

Information-Base and Determinants of Medical Specialization and Primary Care: A View Point

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Abstract

Speculations are rife as to the place of medical specialization, the contributions of the generalists and specialists, and the importance of primary care to the information, development and determinants in career pursuit for sustainable healthcare delivery and quality care for society at large and the individual patient. Although, medical specialization has invariably advanced at the expense of teaching, research and practice of medicine, it is understandable that the patient remains a unit, and inasmuch as his personal health and well-being are concerned, all aspects of medical practice must be taken into cognizance. It is imperative that in medical specialization, that the human body be observed in parts, but a holistic approach as in primary care is pertinent in treatment and in care. This calls for plausible interaction between specialists and the generalists in the provision of sustainable health and quality care for the future. Therefore, planning, organization and management of medical specialization are necessary to attain flexibility with a controlled and structured healthcare system.

Keywords: medical specialization, primary care, specialists, generalists

INTRODUCTION

For several years, medical specialists and subspecialties have developed in an unplanned, uncoordinated and uncontrolled perspective which became inimical to medical manpower development in the provision of healthcare services in both the industrialized and non-industrialised world. Hence, medical specialization needs special focus to ensure equitable distribution of our resources for quality care. A specialty in medicine is a branch of medical science. Following the completion of medical school and earning the requisite degree of medicine and surgery, a physician or medical doctor or practitioner may decide to choose a medical specialty to have residency training in. A medical graduate may start exploration of his specialty by selecting from several specialties and subspecialties available in one's country or other. When a patient presents with health problems, the perspicuous option to general practice is the direct access of a patient to a specialist. Thus, one of the several alternatives that a medical practitioner has as a healthcare professional is the choice of a medical specialty in which to practice.

This necessitates the rigorous qualitative and quantitative analyses of medical specialization and the requisite organization of specialist training as to the extent in which medical specialties meet health needs, and the decision-making modalities which underlie the development of medical specialization. Medical specialization is dependent on some factors which include professional preferences, socioeconomic considerations, lifestyle, and advances in medical technology and science. A novel diagnostic tool or procedure may cause medical practitioners with special training to seek its use. Certain innovations or newfangled procedures may generate their own demand for specialists, whereas other innovations such as novel angioplasty technologies are endogenous and are generated through the experience and occupational needs and requirements of medical specialists. Certain physicians are attracted to specialization due to availability of potential, specific and precise responsibility which are defined to greater control over their practice, prestige, and remuneration.

Economic considerations play an expansive aspect in the development of specialists. Adam Smith commences *The Wealth of Nations* (1) by emphasizing the importance of the specialization of labour. He states that its extent is limited by market size. As markets for medical care have become expansive through increased population growth and income, urbanization and improved transportations and communication, so has specialization within medicine increased. Salary or income differentials between specialists and primary care physicians vary across countries, and also influence physician choice. Nowadays, a vast majority of physicians and surgeons are trained and are qualified to provide certain defined sort of care. In this regard, the physician workforce has differentiated into a heterogeneous group of professionals (2).

PROSPECTS, CHALLENGES AND CONSTRAINTS FOR MEDICAL SPECIALIZATION AND PRIMARY CARE

Specialization is a fact of life, and it enhances the quality of life in every anthropogenic activity with perspicuous advantages, and so it is in medicine and the healthcare system. Medical specialization distinguishes the task performed by medical doctors from that done by other health professions, several of whom are also faced by cumbersome issues regarding specialization. These constitute crucial issues as to the extent of possible

substitution of non-medical for medical personnel within the operational team, and the maintenance of efficiency, effectiveness and safety as to their degree of education, training and qualification.

