

“Career choice and perceived destination for pre-vocational medical trainees”

Background

Pre-vocational medical trainee career choices are important to understand as they are key determinants for the future medical workforce. How the medical trainees choose their intended career impacts on how, where, and when medical care will be delivered in the future. Therefore having insights into the underlying factors which influence these choices and when these choices occur has important implications for workforce planning and policy development.

Research from the UK and Australia suggests that only a minority of medical students would have decided on a specialist training program by the end of medical school [1, 2]. A major Australian survey of doctors in specialist training showed that the majority of medical graduates choose their career path during PGY1 and PGY2[3]. These studies emphasise the importance of identifying and understanding the chronology of when choice occurs.

Further there is no doubt that the choice of medical specialty is a multifactorial process which has been shown to be influenced by intrinsic factors such as *“appraisal of own skills and aptitudes”*, *“intellectual content of speciality”*, *“interest in helping people”* as well as extrinsic factors which includes *“work experience”*, *“work place culture”* and *“ability to work flexible hours”* to mention a few [3, 4]. Adding to the complexity of the decision making process there are additional factors which appear important to medical trainees who choose the less popular speciality programs such as General Practice including positive student experiences in General Practice, rural background of the individual and gender [1].

While there is a substantive body of international literature about medical graduates’ career choices, the available literature from Australia is limited and calls for further exploration to expand on the current body of knowledge as was highlighted by the work of Harris et al. (2005)[3].

Our study aims to add to the current Australian body of knowledge relating to specialty decision making processes in pre-vocational medical trainees to gain an in-depth understanding of the chronicity and the factors driving the decision making processes during that critical pre-vocational period. This was achieved by the further development and refinement of an survey tool recently

developed in a unpublished pilot study for medical students from Monash University as well as synthesis of the available literature from Australia and international research groups to further improve the pilot survey tool to capture both intrinsic and extrinsic factors which influence career choice in pre-vocational trainees in the Victorian hospital setting, with the view to extending the study to conduct a national survey. The current study had multiple aims; we aimed to establish when career choice/decision takes place in pre-vocational medical trainees, identify the key intrinsic and extrinsic factors which shape career choice, and lastly identify career choice preferences across all medical specialisations.

This study has implications for workforce planning and policy as our results will further expand on the previous literature to provide evidence about factors amenable to change as well as identifying when interventions could be put in place to improve uptake into the less popular specialties. These factors are pivotal to addressing the current maldistribution of medical professionals across the specialties.

Methods

Recruitment and participants

PGYs were recruited at seven Victorian hospitals, including both metropolitan and regional hospitals. Participants were invited to participate via a standard email sent by the hospital nominees. The email included a link to the online questionnaire. Reminder emails were sent twice after the initial recruitment email to increase participant uptake. Participants were eligible to be included in the study if they were PGY 1, 2 and 3s. No other exclusion or inclusion criteria applied.

Questionnaire development

The questionnaire employed in the current study is based on a validated questionnaire addressing speciality choices of medical graduates [3], a review of local and international literature on the topic as well as a questionnaire employed in pilot project which assessed vocational choices in undergraduate medical students at Monash University, Victoria. The questionnaire consisted of 36 items which consisted of rating scale, multiple choice and some free text options (see attachment 1).

The questionnaire underwent validation through an iterative process of testing and feedback from both the target group (prevocational medical trainees), experts in the field and academic staff prior

to conversion of the paper-based questionnaire to an electronic medium (Qualitrix) after which the online version was tested for usability by the research team and academic staff.

Statistical analysis

Descriptive analysis of the outcomes was conducted using MS Excel 2010. The data analysis plan was to conduct regression analysis; however participant uptake of the survey was insufficient resulting in small sample size which did not meet the assumptions of the analytical framework originally planned.

Ethical Approval

Ethical approval was obtained from Monash University (MUHREC Approval CF15/1057 - 2015000495) and approvals from 7 hospitals were obtained (details available on application).

Results

Participant Characteristics

113 respondents consented to participate in the study, with 106 completing the online questionnaire. The average age of participants was $Mean=27.1$ years of age, $SD=4.13$ years. As often observed in research, a larger proportion of females (68.86%) responded to the survey relative to males (31.13%). 25% of our sample reported having lived rurally more than five consecutive years in Australia, 3.8% reported having lived in rural areas overseas, and 70.8% reported being from metropolitan areas. There were no respondents from Aboriginal or Torres Strait islander background, however, the main proportion of respondents were Australian citizens from Victoria as reflected in Table 1.

