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Interim Foundation Year One (FiY1) and preparedness for foundation year 1: A national survey of UK foundation doctors

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ABSTRACT

Background: Induction programmes aim to ease the transition from medical student to doctor. The interim foundation year 1 (FiY1) placement, introduced in the first COVID-19 wave, provided experience in advance of the Foundation Year 1 (FY1) start in August; providing more time and enhanced responsibilities than traditional induction programmes. This study examines the effects of the FiY1 placement on anxiety levels and preparedness for FY1.

Methods: This was a descriptive cross-sectional study using data from four cohorts of FY1s who completed the online National FY1 induction survey from 2017 to 2020 ($n = 4766$). Questions evaluated self-reported preparedness and anxiety levels. Differences in preparedness and anxiety levels of FiY1 and non-FiY1 participants in 2020, and the 2017–2019 participants (non-FiY1 controls), were evaluated.

Results: FiY1s in 2020 reported higher self-reported preparedness (79%) than non-FiY1s (54%) in 2020 ($p < 0.001$) and the control 2017–2019 cohort (63.8%) ($p < 0.001$). Fewer FiY1s experienced pathological anxiety (29.3% versus 40.8% for non-FiY1s; $p = 0.001$).

Conclusion: Time spent in an FiY1 role is associated with an increase in self-perceptions of preparedness and a reduction in anxiety. These data indicate that time spent in an FiY1 role may have utility in further improving the transition period from medical school to FY1.

KEYWORDS

FiY1; Foundation Year 1; FY1; Medical Education & Training; preparedness; medical student

Introduction

In 2009, the General Medical Council (GMC) made assistantship a mandatory component of the medical curriculum, as part of the new aims for United Kingdom (UK) medical education outlined in *Tomorrow's Doctors* (General Medical Council 2009). Assistantship is defined as “assisting a junior doctor and under supervision, undertak[ing] most of the duties of a Foundation Year 1 (FY1) doctor” (General Medical Council 2009). Also referred to as “shadowing,” assistantship aims to ease the transition from medical student to doctor by providing supported opportunities to take on responsibility for patient care, which is rarely provided with conventional teaching methods (Crossley and Vivekananda-Schmidt 2015). However, its success has been limited due to variations in delivery across universities and because the simulated responsibility of assistantship is sometimes engaged with differently to the real responsibility of being a doctor (Crossley and Vivekananda-Schmidt 2015).

Presently, the period of transition between medical student and FY1 can be a stressful experience leading to burnout (Firth-Cozens 1987; Lempp et al. 2004; Alexander et al. 2014; McCullough and van Hamel 2020). Additionally, the “Black Wednesday” August changeover is well known to result in higher mortality rates for patients (Blakey et al.

Practice points

- The interim FY1 programme was effective at improving self-reported preparedness.
- Undertaking the FiY1 role in any format improved preparedness (e.g. irrespective of whether it was located in the same hospital or specialty as the first FY1 placement).
- Anxiety levels in 2020 were significantly higher for those not participating in the interim FY1 programme.
- There is utility in enhanced training in a supported environment prior to FY1 start.
- Rates of pathological anxiety are high amongst new FY1s in the UK, and efforts from regulatory bodies need to be made to target this.

2013; Gaskell et al. 2016). These elevated mortality rates are traditionally ascribed to the fact that on this day, trainees of all stages change hospital and new FY1s start work with minimal clinical experience (Blakey et al. 2013; Gaskell et al. 2016). Several factors have been identified which positively affect preparedness: early clinical experience

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 Supplemental data for this article can be accessed [here](#).

This article has been corrected with minor changes. These changes do not impact the academic content of the article.

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during medical school, assistantship and increased senior support (Alexander et al. 2014). Research has indicated that further direct experience on the wards prior to formally starting FY1, in the form of induction training, increases perceived preparedness level and decreases perceived anxiety and is therefore postulated to improve patient safety (Van Hamel and Jenner 2015; Blencowe et al. 2015; Gaskell et al. 2016). Consequently, mandatory inductions immediately prior to starting FY1 were rolled out across NHS trusts in 2012 (Blencowe et al. 2015), typically taking place over 3–5 days (Blencowe et al. 2015; Gaskell et al. 2016).

