

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Does Initial Postgraduate Career Intention and Social Demographics Predict Perceived Career Behaviour? A National Cross-Sectional Survey of UK Postgraduate Doctors.
AUTHORS	Scanlan, Gillian; Cleland, Jennifer; Stirling, Suzanne; Walker, Kim; Johnston, Peter

VERSION 1 - REVIEW

REVIEWER	Dr Sharon Spooner University of Manchester, UK No direct competing interests - though I have previously been involved in projects investigating medical specialty/ career choice.
REVIEW RETURNED	23-Oct-2018

GENERAL COMMENTS	<p>Major points</p> <ol style="list-style-type: none">1. Page 8 Lines 25-30 I find the initial presentation of results immediately preceding Table 2 does not appear consistent with the UKFPO 2017 Career destinations report and therefore needs explanation. Table 1 indicates that 96.7% of the sample intend to be working in the UK or abroad, whereas the UKFPO table indicated that 13.8% report 'Not practising medicine - taking a career break' (and an additional 0.6% having permanently left the profession). The authors do not appear to have included those not working in medicine in their presentation of results. When reporting stated career intentions - the whole sample (included and omitted) does not appear to be accounted for (total = 6787).2. Several uncited articles could be considered as relevant for this paper; e.g. Maiorova T, Stevens F, Scherpier A, et al. The impact of clerkships on students' specialty preferences: what do undergraduates learn for their profession? Medical Education 2008;42(6):554-62 doi: 10.1111/j.1365-2923.2008.03008.x Goldacre MJ, Laxton L, Lambert T. Medical graduates' early career choices of specialty and their eventual specialty destinations: UK prospective cohort studies. BMJ 2010;341:c3199 Van Der Horst K, Siegrist M, Orlow P, et al. Residents' reasons for specialty choice: influence of gender, time, patient and career. Medical Education 2010;44(6):595-602 doi: 10.1111/j.1365-2923.2010.03631.x
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	<p>Spooner S, Pearson E, Gibson J, Checkland K. How do workplaces, working practices and colleagues affect UK doctors' career decisions? A qualitative study of junior doctors' career decision making in the UK. <i>BMJ Open</i>. 2017;7, 10(10).</p> <p>3. While this analysis of data is of interest, the authors have not made a particularly strong case for how it adds benefit - e.g. to medical school student selection of for workforce planning</p> <p>Minor points Grammatical error Abstract line 29 Also feel that the term 'graduates' could easily be misunderstood - since at survey point all are graduates</p>
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REVIEWER	Hung-Yu Chang Department of Nephrology, Chang Gung Memorial Hospital, Chiayi Branch, Taiwan, Republic of China
REVIEW RETURNED	01-Nov-2018

GENERAL COMMENTS	<p>1. The authors used the data of national Career Destination Survey to examine the link between at the start of UK foundation programme and career behaviour. But, there was only one survey and the survey was sent out in the last few months of F2. In my opinion, the actual initial career intention may be different to the intention surveyed in the last few months of F2. So, it is better to have a survey at the beginning of the 2-year Foundation programme.</p> <p>2. The authors should add the form in supplement that was sent out to F2 doctors by email.</p> <p>3. The authors used Chi square as one analytical method and we would like to see the result of Chi square in a table.</p> <p>4. Are there students from other country to receive UK Foundation programme? If there are, after training they may return to their own country.</p> <p>5. Will the authors do a flow chart to depict the result of survey?</p>
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VERSION 1 – AUTHOR RESPONSE

Major points

1.

Page 8 Lines 25-30

I find the initial presentation of results immediately preceding Table 2 does not appear consistent with the UKFPO 2017 Career destinations report and therefore needs explanation.

Table 1 indicates that 96.7% of the sample intend to be working in the UK or abroad, whereas the UKFPO table indicated that 13.8% report 'Not practising medicine - taking a career break' (and an additional 0.6% having permanently left the profession).

The authors do not appear to have included those not working in medicine in their presentation of results. When reporting stated career intentions - the whole sample (included and omitted) does not appear to be accounted for (total = 6787).