Table 1

Question	Percentage
Gender	
Male	31.1
Place of birth	
NSW	9.6
Vic	74.7
QLD	2.4
SA	3.6
WA	2.4
TAS	3.6
NT	3.6
ACT	0.0
Other	0.0

Marital status	
Single	50.9
living with partner	49.1
divorced	0.0
widowed	0.0
Citizenship	
AU citizen	85.8
Permanent resident	6.6
Temporary resident	7.5
Lived in Rural setting more than 5 Years?	
yes, rural Australia	25.5
Yes, rural other country	3.8
no	70.8

Training and work background

Respondents were asked to indicate their current work setting and results suggested 23.6% were working in either urban centres (urban centres are identified as Newcastle, Geelong, Wollongong and the Gold Coast or similar) or in a rural setting [3]. However, not surprisingly the vast majority (76.4%) were working in metropolitan areas such as Melbourne or Sydney.

In the sample 41.5% were PGY 1, 35.8% were PGY2, 19.8% were PGY3, and only 2.8 % indicated to be at a later stage of their vocational training. There was also a small percentage of PGY4's that completed the survey. Of these participants many had completed their MBBS at a Melbourne based university (87.7%) and remaining participants had completed their medical degree at universities around Australia (10.4%) and internationally (1.9%). 61.3 % indicated that they held additional tertiary qualifications over and above their medical degree and of those 92% indicated that the additional qualification was at Bachelor level. Moreover, 12.3 % reported having masters or doctoral qualifications in addition to their Bachelor and 19.8% indicated they were currently undertaking further studies in addition to their prevocational training.

Satisfaction with current prevocational training program

Respondents were asked whether or not they had a designated supervisor and the majority (61.9%) indicated they did have a supervisor, however, 28.9% reported they did not have a formal supervisor and 9.3% did not know whether or not they had a supervisor. Most respondents reported receiving training from predominantly senior registrars (n=83), registrars (n=63) and consultants

(n=75). In terms of satisfaction with current education and training program respondents were asked to rate their level of satisfaction on a 5-point Likert scale (0=not satisfied-4=very satisfied) results are presented in Table 2.

Participants were also provided with free text options to add comments relating to their levels of satisfaction with a number commenting on the lack of time for educational activities;

“As an HMO there is no teaching or time for teaching in O&G. Residents are expected to learn without training and just know without guidance”

Disconcertingly, some reported systemic problems with unprofessionalism and bullying as highlighted by the following respondent;

“The most dissatisfying is the frustrations with the hospital system, the unprofessionalism/bullying you encounter every day as a junior team member.”

In addition, inappropriate use of junior doctors and inadequate teaching and learning opportunities was a cause for significant dissatisfaction;

“Protected teaching” is a joke - almost always paged/called from every session for 'urgent' non urgent ward jobs, many education sessions are run by nursing staff for JMO's which is a different role/mindset, lots of fear of litigation often limits 'on job' training, overworked junior staff given NO theatre time or placed in inappropriate venues for teaching”

“There is always a lot of noise made about how much education is done and how important it is. However the reality is you always end up working so much that what little education there is, you often struggle to get to or will almost certainly be interrupted. Another issue is the quality of the education session is often not great.”

Furthermore, difficulties obtaining career advice and dealing with the Colleges;

“I think for people hoping to go into anaesthetics training it is very difficult to get any formal or informal advice regarding career guidance until you do a rotation in anaesthetics”.

