

# Clinical Elective Choices and Motivations for Future Career Specialty Selection of Medical School Trainees and Junior Doctors of the University of the West Indies, Jamaica

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## Abstract

**Background:** Clinical electives provide opportunities toward future careers. This study aimed to examine whether students at the University of the West Indies used clinical electives to help with specialization choice and determine factors that influence trainee decisions for specialty training. **Methods:** A cross-sectional prospective study was conducted between July 2019 and March 2020, at The University of the West Indies and the University Hospital of the West Indies involving senior medical students and junior doctors. Paper questionnaires were administered using convenience sampling. Participants voluntarily agreed and were kept anonymous. **Results:** 193 participants, aged 20 to 35 years, completed the questionnaire 133 (68.9%) females. Preferred electives were internal medicine specialties (80, 41.5%), then surgical specialties (53, 27.5%). Sixty-four (33.2%) participants reported using electives to gain experience for their future career; other reasons included filling knowledge gaps (101, 52.3%) and repeating failed clerkships (19, 9.8%). Career preferences included surgery (75, 40.8%), internal medicine (41, 22.3%), anesthetics (20, 10.4%), and obstetrics & gynecology (18, 9.3%). Males showed preference for surgical specialties ( $p=0.002$ ). Elective choice for determining career path significantly correlated with future likely specialty choice (likelihood ratio chi-square test (32)=98.37,  $p<0.001$ ). Motivational factors that correlated significantly with future likely specialty choices were intellectual challenge ( $p=0.025$ ), income ( $p=0.010$ ), prestige ( $p=0.015$ ) and working hours ( $p=0.012$ ). **Conclusions:** Of the participants surveyed, only 33.2% used clinical electives for their intended purpose of informing future career paths. Surgical specialties were the top selections for postgraduate training and intellectual challenge was the top motivational factor.

**Key Words:** Electives; Medical students; Career choices; Medical specialty (Source: MeSH-NLM).

## Introduction

Medical students and interns are faced with life changing decisions about their future career path as they approach the final stages of their training and these decisions are often uninformed.<sup>1,2</sup> For medical students trained in the Caribbean, future specialty considerations have only been reported for students in the first year of training;<sup>3</sup> however specialty choices are more informed by clinical year experiences.<sup>4</sup> The medical school curriculum of The University of the West Indies (UWI) is a programme with three pre-clinical and two clinical years of training. During the clinical years, students are required to complete two separate clinical elective periods; in the fourth year, they can do a three-to-five-week rotation and in the fifth year

they have a five-week rotation, both times in areas of their choice. These clinical electives were designed primarily to allow the students in their clinical years of training a chance to spend time in a specialty area that would help to better inform their selection of future career paths.<sup>5</sup> The primary purpose of this study was to examine whether the clinical electives were being used as intended that is to help with specialization choice and to determine the factors that influence trainee decisions for specialty training at The UWI.

Cross-sectional surveys studies conducted among final year undergraduate medical students confirmed that clinical electives designed to provide specialty exposure were rated as positively

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influencing their career path decisions.<sup>6,7</sup> Similar findings were reported in a systematic review of twenty studies involving pre-clinical and clinical students, as well as interns from medical schools in the United States of America, United Kingdom, Poland, Switzerland and Australia.<sup>8</sup> Understanding the motivational factors that influence the career path decisions are also important as this information could be used by the university and health policy makers to make specialties that are underrated and require more doctors, more appealing. Previous studies that surveyed medical students in their senior years and interns suggest prestige, perceived quality of life and anticipated income are common considerations among these trainees in both developed and developing countries.<sup>9-14</sup> For example, the study by Alshahrani et al<sup>11</sup> reported that in a sample of 379 participants, 44.7% of the participants were influenced by lifestyle in making their career choice.

Although clinical electives designed to influence future career paths have been integral to the curriculum of the medical school at The UWI for more than twenty years, a search of the literature did not reveal any study evaluating their relevance in future career path decisions. There were also no studies examining the future career choices in this population of students. Our study aimed to address this dearth of information and may be important to support alignment of specialty training with the needs of the Caribbean. We designed a questionnaire for medical students and junior doctors to identify their elective choices, decisions surrounding future career paths and the motivating factors influencing these decisions of students trained at this institution.

