A qualitative study on physicians' perceptions of specialty characteristics

Kwi Hwa Park[1], Soo-Koung Jun[2] and Ie Byung Park[3]

[1]Department of Medical Education, Gachon University College of Medicine, Incheon, [2]Department of Education, Korea National Open University, Seoul, and [3]Department of Internal Medicine, Gachon University College of Medicine, Incheon, Korea

Purpose: There has been limited research on physicians' perceptions of the specialty characteristics that are needed to sustain a successful career in medical specialties in Korea. Medical Specialty Preference Inventory in the United States or SCI59 (specialty choice inventory) in the United Kingdom are implemented to help medical students plan their careers. The purpose of this study was to explore the characteristics of the major specialties in Korea.

Methods: Twelve physicians from different specialties participated in an exploratory study consisting of qualitative interviews about the personal ability and emotional characteristics and job attributes of each specialty. The collected data were analysed with content analysis methods.

Results: Twelve codes were extracted for ability & skill attributes, 23 codes for emotion & attitude attributes, and 12 codes for job attributes. Each specialty shows a different profile in terms of its characteristic attributes.

Conclusion: The findings have implications for the design of career planning programs for medical students.

Key Words: Career development, Medical students, Specialty choice

Introduction

In Korea, medical schools are generally perceived as vocational training institutions for primary care doctors, therefore there has been a lack of concern about career guidance for medical students [1]. Traditionally, medical students have started to consider their career choices and possible specialisations after the National Examination for Medical Practitioners and during their 1 year period of internship.

However, there are several reasons why medical students should start to consider their career choices earlier than before and to continue to do so during their training and initial experiences of practice [2]. Firstly, this is because of continuing discussion in Korea about abolishing the internship system, so that students would be put in a situation in which career choice would take place earlier than before [3]. Secondly, due to increasing competition for access to some specialties, students should be preparing themselves earlier, to be more advantaged through experiences such as doing experimental work and writing research papers, related to the specialty they want to aim for. Thirdly, with the rapid

pace of development in most medical fields, the necessary knowledge and skills required by doctors are changing as well. Therefore, students need to be provided up-to-date information about specialties earlier in their training [1].

Career guidance for medical students has more importance than for other university students in Korea because medical students typically decide to enter medical schools under the influence of parents or other external factors such as job security, high level of income, or high position in society, rather than considering their aptitude or interests about medicine [4]. In addition, as the time to study to be a physician is longer than for other professions and the post-graduation training period of residency is long, medical students have to be serious in choosing their specialties.

According to previous evidence from Korea and elsewhere, choice of specialty after graduation is one of the biggest concerns for medical students, apart from academic achievement, and students would like to have advice or counselling about this issue [2,5,6,7,8]. Gale and Grant [9] found out in a survey that one-third of doctors had ended up in a specialty that was not their first choice, which suggests that making the right initial choice as a student can be problematic. In the study of Chung et al. [1], 84% of medical students reported that they needed career counselling for specialty choice and the students wanted to learn how to choose specialties which were matched to their aptitudes. An et al. [5] found that medical students in the final year needed career counselling programs the most and they valued experiences such as being able to meet seniors who had graduated from the same university and were now working in various medical fields.

From the students' perspective, they need to have information about specialties and they have to know how their aptitudes and interests can match up with the different specialties. However, by themselves students cannot be expected to know enough about what they want and what are their aptitudes and interests, so there is a significant problem of having inadequate information to make good choices [1,10]. Personal interest and aptitude are known to be the most influential factors for students making their specialty choice [11,12,13,14].

One way of guiding students to understand their own interests and aptitudes is to provide educational programs in which they come to understand themselves better, based on psychological testing. In the United States, the Career in Medicine (CiM) program of the American Association of Medical Colleges is well-known, and some medical schools have applied the CiM model into their own school programs [3]. The CiM (http://www.aamc.org/cim) is designed to help students identify career goals; explore specialty and practice options; choose a specialty; and select and apply to residency programs.

CiM uses a four-step career planning model: understanding yourself; exploring options; choosing specialty; and getting into residency. In the step of understanding oneself, it provides four kinds of psychological tests: specialty indecision scale; medical specialty preference inventory (MSPI); physician values in practice scale; and the Myers-Briggs type indicator or Keirsey Temperament Sorter.

