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SPECIAL CONTRIBUTION

Sent to Explore, Conquer and Heal

History of the evolution of biomedicine in Oman during the 19th century

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أُرسِلَ ليستكشف ، ليفتح وليُعالِج

تاريخ تطور الطب الحيوي في عُمان في القرن التاسع عشر الميلادي

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الملخص: خلال العقود الأربعة المنصرمة، تحولت عُمان إلى دولة حديثة ورافق ذلك تغير ملموس في كافة المجالات، بما فيها الصحة العامة وتوفير الخدمات الطبية. حتى الآن لم يكن هناك اهتمام كبير بتاريخ التغيير في النظام الطبي السائد من العلاج التقليدي الى الطب الحيوي الحديث. إن تاريخ الممارسات العلاجية مهم جدا كأهمية التاريخ السريري للمريض، حيث أنه يساعد على تشخيص المشكلات، وتخطيط العلاج الناجع، بل وتوقع النتائج المستقبلية في إطار واقعي. إن هذه الدراسة هي الأولى من نوعها للبحث بالتفصيل في تاريخ بداية وتطور استخدام الطب الحيوي في سلطنة عُمان خلال القرن التاسع عشر الميلادي. تقسم هذه الدراسة مراحل تطور هذا النظام خلال تلك الفترة إلى ثلاث مراحل تبدأ بمرحلة الاستكشاف وزيارات الرحّالة والأطباء المرافقين أحيانا، مرورا بمرحلة الوجود البريطاني في المنطقة وفريقه الطبي، ثم بداية الإرساليات الأجنبية والطب التنصيري في العقد الأخير من القرن التاسع عشر. وتخلص الدراسة إلى أهمية التركيز على الدراسة والبحث في مجال الإنسانيات الطبية بما فيها تاريخ الطب مما يوفر فرصة كبرى لتقدم فن الطب وعلمه واستمرارية سياسة النظام الصحي القائم بما يتوافق مع احتياجات المستخدمين وثقافتهم.

مفتاح الكلمات: عُمان، تاريخ الطب ، الإرساليات التبشيرية ، الاستعمار.

ABSTRACT: During the past four decades, Oman has transformed into a modern state with remarkable changes in all fields, including public health and the provision of medical services. Little attention has been paid so far to the history of the development of biomedicine in Oman. A history of healing practices, just like clinical patient histories, helps to diagnose problems, plan interventions and predict their future within a dynamic context. This study is the first to explore the beginnings and evolution of biomedicine in Oman during the 19th century, categorising it into three eras: from the casual system offered by occasional visiting biomedical practitioners to the more organised, but limited, British military hospital and, finally, to public missionary medical care toward the end of the 19th century. The study concludes by recommending further focus on medical humanities, including the history of medicine, as a contributing factor to improve and sustain the art and practice of medicine within the existing Omani health care system.

Keywords: Oman; History of medicine; Mission and Missionaries; Colonialism

The Sultanate of Oman is a Muslim Arab country located in the southeastern Arabian Peninsula. The strategic position of Oman, particularly as a marine centre connecting the Arabian Peninsula with the Indian Subcontinent and East Africa, contributed largely to creating the dynamic cultural hub which characterises the country. For many people in Oman, the year 1970, when the current Sultan took power, marked the leap of Oman into a nation state and the move towards modernisation. The health care sector has been one of the essential priorities in the evolving state.[1] Looking today at the public, state-wide biomedical health care system, the presence and evolution of biomedicine over the last two centuries could be easily overlooked by future generations. As even the seemingly minor traces of history do contribute to shaping and explaining current health care policies in the country,[2] and because of significant rising challenges to the existing system in Oman,[3,4] the need to look back at the roots of current practice and identify historical learning points seems more imperative than ever.

Few papers have attempted to address, even in brief, some of the aspects related to the history of medicine in Oman. The College of Medicine

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at Sultan Qaboos University took an interesting initiative in The Dean's Prize Essay in the History of Medicine for medical students which existed for several years during the 1990s. The award-winning essays touched on various aspects related to the history of medicine in general although often with a focus on Oman. Essays such as *Folk Medicine in Oman through the Eyes of Traditional Healers, The Early History of Modern Medicine in Oman and The History of Medicine in Relation to Medical Education in Oman* could form the seed for a deeper insight on the subject.[5,6,7] Unfortunately, such initial efforts have neither been nurtured further nor sustained. Alas, there are at present no organised or sustainable efforts to study the historical development of the system of medical practice in relation to health and health care in the country.