Table 2

	Not satisfied %	Somewhat dissatisfied %	Neutral %	Somewhat satisfied %	Very satisfied %	Not applicable %
Formal supervision	4.1	17.5	27.8	34.0	12.4	4.1
Access to formal educational activities	2.1	19.6	24.7	39.2	12.4	2.1

Quality of formal educational activities	1.0	14.4	23.7	38.1	18.6	4.1
Time to participate in formal educational activities	7.2	33.0	23.7	25.8	8.2	2.1
Support to participate in formal educational activities	2.1	20.6	29.9	33.0	12.4	2.1
Opportunity to develop procedural skills	4.2	15.6	21.9	38.5	16.7	3.1
Time to develop skills in areas such as research and/or teaching relevant to your career development	13.4	27.8	25.8	23.7	6.2	3.1
Support to develop skills in areas such as research and/or teaching relevant to your career development	10.4	27.1	27.1	19.8	8.3	7.3
Taking everything into consideration, how satisfied are you with the training that you are receiving	3.1	17.7	14.6	44.8	16.7	3.1

Intended choice of speciality

Respondents were asked to indicate their desired choice of medical speciality and 26.1% indicated they were intending to pursue a career in General Practice and 73.9% indicated that they wished to pursue other medical speciality programs.

In terms of choice of speciality, respondents were asked to indicate which area/s they might wish to pursue and the outcomes are highlighted in Table 3. It is important to note that of the 87 respondents who completed the question 37.9% indicated more than two preferences for medical speciality, however this proportion was higher in PGY1 respondents (52.9%), followed by PGY2 where 37.1% indicated they had 2 or more specializations in mind and lastly only 15.8 % of PGY 3 or higher indicated they were not sure of their specialization pathway, suggesting a clear refinement of specialization choices as prevocational training progresses. The most popular specialization was General Practice (35.6%), internal medicine (28.7%), followed by emergency medicine (20.7%) and obstetrics and gynaecology as well as surgery (16.1% respectively).

Moreover, very few respondents (6.3%) indicated that they were enrolled in the rural pathway or were undecided (4.2%) whether or not a rural pathway would be of interest.

Table 3

Specialty	Percentage of overall sample
Internal Medicine	28.7
Paediatrics and Child Health	13.8
Occupational Medicine	0
Palliative Medicine	5.7
Public Health Medicine	5.7
Rehabilitation Medicine	0
Anaesthesia	9.2
Dermatology	10.6
Emergency Medicine	20.7
General Practice	35.6
Intensive Care Medicine	9.2
Paediatric Intensive Care Medicine	0
Medical Administration	1.1
Obstetrics & Gynaecology	16.1
Ophthalmology	1.1
Pathology	1.1
Psychiatry	5.7
Radiology	4.6
Surgery	16.1
Other Specialist Training Program	3.4

Factors influencing choice of speciality

Using a Likert rating scale (0=Not at all important-4=Very important) respondents were asked to rate which factors influenced their choice of discipline (Table 4). Three intrinsic factors emerged as the predominant drivers for choice of speciality across the sample; intellectual content of the specialty, appraisal of own skills/aptitudes and interest in helping people.

There were, however, some gender differences in terms of the reported influence of factors, for example 86.6 % female respondents rated “Interest in helping” and 77.6 % “type of patient” as highly influential compared to 68.8% and 59.4% of male respondents respectively. Likewise, females rated “atmosphere/work culture typical of the discipline” as highly influential (88.1%) compared to 71.9% of males, whereas males were more likely to rate “perceived career advancement prospects” as important (50%) relative to women (31.3%) as highlighted in Table 4a. Interestingly, there did not appear to be large differences in terms of flexibility of work across genders which departs from previous literature whereas females appeared to be more concerned with the duration of the training program than did males [3] as highlighted in Table 4b.