The MSPI is an assessment of students' specialty interests to inform their choice of medical specialty [10]. It asks students to consider a comprehensive list of tasks, activities, and experiences that a physician may encounter in practice and to identify their level of interest in each [15]. In the results, students are shown the probabilities of choosing from 16 different medical specialties, based on the student's responses. A similar assessment developed in the United Kingdom is "Sci59," designed by Gale and Grant [9]. It consists of 130 items

and is available to British Medical Association (BMA) members through the "BMA Careers" section of the BMA website (http://bma.org.uk/developing-your-career/foundation -training/psychometric-test). Sci59 suggests to each student the best and worst fitting specialties, according to his/her interests. In the case of the original MSPI items, utilizing literature reviews, expert physician developed items and finally, 18 theoretical components were extracted: complex problems; comprehensive care; diagnostic precision; emergency-critical care; history taking; home health care; immediate results; knowledge of anatomical structures; knowledge of organ systems; laboratory results; palliative care; patient counseling; prevention and education; procedural care; psychological care; reproductive care; social context; and technological in medicine. In the case of Sci59, the original items were developed by in-depth interviews and finally 12 dimensions were extracted: action orientation; academic orientation; minor specialty; detail is crucial; working in teams; working with children; educating patients; coping with uncertainty; independent specialty; need for assertiveness; routine working; and out of hours working. Apart from MSPI and Sci59, we could identify core factors important in choosing specialties from the Physician Values in Practice Scale: prestige, service, autonomy, lifestyle, management, and scholarly pursuits [16].

The current situation in Korea is that there is a lack of career guidance programs such as those which exist in the United States and the United Kingdom [1,3,5]. In order to develop a specialty preference test for the Korean medical system similar to the MSPI or Sci59, there is a need to know the correspondences between students' interests and the characteristics of specialties, in the Korean context. Gale and Grant [9] point out that they started the development of Sci59 with an identification of the core characteristics of specialties, in the

U.K. system. The process of extracting the core characteristics is similar to the approach of analysing competencies in the business and industrial field. This is called "competency modelling" and one method of competency modelling is to identify the required levels of competency which are needed for a position or job (including ability, attitude, and skills) by examining a set of "excellent performers" [17,18].

The purpose of the study reported here is to identify the core characteristics of medical specialties in two categories of the personal attributes and the job attributes in the Korean context and to develop the coding scheme for the further analysis of large in-depth interviews with physicians, using evidence from a group of "excellent performers," who are current physicians in a university hospital, obtained through qualitative interviews.

Subjects and methods

1. Study design

An exploratory study was conducted on the basis of physicians' perceptions of specialty characteristics. In conducting the study, a qualitative approach was followed to obtain the physicians' opinions and views on specialty characteristics. An interview method was used to facilitate open descriptions by the respondents and to uncover themes that the researchers may not have anticipated [19]. Rather than using standardised questions with specified responses as in quantitative research, one-on-one interviews using open-ended questions were used to allow the respondents to reveal their perspectives in their own way and in greater depth [20].

Conceptually, we used two subcategories of specialty characteristics, which were translated into two open-

ended questions for the interviews:

(1) What are the personal attributes that are needed to sustain a successful career in this specialty?

(2) What are the job attributes that medical students should know about before choosing this specialty?

These subcategories are based on the study by Gale and Grant [9]. In the process of construction of the Sci59 test, two subcategories emerged through interviews with physicians: specialty characteristics and personal attributes.

2. Participants

For this study, we selected nine major specialties, and three minor specialties of internal medicine, to make a total of 12 specialties: family medicine, cardiology, endocrinology, gastroenterology, surgery, obstetrics and gynecology, pediatrics, psychiatry, emergency medicine, radiology, anesthesiology, and ophthalmology. This selection is quite similar to the sixteen specialties used in the MSPI test and originally six physicians were involved in developing original items [15]: family medicine, internal medicine, surgery-general, obstetrics and gynecology, pediatrics, psychiatry, emergency medicine, radiology-diagnostic, anesthesiology, dermatology, neurology, orthopedic surgery, otolaryngology, pathology-

anatomical and clinical, physical medicine & rehabilitation, and urology. For the Sci59 test, 59 specialties are included, but the researchers started by doing semi-structured interviews with an initial sample of 10 senior physicians [9].

Twelve participants were recruited by two researchers who work at the same hospital with participating physicians. Each one was active performer in each specialty and was interviewed individually at an office in the hospital. The interview was taken for about 20 to 30 minutes. Following an initial contact by the authors to briefly explain the study, we conducted one to one interviews between September 2014 and February 2015. During each interview, we clearly explained the intentions and the nature of the study before requesting consent from the interviewee. Each interview was audio recorded.

Eight were male doctors and four were female. Their ages ranged from 35 to 59 and the average age was 45.5 years. Seven out of the 12 doctors chose their specialties during their internship period. Four out of 12 chose their specialities during their time in medical school. The basic information about the participants is given in Table 1.