The aim of this paper, therefore, is to trace the introduction and evolution of biomedicine in Oman during the 19th century in relation to internal and external factors. It is an attempt to ignite interest in the medical humanities in general, and to break new grounds for investigation and research on the history of medicine by relating it further to health and health care in the country. As such, the article is expected to generate more questions and open more new doors for enquiry than it may present ready-made answers on the subject.

Methods

This study, to the best of the author's knowledge, is the first to investigate and document in detail the very beginning and development of biomedicine in Oman in the 19th century. Labelling medical and healing practices poses always a dilemma of terminology and definitions, particularly when it comes to Western medicine and its counterparts in other cultures.[8,9] The term "biomedicine" is used in this paper specifically to connote biological medicine which is based on a positivist approach,[10,11,12] so as to differentiate it from other forms of local medical practices that were present in the community.

Since writing a global history of biomedicine in Oman is virtually impossible, this study has to be limited in time to the 19th century and in content to the evolution of biomedicine. The introduction of biomedicine in Oman corresponded largely with the increased Western involvement and intrusion into the region during late 18th and the 19th centuries. The pattern almost parallels the development of Western imperialism through the stages of exploration and discoveries, military and economic interests and religious imperialism. Investigating such a historical issue is hindered by the lack of documentation for this period. Moreover, socio-political events and internal conflicts were the topics of interest for local historians, but they rarely documented the health status of the general population, or healing practices in the community.

In studying history, there are usually three types of source materials.[13] Primary sources include all materials produced at the time of an event by people with direct knowledge of it. Secondary sources are those that discuss, analyse or review primary sources. Tertiary sources are usually collections that organise data from secondary sources. This study utilised primary sources from travelogues written by visitors to Oman during the period under study. It also utilised the information contained in the administration reports sent by the British Naval Resident Surgeon in Muscat to headquarters. American Mission reports contributed as well to the documentation of medical practice in the country starting from the 1890s onwards. The study would have not been complete without referring to the few local resources that addressed health-related aspects of Omanis. In addition, secondary sources were also consulted and used to augment this study.

Why Study the History of Medicine?

Medical humanities, including the history of medicine, are as essential to medicine as basic sciences are. Medicine is an art and a science,[14,15] and both aspects therefore should be considered whether one is dealing with an individual patient or with a medical system. Just like the vital importance of patient history in the clinical context, the history of medicine attempts to place people, institutions and events in the broader context in which they happened, lived or interacted.[16] Among other functions, it questions the past in order to provide answers to current or expected problems of health and health care.

Being rather a dynamic social organism and not simply a mechanical structure, a health care system should be understood, evaluated and enhanced within its context and locale. Medical

humanities are essential for a practice that is suffering proliferating ethical dilemmas, frequent patient-carer miscommunication and increasing customer dissatisfaction despite skyrocketing costs. It can operate, as well, as a countermeasure against the "dehumanizing atmosphere that technology brings to medicine".[17] In addition, humanities may also contribute positively to medical education and practice in an age of crisis.[18,19]

Medical humanities could also improve the art of medical practice and guide the rethinking of current health policies. Although it is thought commonly to deal with the past, studying history is about affecting the future course of events differently from what already happened or is happening.[20,21] This makes the link between history and policy unambiguous, and as Rosenberg stated:[22] "Policy is always history". As such, history is indispensable for health systems in order to understand current public health challenges and affect, directly or indirectly, related future policies.[23,24] In brief, the history of medicine can be a compass showing where health care was, where it stands now and in which future direction it should be steered.

Brief History of Oman During 19th Century

Throughout history, Oman has remained an independent land, apart from short periods when mainly coastal areas were under Persian and, later, Portuguese control. Toward the end of the 18th century, Omani dominion had expanded beyond the south eastern Arabian Peninsula eastwards to the coast of Baluchistan in the Indian subcontinent and westwards to the shores of Mozambique. By the 19th century, its influence extended across the Gulf, Persia, Asia, and East Africa. This was the epoch of the "Omani Empire".