Table 3a

Factors influencing choice of speciality						
<i>Extrinsic factors</i>	Not at all important	Not very important	Neutral	Somewhat important	Very important	Total rating factor as influential (i.e. "somewhat important" and "very important")
Atmosphere/work culture typical of the discipline	1.0%	7.0%	9.1%	35.4%	47.5%	83%
Influence of consultants/mentors	5.1%	6.1%	13.1%	44.4%	31.3%	76%
Opportunity to work flexible hours	10.1%	4.0%	11.1%	43.4%	31.3%	75%
Type of patients typical of the discipline	3.0%	4.0%	21.2%	45.5%	26.3%	72%
Experience of specialty as a medical student	4.1%	6.1%	22.4%	33.7%	33.7%	67%
Hours of work typical of working in the discipline	6.1%	10.1%	18.2%	30.3%	35.4%	65.7%
Work experience since graduation	8.1%	10.1%	20.1%	42.4%	19.2%	62%
Opportunity for procedural work	10.1%	11.1%	18.2%	26.3%	34.3%	61%
Opportunity for research and /or teaching	12.1%	17.2%	20.2%	35.4%	14.1%	50%
Number of years required to complete training	19.2%	26.3%	20.2%	25.3%	9.0%	34%
Knowledge of a vocational training placement	17.2%	15.2%	33.3%	28.3%	6.0%	34%
Risk of litigation and associated insurance costs	50.5%	23.2%	21.2%	5.1%	0.0%	5%
Cost of training in the discipline	59.6%	19.2%	16.2%	5.0%	0.0%	5%
<i>Intrinsic factors</i>						
Intellectual content of the specialty	1.0%	3.0%	11.1%	42.4%	42.4%	85%
Appraisal of own skills/aptitudes	2.0%	2.0%	12.1%	49.5%	34.3%	84%
Interest in helping people	0.0%	2.0%	17.2%	36.4%	44.4%	81%
Appraisal of own domestic circumstances	7.1%	13.3%	20.4%	34.7%	24.5%	59%
Perceived job security prospects	14.1%	17.2%	25.3%	30.3%	13.1%	43%
Perceived career advancement prospects	9.1%	22.2%	31.3%	29.3%	8.1%	37%
Perceived financial prospects	33.3%	21.2%	28.3%	16.2%	1.0%	17%
Perceived prestige of the discipline	39.4%	27.3%	22.2%	10.1%	1.0%	11%
Influence of parents/relatives	58.6%	24.2%	12.1%	5.1%	0.0%	5%

Table 4b

	Males	Females	
	% Total rating factor as influential (i.e. "somewhat important" and "very important")		% Difference between males and females
Hours of work typical of working in the discipline	62.5	67.2	-4.7
Appraisal of own skills/aptitudes	84.4	83.6	0.8
Experience of specialty as a medical student	75.0	63.6	11.4
Appraisal of own domestic circumstances	58.1	59.7	-1.6
Influence of parents/relatives	3.1	6.0	-2.8
Perceived financial prospects	21.9	14.9	6.9
Opportunity to work flexible hours	68.8	77.6	-8.9
Influence of consultants/mentors	81.3	73.1	8.1
Intellectual content of the specialty	90.6	82.1	8.5
Work experience since graduation	68.8	58.2	10.5
Perceived prestige of the discipline	18.8	7.5	11.3
Cost of training in the discipline	6.3	4.5	1.8
Type of patients typical of the discipline	59.4	77.6	-18.2
Number of years required to complete training	21.9	40.3	-18.4
Opportunity for research and /or teaching	46.9	50.7	-3.9

Perceived job security prospects	50.0	40.3	9.7
Opportunity for procedural work	71.9	55.2	16.7
Perceived career advancement prospects	50.0	31.3	18.7
Atmosphere/work culture typical of the discipline	71.9	88.1	-16.2
Knowledge of a vocational training placement	43.8	29.9	13.9
Risk of litigation and associated insurance costs	6.3	4.5	1.8
Interest in helping people	68.8	86.6	-17.8

Furthermore, 79.2% of respondents indicated that their experiences on rotations was an important factor in the decision making process as highlighted in this comment from a male prevocational doctor currently in PGY1 *“Experience on rotations is the only way to form an appreciation of what the specialty may be like”* and another respondent noted that the quality and inclusiveness of the rotation was highly influential; *“Workplace culture and engagement from the educational team. Ignored on surgery, valued in General Practice.”*

84.4% of respondents rated the role modelling and interactions with senior clinicians (84.4) as being influential in their choice of training pathway. For example one respondent noted that they *“Had very bad experiences with bullying in general medicine. Psych seems to be a discipline in which bullying rarely occurs”* whereas as another respondent noted *“Talking to more senior doctors gives insight into the role, also aspiring to be like them is a driving force!”* suggesting that both positive and negative experiences can be powerful drivers when prevocational doctors choose their pathways across the board. On the other hand only 17.7 % thought that advice and support from Directors of Clinical Training (DCTs) or Medical Education Officers (MEOs) influenced their choice of training pathway. 18.8 % and 10.4 % respectively indicated that careers or other educational events and Royal Colleges had an influence on their choice of training pathway. One participant noted that there were significant divergences in the quality of services provided by the Royal Colleges which may also influence speciality choice *“RACS comes across as exceedingly formal and unwelcoming, actively discouraging applications. RACGP provide a hotline for queries and troubleshooting!”*

Respondents were also asked to indicate when they felt they had made their speciality decision. Results suggest that respondents predominantly made their choice of speciality at the conclusion of med school and in PGY1 and PGY2. Results are shown in Table 6.

