

# Endocrinology Is Fascinating

Fereidoun Azizi<sup>1,\*</sup>

<sup>1</sup>Endocrine Research Center, Research Institute for Endocrine Sciences, Shahid Beheshti University of Medical Sciences, Tehran, IR Iran

\*Corresponding author: Fereidoun Azizi, Endocrine Research Center, Research Institute for Endocrine Sciences, Shahid Beheshti University of Medical Sciences, Tehran, IR Iran. Tel: +98-2122409309, Fax: +98-2122402463, E-mail: azizi@endocrine.ac.ir

Received 2016 September 11; Accepted 2016 September 15.

Endocrinology defined earlier as the study of cell communication via messenger molecules or hormones transversing extracellular space, now extends to inter and intra cellular spaces. Development of the understanding of functioning of endocrine glands parallels the evolution of clinical sciences in the history of medicine. For example Rhazes, died 925 A.D, discussed in detail the sex organs and contraception (1); Avicenna, died in 1037, gave a good account of diabetes, described 22 conditions for polyuria in addition to diabetes, and for the first time, pointed out diabetes insipidus (2, 3). Avicenna and Jurjani documented and introduced the association between exophthalmos and goiter 8 centuries before Pary, Graves and Basedow (4). Around 100 years ago, Starling proposed the term hormone to describe secretion of a substance by the small intestine into the bloodstream. Others showed that replacement of thyroid extract and insulin could treat hypothyroidism and diabetes mellitus successfully. Nowadays, advances in cell biology, molecular biology, immunology and genetics explain the mechanism of hormone secretion, action and the pathophysiology of endocrine diseases.

Advancement of investigations that have been conducted over the last few decades have extended endocrinology from a discipline that attempts to understand the physiology and pathophysiology of internal secretions to one that also searches for knowledge of the effect of genetics, gene expression and cell signaling on organ systems.

Training of endocrinology as subspecialty of internal medicine, and followed by pediatrics, began in the last century. The training programs have expanded from developed to developing countries and now many countries in various continents carry subspecialty training of endocrinology. However, there are challenges to practicing this subspecialty, mainly because of its lower income as compared to other specialties and subspecialties. In the USA, an endocrinologist makes \$200,000 - 250,000 a year, as compared to average income of a cardiologist of \$357,000 per year (5). The same discrepancy exists in most developed and developing countries. Therefore, endocrinology

is not the choice for making money. Yet, as we see, it is obvious that many physicians select this specialty. Why do physicians choose endocrinology? This question has been a subject of two recent articles (5, 6). The first one appeared in the March 2015 issue of Endocrine News and the author asked the above-mentioned question of eight endocrinologists, both senior and junior, mostly from USA and UK and one from Turkey and got almost similar responses. Some statements made by these endocrinologists were (5): "It is an area where both science and clinical medicine run in parallel, and, as a basic scientist, I get thrilled by how my research can have such a great impact on the patients' quality of life, the daily interaction with clinicians and patients as well as with people from similar, but not the same, endocrine field gives you a unique opportunity to broaden your knowledge and helps to better understand how other key endocrine tissues can contribute to the metabolic disease." "The intellectual process of combining of focused history targeted physical exams, and diverse investigations culminating in correct diagnosis and appropriate treatment and monitoring is very satisfying and a great benefit for the patient whose condition has often not been diagnosed or managed optimally." "Endocrinology is an evolving and fast-moving field, and it never ceases to stimulate or surprise. I like that endocrinologists must consider the integration of all of the body's systems including the brain, with hormones as messengers. To me this was preferable to a subspecialty focused on just organ system." "Endocrine disorders bring in a range of other issues including public health, preventative medicine, policy, health economics, healthcare systems, medical informatics, cultural issues, clinical leadership, patient self-management, and engagement." "To sum it all up, endocrinology is a fascinating and challenging multidimensional specialty that opens the doors to an array of stimulating opportunities packaged into a family-friendly environment. So why would I choose anything else?"

The second article, just published (6), aimed to study why Iranian endocrinologists choose this subspecialty! In

addition it searched for advantages and limitations that they encounter. Of the 157 endocrinologists contacted, 81 (52%), 42 females (52%) and 39 males (48%), responded, half of whom were aged 41 - 50 years. Answers to the question why did you choose endocrinology? were: Its constant process of thinking in diagnosis and treatment (69%), systematic and intellectual decision making (62%), the influence of a role model, a distinguished mentor (59%), its interaction with other systems and organs (55%), and continuing intellectual stimulation and pragmatic satisfaction (55%). Regarding the pros and cons faced, well-organized endocrine functions (51%), ease of reaching specific diagnosis for illnesses and firm decision making (36%); relatively few emergencies (26%), lower indications of hospitalization; (25%) less professional stress (23%) and rapid response of patients to treatment modalities (23%) were chosen as advantages of this branch of medicine. However, endocrinologists believed that the major limitations of this subspecialty were excessive dependence on accurate laboratory procedures, which may not always be available (62%) and the lower income, as compared to other medical specialties (53%).

Both these studies, one from a developed and the other from a developing country, have shown that despite the lower income, the rewards of choosing endocrinology, in particular its research and scientific evidence-based process of thinking, firm decision making in diagnosis and treatment, its interaction with other organs and basic sciences, and, last but not least, the influence of a great mentor are major incentives why physicians choose the endocrinology subspecialty.

Endocrinologists are exposed to huge variety of endocrine problems, some of which are not localized to a particular organ and may present with subtle clinical features; some more common, like obesity, diabetes and goiter, with huge impact both at individual and community levels and some being relatively rare with interesting presentations. Availability of and accessibility to well-facilitated laboratories and higher incomes could minimize the challenges faced by physician endocrinologists. This might be one of the reasons for the responses of endocrinologist for choosing this subspecialty in recent years. When asked endocrinologists if you had to do it all over again, would you? almost 70% of endocrinologists in 2011 would still choose a career in medicine, a number that fell to 57% in 2012. Moreover, only 38% of endocrinologists would choose endocrinology again, a discernable decline from 70% in 2011 (5).

The excellence of endocrinology should not be hampered by such limitations. Medical organizations and officials of various governments should strive for equity in various branches of medicine, in order to avoid the decline

in scientific quality of many medical specialties, which are important for management of common disorders and promotion of health care for humankind.

## References

1. Medvei VC. The history of clinical endocrinology. The parthenon publish; 1993.
2. Syed I. Islamic Medicine: 1000 years a head of its times. *J Islamic Med Assoc.* 1981;**13**:6-13.
3. Nabipour I. Clinical Endocrinology in the Islamic civilization in Iran. *Int J Endocrinol Metab.* 2003;43-6.
4. Nabipour I, Burger A, Moharreri MR, Azizi F. Avicenna, the first to describe thyroid-related orbitopathy. *Thyroid.* 2009;**19**(1):7-8. doi: [10.1089/thy.2008.0299](https://doi.org/10.1089/thy.2008.0299). [PubMed: [19119980](https://pubmed.ncbi.nlm.nih.gov/19119980/)].
5. Newman MA. Why endocrinology?. *Endocrine News*; 2015.
6. Azizi F, Shabani K, Fakhimi T, Zadehvakili A. Opinion of Iranian Endocrinologists about Internal Medicine and Endocrinology [in Persian]. *Iranian J Clin Endocrinol and Metab.* 2016;**18**:159-64.