Table 1. Information about the Participants

No.	Specialty	Gender	Age (yr)	When she/he chose her/his specialty
1	Family medicine	Male	40	Internship
2	Cardiology	Male	45	In the 4th year
3	Endocrinology	Male	51	Internship
4	Gastroenterology	Male	49	Internship
5	Surgery	Male	50	Internship
6	Obstetrics and gynecology	Male	42	In the 5th year
7	Pediatrics	Female	36	In the 4th year
8	Psychiatry	Male	42	Before medical college
9	Emergency medicine	Male	45	Residency
10	Radiology	Female	35	Internship
11	Anesthesiology	Female	59	Internship
12	Ophthalmology	Female	52	In the 1st-2nd year period

3. Analysis

The data coming from the interviews were transcribed and analysed by traditional approach of content analysis. To conduct a content analysis, the text should be "coded," that is, broken down into manageable categories on a variety of levels [21]. The first reading was the process in which two independent researchers discussed the analysis procedures and research topic for developing primary keywords emerged from the text. These keywords are supposed to be used as codes for further interviews with large number of physicians. Each researcher performed categorization of emerging keywords independently and the results of two researchers were compared for making one unit of coding scheme.

Results

Initially, 126 keywords (concepts) were identified across twelve specialties and the similar ones were placed in the same low of the EXCEL sheet and then categorized as the same code (Table 2). In this initial grouping, similar keywords were combined, making a final list of 47 codes. The codes were grouped under the two subcategories of job attributes and personal attributes, and the personal attributes were further divided into ability and skill attributes, and emotional and attitude attributes (Fig. 1). Twelve codes were placed under ability and skill attributes, 23 codes were placed under emotional and attitude attributes (Table 3), and 23 codes were placed under job attributes (Table 3).

Fig. 1. The Coding of Medical Specialty Characteristics Derived from the Interviews with Physicians
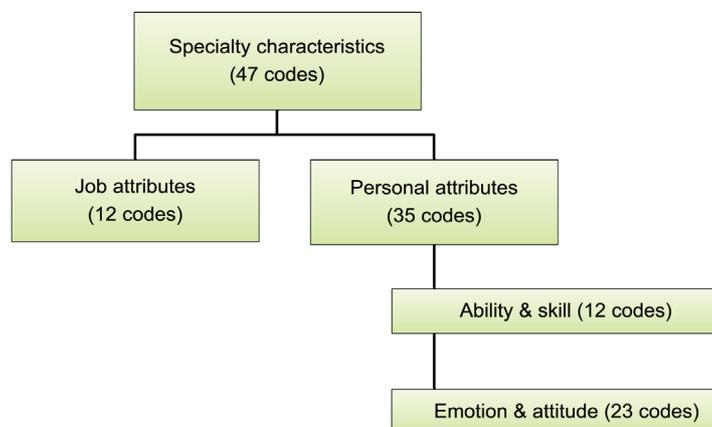
Table 2. Examples of Interview Analysis in This Study

Keyword (concept)	Category-1 (code)	Category-2	Category-3
Communication ability (GIM)	Conversation skill	Ability & skill attribute	Personal attribute
Conversation skill (RA)			
Talking ability with colleague (SU)			
Conversation competency (OG)			
Outgoing (OG)	Outgoing	Emotional & personality attributes	
Extroverted (SU)			
Patient education needed (FM)	Patient education	Job attributes	Job attributes

GIM: Gastroenterology internal medicine, RA: Radiology, SU: Surgery, OG: Obstetrics and gynecology, FM: Family medicine.

1. Ability and skill attributes

Through the interview data analysis and categorisation, 12 items in total were extracted as the ability and skill attributes needed to sustain a successful career in medical specialties. These are conversation skill, coping skill, attention-concentration ability, personal relationship skill, engineering aptitude, decision-making ability, team-working ability, physical strength, hand skill, liberal arts aptitude (writing skill), space perception ability, and memorization ability (Table 3).

2. Emotional and personality attributes

Through interview analysis and categorisation, 23 items were extracted as necessary emotional and personality attributes. These are outgoing, devoted, empathetic, meticulous, quick and accurate, pursuing new things, patient, easygoing, delicate-sensitive, caring for others, strong mental power, responsibilities, introverted, interest in national health management, calm, analytic, active, truthful, enthusiastic, no fear of blood, like to see patients, interest in various fields of health, and expressive (Table 4).