Table 5

Timing of decision	Percentage
Prior to entry to med school	8.1
By the end of medical school	33.3
PGY1	23.2
PGY2	26.3
PGY3	0.0
Other	9.0

Looking to the future

When asked to indicate what the short term plans were for the next 3 years, 68 % of respondents indicated that they were planning to start vocational training, 58.3 % were aiming to finish their current PGY1/2/3 training program and 30.2% were planning to remain at PGY1 and 2 (Table 6)

Table 6

Short term future career plan (3 years)	Percentage
Complete current PGY1/2/3 training program	58.3
Commence vocational training	68.8
Gain work experience overseas with the intention of returning to work in Australia	15.6
Commence a higher degree	16.7
Remain in PGY2/3 for another year	30.2
Take time out	24.0
Drop out of medicine altogether	2.1
Other	2.1

The majority of respondents who indicated that they were going to look further afield once they were fully qualified, wished to work in either a mix of public and private clinical work or public clinical work 45.2% as shown in Table 7. Results did not reveal any other consistent patterns in terms of long term career plans.

Table 7

Long term career plans (3-7 years)	Percentage
Private clinical practice (1-4 practitioners)	8.6
Medical administration	1.1
Private clinical practice (5+ practitioners)	7.5
Research and teaching	0.0
Mix of public and private clinical work	45.2
Gov't health department	0.0
Public hospital clinical appointment	20.4
NGO/charitable organization	1.1
Salaried clinical practice	0.0
Corporate clinical practice	0.0
Predominantly public health medicine	3.2
Career outside medicine	0.0
Other	4.3
Undecided	8.6

In terms of desired location of practice, the overwhelming majority (82.4%) preferred to work in Victoria, most likely reflecting the fact that most were originally from Victoria. Not surprisingly most hoped to practice in metropolitan areas or regional centres (Table 8).

Table 8

Location preferences	Percentage
Preferred state/territory or country other than Australia	
NSW	4.4
Vic	82.4
QLD	4.4
SA	1.1
WA	0.0
TAS	3.3
NT	3.3
ACT	0.0
Other	1.1
Preferred geographical location	
Metropolitan	59.1
Other Urban centre	9.7
Rural or remote regional centre	16.1
Small rural or regional town	10.8
Other	4.3

The choice of preferred location was driven by a number of factors including consideration for career prospects and family and social aspects which emerged as the most important considerations for this cohort as shown in Table 9.

Table 9

	Consideration for my career %	Consideration for my partner's career %	Family and/or social considerations %	Lifestyle %	Other %
Most important	31.1	5.6	35.6	21.1	5.6
Important	21.1	20.0	24.4	32.2	1.1
Neutral	18.9	34.4	16.7	27.8	1.1
Somewhat unimportant	23.3	34.4	20.0	17.8	3.3
Unimportant	4.4	4.4	2.2	0.0	87.8

Generally most respondents are intending to work full-time (68.8%), and 18.3 % indicated they wanted to work part time whereas 12.9% didn't know at the time of the survey.

Discussion

It is well accepted that Australia, like most other Western countries, will continue to experience increased pressure on the health care system as the health care needs of the Australian population change [5, 6]. As highlighted in a number of reports including the final report by Health Workforce Australia this increasing and ever-changing demands require national co-ordination and modelling to ensure the medical workforce meet the health care requirements facing the Australian community [7]. While there are enough medical graduates, choices of specialities is unevenly distributed creating an imbalanced medical workforce [6, 7]. This includes ensuring that medical graduates choose medical specialities which meet the requirements of the community, whereas at the moment this distribution is uneven, and many positions are filled by overseas doctors. This is why understanding the underpinning factors driving the speciality choices by junior doctors is important as these decisions may ultimately have far-reaching implications for the Australian medical workforce.