The 19th century had also witnessed the struggle between western powers to gain a foothold in the area as part of their imperial expansion. As a consequence of rising western interests and competition in the region, the East India Company established a British Political Agency in Oman. This was moved in 1843 to Zanzibar when the capital was shifted there earlier under Sultan Said. In 1861, the British Residency was re-established by re-appointing a European political officer at Muscat.[25] This was an important landmark for the institutionalisation of biomedicine in Oman as the nucleus of an organised biomedical practice was soon established by the British Army. Although the Omani empire had receded since the mid-19th century to occupy its original lands in the Arabian Peninsula, Oman continued to influence and be influenced by the external competing forces in the region, especially following the discovery of oil in the Gulf.

Biomedicine in Oman: The Early Days

The rise of biomedicine and its first contact with people in Arabia coincided with the rising tide of Western colonialism and evangelisation in the region. Soldiers, missionaries, administrators and capitalists became almost simultaneously interested in Arabia. These different "invaders" attempted to enlighten the people they encountered, albeit by different means and for different reasons, but commonly toward "civilisation".[26,27,28] Doctors and nurses had diverse motivations for working away from home including economic, practical, social, professional and religious reasons; nevertheless, "they were all culturally determined".[29] Wendell Phillips portrays this civilising mission as he describes the work of Dr. Krause in the desert of Oman: "[h]ere is one of the wildest, least known areas of the world, a primitive badawi lies in the sand extremely ill. Then, without warning, one of America's leading medical specialists drops down as from heaven to serve his most grateful patient".[30] They were simply missionaries of a new culture, a new way of life and a new *Weltanschauung*.

Moreover, invading forces used medicine as a tool for penetration into Arabia, making the connection between biomedicine and these forces unavoidable. As an instrument used by various groups of politicians, armies and missionaries, and practised by professionals and non-professionals to gain entry into the region including Oman, biomedicine could be considered as a Trojan Horse of Arabia. Major Ross "believed that in the coming (20th) century the success of Imperialism would depend largely upon success with the microscope".[31] Members of the royal family and rich people who had more contact with the Westerners were more ready to welcome and adopt the biomedical approach to healing as they had access to it.[32] Gradually, however, several

pushing and pulling factors contributed to the incorporation of biomedicine in the local Omani community as a mode of healing practice.

Pushing Factors

External pushing factors probably preceded the internal pulling ones. Politicians, discoverers, investors and missionaries guarded by military troops all used, or abused, biomedicine to fulfil their agenda in this region as they had in other parts of the world such as China, India and Africa. As will be noted later in the discussion, physicians were used to bargain for political and military advantages. They also helped the newcomers to cope with the harsh, "unhealthy" environment of their new "settlements". Biomedicine was, initially at least, more of a condition for survival of the foreigners in the country than a requirement for the locals.

Toward the end of the 19th century, with increasing wealth and urban growth, new social hierarchies and influential relationships were being shaped by the imperial powers in the region. Medicine served a dual role for both the local elite and the invaders. It was a means for the elite to strengthen their relationships with the military powers and to prove their devotion in order to protect their interests in the region. As noted by Ghubash *et al.,* "pro-British personalities played a substantial part in motivating Britain to introduce medical services into the region. That was their natural role, taking into consideration the status they enjoyed at that time".[33] On the other hand, medicine was utilised as a tool for those military powers to gain the confidence and satisfaction of the rulers and local people.

Pulling Factors

Pushing factors, no matter how forceful they could be, would not have exerted the required influence without a significant accompanying change in the social milieu. Pulling, or internal, factors calling for biomedicine to be part of local culture were related mostly to the pushing factors. The need was partly created by the new epidemics, illnesses and injuries shipped in by soldiers, merchants and missionaries. Ibn-Ruzaiq, a prominent Omani historian who died in 1857, described the cholera epidemic in 1821 as an 'unusual plague',[34] leading to an assumption that cholera was probably not a known disease in this country until that date. This is consistent with various historical data that linked the 1821 Omani cholera epidemic with British troops sent from India to aid the Sultan against a local rebellion.[35,36]

The industrial revolution and its surge of scientific discoveries had been associated with a new set of illnesses and injuries. The introduction of guns, for example, led to injuries previously unknown to locals. As Peter J. Zwemer noted, a man was brought over 600 km from Abu-Thabi (Abu-Dhabi, UAE, today) to the British military hospital in Muscat because of a gunshot wound, and a bullet was extracted successfully by the attending surgeon.[37] Major surgery, in its modern practice, was indeed an incredible treatment modality for a population that largely used herbal medicines and other simple "surgical" procedures such as *tajbeer* (bone-setting) and *wasm* (cauterisation or branding).