## Methods

This was a cross-sectional questionnaire study using convenience sampling conducted at The UWI and the University Hospital of the West Indies (UHWI), Mona Campus. The enrollees were students in the clinical years of their programme (years 4 and 5), junior medical doctors within the first year (interns) and second year (Senior House Officers, SHO) following graduation from medical school. Senior House Officers are medical doctors who remain in hospital after the internship period, and this work period is a requirement for any medical doctor trained at The UWI intending on pursuing specialty training at The UWI. Recruitment took place from July 2019 to March 2020. Data from a similar study was used to calculate the sample size required. Alshahrani et al<sup>11</sup> reported that in a sample of three hundred and seventy-nine participants, 44.7% of the participants were influenced by lifestyle in making their career choice. Using this data, a required sample size of two hundred and thirty-eight was calculated as we hypothesized that 50% of our sample will select lifestyle as their main motivation for career choice. This was done at a 95% confidence interval level and beta error of 50%.

In order to get proportions reflective of the population, stratified sampling was used to determine the number of medical students, interns and SHOs that needed to be recruited. There are

approximately 500 medical students in fourth and fifth year, forty interns and forty SHOs. Using corresponding proportions and calculated sample size, the aim was to recruit two hundred and six medical students, sixteen interns and sixteen SHOs. Clinical rotations were suspended in March 2020, which restricted the sampling process.

Ethical approval was obtained from the UWI Ethics Committee (ECP 146,18/19) and informed consent was obtained prior to the completion of the questionnaire. The Deans office and the University Hospital's human resources department were asked to send out emails to inform the participant of the study. The different location of classes and meeting points were determined for the medical students. The information about the interns and SHOs location was obtained from the hospital human resources department.

Medical students were asked to complete the questionnaire before and after class times by the research assistant. The research assistant stood at the door and handed out and collected the questionnaires which were only given to students who agreed to be part of the study. The SHOs and interns were approached based on their work schedule and the questionnaires were completed and collected at the same time. The questionnaire consisted of two pages and included demographic items, last elective choice (this elective was chosen to reduce errors from recall bias) and questions asking participants to choose one specialty from a list of twenty-three for postgraduate training. This included nine surgery specialties (Cardiac, General, Neurosurgery, Orthopedics, Ophthalmology, Plastic, Anesthesiology, Thoracic and Urology), six internal medicine specialties (Dermatology, Family, Gerontology, Pediatrics, Rheumatology and Sports Medicine), Intensive Care Medicine, Emergency Medicine, Obstetrics and Gynecology, Medical Administration, Psychiatry, Public Health Medicine, Rehabilitation Medicine and Radiology.