Due to the COVID-19 pandemic placing extreme strain on the healthcare workforce, a new role termed Interim Foundation Year 1 (FiY1) was created to mitigate against predicted rota shortages (General Medical Council 2020). All final year medical students deemed eligible were offered the opportunity to undertake FiY1 – comprising FY1 responsibilities and provisional GMC registration in advance of the scheduled start of FY1 in August 2020. Of the 7588 eligible (UK Foundation Programme 2020) medical students, 4662 (61.43%) were allocated to FiY1 positions (General Medical Council 2020). This role was optional, leading to mixed uptake, and FiY1s were paid the same as their FY1 counterparts (Newcastle University, GMC 2020). Experiences of FiY1 varied, both in terms of length of placement and the exact roles undertaken. Although the intention was for FiY1s to be supernumerary (i.e. not included in rota planning for minimum staffing) and be provided with a senior “buddy,” implementation of this was variable due to rota differences (Impact of COVID-19 on the UK Foundation Programme 2020). This study aimed to assess the effects of the interim FiY1 role on perceived preparedness for clinical practice and anxiety levels, with the hypothesis that time spent in the FiY1 role will increase levels of self-reported preparedness and reduce anxiety. This will provide useful insights into the value of the FiY1 role in the future of UK medical education.

Materials and methods

Design

This is a descriptive cross-sectional survey, undertaken in accordance with the “Good practice in the conduct and reporting of survey research” (Kelley et al. 2003) and the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidance (Elm et al. 2007). A cross-sectional survey was made available electronically to all eligible UK FY1s from 2017 to 2020 ($n = 30,346$) (UK Foundation Programme 2017; UK Foundation Programme 2018; UK Foundation Programme 2019; UK Foundation Programme 2020; Impact of COVID-19 on the UK Foundation Programme 2020). Participants were deemed eligible if they were successfully placed within a foundation programme in August of the year their FY1 training was scheduled to start. In the 2020 cohort, both FiY1 and non-FiY1 participants were eligible to participate provided they met the above criteria. Participation in the survey was voluntary. Respondents to the survey between 2017 and 2019, which had a more typical FY1 start, were combined into a control group.

Setting and participants

Every year in the UK a national FY1 trainee survey, developed in 2012, collects data on perceptions of preparedness and anxiety levels amongst new FY1s (Van Hamel and Jenner 2015). The current study utilised this survey in 2020 with modifications to include questions specific to FiY1 and non-FiY1 participants.

Outcome measures

The primary outcome of the study was the self-reported perceptions of preparedness for FY1. The secondary outcomes include self-reported levels of anxiety, and motivations for completing or not completing FiY1. Anxiety levels were measured using the Leeds Self-Assessment of Anxiety general scale (LAGS) (Snaith et al. 1976). Further descriptions of how these were measured and reported are provided in the “Data Collection” & “Quantitative variables” sections below.

Data collection

The national FY1 survey collected demographical data including sex, age, ethnicity, sexual orientation, date of finals, medical school, prospective NHS trust, and clinical specialty. Questions in the national FY1 survey assessed self-reported preparedness in various key skills required for FY1s outlined in “Tomorrow’s Doctors” (General Medical Council 2009) (Supplementary Appendix 1). A modified version of this survey was developed in 2020 and released to FY1s between 10 August and 7 September 2020 (Supplementary Appendices 1 and 2). Modifications included additional questions that categorised participants into FiY1 and non-FiY1 groups and exploring variability in FiY1 experience (Supplementary Appendix 2).

Bias

There are several potential sources of bias inherent to survey-based research. To address non-response bias, multiple e-mails were sent out by UK Foundation schools detailing the availability of the National FY1 Survey and its objectives for 2020. This was supplemented by a reminder notification on the “Horus e-portfolio” used by FY1s. Selection bias was addressed by making the survey available to all FY1s enrolled in a Foundation training post. Recall bias was minimised by ensuring a short gap between FiY1 ending and the collection of responses (approximately 1 month). Potential sources of confounding included variations in medical education, experiences between Foundation schools, demographic variables and year-on-year curriculum changes. Previous years of survey data (2017–2019) were triangulated into a single control group to allow for year-on-year and medical school curriculum variations.