Table 3. Ability and Skill Attributes Reported for Medical Specialties

Attribute[a]	No.	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12
Conversation skill	7	×		×	×		×	×	×		×		
Coping skill	6	×		×	×	×						×	×
Attention-concentration ability	5		×		×		×				×	×	
Personal relationship skill	4	×			×		×			×			
Engineering aptitude	4		×		×						×		×
Decision-making ability	3		×		×					×			
Team-working ability	3				×	×			×				
Physical strength	2		×		×								
Hand skill	2		×		×								
Liberal arts aptitude (writing skill)	1								×				
Space perception ability	1		×										
Memorization ability	1			×									
Total	39			×									

D1: Family medicine, D2: Cardiology internal medicine, D3: Endocrinology internal medicine, D4: Gastroenterology internal medicine, D5: Surgery, D6: Obstetrics and gynecology, D7: Pediatrics, D8: Psychiatry, D9: Emergency medicine, D10: Radiology, D11: Anesthesiology, D12: Ophthalmology.
[a]Attributes are ordered by decreasing commonality across the physicians.

Table 4. Emotional and Personality Attributes Reported for Medical Specialties

Attribute[a]	No.	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12
Outgoing	6		×	×		×	×			×			×
Devoted	4		×		×		×						×
Empathetic	4	×			×			×					×
Meticulous	3			×							×	×	
Quick and accurate	3		×			×				×			
Patient	3									×		×	×

(Continued to the next page)

Table 4. (Continued)

Attribute[a]	No.	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12
Easygoing	3	×					×		×				
Delicate-sensitive	3		×					×				×	
Pursuing new things	2		×							×			
Caring for others	2						×		×				
Strong mental power	2					×							×
Responsibilities	2											×	×
Introverted	2										×	×	
Interests in national health management	2	×		×									
Calm	2				×							×	
Analytic	2			×							×		
Active	2		×										×
Truthful	1												×
Enthusiastic	1						×						
No fear of blood	1					×							
Like to see patients	1									×			
Interest in various fields of health	1	×											
Expressive	1												×
Total	53			×									

D1: Family medicine, D2: Cardiology internal medicine, D3: Endocrinology internal medicine, D4: Gastroenterology internal medicine, D5: Surgery, D6: Obstetrics and gynecology, D7: Pediatrics, D8: Psychiatry, D9: Emergency medicine, D10: Radiology, D11:Anesthesiology, D12: Ophthalmology.
[a]Attributes are ordered by decreasing commonality across the physicians.

Table 5. Job Attributes Reported for Medical Specialties

Attribute[a]	No.	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12
Emergency/intensive care	6		×			×	×			×		×	×
High workload	5		×	×			×		×	×			
Research-related	4		×	×	×						×		
Operation-related	4		×			×	×					×	
Patient education	3	×			×				×				
Difficult to plan holiday	3		×			×	×						
Not to see patients directly	2										×	×	
High risk of medical accident	2					×	×						
High level of difficulty	2		×									×	
Female patients	1						×						
Child patients	1							×					
Mental care	1								×				
Total	34												

D1: Family medicine, D2: Cardiology internal medicine, D3: Endocrinology internal medicine, D4: Gastroenterology internal medicine, D5: Surgery, D6: Obstetrics and gynecology, D7: Pediatrics, D8: Psychiatry, D9: Emergency medicine, D10: Radiology, D11: Anesthesiology, D12: Ophthalmology.
[a]Attributes are ordered by decreasing commonality across the physicians.

3. Job attributes

Through interview analysis and categorisation, 12 items were extracted as the job attributes that are needed to sustain a successful career in medical specialties. These are emergency/intensive care, high workload, research-related, operation-related, patient education (i.e., the physician educating the patient is part of giving treatment), difficult to plan holiday, not to see patients directly, high risk of medical accident, high level of difficulty, female patients, child patients, and mental care (Table 5).

Discussion

As it was expected, seven physicians out of 12 reported that they chose their specialty in the period of internship after obtaining their medical license. This is typical among Korean medical students, who tend to delay their specialty choice until after passing the National Examination for Medical Practitioners.

In this study, 12 specialties were examined from the three angles of ability attributes, personality-emotional attributes, and job attributes. In terms of the first angle, the ability and skill attributes that are needed to sustain a successful career in medical specialties, the results were similar to those obtained by Han [18], with conversation skills, coping skills, and personal relationship skills being the most mentioned by the physicians as common factors important for nearly all specialties. It is evident that those attributes should be basic components of career development programs. An interesting fact is that attention-concentration ability is needed in most specialties and some specialties need it more critically. The teamworking ability is mentioned as important, and the importance of this is increasing in medical fields in