Response: Some of the figures presented in this work will vary when compared to the career destination report. However, we have now included a break down of each career behaviour of the F2 doctors and provided two figures that explain why certain participants were excluded from the final analysis. In addition, we have also opted to divide the categories differently, and this was based on feedback received from an internal and external reviewer. Career behaviour is now divided into: Other employment/Further Study, Career Break, Working Abroad and Specialty training. By adding career break into the analysis, we are considering those not practising medicine at this time but they have clearly stated they will return in the future. For those that were omitted, we did not know their explicit next career destination and thus it seemed appropriate to omit them from the analysis. Thank you for your comments on this, with a clear presentation of participants demographics in table 1 and figures 1 and 2, the results should be easier to interpret now.

2.

Several uncited articles could be considered as relevant for this paper; e.g.

Maiorova T, Stevens F, Scherpbier A, et al. The impact of clerkships on students' specialty preferences: what do undergraduates learn for their profession? *Medical Education* 2008;42(6):554-62 doi: 10.1111/j.1365-2923.2008.03008.x

Goldacre MJ, Laxton L, Lambert T. Medical graduates' early career choices of specialty and their eventual specialty destinations: UK prospective cohort studies. *BMJ* 2010;341:c3199

Van Der Horst K, Siegrist M, Orlov P, et al. Residents' reasons for specialty choice: influence of gender, time, patient and career. *Medical Education* 2010;44(6):595-602 doi: 10.1111/j.1365-2923.2010.03631.x

Spooner S, Pearson E, Gibson J, Checkland K. How do workplaces, working practices and colleagues affect UK doctors' career decisions? A qualitative study of junior doctors' career decision making in the UK. *BMJ Open*. 2017;7, 10(10).

Response: Thank you, we have now included these references.

3.

While this analysis of data is of interest, the authors have not made a particularly strong case for how it adds benefit - e.g. to medical school student selection of for workforce planning

Response: Thank you, we have now added in more reflection on workplace planning and policy. Please see paragraphs: 6, 11 and 12 in the discussion where more reflection and benefits of this study are outlined. We have also added in a sentence to the second last paragraph in the introduction to outline how the intelligence from this study can impact workforce policy.

Minor points

Grammatical error Abstract line 29

Response: Resolved

Also feel that the term 'graduates' could easily be misunderstood - since at survey point all are graduates

Response: Each time graduate status is referred to it is now clearly outlined that this is referring to 'upon entry to medical school'. Please see the analysis section where there is the first example of this and throughout the result section also.

Reviewer: 2

Reviewer Name: Hung-Yu Chang

Institution and Country: Department of Nephrology, Chang Gung Memorial Hospital, Chiayi Branch, Taiwan, Republic of China

Please state any competing interests or state 'None declared': None declared

1. The authors used the data of national Career Destination Survey to examine the link between at the start of UK foundation programme and career behaviour. But, there was only one survey and the survey was sent out in the last few months of F2. In my opinion, the actual initial career intention may be different to the intention surveyed in the last few months of F2. So, it is better to have a survey at the beginning of the 2-year Foundation programme.

Response: Yes, we agree that the survey should be sent out in the first few months of F2 to properly measure their original career intentions at that time, rather than asking retrospectively. However, as researchers we did not have control over the questions asked nor when the survey was completed by participants. This is something that is commented on within paragraph 8 of the discussion now.

2. The authors should add the form in supplement that was sent out to F2 doctors by email.

Response: Unfortunately, due to not owning the rights to this survey, this cannot be included as a supplementary file. However, please see the second paragraph in the context section where there is a sample of questions asked each year.

3. The authors used Chi square as one analytical method and we would like to see the result of Chi square in a table.

Response: Thank you, we have now added the results of the chi-square, and these appear in table 2.

4. Are there students from other country to receive UK Foundation programme? If there are, after training they may return to their own country.

Response: Yes, there will be doctors who complete the foundation programme in the UK who then return home after completion. However, due to the nature of the survey we could not specifically look at this group. However, we have added in paragraph 8 in the discussion to include a reflection upon this.