Quantitative variables

To reduce the risk of a type 1 error, all questions ($n = 24$) relating to clinical competency and confidence were combined into a “preparedness score,” using a 5-point Likert scale (Likert 1932; Joshi et al. 2015) (min score 24, max score 120). Higher scores indicate higher levels of perceived preparedness.

A further question in the survey, termed “self-assessment of preparedness,” directly asked participants whether they felt prepared for FY1 using a 5-point Likert scale response (strongly agree to strongly disagree). Responses were combined into Agree, Neutral and Disagree.

The LAGS anxiety questions were summed into a continuous score (0–18), where scores higher than 7 are indicative of pathological anxiety (Snaith et al. 1976).

Descriptive analysis of motivations for completing or not completing FiY1 was completed using a series of 5-point Likert scale (Likert 1932) questions, and a free text box response. Questions are listed in [Supplementary Appendix 3](#).

Statistical analysis

Preparedness and anxiety were compared between (i) FiY1 and non-FiY1 participants (2020) and (ii) FiY1 against the control group (2017–2019). Categorical variables were analysed using Chi-square tests. Numerical variables were analysed using *t*-tests or ANOVAs and described using means and standard deviation. Where numerical data was skewed, a Mann–Whitney *U* test was used and described using medians and interquartile range. Multivariable analyses were conducted on overall preparedness between FiY1s and Non-FiY1s, adjusting for gender, and age. We also investigated whether the format of delivery for FiY1 (i.e. If FiY1 took place in the same hospital and/or specialty as first FY1 placement) and time spent in FiY1 had an impact on the preparedness score (see [Supplementary Appendix 2](#)). All analyses were conducted in Stata v.16.1 (StataCorp, College Station, TX).

Results

Participants

Between 2017 and 2020, all FY1s ($n = 30,346$) at the time of their first FY1 placement were eligible to participate in the survey (UK Foundation Programme 2020). A mean of 15.6% of eligible FY1s responded across 2017–2020 (Figure 1). In 2020, there were 891 respondents, representing 35 UK medical schools and non-UK medical schools. Data were missing for 55 individuals on most variables, so were removed from the dataset. Of the remaining 836, 451 (54.0%) were FiY1s and 362 (43.0%) non-FiY1s (23 individuals selected both non-FiY1 and FiY1 options). Amongst the respondents, 540

(64.6%) were female and the majority (76.0%) were between 21 and 25 years of age, and the remaining participants (24.0%) were between 26 and 30 years old. The proportion of females was slightly larger in 2020 compared to the control cohort (59.1%, $p = 0.003$), and the proportion of participants aged 21–25 years was slightly lower in the control cohort (71.0%) compared to the 2020 cohort ($p = 0.003$).

Comparisons of preparedness and anxiety between FiY1 and non-FiY1 (2020)

Preparedness

In 2020, respondents that completed FiY1 felt they were more prepared. Based on the “self-assessment of preparedness” question, 79.0% of FiY1 respondents agreed they felt prepared compared to only 54% of non-FiY1s (Figure 2; Table 1 Chi-square test: $p < 0.001$). Non-FiY1s also scored lower on the overall preparedness score (mean preparedness score: 75.84 [SD 11.11]) compared to FiY1s (mean preparedness score: 81.53 [SD 10.42]) (Table 2; *t*-test, $p < 0.001$). There was a strong association (ANOVA: $p < 0.001$) between the continuous preparedness score and the “self-assessment of preparedness” question, with mean scores far higher in the “agree” category (83.31) than the “neutral” (72.76) and “disagree” (65.20) categories.

In terms of preparedness score, males (mean preparedness score: 81.70 [SD 10.64]) felt more prepared than females (mean preparedness score: 78.32 [SD 10.65]) (*t*-test, $p < 0.001$).