A review of the state of development depicts extraordinary variations. In 1960, there existed just 18 specialty boards and a crop of subspecialties in the United States of America (USA), but these increased in 2011 to 158 specialties; with Canada 67, France 52, and England 97 specialties and subspecialties (3). In 1973, the recognized major medical specialties ranged from 10 to 48 in Europe; subspecialties were from 0 to 37; thus, affording a variation for the two areas combined as from 16 to 62. In 1983, England and Wales had over 100 listed medical and dental specialties and subspecialties (4,5). In addition to the variation in the number of specialties, the distribution of specialist physicians, in contradistinction to generalists, shows disparities between countries; and these differences are dependent on the nomenclature applied in each country (3). These differences raise the issue as to the extent medical specialization is good or necessary for society. This depends on the impact of specialization on health outcomes as related to length of life and quality of life, as well as costs. Invariably, the USA has developed more specialization and increased costs without offsetting gains in health outcomes. States with greater number of general practitioners used more effective care and less spending, whereas those with higher number of specialists had more costs and less quality of care. This portends that improving health quality of care is attainable with more effective use of extant funds. The criteria for the certification of a new subspecialty may have been largely technology driven. There has been no requirement for empirical evidence that the creating of a specialty is beneficial or not. It is pertinent to know to what extent specialization in medicine is appropriate (6) in other specialties as is in primary care.

In Nigeria, healthcare providers are being placed in a difficult situation in the judicious management of their resources in delivering quality care. These challenges offer an opportunity to make investments in sustainable mechanisms which can integrate healthcare providers and augment beneficial outcomes for patients. Primary care is liable to create value for both providers and patients, if it leverages on an appreciable population size as well as related network of diagnostic capabilities and specialist input. Primary care in Nigeria has not witnessed high investment levels because a vast majority of primary care providers are sole entrepreneurs with limited capacity for growth and unwholesome revenue streams. Therefore, a top-down approach is preferred by investors, as this portends a better atmosphere for high financial returns of specialty hospitals and diagnostic facilities. With the prevailing expansive telecommunications coverage, there is vast opportunity for advances in medical technology and healthcare. Challenges are also faced by developed economies as considerable efforts to implement new technologies a result of the huge costs to overhaul extant infrastructure in vested interests and rigid regulatory environments. An integrated healthcare system undergirded with sustainable health information technology system provides continuity of care for a healthy patient population by means of primary care and preventative services (7,8). Such a system is not liable to easily crumble in the face of inevitable financial pressures resulting from increases in prevalent uneconomic and financial terms and conditions. For any particular country, a strong health workforce is inevitable and essential. Cognizance needs to be taken of widespread globalization and independence among countries, sustained migration of health professionals, the complex threats of rapidly emerging and re-emerging infectious diseases, and changing lifestyles. Developing and augmenting the human resources for health should include not only healthcare professionals, but also community and mid-level health workers, strengthened primary healthcare systems to increase coverage for sustainable health needs of societies. This becomes evident in low and middle-income societies where healthcare access is a formidable challenge. Nation-states must identify their health needs to adequately address recruitment, training, retention and needs of health workers if they must reach Millennium Development Goals (MDGs) for sustainable health (9).

The practice of community medicine, preventive and social medicine as a specialization in the medical profession has emerged as the keystone of public health. Primary care is the latest broad specialty of medicine whose practice and understanding is slowly evolving in most non-industrialised nations. Even in industrialized nations, the challenges of the discipline are difficult to unravel; so that, persons with little or no knowledge may not comprehend it. However, it still remains the most needed and sought after of all the specializations in the medicine, and followed closely by specialist general medical practice or family medicine. It is the basis for the achievement of Health for All, especially in developing countries.

In the early 1990s, the erstwhile communist countries started reforming their healthcare systems with emphasis on the significant role of primary care, and the recognition of family medicine as a specialty and an academic discipline. Family medicine in Central and Eastern European countries (CEE) is now formally given recognition as a medical specialty, with successful introduction into medical training at all levels, but research in family medicine has not been well-developed. Although, the status of the field is not advanced, an expanse of the CEE countries is exemplary of a successful academic development for southern European countries where family medicine has not yet been fully given recognition (10).

Specialization in itself presents diverse interpretations, and various levels of completeness or sophistication. Certain patterns of organization of primary medical care in developed countries, such as the erstwhile USSR,

USA, England, and Scandinavia (Sweden and Finland) have been illustrated (11). This depicts the numerous interactions between general practitioners and medical specialists, and the variations encountered in partial or full specialization at the primary level of medical care, with the ever-changing spectrum of medical research and technology resulting in the emergence of new clinical specialties. Despite the perceived high standard of achievements and specialization, and the enormous financial investments in the healthcare system, the overall degree of the population's health is abysmal than ought to be realized.