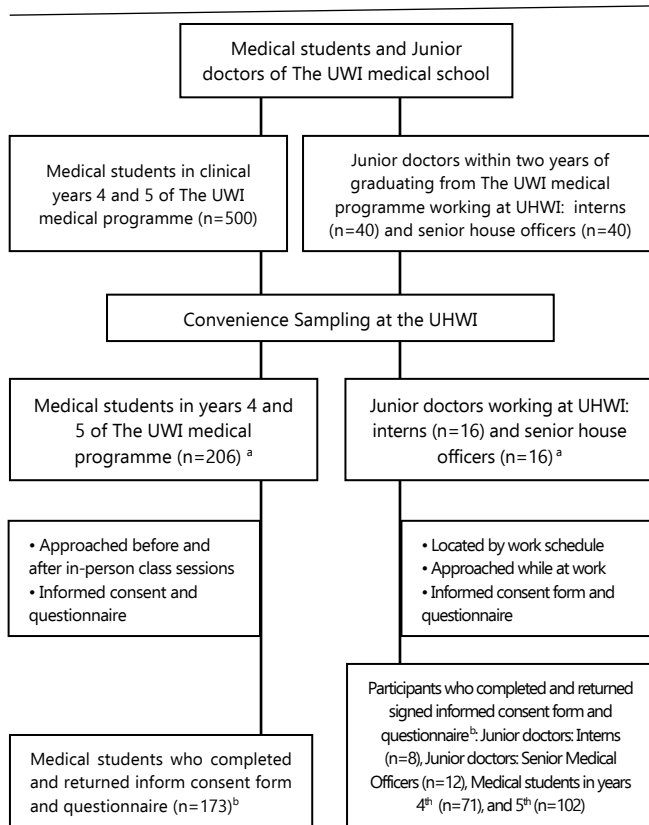
Each participant was given the opportunity to select three main reasons from a list of eleven career motivation factors for selecting that specialty for postgraduate training. For data analysis, these were grouped into career motivation factors of four intrinsic (described as enjoyment of and interest in professional activity): personal interest, role models, intellectual challenge and elective experience, four extrinsic (described as striving for promotion income or prestige): lifestyle, income, prestige and family influence, and three extraprofessional concerns: patient contact, working hours and job security. The questionnaire also delved into whether students wished to do post graduate studies and as well as where they wished to specialize. This included The UWI and common locations of interest in Caribbean students- United Kingdom, United States of America and Australia. Students were also given the option to state any other places they wish to specialize.

Data was analyzed with Statistical Package for Social Sciences (SPSS) software version 20. Correlation analysis was done to determine if there was any association between demographical data and specialty choice and motivational factors. Categorical variables were expressed as percentages; age of participants presented as median and range. Correlation between categorical variables was examined by chi-square test ( $\chi^2$ ); specifically, likelihood ratio chi-square test when the expected counts were below the amount required for Pearson's  $\chi^2$ . Differences between sexes used fisher's exact test. Statistical significance was recognized at  $p \leq 0.05$ .

## Results

**Table 1** shows demographic of the participants and information about their elective choices. One hundred and ninety-three medical students and doctors responded to the questionnaire. This included fourth year medical students (71, 36.8%), fifth year students (102, 52.8%), interns (8, 4.1%) and SHOs (12, 6.2%). One hundred and thirty-three (68.9%) of the respondents were female and the median age was twenty-three years old (range 20 to 35). Most of the participants were nationals of Caribbean islands with Jamaicans being the majority (144, 74.6%). The study was terminated due to the COVID-19 pandemic, with one hundred and seventy-three medical students (89.6%) and twenty junior doctors (10.4%) of the projected samples size (**Figure 1**).

**Figure 1.** Sampling Flow Chart.



**Legend:** <sup>a</sup>, Sample size calculated using Alshahrani et al.<sup>7</sup> <sup>b</sup>, Study terminated in March 2020 with the suspension of clinical rotations.

**Table 1.** Last elective experience and reasons given by students and junior doctors for selection (n=193).

Characteristics	n (%)
Age in years, Median (range)	23 (20-35)
Gender	
Male	8 (26.7)
Female	163 (73.3)
Country of Nationality(missing data for 3)	
Caribbean Islands: Jamaica(144),Trinidad and Tobago (25), Barbados (5), St Kitts and Nevis (4), British Virgin Islands (2), Bahamas (1), Dominica (1), Cayman Islands (1), St Vincent and the Grenadines (1), Belize (1)	185 (97.4)
Other Countries: United States of America (2), United Kingdom (1), Canada (1), Nigeria (1)	5 (2.6)
Elective Specialty	
Internal medicine & Subspecialties: Pediatrics (9), Hematology (5), Cardiology (2), Infectious diseases (2), Pulmonary (1), Dermatology (1)	80 (41.5)
Surgery & Subspecialties: Orthopedic (7), Ophthalmology (2), Urology (2), Neurosurgery (2), Pediatric surgery (2), Plastic surgery (2), Cardiothoracic (1)	53 (27.5)
Combination electives: Internal medicine/Surgery (13), Internal medicine/Pathology (2), Internal medicine/Emergency medicine (2), Surgery/Pathology (1), Surgery/Radiology (1)	19 (9.8)
Laboratory Medicine: Pathology (9), Microbiology (4)	13 (6.7)
Community Health/Psychiatry	7 (3.6)
Emergency Medicine	7 (3.6)
Anesthesiology	5 (2.6)
Obstetrics/Gynecology	4 (2.1)
Radiology	3 (1.6)
Independent study	1 (0.5)
Specialty not reported	1(0.5)
Reasons for selecting elective, n (%)	
To fill knowledge gap	101 (52.3)
Experience for future career path	64 (33.2)
To repeat failed clerkship	19 (9.8)
Little effort required	6 (3.1)
Other	3 (1.6)

