based on teaching award winners versus the others who did not as the only published ED research has evaluated only the accomplished “teaching award winning” consultants’ perception.

Small gender differences were found, males had slightly but significantly higher perception of the attitude sub-score compared to females (26.1 ± 3.2 vs. 24.7 ± 2.2). In a previous comparison, the only difference was found to be higher in valuing autonomy by female trainees.

CONCLUSION

The study showed no difference in the perception of characteristics of excellence of clinical teachers between consultants and residents in an EM residency program. Since results also confirm that there is no relation between accomplished and non-accomplished consultants in perceiving those qualities, we exclude the lack of knowledge of those characteristics as a cause of being accomplished or not accomplished. We suggest a greater dedication from program developers toward creating more opportunities to involve more consultants in basic EM training. However, further studies are needed to explore the consistency and differences among other specialty residency programs.

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Challenges in managing liver disease

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Keywords: Viral hepatitis, prevention, hepatocellular carcinoma, alcohol abuse, cirrhosis

Liver disease remains one of the most important causes of disease and death worldwide, and is increasing in frequency in some countries, such as the UK. The burden of liver disease is more distressing because the increase is coming at a time when many important causes of serious liver disease are becoming amenable to prevention.

Chronic liver disease from viral hepatitis remains the most important cause of morbidity and mortality, and in the case of hepatitis B (HBV) we have had available for two decades the means to virtually eradicate this through vaccination programs. In places where this has been undertaken systematically for 20 years, like Hong Kong, carriage rates have plummeted, but there remain 350 million chronic carriers worldwide and 4 million new cases each year. Treatment with antiviral agents has transformed the management of chronic HBV and the problems with emerging viral resistance largely overcome, but these therapies are far too costly to make an impact on the global burden. The only global solution is through prevention.[1] Progress toward hepatitis C (HCV) prevention by immunization has been slow and thwarted, as with HIV, by the ability of the virus to mutate. Blood borne like HBV, with a worldwide prevalence of about 150 million chronically infected individuals, most of whom will have been unaware of any acute infection. Again, there has been huge progress in treatment of chronic infection with new antiviral agents such that the majority of patients can become free of infection and returned to normal if treated before the onset of cirrhosis and its complications. However, the costs are putting a strain on health budgets, even in rich countries, and there is currently no prospect of effective and affordable treatment worldwide. Progress through prevention depends on screening of blood and blood products, the provision of clean needles and eradication of local practices such as scarification.

Alcohol is the single biggest cause of chronic liver disease in many western countries such as the UK and accounts for the rising mortality of liver disease there. The burden on health and healthcare in the UK amounts to £3.5bn and more than a million admissions to hospital annually from alcohol-related causes. There are currently 1.5 m dependent drinkers in the UK. This has led to advocacy for tougher regulation on price and availability of alcohol and also better identification and treatment of those drinking to excess.[2] Progress in treating the complications of cirrhosis, such as variceal hemorrhage, ascites and liver failure, has been achieved more by improved organization and attention to good supportive care than by novel therapies. Liver transplantation for all types of end-stage cirrhosis gives continually improving survival figures (around 80% at 5 years) and good quality of life, but remains severely constrained by lack of donor organs. Hepatocellular carcinoma continues to be a frequent and usually fatal complication of cirrhosis, with progress being more in palliation through interventions (e.g. radiofrequency ablation) and chemotherapy (e.g. sorafemib) than cure.

A new epidemic of liver disease in developed countries from non-alcoholic fatty liver disease is emerging. Predisposing factors include obesity and type 2 diabetes, both also increasing markedly in frequency. At present, the mainstay of management is attention to life-style.[3] Histologically this mirrors alcoholic liver disease, with stages moving from purely an accumulation of excess fat through an inflammatory hepatitis with early fibrosis and finally to established cirrhosis. Fatty change is easily...
picked up on imaging such as ultrasound scanning, but liver biopsy has been needed to determine whether there is a risk of progression to significant fibrosis and cirrhosis. There is currently great interest in developing non-invasive markers of progression that are more suitable for regular monitoring of patients with fatty liver disease. There are a series of algorithms developed to give a risk score. Some depend on easily available biochemical tests but others on new serum markers of fibrogenesis. Finally, there are new imaging modalities involving both ultrasound and magnetic resonance that allow the physical properties of liver tissue, such as its elasticity, to be measured and followed over time. These advances will have application to the follow-up of other patient groups, such as those with HCV, and will render liver biopsy less necessary in the evaluation of disease progression and response to treatment.