In the United States, it is clear that Obamacare portends to enroll circa 14 million persons in 2014 (12). The United States depicts a deficit of 20,000 medical doctors; and this shortage predicts to be in primary care. As the primary care deficit becomes debilitating with the Affordable Care Act or the Obamacare, 75% of medical school graduates intend to choose highly specialized fields, with an estimated 5,000 new medical graduates entering primary care training annually. Reflecting on an averaging medical school debt of USD 166,750 in 2012 and decline in physicians' salaries in recent times, there exists the tendency for students to pursue specializations which maximize their income. NerdWallet Health ranked the fifteen preponderant medical specialties by evaluating the financial, professional and emotional factors which advance the interests of medical students into highly specialized fields, and remote from primary care (12). The top three medical specialties included gastroenterology, orthopaedics, and radiology. The three primary care specialties ranked least overall; thus, emphasizing why less medical students opt for the specialties of paediatrics, family medicine, internal medicine. NerdWallet Health's Best Specialty ranking system regards remuneration, time spent performing administrative tasks, job satisfaction and total hours worked. The financial return for time invested in training differs greatly between specialties. Primary care physicians consult with more patients, but spend less time with a particular patient. In the future, more incentives will be needed by physicians to enter primary care specialty to ameliorate the primary care deficit. Healthcare reform will be debilitating if not accompanied by overall reform in graduate medical education with a broad perspective. Primary care doctors excluding family physicians, paediatricians, and internists incessantly rate lower on several levels, such as income, specialty satisfaction, and work hours. In the United States, primary care becomes the entry point into the healthcare system for an estimated 14 million uninsured. It is imperative to address the doctor deficit as to ensure the newly insured have access to healthcare (12).

Therefore, planning, development, organization and management of medical specialization are necessary to attain flexibility within a controlled and structured healthcare system. The gray areas between specialist and general medical services, and between medical and non-medical task, are of critical significance, otherwise the planning of specialization becomes constrained and inflexible with a threat to development, progress and quality care,

COMPARATIVE PRESENTATIONS OF SPECIALISTS AND GENERALISTS IN CLINICAL OUTCOMES

Specialization results in disjointed care and discontinuity, even for patients presenting with a single disease. Any reductions in cost and concomitant improvements in care due to highly trained specialists who deliver defined services can be offset by the quality-eroding and cost-enhancing effects of the diverse communications required when multiple independent specialists are treating a single patient. This difficulty in coordinating patient care and treatment is easily manifest when it concerns patients with increased age as they often present with several debilitating or similar chronic diseases. A specialist handling the treatment of a single chronic disease focuses more on that disease, probably leading to untoward outcomes (13). Specialization tends to create professional monopolies which present barriers to other interested physicians who could perform the same service in care and treatment (6). Other disadvantage include the length and cost in training and then qualifying the medical specialists due to the requirement that they start with generalist training in medicine, with expectation that the specialist is more grounded than the generalist in most fields, whereas the reverse pertains.

In addition, patients with multiple chronic morbidities usually receive suboptimal care, and their fragmented plans culminate in redundancies and ineffectiveness which place disproportionate pressure on the prevailing health care system. Adam Smith would have not described such prevailing healthcare with his invisible hand, but with a pin-maker. In the Wealth of Nations (1), a parable regarding a pin-maker explicates the benefits of division of labour. Whereas, a single person working barely creates 20 pins in one day, a group of ten persons that segregates doing different chores by shaping, sharpening, and painting pins can produce tens of thousands of pins in a day. This method creates more efficiency in workers as they specialize by developing a skill, creating new technology to help them, and not losing or wasting task time by switching in-between. In this regard, the cardiologist confers with heart problem patients, the psychiatrist with manic-depressive psychosis, the oncologist cancer, and all lay claim to treat these specific illnesses better than a single generalist medical practitioner. As would have been predicted by Smith, even in primary care that has been for a long time the undergirding framework of the generalist, to segregate functions or duties between full-time hospitalists and out-patient clinicians, these divisions of labour care for single diseases and manage routine care with quality and efficiency.