The questionnaire asked participants to indicate the specialty selected for the last elective completed. Some participants reported a single elective experience that combined two specialties. The most common specialty elective completed by participants were internal medicine and its subspecialties (80, 41.5%), followed by surgery and its subspecialties (53, 27.5%) (**Table 1**). Only sixty-four (33.2%) of the participants reported electives being used as intended; that is, to gain experiences for future career path. Most participants used elective experiences to fill knowledge gap (101, 52.3%), followed by to repeat failed clerkship (19, 9.8%). Other reasons for selecting the elective

choice were preparation for United States Medical Licensing Examination (USMLE) (2,1.1%) and no choice due to administrative reasons (1,0.5%).

Only one hundred and eighty-four (95.3%) participants completed this second section of the questionnaire. There was a greater preference for the specialties of Surgery (75, 40.8%), Internal Medicine (41, 22.3%), Anesthetics (20, 10.4%) and

Obstetrics/Gynecology (18, 9.3%). Analysis between sexes showed that had a preference for surgical specialties (Fisher's exact test  $p=0.002$ , **Table 2**). When the participants were divided by reason for the elective specialty choice, only those that used the elective to future career path exposure showed significant correlation with specialty choice (likelihood ratio  $\chi^2(32)= 98.37$ ,  $p<0.001$ ). There was a significant association between specialty choices and sex (likelihood ratio  $\chi^2(4)= 10.89$ ,  $p=0.028$ , **Table 3**).

**Table 2.** Choice of specialty for postgraduate training based on sex (n=184; missing data for 9 participants).

Specialty Choice	n (%)	Male (n=59)	Female (n=125)	Fisher's exact p
Surgery: Orthopedic surgery (25), General surgery (14), Ophthalmology (10), Plastic surgery (7), Urology (6), Cardiac surgery (5), Neurosurgery (2), Thoracic surgery (2), Cardiothoracic surgery (5) Otolaryngology (2), Traumatology (1)	75 (40.8)	34	41	0.002*
Internal medicine: Pediatrics (14), Internal medicine (3), Dermatology (9), Family medicine (8), Rheumatology (3), Sports medicine (2), Cardiology (1), Nephrology (1), Pulmonary (1)	41(21.2)	9	32	0.132
Anesthesiology/Intensive Care	20(10.9)	5	15	0.187
Obstetrics/Gynecology	18(9.8)	3	15	0.614
Other Specialties: Emergency medicine (9), Public Health (4), Radiology (6), Psychiatry (3), Pathology (2), Medical administration (1)	30 (16.3)	8	22	0.530