In addition, and as happened in other cultures,[38] the perceived inability of local healers to cope with new epidemics and types of illnesses and injuries paved the road for biomedicine to claim its effectiveness among the locals. People even copied new healing practices from others, probably with the hope of combating the 'new plagues'. The Omani princess Sayyida Salma, in her memoirs published first in 1886, noted that some superstitious practices were unknown to Omanis until they mixed with people in the African part of their empire.[32] Probably she was referring to the *zar* cult which has been used to treat spirit possession victims. This is consistent with other sources that refer the origin of this practice to Africa,[39,40,41] and might explain earlier observations that this cult flourished in coastal rather than interior areas of Oman.[42] Biomedicine was being accepted as a mode of healing practice to combat the new illnesses, but never as the sole one.

Evolution of Biomedicine in Oman

Biomedicine in Oman can be traced back to the late 18th century. The development can be categorised into three eras, distinctive in their characteristics, but yet having limited time overlap:

1. ***First Era (Sent to explore):*** the era of casual

medical practice by physician and non-physician explorers extended for the first six decades of 19th century.

2. *Second Era (Sent to conquer):* the era of organised military medicine services extended from the seventh decade of 19th century and beyond.

3. *Third Era (Sent to heal):* the era of missionary medicine extended from the 1890s onward.

These eras represent more topical than chronologic stages of biomedicine in Oman. The labelling of the eras reflects the general dominant trend of western powers in the region rather than individual practitioners' objectives. The first and second eras correspond closely to phase 1 (exploration phase) and phase 2 (colonial phase) in the Basalla model for explanation of the spread of Western sciences to non-Western dominions.[43]

Sent to Explore

The last decade of 18th century witnessed a peak in the strife between the British and the French. Sayyid Sultan, the ruler of Muscat, had at that time a French military surgeon in his service.[44] This prompted the British in 1799 to suggest sending Assistant Surgeon A. H. Bogle as a personal physician to the Sultan if the later agreed to exclude the French, and their physician, from Muscat. The Sultan did, and Dr. Bogle became the first British Political Agent in Muscat.[25] Dr. Bogle, who died in less than a year, was then succeeded by Captain David Seton of the Bombay Army. Biomedicine has entered Oman on military ships as a door opener for the colonials and the doctor was the bait!

One of the earliest encounters during the early 19th century was with the Italian traveller, Vincinzo Maurizi, known to local people in the region as Shaik Mansur. He was appointed as the Sultan's physician in 1809, shortly after his arrival in Oman.[45] In addition to this position, he also had his own private medical practice, which he described as being 'very extensive'. Nevertheless, he described the suspicions raised by some people regarding his claim of being a physician and how luck helped him overcome it! Apart from casual stories of patients he successfully treated, he did not elaborate much on the population health status, common illnesses, or medical and healing practices.

Not surprisingly, this era coincided with Western geographical exploration and is the most difficult to track as biomedical practice was not yet organised. Most of the information is in the writings of travellers who visited the country, or in the political history records. A few journals also referred to some biomedical practitioners in Oman, but mainly for their contribution to geographic explorations rather than their medical practice. Many military surgeons visited and toured the country, such as Dr. W. S. W. Ruschenberger of the United States Navy,[46] Dr. Hulton, and John Henry Carter of the British Navy.[47,48,49] Their accounts on the culture, geology, and topography of Oman reflect the trend of Western explorers in Asia and Africa at that time, but contain no elaborate medical reports.

The British Navy in Muscat had medical staff to care for its employees and also the royal family. Grant is probably referring to this in his statement: 'The British Residency started medical work in Muscat in 1800, and maintained a medical staff throughout the century.'[50] Bosch also asserted that a medical officer was maintained at that time by the British Residency as 'Port Quarantine Officer'.[51] The proposition that the quarantine officer was maintained throughout 19th century cannot be substantiated since the regulations were not present till 1867. In addition, the British Political Agency had been shifted to Zanzibar from 1843 until 1861, and it was represented in Muscat by an illiterate Jew during that period.[25] Thus, it is hard to assume that any organised biomedical practice was undertaken by British Residency medical staff during the first half of the century. Nevertheless, this was the exploratory era when such visits probably had an impact on the elite society, in particular, and prepared it for the "new medicine" to come.