With problems spread across the divisions or units, such as people presenting with multiple chronic diseases or multi-morbidity, they consult with a different specialist acting alone for a single condition. Moreover, due to the reasons that clinical care guidelines and randomly controlled research trials usually fixates on patients with a single disease to avoid confounding variables, specialists seldom realize how treatment administered by them interacts with other concurrent treatments. This fragmentation frequently culminates in untoward reactions to drug combinations, repetitive or ineffective care, and overwhelming poor health outcome. As multi-morbid patients receive suboptimal care, there are also presenting unnecessary hospitalizations, redundant tests, and fragmented care, these also place disproportionate pressure on the prevailing healthcare system (14).

What evidence are there about outcomes in the care and treatment of patients by generalists and specialists? There are mixed results obtained from several studies comparing care delivered by specialists with those delivered by generalists. A study (15) revealed that clinical outcomes in critically ill patients were improved by having intensive care units equipped with compulsory intensivist consultations or care exclusively delivered by an intensivist in contrast to units in which there was either no intensivist or only elective intensivist consultations; with relative mortality of 30% and 40% (15). In contrast, another study (16) using a large sample of patients of United States intensive care units, the odds of hospital mortality were higher for patients under the purview of critical care physicians than for those patients who were not. In another study (17), there existed no between-country differences in mortality.

Researchers investigated the formulation of diagnostic hypotheses by general internists and family physicians regarding to cases of dyspnoea, abdominal pain and syncope in the United States. The responses of physicians to sequentially presented clinical data were audio-taped. Every transcribed protocol was recorded to enumerate and characterize the hypothesis by physicians in each specialty concerned. Results of the analyses of variance of hypothesis measured suggested that internists generated more hypotheses than family physicians; and that the internist's hypotheses were more specific and with less tendency to be generated by other physicians. Also, internists were more likely to consider hypotheses more closely associated with the final diagnosis promptly in the case presentation than did family physicians. The findings of greater number, specificity, and uniqueness of hypotheses considered by internists were consistent with erstwhile established differences in the amount and nature of diagnostic information collated by family physicians and internists (18).

It is estimated that errors in medicine result in an excess of 44,000 preventable deaths yearly. Some of these errors are caused by specialist physicians at diagnosis. A testing of the experimental hypothesis that a specialist physician has a bias in the diagnosis of cases outside his own domain (19). Thirty-two board certified physicians from four internal medicine subspecialties managed four patient cases each. Using vertical protocol analysis and general linear modeling of the numerical data conformed with the experimental hypothesis, suggesting that specialists try to attract or induce cases toward their specialty. Specialists create more diagnostic hypotheses within their own domain than from extraneous domains (19). It was found that a vast majority of medical diagnosis were done by applying automatic, efficient cognitive processes, with the diagnoses being accurate most of the time. The study was concerned with the times when these cognitive processes do not succeed, and when the final diagnosis is wrong or missed. It was argued that physicians generally do not appreciate that their diagnoses could be wrong; and that this tendency of overconfidence is associated with both intrinsic and systematically reinforced factors (20).

The most significant of the thrust of the specialist is the observation of the patient as a part or in parts rather than the holistic approach to treatment and care. The specialist has a generalist training before qualifying as a specialist, and must bring his training to bear in all totality for the welfare and being of the patient.

PERCEPTIONS OF PUBLIC AND OTHER HEALTH WORKERS OF MEDICAL SPECIALISTS

Currently, there is an increasing perception and belief that specialists' behavior including conflict of interest impact on medical practice with untoward influence on health policy, organization and management. These are observable in the natural world, and have been further investigated by other scientists and researchers (21). The objective of these studies has been to assess and evaluate the behavior of specialists and other health workers as how these fit and are perceived in the institutional setting of quality care.

The American College of Physicians-American Society of Internal Medicine conducted surveys which suggested that the public has varying opinions regarding the capabilities of internists (22). The perceptions of patients seeking care from internists remained indeterminable, though. The study attempted to determine how patients consulting with general internists perceived them; and if patients could appreciate the differences between internists and other primary care physicians. Adult patients visiting three general internal medicine clinics in Georgia (south USA), Iowa (midwest) and Vermont (east) were surveyed with patients responding to eleven questions each about their perceptions of an internist's purview of care; also which of twenty-four selected diseases, symptoms, or examination skills they were in the scope of an internist. Significantly more ($p < .001$) patients showed confidence in an internist's ability to manage symptoms (76%) than manage specific diseases (59%) or conduct clinical examinations (54%). The study showed that established patients seeking care in

internal medicine clinics have no demonstrable consensus on the capabilities of internists, particularly their differences from other specialists. It was suggested that public education must be geared to advance adequate understanding of the role of the internist as a specialist in adult medicine (22).