5. Will the authors do a flow chart to depict the result of survey?

Response: We have included a bar chart depicting participants data that was omitted from the analysis, please see figure 1 and figure 2. All other results are displayed in tables 1-3, and discussed within the text.

VERSION 2 – REVIEW

REVIEWER	Sharon Spooner University of Manchester
REVIEW RETURNED	15-Jan-2019

GENERAL COMMENTS	While I am unable to provide an expert statistical review of this manuscript, I am happy with the non-statistical revisions.
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REVIEWER	Ruth Lavergne Simon Fraser University
REVIEW RETURNED	05-Apr-2019

GENERAL COMMENTS	<p>This paper describes career intentions among doctors completing the Foundation Programme and examines how these differ by gender, graduate status on entry to medical school, and career behaviour. The authors analyze national survey data that up to this point had only been used for quality management and workforce planning. This seems to me to be a valuable data source for research but I do have questions especially around the choice of variables in analysis as well response rate and inclusion/exclusion criteria.</p> <p>1. The survey is sent in the last few months of the second year “after</p>
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	<p>doctors have made decisions about the next step in their careers.” Respondents are asked to retrospectively report what their career intentions were at the start of F1 and state their career intentions (though they may not yet have carried out those intentions). Should “career behaviour” more accurately be described as career intentions?</p> <p>2. Three predictor variables are used in analysis - gender, graduate status and F1 Intention (specialty or other). Were these the only variables collected in the Career Destination survey core data set? If not, how were these selected? In the background the authors note literature on career intentions and social demographics is typically atheoretical. How did theory shape choice of variables? Are there potentially important variables that were not captured? I suggest appending a copy of the survey instrument or at least the core questions. This would be helpful in understanding the precise wording of the various response categories</p> <p>3. Please specify that multinomial logistic regression was conducted within the analysis section</p> <p>4. Please report the response rate/proportion of people sent the survey who responded in the abstract and include additional details under “sample and data collection.” How many foundation programme doctors were there in total? The value of 91.1% of responses being non-duplicates, valid responses should not be labeled a response rate. How were “invalid responses” defined?</p> <p>5. 1320 participants were removed in the “final analysis.” Does this mean you analyzed only complete cases in the chi2 tests and multinomial regression? Please provide the n included in each analysis along with each table to clarify. The interpretation of figures 1 and 2 for exclusions is not clear to me. Could information on response rates and inclusion/exclusion criteria be more clearly reported in a flow chart?</p> <p>6. I suggest reporting on the results of chi-2 tests along with corresponding descriptive analysis rather than preceding this content.</p> <p>7. Check reporting of odds – odds were x times those of a reference group, not x times higher (if I interpret correctly)</p> <p>Minor points:</p> <ul style="list-style-type: none"> - Check for consistency between “multinomial” regression than “multi-nomial” - Abstract typo “across-sectional” - What does “school leavers” mean? Does this refer to people who have not completed another university degree prior to medical school vs. university graduate? Please explain this variable for international readers not familiar with this term - Check parentheses in the abstract and results - Consider labelling tables more descriptively (e.g. intention for specialty training rather than intention) - I don’t believe these data in fact capture “career behaviour” but rather intentions. I suggest reframing the first paragraph of the discussion section but would defer to the authors on this point. - The authors write that “There is, to the best of our knowledge, no previous research looking at the association between career intention and behaviour in doctors at the stage of applying for a specialty training post.” I am more familiar with the North American literature, but there is quite extensive research on choice of specialty among medical students, though given differences in training contexts not all of this may be relevant.
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VERSION 2 – AUTHOR RESPONSE

Reviewer(s)' Comments to Author:

Reviewer: 1

Reviewer Name: Sharon Spooner

Institution and Country: University of Manchester

Please state any competing interests or state 'None declared': None

Please leave your comments for the authors below

While I am unable to provide an expert statistical review of this manuscript, I am happy with the non-statistical revisions.