**Legend:** \* Significant deference between gender.

**Table 3.** Association of elective specialty with future career path across reason for choice of elective.

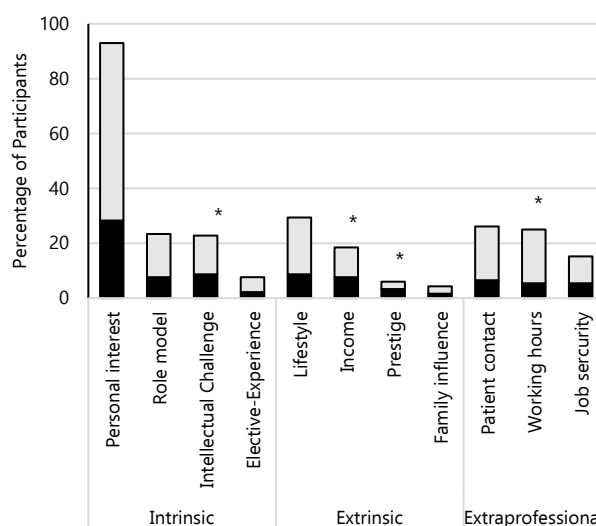
Reason for choice of elective	Likelihood ratio $\chi^2$	df	p
To fill knowledge gap	28.45	24	0.242
Experience for future career path	98.37	32	<0.0001*
To repeat failed clerkship	14.12	20	0.824
Little effort required	12.14	10	0.276
Other	3.82	2	0.148

**Legend:** df: degrees of freedom; \* significant correlation between elective specialty and future career choice.

The location of future study was also assessed. The UWI has three campuses for graduate training within the Caribbean region, Jamaica, Barbados and Trinidad. Ninety (48.9%) participants indicated where they would complete future postgraduate studies; ninety-nine (53.8%) participants were undecided. For those with international preference, the top three choices were schools in the United States of America (28, 51.9%) the United Kingdom (20, 37%) and Canada (4,7.4%).

The questionnaire explored future career path motivation factors for participants' choice of a particular specialty. Participants were asked to select 3 out of 11 career motivation factors; 499 selections were made (**Figure 2**). Personal interest, an intrinsic motivation was the main factor (171/270, 92.9%), followed by

**Figure 2.** Career motivation factors for Specialty choice (n=184) represented by male (black portion) and female (grey portion) of each bar.



**Legend:** Each participant was required to select three choices, a total of 499 choices were made. Motivational factors were group into intrinsic (n=270), extrinsic (n=107) and extra-professional (122). Likelihood ratio  $\chi^2$  analysis showed significant association with between specialty choice and intellectual challenge (11.12,  $p=0.025$ ), income (13.18,  $p=0.010$ ), prestige (12.27,  $p=0.015$ ) and working hours (12.79,  $p=0.012$ ); degrees of freedom=4. Likelihood ratio  $\chi^2$  analysis showed significant association with between gender and selection of at least one extra-professional motivation (5.95,  $p=0.015$ ).

lifestyle, an extrinsic motivation (54/107, 29.3%) and patient contact, an extra-professional motivation (48/122, 26.1%) were the main factor selected. Likelihood ratio  $\chi^2$  analysis (degrees of freedom=4) identified statistically significant association between specialty choice and income (13.18,  $p=0.010$ ), prestige (12.27,  $p=0.015$ ), working hours (12.79,  $p=0.012$ ) and intellectual challenge (11.12,  $p=0.025$ ). When motivational factors were grouped as intrinsic, extrinsic and extraprofessional concerns, there was a significant association between sex and selection of extra-professional concerns (5.95,  $p=0.015$ ) with 27 (45.7%) of males and 81(64.8%) of females selecting at least one extra-professional concern (patient contact, working hours and job security); no sex association was identified for intrinsic or extrinsic career motivations. For the seventy-five participants who chose surgical specialties for future career path, assessment of the motivational factors by sex showed no association with intrinsic, extrinsic or extra-professional concerns.

## Discussion

The participation of senior medical students in electives focused on improving transition to specialty training is an aspect of the curriculum of many medical schools worldwide; however, the successes reported with achieving this objective vary.<sup>7-8</sup> To our knowledge, this is the first study to report on the usefulness of the clinical elective to medical school trainees and junior doctors trained in the Caribbean.

This convenience sampling study carried out at The University of the West Indies, Jamaica medical school revealed that the majority of the participants chose to spend their elective time in internal medicine and the relevant subspecialties, followed by surgery and relevant subspecialties. Most of the participants used the elective to support educational deficiencies, rather than exploring future career paths. Only about thirty percent of the students used the chosen elective as it was intended, that is, to experience an area for possible postgraduate training. Furthermore, the selected future career choices by participants using electives as intended showed significant correlation. Thus, the objectives can be achieved, but there is a need for interventions to support the choice students make.