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Important changes in childhood mortality and morbidity

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Keywords: Paediatric oncology, low birth weight, childhood mortality, childhood morbidity

Over the past two or three decades, there have been impressive improvements in childhood mortality and morbidity but not without some unexpected negative aspects, and not always with the same changes throughout the world. In this presentation, I would like to concentrate on the changes in North America recognizing that there have been equally impressive changes in childhood mortality in developing countries. In Canada, with preventive health measures and higher socio-economic status, the infant mortality rate is 5/1000 and the childhood mortality 6/1000. These improvements are not because we have better physicians and better paediatricians, but rather related to improved socio-economic conditions, better health-care practices, better public-health measures, and immunizations. However, with the prevention of infectious disease and better nutrition, the west is experiencing what has been described as an epidemic of obesity. In Canada, 20% of children are described as overweight and 11% as obese, with the possibility of serious adult complications of diabetes, hypertension, and coronary artery disease.

Two important disciplines of paediatrics have shown the greatest improvements: neonatology and haematology/oncology.

NEONATOLOGY

Advances in perinatal care, during the past two decades have led to dramatic increases in survival among extremely small and immature infants. Low-birth weight (LBW) remains a major contributor to infant mortality and childhood handicap. For very LBW (VLBW) newborns (<1000 g) survival rate is 62% at 24 weeks gestation and 78% at 25 weeks gestation. There are many reasons for this improved survival: the use of corticosteroids for mothers in pre-term labor; training and expertise of staff in the labor room and NICU; the use of surfactant; improved techniques for respiratory assistance, avoiding excessive ventilator pressures; improved nursing care and monitoring; improved technology for supportive care – IVs, nutrition, and antibiotics. However, there are some negative aspects. The first to be noted was retrolental fibroplasia or retinopathy of pre-maturity (ROP). The relationship with high-oxygen tensions has been recognized and the incidence of ROP has improved with improved monitoring of oxygen. The complication of bronchopulmonary dysplasia or chronic lung disease of pre-maturity also is improving. VLBW children (<1500 g) are at risk for impaired health, intracranial hemorrhages or periventricular leukomalacia with subsequent neurologic complications, developmental delay, neurosensory deficits, and cognitive delays, as well as school and behavioural difficulties. In contrast to the enhanced survival among VLBW children, rates of cerebral palsy and neurodevelopmental handicap in early childhood essentially are unchanged. Health problems persist for these children as well, with poorer health outcomes both during the first 2 years of life and when assessed at 8-10 years. Depending on the gestational age of the infants studied, the study center and on the period of the study, at least 30% of VLBW infants will have a major neurodevelopmental complication, and perhaps only 30% of VLBW infants survive without any complications. At present, many
more VLBW infants are surviving but not without important and major complications.

**HAEMATOLOGY/ONCOLOGY**

Similarly, there has been dramatic improvement in mortality for children with leukemia and some solid tumors. Considerable improvements in treatments mean that for every 10 children diagnosed with cancer, almost 8 (78%) will survive for 5 years or more, compared with just 3 in 10 (28%) in the late 1960s. We are recognizing the causes, particularly genetic factors, of many cancers and however, there are also some negative effects. Research has clearly demonstrated that late effects contribute to a high-burden of morbidity among adults treated for cancer during childhood, with 60% to almost 90% developing one or more chronic health conditions and 20-40% experiencing severe or life-threatening complications during adulthood. The common late effects of paediatric cancer encompass several broad domains including, growth and development, organ function, reproductive capacity and health of offspring, and secondary carcinogenesis. In addition, survivors of childhood cancer may experience a variety of adverse psychosocial sequelae related to the primary cancer, its treatment, or maladjustment associated with the cancer experience. Children who are cured of cancers are at more risk for developing second cancers, whether this is due to the immunosuppressive drugs or radiotherapy or genetic factors.