An examination of the feasibility and reliability of completed ratings by hospital-based registered nurses of the humanistic qualities, communication skills, and defined aspects of the clinical skills of practicing internists demonstrated that the ratings of nurses displayed a common structure and had moderate correlation with the ratings of peer physicians (23). However, the ratings of the nurses were lower for most humanistic qualities such as, respect, integrity and responsibility. Their ratings were higher for medical knowledge and verbal communications. The ratings of nurses seem to provide a feasible and reliable approach to evaluate the internists' communication skills and humanistic qualities when applied in conjunction with ratings by peer physicians (23). It is necessary for medical practitioners to have and show respect for persons, empathy with patients and interpersonal relationships with other health workers because these induce optimal healthcare delivery, and decrease the frequency of complaints between specialists, patients and other stakeholders. Ethical commitments by and within organizations lead to better job and healthcare satisfaction and outcomes. With regard to medical specialization, the increasing complexity of treatment, diagnostic and healthcare alternatives demand simultaneous development of ethical standards at the patient, interpersonal and organizational levels. These are necessities in an environment of highly developed medical services, such as organ transplants, renal, cardiac, pulmonary and neurological intensive care units.

DETERMINANTS IN THE PURSUIT FOR A GENERALIST OR SPECIALIST CAREER

Studies of undergraduate education have suggested that sex of the instructor influences female students to choose a discipline (24). Data were obtained from the Association of American Medical Colleges (AAMC) of the specialization of 2006-2008 graduates of US medical schools with respect to the sex of their faculty and department chairs, and sex of residents in their enrolled residency programmes. Contextually, logistic regression was used to elucidate the relatedness between faculty and leadership sex and female students' pursuit of five surgical specialties with three non-surgical specialists. Wilcoxon rank-sum tests were used to evaluate whether women became involved in residency programmes having a higher ratio of female residents. During the period under investigation, US medical school graduates included 23,642 women. Women presented with a disproportionate number among residents in neurosurgery, orthopaedics, urology, otolaryngology, general surgery and radiology. Women constituted 47.4% of US graduates specializing in internal medicine with 74.9% in paediatrics. The study found no strong correlation between exposure to a female department chair and choice of a specialty; and no consistent associations with the ratio of female full-time faculty. In comparison with male students, female students pursued residency programmes in their selected specialty that had considerable greater proportions of female residents in the year preceding their graduation. Inasmuch as, the study did not detect consistent significant associations between exposure to established female faculty role models and specialty pursuit, it is observable that female students have more tendency than their male counterparts to venture into programmes with greater proportions of female residents (24). Sex differences in the specialization of medicine may be extended to include the propensity of persons to adhere to culture in the performing of tasks.

In order to describe trends in specialty choice and to identify predictors of the selection of primary care specialty, a longitudinal study evaluated 102,673 (64%) US medical school graduates from 1997-2006 who completed the Association of American Medical Colleges' Matriculating Student Questionnaire and Graduation Questionnaire (25). Multivariate logistic regression revealed significant predictors of the choice of graduates for primary care specialty (general and internal medicine, general paediatrics, internal medicine subspecialties, paediatrics subspecialties, family medicine, and obstetrics-gynaecology) or "no-board-certification specialty," compared to all other specialties compared to all other specialties (25). General internal medicine, family medicine, general paediatrics, and obstetrics-gynaecology choices declined, whereas choice of internal medicine subspecialties, paediatrics subspecialties, and no-board-certification specialty increased (each: $p < .001$). Female graduates including those who intended to practice in underserved communities demonstrated higher altruistic attitudes and beliefs concerning healthcare, and espoused more importance to social responsibility in their selection of medicine at matriculation had greater tendency to select general internal medicine, general paediatrics, family medicine, or obstetrics-gynaecology, whereas graduates with a physician parent and had decided full-time academic medicine pursuit were less likely to do so (each: $p < .01$). Graduates with greater debt burden had less tendency to select internal medicine and paediatrics specialties (each: $p < .001$) and more likely to choose obstetrics-gynaecology ($p = .001$). Graduates with generalist-primary care specialty choices decreased since 1997, whereas primary care subspecialty and no-board-certification specialty choices increased. The relationships among primary care specialty choices and demographic, attitudinal and beliefs, as well as career intention variables or attributes can define the design of interventions to elucidate potential shortages in primary care workforce.