This study examined the choice of future career path: Surgical specialties was the most selected career path followed by Internal Medicine with both representing more than sixty percent of the group. These two specialties feature in the top five choices among medical students in their clinical training years worldwide<sup>9-18</sup> and thus our participants are showing similar preferences. Intrinsic motivations were the most common factors influencing for future career paths with personal interest being the top choice, which is consistent with other reports involving clinical medical students.<sup>16-19</sup> There was a noted correlation between specialty choice and income, prestige, and working hours; these findings are consistent with the recently published meta-analysis study of Yang et al of seventy-five cross-sectional studies, which included medical students from North America, Europe, Asia,

Oceania, Africa and South America.<sup>21</sup> However, Yang et al did not report intellectual challenges as a significant motivator of career selection, which was a finding among the participants of this study. The importance of this motivation among our students is an interesting finding and needs to be explored.

Studies among medical students in their senior clinical years of training have shown sex influences the choice of future career paths. Further analysis of the specialty preference of our sample, identified a significantly greater percentage of males selecting surgical specialty than females. We did not set out to stratify sampling by sex; however, the proportion of males to females does align with reports of McCartney et al of our Medical school.<sup>22</sup> Although our study is limited in sample size and sampling method, the finding is consistent with a large cross-sectional study of similar medical students in eleven Latin American countries, which showed that female students were less likely to select surgical specialty as a future career path with the exception of Pediatric surgery.<sup>23</sup> In reviews of sex difference among medical student selection of future career paths, the evidence that more females are represented in the medical profession than males is a worldwide trend and their interest in surgical specialties is known to be impacted by sex-bias discrimination, including lack of encouragement by the medical schools and extra-professional concerns as deterrents, including the need to balance having children and family life.<sup>24-26</sup> We identified an association by sex with the extra-professional concerns with more females selecting these motivational factors (job security, patient contact and working hours) for their future career path, other studies have highlighted these as important for female medical student decisions.<sup>10, 27</sup> We did not find any sex-based association with motivational factors for participants who selected surgical specialties and therefore unable to posit a reason for the greater representation of males. An assessment of deterrents to this career path should be considered in future studies among this population of medical students.

Overall, the study identified that less than half of the students were using electives to decide career paths; however, to improve alignment with the intended objectives, interventions are required. Several examples of successful mentorship models have been reported for other medical schools.<sup>29,30</sup> In a systematic review of medical schools in the United States of America, thirty published studies which satisfied the inclusion criteria, suggested that both single mentor-mentee and group mentorship models improved matching of medical students with specialty training.<sup>30</sup>

## Limitations

Convenience sampling restricts the generalizability of the study. Possible bias could have been formed given not all eligible medical students and junior doctors participated in this study. All students are required to complete two electives before graduating; as the study was done among fourth year medical students who would have only completed one elective and junior doctors, who would have completed these electives more than



one year before the study, the questionnaire was restricted to the last elective completed to reduce the possible errors with recall bias. The possible influence of first elective choices on the second elective choices of participants, was not assessed in this study. Moreover, on review of the questionnaires, we found nine students who did not complete questions regarding their single choice of specialty, the three main reasons for their choice of specialty, where they planned on specializing and where they would choose to study if they planned on studying abroad. The projected sample size was not attained, mainly as a result of the *Coronavirus* pandemic which suspended all clinical rotations in March 2020.

### Conclusions

This is the first study reporting on the use of the clinical elective rotations in the setting of a Caribbean Medical School. The study

suggested that when used as was intended, the elective may support the future career path selection of medical students. The areas of choice for future career paths were surgical specialties followed by internal medicine specialties with males more likely to select the former specialty. Personal interest was the motivational factor for most participants' specialty selection, specialties preferred by most females related to their extra-professional motivations. The finding does provide evidence that intervention is needed to ensure objectives of elective rotations are met and for career counseling to be instituted in order to advise senior medical students and junior doctors of their options for postgraduate training.

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