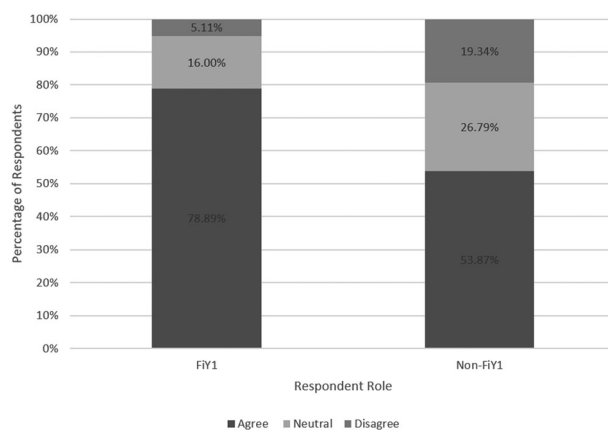


Figure 2. Percentage Responses to “Self-Assessment of Preparedness” for FY1, amongst FiY1s and non-FiY1s in 2020.

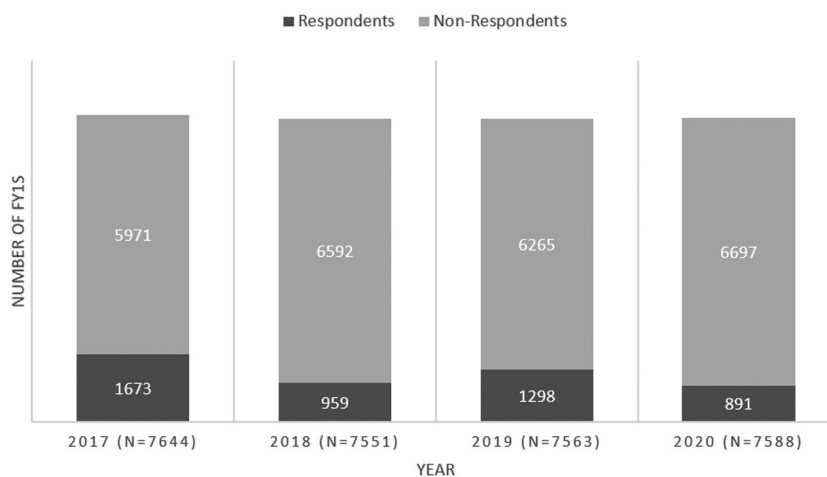


Figure 1. Respondent and non-respondent numbers from 2017 to 2020 [11,13,18–20]. *N* = Number of FY1s eligible to respond to the survey in the respective year.

However, there was no significant difference in the “self-assessment of preparedness”: 74.0% of males agreed to feeling prepared compared to 68% of females (t -test, $p=0.14$). Both preparedness score and the “self-assessment of preparedness” showed participants older than 25 (mean

Table 1. Responses to the categorical “Self-assessment of preparedness” for FY1 question.

	2017–2019		2020	
	FY1 ($n=3930$)	FiY1 ($N=450$)	Non-FiY1 ($N=362$)	
Agree	n	2509	355	195
	%	63.84	78.89	53.87
Neutral	n	961	72	97
	%	24.45	16.00	26.8
Disagree	n	460	23	70
	%	11.70	5.11	19.34
p -value		<0.001 ^a	<0.001 ^b	

^aCompares 2017–2019 control cohort against FiY1s in 2020.

^bCompares control cohort 2017–2019 against non-FiY1s in 2020. p -values stem from Chi-square tests.

Table 2. Mean overall preparedness score in 2020 cohort compared to 2017–2019 control cohort.

	2017–2019	2020	
	FY1 ($N=3768$)	FiY1 ($N=435$)	Non-FiY1 ($N=344$)
Mean (SD)	77.63 (10.52)	81.53 (10.42)	75.84 (11.11)
p -value		<0.001 ^a	0.002 ^b

^aCompares 2017–2019 against FiY1s in 2020.

^bCompares 2017–2019 against non-FiY1s in 2020. p -values stem from t -tests.

preparedness score: 77.76 [SD 12.08]) felt less prepared than participants under 25 (mean preparedness score: 79.81 [SD 10.43]) (t -test, $p=0.02$). The effect of the FiY1 role on preparedness remained when adjusting for gender and age in multivariable analysis. Preparedness was not influenced by the format of delivery of the FiY1 post (ANOVA: $p=0.67$) but there was a small positive effect of time spent in FiY1 where the mean preparedness score increased with increasing time (ANOVA: $p=0.006$; effect size measured as eta-squared = 0.02 (95% CI 0.002–0.05). Time spent in an FiY1 role ranged between one week to 12+ weeks (mode = 8 weeks, mean (SD) = 9 (2.6) weeks). The largest increase in preparedness is seen in the first few weeks (Figure 3). After the initial 3 weeks, the preparedness score was consistently above the non-FiY1s and controls with little change across time. It should be noted that the data for the initial 3 weeks are based on only 10 individuals, so caution is warranted.