Another study was carried out to unravel the extent in which medical students' self-efficacy (SE) impacts the

calling on the commitment of students' specialty, with emphasis on the need to comprehend variables that are predictors of primary care specialization (26). It was hypothesized that students who had perception that their career as a calling would demonstrate greater commitment to their specialty, particularly when such students had elevated SE. The study included medical students (years 1-4, N=152) who completed an online survey to rate their calling, commitment of specialty and SE calling. Calling was measured using the Brief Calling Scale, BCS (27), whereas specialty choice was measured by an empirical examination of the antecedents of commitment to difficult goals, which entails measurement of commitment (28). SE was measured using the Jerusalem and Schwarzer's general SE scale (29). Calling ($r=.24$, $p<.01$) and SE ($r=.20$, $p<.05$) moderately correlated with specialty commitment; thus, suggestive of an interaction. The interaction of calling and SE was a significant predictor of specialty commitment ($\beta=-.20$, $t_{148}=-2.55$, $p<.05$) and revealed a significant proportion of variance in specialty commitment ($R(2)=.12$, $F(3,148)=6.875$, $p<.001$). Students who presented high calling were more likely to have high specialty commitment irrespective of low SE (26). The impact of a final-year elective internship in general practice on motives which influence graduates' specialty choice draws much public interest, but is not adequately evaluated (30), monitored and assessed. Longitudinal studies demonstrate that the influence of various motives, such as work-life balance, without a follow-up of the experience of general practice therein. A cross-sectional questionnaire study was conducted on graduates who completed internship in general practice in Saxony-Anhalt from 2007-2012 as regards their motives for specialty choice. A standardized questionnaire was sent to 109 previous general practice interns. The questionnaire had 29 items dealing with three topics (personal attitudes, concept of personal and professional life, motives for specialty choice). It used single-choice and multiple-choice responses including Likert scales. Correlation analysis was done by Kendall tau (T) rank correlation coefficient. The questionnaire was received by 97 erstwhile interns, of which 45 (46%) responded in the total ranking of motives for specialty choice: family (71%), leisure time (66%) and job opportunities (48%) rated as of greater value than income (36%). Barely 29% of the respondents revealed that internship in general practice changed their specialty choice. Where the specialty choice was previously established before general practice internship, the effect of the internship on specialty choice was invariably low ($r=-.5$, $p=.01$). Conversely, where the general practice internship influenced specialty choice, it was correlated with a new perception of general practice ($r=.36$, $p<.01$). The new perception was proportionally associated with the influence of the medical teacher during the internship. The final-year internship provides the latitude to alter the perception in general practice selection of students who are still uncertain. This may culminate in diverse specialty choices within a subgroup. Personal attitudes and concepts of personal life as well as career were also significant factors influencing specialty choice. It is pertinent to evaluate, monitor and assess the positive features exerted by medical teachers on those students who are still uncertain during the general practice internship (30).

Medical students are unceasingly making non-primary care specialties their choices. Students consider lifestyle in choosing their specialty, but how beginning medical students perceive lifestyle remains unclear. A study showed how first-year students regarded lifestyle domains and specialty-chosen aspects, and if their ratings or values differed by interest in primary care (31). Within the 2012-2013 academic year, a cross-sectional survey was conducted using first-year medical students of eleven medical schools. Using Likert-type scale {1=not important at all; 5 = extremely important}, respondents rated the importance of 5 domains of good lifestyle and 21 features associated with specialty choice. Students were classified into five groups by interests in primary care by one-way analysis of variance. Of 1,704 participants, an appreciable 1,020 (60%) responded. The option "type of work I am doing" constituted the highest rated lifestyle domain {mean =4.8, standard deviation [SD] 0.6}. "Being satisfied with the job" had the highest rated specialty choice characteristic (mean = 4.7, SD = .5). "Availability of practice locations in rural area" had the lowest rating (mean = 2.0, SD= 1.1). Decreased interest in primary care was associated with decreased importance of "opportunities to work with underserved populations", but the importance of "average salary earned" was elevated (effect sizes of 0.98 and 0.94, respectively). First-year students valued work enjoyment. The consideration of financial remuneration was inversely related to primary care interests. Evaluating the determinants of enjoyable work suggestively provides interventions in aiding students obtain professional fulfillment in primary care (31).