Sent to Conquer

During the 19th century, Western commercial interests in Oman developed into political as well as military affairs. Although the Arabian Gulf was never formally a part of the British Empire, it is acknowledged that the Gulf was indeed British.[52] The British government of India was the only foreign government that could maintain a permanent mission in Muscat throughout the second half of the 19th century.[53] The re-establishment of the

British Residency in Muscat in 1861 was a driving force to provide other supporting services for the permanent troops, including medical facilities.

In fact, this was the first time biomedical services were institutionalised in Oman, and probably in the Arabian Peninsula. A hospital was maintained within the Agency compound and was run by a surgeon major from the Indian Medical Services. The Sultan had donated a building that was suitable for the hospital and its dispensary.[37]

The doctor during this period assumed multiple roles. Doctors not only treated their fellow soldiers, but they were also pioneers in reporting on local flowers and species, documenting socio-cultural practices and informing headquarters about political and military issues. The regular administration reports that were sent by the resident surgeon to the headquarters in India documented, among other things, the health of the population at that time.

Surgeon Major Mr. Apothecary Gaspar de Rozario was appointed as the British Political Agent in 1866. Rozario wrote an account of Muscat, which included a two-page briefing on the prevailing diseases, mainly small pox, measles and whooping cough.[54] He had also documented the malaria and cholera epidemics in the summer of 1865. Rozario asserted that vaccination was started for the people of Muscat after nine years of "haranguing and illustration". Although this report was not dated, it could be assumed that it was written around 1875, i.e. 9 years after appointment of Rozario in Oman.

Surgeon Major A. S. G. Jayakar succeeded Rozario in Muscat and is probably better known to zoologists than to physicians as he identified three important Omani species that now carry his name: Tahr (*hermitragus Jayakari*), Fakhakh (*agama Jayakari*), and the small boa (*eryx Jayakari*).[53] He seemed to have travelled extensively throughout Oman during the 21 years that he spent in the country before his retirement in 1900.

Jayakar deserves the credit for the first comprehensive biomedical report on Oman, entitled, Medical Topography of Muscat.[55] This 14-page account offered valuable information on the geology, climate, water supply, food, sanitation, streets and population of Muscat. It also included a detailed description of the prevailing diseases and related health issues in the country. Interestingly, Jayakar noted the very uncommon prevalence of organic diseases of the heart and large blood vessels and the rare occurrence of kidney and bladder diseases, dysentery, rheumatism and brain diseases. On the other hand, malaria was the prevailing disease in the region, and cases of consumption (tuberculosis) were common. According to him, bronchitis, dyspepsia, haemorrhoids, ulcers, and eye and skin diseases were also common in the region.

The 19th century witnessed a remarkable increase in the frequency of epidemics in the country. Much of the burden of these epidemics could be attributed to poor sanitation, unavailability of clean water, and the 'harsh' climate of the country as described by many Western travellers. Nevertheless, the contribution of population movement to and from their new dominions in Asia and Africa, combined with increased use of the Muscat port by military and trading ships, cannot be overlooked. Following the first cholera epidemic in Oman in 1821, a second outbreak took place in 1864, and a third in 1899. Although Jayakar reported that that "plague" had never been known to prevail in Oman, a breakout of plague was indeed reported in Mutrah, the twin city of Muscat, in 1899–1900.[56] Marching troops, cruising steamers, ambitious explorers and locals moving to and from their new dominions in Africa were advancing faster than controlling health measures in the country.

As noticed above, despite the fact that many epidemics were related directly or indirectly to imperial activities in the region, there was neglect of the health of the general population in favour of a focus on health of the troops, western travellers and the elite. For example, 'Maskat Quarantine Regulations' were issued in 1867 for British subjects and British-protected subjects who entered Oman.[56] This may not be surprising since "[t]he first priority of imperial medicine prior to the First World War was to keep soldiers and officials functioning in unhealthy environments".[57] However, this era paved the road for the next when missionaries came to a country which was suffering from diseases and epidemics both contributed to and neglected by their fellow countrymen.