Reviewer: 3

Reviewer Name: Ruth Lavergne

Institution and Country: Simon Fraser University

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

This paper describes career intentions among doctors completing the Foundation Programme and examines how these differ by gender, graduate status on entry to medical school, and career behaviour. The authors analyze national survey data that up to this point had only been used for quality management and workforce planning. This seems to me to be a valuable data source for research but I do have questions especially around the choice of variables in analysis as well response rate and inclusion/exclusion criteria.

1. The survey is sent in the last few months of the second year “after doctors have made decisions about the next step in their careers.” Respondents are asked to retrospectively report what their career intentions were at the start of F1 and state their career intentions (though they may not yet have carried out those intentions). Should “career behaviour” more accurately be described as career intentions?

Response: Thank you for this comment, we have taken your point in board and we had made this change to reflect that the ‘career behaviour’ attribute is better defined as career intentions at the end of the foundation programme.

2. Three predictor variables are used in analysis - gender, graduate status and F1 Intention (specialty or other). Were these the only variables collected in the Career Destination survey core data set? If not, how were these selected? In the background the authors note literature on career intentions and social demographics is typically atheoretical. How did theory shape choice of variables? Are there potentially important variables that were not captured? I suggest appending a copy of the survey instrument or at least the core questions. This would be helpful in understanding the precise wording of the various response categories

Response: Other variables were collected in the survey but we focused on these three for two reasons. First, on a very practical note, not all core questions in the survey were applicable to all respondents and/or there was much missing data, but the three above had a very high proportion of responses.

Second, our knowledge of the careers literature indicated that of all the background variable data requested in the Destinations Survey, gender and graduate status were those known to be related to careers choice and intention. The F1 intention variable was selected as much research shows that intention is a good predictor of future behaviour (e.g., the theory of planned behaviour studies). We felt this was important to examine given previous qualitative work has suggested that the foundation programme influences career intentions. Please refer to the aims section on pages 4-5 where this is highlighted.

Of note is that some socio-demographic data such as country of origin or home country were not collected in the Destinations Survey although this information could have been of interest in relation to career intentions. This point is highlighted on page 13. I have also extended this section to highlight the additional limitations with the survey.

The core questions will be included as a supplementary file for readers.

3. Please specify that multinomial logistic regression was conducted within the analysis section

Response: Thank for you for this- I have now included in information within the text and the rationale for its use. See page 8 as highlighted.

4. Please report the response rate/proportion of people sent the survey who responded in the abstract and include additional details under "sample and data collection." How many foundation programme doctors were there in total? The value of 91.1% of responses being non-duplicates, valid responses should not be labeled a response rate. How were "invalid responses" defined?

Response: The number of participants sent the survey should have been 6890, however, due to the nature of survey delivery, some other training grade doctors may have received this survey and completed it in error. Because of this, we could not calculate the response rate. However, we have included the number of participants within the abstract and included this additional information in the results section (p9).

5. 1320 participants were removed in the "final analysis." Does this mean you analyzed only complete cases in the chi2 tests and multinomial regression? Please provide the n included in each analysis along with each table to clarify. The interpretation of figures 1 and 2 for exclusions is not clear to me. Could information on response rates and inclusion/exclusion criteria be more clearly reported in a flow chart?

Response: Yes, only complete cases were included in the analysis of the chi-square tests and the multinomial regression. The corresponding tables have now been updated. We have now included two flow charts that correspond to figures 1 and 2 for ease of interpretation and also highlight the number of participants included in the analysis.

6. I suggest reporting on the results of chi-2 tests along with corresponding descriptive analysis rather than preceding this content.

Response: This has now been revised to reflect this change, please see 9 and 10 where this has been implemented.

7. Check reporting of odds – odds were x times those of a reference group, not x times higher (if I interpret correctly)

Response: Thank you for your comment, this has been rectified. Please see page 10 and 11 where this is highlighted.

Minor points:

- Check for consistency between “multinomial” regression than “multi-nomial”

Response- Thank you this has been amended throughout the text. I have also include the goodness of fit result within table 3 and also within the text, see the bottom of page 10 where this is highlighted.