Anxiety

In 2020, those completing an FiY1 had a lower average anxiety score (mean: 4.61 [SD 4.09]) than non-FiY1s (mean: 5.80 [SD 4.47]) (Table 3; Mann–Whitney U test: $p < 0.001$). A lower proportion (29.3%) of FiY1s experienced pathological anxiety (anxiety score ≥ 7) than non-FiY1s (40.8%; see Table 4, Chi-square test, $p < 0.001$). Those with pathological anxiety scored much lower on overall

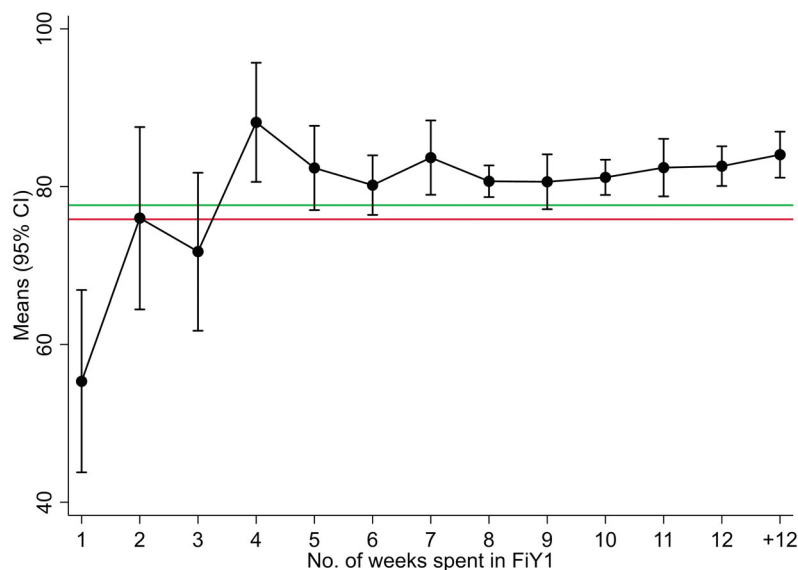


Figure 3. Mean preparedness score (y -axis) versus number of weeks spent in FiY1 (x -axis). Highest line = 2017–2019 control cohort mean preparedness score. Lowest line = non-FiY1 mean preparedness score.

Table 3. Anxiety scores for FiY1 and non-FY1 participants in 2020 compared to 2017–2019 control cohort.

Anxiety score	2017–2019 ^a		2020 ^b	
	FY1 ($N=3775$)	FiY1 ($N=444$)	Non-FiY1 ($N=348$)	
Mean (SD)	4.89 (4.11)	4.61 (4.09)	5.80 (4.47)	
Median (IQR)	4 (1–8)	4 (1–7)	5 (2–9)	

^a p -value for 2017–2019 versus FiY1 = 0.14, p -value for 2017–2019 versus non-FiY1 = <0.001.

^b p -value for FiY1 versus non-FiY1 2020 = <0.001. p -values stem from Mann–Whitney U test.

Table 4. Pathological anxiety in FiY1 and non-FY1 participants in 2020 compared to 2017–2019 control cohort.

Pathological anxiety cut-off	2017–2019 ^a		2020 ^b	
	FY1 ($N=3775$), n (%)	FiY1 ($N=444$), n (%)	Non-FiY1 ($N=348$), n (%)	
Score 0–6 (non-pathological)	2554 (67.7)	314 (70.7)	206 (59.2)	
Score ≥ 7 (pathological)	1221 (32.3)	130 (29.3)	142 (40.8)	

^a p -value for 2017–2019 versus FiY1 = 0.19, p -value for 2017–2019 versus non-FiY1 = 0.001.