the name of "inter-professional education (IPE)." Although medical faculty members showed much lower scores than nursing faculty members on attitudes about IPE, interprofessional teams and interprofessional learning in an educational setting [22], the importance of it is increasing among physicians. Engineering aptitude including the ability to handle machines or tools is reported as needed in the specialties relating to operations, surgical procedures, or examination through machines. In the case of surgery, nowadays robotic surgery is increasing in Korea [23]. Physical strength and hand skills are mentioned in cardiology internal medicine and surgery. These two specialties have a common attribute in terms of engineering aptitude, so cardiology internal medicine can be regarded as resembling surgical specialties. In the case of endocrinology internal medicine, memorisation ability is a critical attribute. This can be related to two personality attributes of cardiology internal medicine, meticulous and analytic. The reason for this is interpreted as being that endocrinology internal medicine doctors have to analyse numerical values for diabetes and thyroid patients. Regarding surgery, Graham and Deary [24] point out that for surgeons dealing with stress and decision-making ability are considered to be important within the profession, and this study showed similar results.

Outgoing, devoted, and empathetic character attributes are preferred in many specialties. Outgoing is in the same group as quick and accurate, active, and enthusiastic attributes, which are opposed to the introverted, calm, and meticulous character attributes. The specialties that go along with two different character types can be divided into two. Some specialties are outgoing character types, while the others are introverted character types. Specialties where introverted characters are preferred are typically those that do not see patients directly. Davis and Myers [25] report that

psychiatry and anesthesiology are introverted while surgery is outgoing. The specialties that need meticulous characters are opposite to ones needing quick-accurate characters. The latter are cardiology internal medicine, surgery, and emergency medicine, all of which involve emergency/intensive care. Operations and emergency procedures must be quickly done but at the same time accuracy is critical. In the case of family medicine, empathetic and easygoing characters are reported as necessary, as well as being interested in national health management and various fields of health. Molidor [26] reports that family medicine involves caring for others with enthusiasm and devotion, but in this study the respondent did not mention those characteristics. Obstetrics and gynecology and psychiatry require the characters attributes easygoing and caring for others because they should treat patients' emotions with sensitivity. In addition, for psychiatry, the patient attribute is necessary because doctors must be able listen to abnormal patients even though the patients' behaviour may be irrational.

Regarding job attributes, although they are not precisely defined, we could understand the core attributes for each specialty. The attributes of child patient, mental care, female patients, not to see patients directly, and high-risk of medical accidents are particular to certain specialties, while emergency/intensive care and high-workload attributes are common to several specialties.

Even though there are highly-validated tests of specialty choice such as Sci59 in the United Kingdom, and MSPI in the United States, there is a need to develop a Korean career development program and guidance test which takes into account the country's cultural meanings and values. For example, Chandratilake et al. [27] argue that 'altruism' is an essential element for Asian doctors, reflecting the collectivist nature of Asian culture, com-

pared with the individualist nature of Western culture. In Korea, obedience to authority or elderly people has been central to collectivism. Collectivism means that members of a society are included into groups and they follow the values and expectations of the group. However, due to the influx of Western culture of rationalism and individualism, young Korean physicians feel it is more difficult to engage with their elderly patients [28], and to devote oneself to specialty training which requires obedience to senior staff. For these reasons it is important that career guidance reflects the prevailing culture.

Career choice after graduation is one of the most important decisions faced by medical students and career indecision may cause anxiety and stress to students [29]. This study is significant because it is the first part of comprehensive research on specialty characteristics to inform career guidance programs for medical students. However, in this stage, this study has a limitation as the number of physicians reported on their each specialty was only one. Therefore, in this study, we focused on extracting the personal attributes and job attributes that are considered as necessary to sustain medical careers successfully and developing the list of codes for further large number of interviews and survey with self-administered questionnaires. Nevertheless, it is interesting that we could be informed about the similarities and differences among specialties, discussed in this section.

To develop a medical specialty career choice scale like Sci59 or MSPI, the next stage will be to strength the core characteristics of different specialty careers with large number of interviews with more than 50 physicians. Then, to test completeness and balance of the findings, the national survey of more than 200 physicians will be followed. From this national survey, discriminating factors of specialties will be analyzed and draft of career choice test could be made. From then, some stages for

standardization of the test will be followed.

With the information gained from this study, the researchers will go further to perform a large interviews and questionnaire-based study of Korean physicians working in a complete range of specialties in order to test and develop the initial categorisations (coding scheme) of ability, emotional and personality, and job attributes which pertain to medical specialties as they are practiced in Korea.

ORCID: Kwi Hwa Park: http://orcid.org/0000-0002-0008-2400; Soo-Koung Jun: http://orcid.org/0000-0002-0456-2436; Ie Byung Park: http://orcid.org/0000-0003-0194-1665

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