- Abstract typo “across-sectional”

Response: This has been amended within the abstract.

- What does “school leavers” mean? Does this refer to people who have not completed another university degree prior to medical school vs. university graduate? Please explain this variable for international readers not familiar with this term

Response: We have now amended this in text and referred to these participants as ‘graduates’ and ‘non-graduate’ entrants to medicine. Additional information has been added to the context section, found on page 6.

- Check parentheses in the abstract and results

Response: These have been revised appropriately.

- Consider labelling tables more descriptively (e.g. intention for specialty training rather than intention)

Response: Thank you- we have amended tables to provide more descriptive information about the attributes.

- I don't believe these data in fact capture “career behaviour” but rather intentions. I suggest reframing the first paragraph of the discussion section but would defer to the authors on this point.

Response: Thank you for this, we also agree and have changed the framing of the discussion to reflect this.

- The authors write that “There is, to the best of our knowledge, no previous research looking at the association between career intention and behaviour in doctors at the stage of applying for a specialty training post.” I am more familiar with the North American literature, but there is quite extensive research on choice of specialty among medical students, though given differences in training contexts not all of this may be relevant.

Response: Thank you for this point. Yes, we agree there is extensive literature on specialty choice of medical students, we have highlighted this on page 4 and the literature associated. However, as

highlighted we were specifically interested in qualified doctors at the stage of specialty application rather than medical students' specialty preferences.

VERSION 3 - REVIEW

REVIEWER	Ruth Lavergne Simon Fraser University, British Columbia, Canada
REVIEW RETURNED	14-May-2019

GENERAL COMMENTS	<p>The authors have addressed most of my concerns. The remaining point I'd like to see addressed is around response rate. If I understand correctly the survey may have gone to some respondents who did not meet eligibility for the reported analysis. As a result the authors write that it is not possible to report a response rate.</p> <p>In the methods section under "Sample and Data Collection" the authors write that "The email containing the link about the Career Destinations survey was sent out to F2 doctors by 21 UK Foundation Schools who are responsible for the management of the survey in May 2017 (N= 6890). Under results they write that "The Destination Survey received a total of 7563 responses. Unfortunately, the approach to survey administration meant some respondents completed the survey more than once and some doctors received and completed the survey in error. After cleaning (removing duplicates, and invalid responses), we had a total of 6890 valid responses."</p> <p>I'm not clear on how to reconcile these numbers. Does this mean the survey was sent to 6890 valid participants, some completed more than once and other ineligible physicians replied (explaining why n=7563 is larger than the total number of valid participants), but then this was cleaned to 6890 valid responses (or 100% response rate among eligible physicians). If yes, this is a very high response rate for a physician survey, and this should be highlighted in discussion. If I've misinterpreted this, it speaks to the need for much clearer explanation of how many physicians were potentially eligible, how many were sent the survey, and an estimated response rate (even if not all people sent the survey nor survey respondents met criteria for final analysis).</p>
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VERSION 3 – AUTHOR RESPONSE

Thank you for this additional feedback and on rereading the paper, we see that this statement is indeed unclear. We have done further analysis and have replaced it with the following:

The Career Destinations survey was sent out to F2 doctors via email by all 22 UK Foundation Schools Programme directors in August 2017 (N= 6,890). Unfortunately, the approach to survey administration meant some respondents completed the survey more than once and some doctors received and completed the survey in error, giving 7563 responses. After cleaning (removing duplicates, and invalid responses), we had a total of 5570 usable responses. This gives a response rate of 80.1%.

We also highlight the high response in the discussion section:

A real strength of this study was the high response rate that yielded an opportunity to survey a contemporary population of all F2 doctors in the UK.

Both Sections are highlighted in the text.

Many Thanks for your comments.

VERSION 4 - REVIEW

REVIEWER	Ruth Lavergne Simon Fraser University
REVIEW RETURNED	25-Jun-2019
GENERAL COMMENTS	Thank you. The additional clarification about recruitment and the response rate addresses my previous comment.