^b p -value for FiY1 versus non-FiY1 2020 = 0.001. p -values stem from Chi-square tests.

preparedness score (mean 74.73 [SD:11.2]) compared to those who did not meet criteria for pathological anxiety (mean 81.50 [SD:10.34], $n = 514$) (t -test: $p < 0.001$).

Comparisons of preparedness and anxiety between FiY1 and non-FiY1 (2020) versus 2017–2019 cohort

Preparedness

FiY1s respondents in 2020 felt more prepared than the 2017–2019 control cohort (Table 1; Table 2). For the categorical question on whether participants felt prepared, 78.9% of FiY1s selected agree compared with 63.8% in the 2017–2019 control cohort (Table 1; t -test, $p < 0.001$). Only 53.9% of non-FiY1s in 2020 agreed to feeling prepared, a 9.9% reduction compared to 2017–2019 (t -test, $p < 0.001$). Similar results were obtained with respect to the overall preparedness score: FiY1s in 2020 had a higher mean score (81.53 [SD 10.42]) compared to the 2017–2019 cohort (77.63 [SD 10.52]) (Table 2, t -test, $p < 0.001$). Non-FiY1s in 2020 also scored lower (mean: 75.84 [SD 11.11]) compared to the 2017–2019 cohort (Table 2, t -test, $p = 0.002$).

Anxiety

There was no difference in mean anxiety score for FiY1s in 2020 (4.61 [SD 4.09]) and the 2017–2019 cohort (4.89 [SD 4.11]); Mann–Whitney U test, $p = 0.14$). Non-FiY1s (mean anxiety score 5.80 [SD 4.47]), however, were significantly more anxious than the 2017–2019 cohort (Mann–Whitney U test, $p < 0.001$). Similarly, a larger proportion of non-FiY1s (40.8%) experienced pathological anxiety compared to the 2017–2019 cohort (32.3%, Chi-square, $p = 0.001$). There was no difference in terms of proportion of FiY1s (29.3%) experiencing pathological anxiety compared to the 2017–2019 cohort (32.3%) (see Table 4, Chi-square, $p = 0.19$).

Motivations for completing FiY1

Data collected in this section were variable due to missing data from many candidate responses. 450 FiY1s reported completed data versus 143 non-FiY1s.

Key areas which predominated motivation for completing FiY1 included: to help the NHS (96.8% agree); to be better prepared for FY1 (96.7% agree); fear of being less prepared than peers who completed FiY1 (75.2% agree). Three respondents specified getting paid was a significant motivation for completing FiY1.

A significant factor leading to non-FiY1s to not complete FiY1 was health concerns for themselves or a relative (50.6%). Free text analysis identified other factors including: applying but not getting FiY1 due to trusts declining applications; exams (either resits, or delays in exam results); not being in the UK at the time; maternity leave/childcare commitments.

Discussion

To the authors' best knowledge, this is the largest study (sample size; $n = 4766$) examining the impact of educational interventions on perceived preparedness for FY1 to date. Results indicate that those spending time in an FiY1 role had higher levels of self-perceived preparedness when

compared to non-FiY1s in 2020 and FY1s from 2017 to 2019. Although there was no difference in anxiety scores between FiY1s and FY1s from 2017 to 2019, non-FiY1s in 2020 were significantly more anxious than all other groups. Compared to previous research into preparedness for FY1s (Cave et al. 2007; Goldacre et al. 2010; van Hamel and Jenner 2015; Blencowe et al. 2015), the FiY1 role has been the most impactful intervention on perceived preparedness in over 8 years of medical education curriculum changes. Stakeholders including the GMC, UKFPO and Medical Schools Council will need to consider the immediate utility of this intervention, including the cost implications, for the future of medical education in the UK.

Previous research has shown that medical school curriculum changes and induction programmes have improved preparedness for FY1 (Cave et al. 2007; Goldacre et al. 2010; van Hamel and Jenner 2015; Blencowe et al. 2015). The FiY1 role, a form of enhanced and prolonged induction, has had this impact even in challenging circumstances for junior doctors' mental health due to additional stress from the COVID-19 pandemic (Bandyopadhyay et al. 2020).