The findings of the current pilot study have highlighted that the choice of speciality is a complex process influenced by numerous factors, both intrinsic and extrinsic. In our sample of junior doctors results suggested that the perceptions of work place culture, influence of mentors and consultants and the ability to work flexible hours are the primary extrinsic factors which mostly concurs with the findings other studies [3, 8]. Experience and perceptions of the culture within a speciality as well as the influence of mentors and consultants were particularly salient. However, these factors can both encourage uptake into a speciality but can also deter junior doctors from certain specialities based on negative experiences they may encounter. This has previously been noted by Bunker and Shadbolt [1]. Negative experiences noted in our study included but were not limited, to bullying by senior staff. Furthermore, some respondents indicated that there was a lack of appropriate and timely mentoring which could influence speciality choices if the clinical experience gained during the rotation within a certain speciality was negative.

Equally, while many felt they were offered the opportunity to engage in formal education activities and supervision, many respondents indicated some dissatisfaction with the time they had to engage in these activities. Moreover, while the majority of respondents indicated they had a dedicated supervisor, a significant proportion did not have a supervisor or were unaware of who their supervisor was. Furthermore, a number of respondents indicated that obtaining information

from some of the Colleges was difficult and that the bureaucracy and unresponsiveness of these was frustrating for some.

This suggests that the training framework in place for the junior doctors in some cases may be unsatisfactory for this group of medical workers and the training pathways may be further obscured and influenced by negative experiences with the Colleges. Given the strong influence of mentors and personal experience with workplace culture and the consequential relevance to workforce planning, this gap in the training experience and lack of information from the Colleges to the junior doctors may represent missed opportunities to direct these medical professionals into the areas which are currently under-represented. Further, from our data it would appear that a large proportion of junior doctors make their speciality choices in PGY 1 and 2, suggesting that particular efforts should be made during those formative years to ensure that junior doctors have opportunity to have positive engagement with specialities throughout their clinical rotations.

Interestingly, unlike previous studies [3], females and males did not differ vastly in terms of the influence that workplace flexibility played in the choice of speciality, whereas females and males differed somewhat on a number of factors; for examples female respondents expressed that the interest in helping others and the types of patients were important factors, whereas males were more likely to rate perceived career prospects as a highly influential. Similar to findings in the literature important intrinsic factors that emerged as influential included the perceptions of being challenged intellectually by the speciality and appraisal of own skills/aptitudes [3].

These findings suggest interplay between intrinsic factors and extrinsic factors, hence while junior doctors might feel capable and interested in a certain speciality, extrinsic factors such as work place culture and mentor experiences can modulate speciality choices highlighting the importance of fostering positive workplace cultures and mentoring relationships. Further, assuming the Colleges have an interest in attracting junior doctors to their speciality, our results suggest that having appropriate and accessible information and guidance available may also be important to some junior doctors' decision-making process.

Looking further afield, respondents in this cohort indicated that the majority of them wished to work in a mixture of public and private clinical work and mainly in metropolitan and urban settings rather than rural and regional settings. Given the current disparity in the provision of health care

services in regional and rural areas this is not surprising, however to address this disparity coordinated efforts to encourage and direct junior doctors to areas of urgent need must be a priority in the years to come.

Limitations of the current study

This study suffered from a number of limitations including small sample size due to low uptake of the survey which significantly impacted on the capacity to conduct inferential statistics vis-à-vis our ability to make recommendations. Furthermore, the composition of the sample was limited to respondents from Victoria and we do not have longitudinal data to ascertain change over time in terms of speciality choices.

Conclusions

This study has provided preliminary insights into the intrinsic and extrinsic factors which appear to be influential in the choice of specialty for junior doctors. We found that experience and perceptions of the culture within a speciality as well as the influence of mentors and consultants were particularly important extrinsic factors whereas important intrinsic factors included the perceptions of being challenged intellectually by the speciality and appraisal of their own skills/aptitudes. It is important to acknowledge and consider these factors within the formative years of medical training in order to be able to appropriately guide and encourage uptake of the medical specialities which will be required to meet the demands of the Australian community in the future.

While this small study has provided preliminary data, further research is required to refine and expand on our results using a national sampling strategy and potentially further explore the decision making processes using a mixed method framework incorporating both quantitative and qualitative research methods.

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Attachment 1-Survey instrument