Sent to Heal

Toward the end of the 19th century, evangelical missionary activities were flourishing in Arabia. Oman was a strategic area to the missionary

enterprise, just as it was for the foreign political and military powers. General F. T. Haig of the British Army suggested Oman, Bahrain, and the Najd region in Saudi Arabia as profitable places for establishing permanent missionary stations.[58] Missionaries realised early on that it would be futile to start out with empty hands on the adventure of "healing souls". Healing bodies with biomedicine, tried already in some other areas such as China and Africa with success, could pave the way toward "God" in Arabia as well, or so it was thought. Despite the fact that the Muslim people of the region did not consent to any evangelisation, medical missionaries were still of particular importance as they were the key to the people and area.

The Arabian (American) Mission started its work in Oman in 1893. It was customary for non-medical missionaries to practice medicine and dispense drugs to people in the region during their tours, just as earlier explorers did. Samuel Zwemer, for example, was known to do this, and he used it as a door-opener during his tours in Arabia, including Oman.[59,60] In 1896, the first recorded exploratory visit by a medical missionary to Oman was made by Dr. Worrall.[61] Although missionaries frequented the country with their 'medicine chests' during the 1890s, it was not until 1904 that a medical clinic was started in Mutrah, the port area of Muscat, and run by Mrs. James Cantine.

Female medical practitioners were of particular importance to the missionary enterprise in the region and they were awarded a central role in Arabia. In fact, women's medical services were among the most effective agents of cultural change in the region.[62] Sayyida Salma, who converted to Christianity, called particularly for female physicians, as 'there is a great opening here for Christian charity, that would bear fruit a hundredfold, without any great obstacles in the way'.[33] It seemed that "Oman and all Arabia offer untold opportunities for the [missionary] medical profession".[63]

At the turn of the 19th century, the Arab Gulf region was sandwiched between the tight military grip of the British Army on one side and the soft, "humanitarian" services of the American missionaries on the other. In contrast with the already existing British military hospital, missionary medical services were primarily public and sought to serve otherwise impenetrable parts of the country. Medical missionaries, just as in other parts of the world, blended in with the people as no other "foreigners" did. They lived their life, ate their food and shared their joys and sorrows. Their work included not only conquering the diseases of the poor, but also civilising the "heathen" with their Western cultural values.[64,65,66] As Etherington has noted: "although missions and the official empire were quite different operations, they play related parts in a larger drama—the spread of modernisation, globalisation, and Western cultural hegemony".[57]

Until the end of the 19th century, biomedical work was restricted mostly to the Muscat area although missionaries also started exploratory visits to the Batinah.[67] Their activities expanded in the 20th century to include the interior of Oman, an area that had remained largely unreached by other foreigners. Medical missions with two operating hospitals were the active force in Omani biomedical practice until a national health care system was established in the 1970s.

Agenda for Future Research

The history of the evolution of biomedicine in Oman is intriguing and raises many questions that could form an agenda for future research on the topic. The nature of the interaction between state power, Western powers in the region, biomedicine, culture and traditional healing practices in Oman, and factors that affected such interactions, is a virgin area for investigation. Missionary medicine and missionaries in Oman and Arab Gulf is another almost untouched topic despite a wealth of primary sources. In addition, it would also be worth investigating social milieu changes in relation to health and healing practices, particularly following the establishment of missionary medical centres. Such studies should address these issues and relate them to the then health and healing practices, as well as probing possible implications for the currrent health system.

Conclusion

The introduction and evolution of biomedicine in Oman, which began in the 19th century, is a fascinating topic. What started out as casual exploratory visits further crystallised into a

permanent British military hospital that served mainly military staff and the elite, but occasionally the poor as well. The last decade of the 19th century witnessed the growing interest of American missionaries in the country, who were particularly influential in opening doors for not only the evangelising enterprise in the community, but for foreign intrusion in general. The history of changes in biomedicine and health in Oman is an interesting subject that needs more attention from local scholars and researchers. Humanities, in general, are still a subject which is lacking, or thought to be auxiliary, in the medical scene of most developing countries. Literature, history, philosophy, ethics and religion should be addressed in medical education not as a supplementary, but as a core subject. In addition, focused research and practice in these disciplines should be encouraged in order to explore and assess their contribution to current and future health and health care in Oman.

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