There is a complex identity shift from medical student to doctor, with previous research indicating that traditional methods to aid this transition either provide too much or too little responsibility for it to be comfortable (Yardley et al. 2020). Our leading hypothesis is that through a more supported and better staffed environment, the FiY1 has bridged the gap in a kind of "goldilocks zone" of responsibility that provides a more supported period of identity reconciliation. Furthermore, simply having the roles and responsibilities of a doctor in a more supported environment is enough to have this effect, regardless of location or specialty. Further qualitative research in the format of interviews may be useful in further understanding exactly why the FiY1 role had this impact.

Predominantly, motivations for completing FiY1 were to help the NHS, and because FY1s felt that the role would improve their preparedness for the August FY1 start. Non-FiY1s primarily did not volunteer due to health concerns, or structural issues leading to the post not being offered such as late exams, resits, or being abroad. This concern over health was legitimate given the uncertainties of the risks of COVID-19 infection at the time, and could provide some explanation for the elevated pathological anxiety seen in the non-FiY1 group in 2020.

As self-perceptions of preparedness do not necessarily translate into objective changes in competence, further research is ongoing to evaluate the long-term impact of the FiY1 role on FY1 wellness & progression through training (Newcastle University, GMC 2020). "Black Wednesday" elevated mortality rates are commonly thought to be due to trainees of all stages changing hospital and new FY1s starting with minimal clinical experience (Blakey et al. 2013; Gaskell et al. 2016). Whether FiY1 has impacted death rates is currently uncertain. Given the elevated death rates caused by the COVID-19 pandemic, it would presently be impossible to evaluate this accurately.

Limitations

There are several strengths and limitations to this study. The main strength is its size; it was conducted across all UK foundation schools, in the context of a well-established national

FY1 survey with standardised questions and a validated tool for pathological anxiety (Blencowe et al. 2015). A limitation is that the national FY1 survey has had a continually low response rate (11.74–21.88%), with the lowest response rate in 2020, introducing some non-response bias. Another potential weakness is that the preparedness score is non-validated and was created retrospectively. We attempted to validate this score by evaluating its association with the “self-assessment of preparedness” question; this showed a strong correlation. Additionally, the conditions for assessing the impact of the FiY1 role on perceived preparedness were not optimal due to the impact of the COVID-19 pandemic on the hospital working environment and the wellbeing of FiY1s (Bandyopadhyay et al. 2020). At present, lower staffing levels due to absence and increased general life stress could lead one to predict that anxiety levels would be higher for the 2020 cohort. This may have skewed the anxiety findings and blurred any effects of the FiY1 intervention.

Conclusion

This study indicates that time spent in an FiY1 role is associated with an increase in self-perceived preparedness for FY1, and lower anxiety compared to those that did not undertake FiY1. The study has also highlighted the high proportion of FY1s experiencing pathological anxiety, which requires urgent attention. We recommend a mandatory FiY1 period or enhanced induction for all new FY1s, with careful consideration of the cost implications. Further research is now required to investigate the long-term outcomes of FiY1 participants in terms of overall competence and career progression.

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Ethics approval

Ethics approval previously granted for ongoing research using data from the National FY1 survey by Great Western Hospitals NHS trust Ethics Board in 2012.

Disclosure statement

The authors have no conflicts of interest to declare. All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous 3 years; no other relationships or activities that could appear to have influenced the submitted work.

Data sharing statement

Anonymous aggregate data are available on reasonable request to the corresponding author.

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Glossary

Foundation programme: A 2-year programme which completes the basic training of a doctor in the UK before entry into specialist training. This takes place immediately after medical school.

FY1 (Foundation Year 1 Doctor): The first year in a graduate doctor's training in the UK.

FiY1 (Interim Foundation Year 1 Doctor): The role created for newly graduated doctors in April 2020 during the COVID-19 pandemic. This role provided a modified FY1 placement in advance of the normal start of FY1 in August.

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The core researchers are faculty from the University of Bristol (C. J. S. M., N. S. B., and L. H.) & Severn Deanery (C. v. H.) who designed the study, collected, and analysed all data. C. J. S. M. conceptualised the study and oversaw the manuscript development overall with significant assistance from N. S. B. and L. H. L. H. oversaw the data analysis and reporting. C. v. H. managed the research overall, and the data collection via the National FY1 Survey.

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