**CHILDREN WITH MEDICAL COMPLEXITY**

These are two examples of children with special healthcare needs who are surviving longer and adding to the paediatric population for healthcare professionals. These are children with various disabilities and technology requirements including, tracheostomies and gastrostomy tubes. In the 2010s, 60% of children admitted to hospital had a chronic illness; children with medical complexity may be only 0.5-1% of the population but they use 25-30% of the healthcare resources for children.

**THE FUTURE FOR HEALTH PROFESSIONALS**

The reasons for these great improvements are multiple and in part reflect what are described as the seven roles of the physician specialist, the CanMEDS roles. This has important relevance for the training of paediatricians and physician specialists in Saudi Arabia.

a. Medical expertise: In the past three decades, there has been a great process of sub-specialization and development of paediatric subspecialties, such as neonatologist and paediatric oncologists. The future will require both generalist physicians but also those who have developed a specific medical expertise.

b. Scholarship: There has been extensive research to develop new drugs, new protocols, and new techniques. The future will require physicians to have knowledge and skills in quality improvement and clinical research, to know the effectiveness of our present therapies and how to make improvements.

c. Collaborator/manager: A lot of these improvements would not have taken place without other health professionals-nursing, respiratory therapy, physical and occupational therapy, and social workers. Paediatricians cannot take all the credit for these impressive changes, but with the help of other health professionals. The future will require physicians to have the skills to collaborate with physicians in other centers and with other healthcare professionals.

d. Health advocate: There have been paediatricians and health professionals who have advocated for newborn children and children with cancer with respect to resource allocation and funds for research. The future will require physicians to advocate for their patients to address their needs and for resource planning and allocation.

e. Professional: These two paediatric subspecialties have raised a lot of ethical issues about the care of children. In the future, physicians will need to know how to resolve the ethical questions raised with respect to the care of children.

There have been impressive improvements in child-health over the past decades. It is important for us to understand these improvements and recognize what is needed to continue these improvements for the 2010s.

**BIBLIOGRAPHY**


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Expert Status Report

A global perspective on postgraduate medical education

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Keywords: Postgraduate medical education, internationalization, technology, curriculum planning

Using a global perspective, an overview of contemporary issues in postgraduate medical education will be presented at the First International Saudi Commission Health Specialties Conference. This includes examining social, economic, and political issues that impinge on healthcare services, and therefore on education. Postgraduate medical education must not be viewed in isolation of that which precedes and that which follows, so reference will be made to undergraduate and continuing professional development. The presentation will draw on the works of eminent scholars\(^1\)\(^-\)\(^4\) and organizations whose mission is aligned with global/international medical education – http://www.faimer.org, http://www.wfme.org. The concept of internationalization, as it relates to postgraduate medical education, will also be considered.

With respect to globalization, there are issues that relate to the social context of healthcare (e.g., changes in regulatory bodies, professionalism in contemporary societies, social accountability, demographic changes, reshaping the doctor-patient relationship), to the workforce (e.g., mobility, generalism versus specialism, redefining roles), the delivery of health services (e.g., safer working hours, reshaping of health services, rising costs, technology), to curriculum and training pathways (e.g., competency-based, increased flexibility, individualized, accelerated), to pedagogical shifts (e.g., technology-based learning), to roles of the doctor (e.g., as communicator, educator, leader, researcher), and faculty development (e.g., the recognition of clinical supervision and education as expertise).

An internationally mobile medical workforce and the provision of medical education across national borders have in part led to the establishment of global standards and accreditation in medical education. Harden\(^2\) argues that embracing new technologies and pedagogies will facilitate internationalization such that national boundaries can more readily be crossed. Furthermore, there is evidence that where medical education does not keep abreast of international trends, there are local consequences for standards of medical education.\(^5\)

Central to these issues are the new graduates themselves. As educators, we need to find ways to maintain and value their diversity, individualism, and humanism while supporting them in meeting the needs of the healthcare services. Although there are generational differences that may challenge the aspects of postgraduate medical education, engaging new graduates in all phases of their educational activities – curriculum planning, delivery, and assessment may offer some solutions.

In summary, the presentation starts with macro issues, but slowly focuses on those most critical to postgraduate medical education – the new graduates themselves.
REFERENCES


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