Also, questionnaires were made available to 346 fourth-year students in nine medical schools in the United States to state their specialty choices and to rank the value that each of twenty-five items listed in the questionnaire influenced their specialty selection (32). Factor analysis revealed that specific items were specifically associated with specific factors. The first factor stressed perceived lifestyle (items in this class regarded compensation, personal item, and prestige); the second factor stressed cerebral activities and a practice orientation; and the third factor emphasized altruistic values and attitudes. The study categorized the chosen specialties into three groups: those having a non-controllable lifestyle (NCL), those with a controllable lifestyle (CL), and surgery. (CL specialists allowed the physician to control the number of hours to practice the specialty.) Data were analysed by factor analysis, analysis of variance and the Scheffe method. Analysis revealed that the perceived lifestyle factor was significantly associated with the responses of students' selecting CL specialties;

this factor obtained the highest overall loading of the three factors from the students; thus, suggesting the interest level in lifestyle factors. Responses to items that characterized the cerebral and practice factors were highest from the student group selecting CL specialties, and lowest from the group selecting NCL specialties. The NCL students rated highest in the altruism factor, and the CL students scored lowest. The surgery and the NCL groups were identical in attitude patterns; and both remarkably varied in attitude patterns from the CL group (32).

DISCUSSION AND CONCLUSION

Primary care is the bastion for a strong healthcare system, but has been long ignored in the United States and all over the world. There is research evidence on the importance of primary care with emphasis on the value of effective primary care services in the delivery of quality healthcare, improving health outcomes, and to decrease disparities. Primary care can also assist to counteract the debilitating effect of poor economic conditions on health. There is an extant disequilibrium between specialty and primary care. For instance, in the United States in 2008, among 954,224 total medical doctors, there were 784,199 who actively practiced ; and 305,264 were practicing in primary care specialties (32% o the total and 39% of actively practicing physicians) The percentage of specialists is estimated at 60% of all physicians in patient care (33).

The principal aspect in the accelerating number of medical specialists is the development in medical technology. The rapid advances in medical technology have extremely widened the diagnostic and therapeutic preferences at the disposal of physician specialists. A vast majority of patients invariably extricated from financial burdens have reverted to physicians who can make provision of the most sophisticated recent equipment and treatment as well as specialty services which eventually pave the way for continuous specialty development or creation (34). Specialist physicians not only earn substantially greater incomes than primary care physicians, but are also potentially have viable and predictable work hours and embellish expansive prestige among their colleagues and from the general public (35). The ambient of medical education is organized with respect to specialists, and greatly controlled by those who have attained leadership positions by demonstrated ability in narrow scientific or clinical fields, with emphasis on technology-driven procedures and tertiary care settings which invariably discourage the selection of students as primary care specialists (36).

Policy makers and the public at large also portray minimal knowledge of the efficacy of primary care, its effect on individual and population health, and its role for sustainable healthcare delivery. These actualities have resulted in superfluous political commitments and the fragmentation of related sectors (7,37,38).

For sustainable healthcare, the future presents possibilities which include continuation of uncontrolled and opportunistic expansiveness of medical specialization, or an emphasis on rational analysis of its actual status and position in the healthcare spectrum. For instance, modalities needs to be appropriately devised for specific countries and systems to bring into focus the identification of health needs and planning of medical specialization. The appropriate interaction of special and general potentialities is crucial in individual medical practitioner according to his vocation, in the collective medical profession, and in society generally or the public at large. If there is a necessity for medical specialization, it becomes imperative for the existence of good working relationships between specialists and the effective and efficient performance of the entire caring team and the patient himself (39).

Furthermore, there is a requisite information base to identify and quantify healthcare priorities for the establishment and specification of targets (5). Several recent medical graduates are on an uncertain trajectory regarding their career future. Inability or failure to understand and utilize the manpower planning and training potential is debilitating to the unique prospect to better manage medical skills and equitable distribution and provision of sustainable healthcare delivery system and services for the present and future generations.

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