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Interventions, practices and institutional arrangements for supporting PGR mental health and wellbeing: reviewing effectiveness and addressing barriers

David Watson^a and John Turnpenny^b

^aNorwich Business School, University of East Anglia, Norwich, UK; ^bSchool of Politics, Philosophy, Language and Communication Studies, University of East Anglia, Norwich, UK

ABSTRACT

A significant, if relatively small, body of literature provides a picture of PGR mental health and wellbeing, and key factors influencing this. However, little has been written on interventions, practices and changes to institutional support for PGRs, how these impact on wellbeing, and what factors influence their success. This paper summarises and synthesises research that has evaluated interventions or institutional changes aimed at supporting PGR mental health and wellbeing. A rapid systematic review methodology identified 21 papers, which evaluated interventions or practices to support PGR wellbeing, gathering data from 1066 students, 33 staff members (mainly supervisors) and 11 recent graduates. The papers included were diverse but limited and therefore did not offer strong evidence for the effectiveness of specific approaches. However, they provided valuable insight, which we conceptualise in a model of approaches to enhancing PGR wellbeing before exploring barriers to implementation of interventions, and recommendations for research, policy and practice.

KEYWORDS

Mental health; wellbeing; PGR; practice/s; intervention; barriers

1. Introduction

Student mental health and wellbeing is a source of increased interest and concern, within the UK and internationally (Brown 2016; Carter et al. 2017; Papadatou-Pastou et al. 2017; Hughes et al. 2018). The literature on this topic has highlighted how institutions have shifted practice to accommodate student need for mental health services (Lusk and Fearfull 2015), but that significant barriers to accessing support remain (Cage et al. 2020). Moreover, the focus of increased interest has largely remained on undergraduate students and, to a lesser extent, postgraduate taught students. Postgraduate Researchers (PGRs) have largely been overlooked, although there is now a body of literature that provides a picture of PGR mental health and wellbeing setting out a range of key factors influencing this (Metcalfe, Levecque, and Wilson 2018; see also Stubb, Pyhältö, and Lonka 2011; Levecque et al. 2017; Barry et al. 2018; Schmidt and Hansson 2018; Waight and Giordano 2018). This review does not set out to describe this literature on PGR wellbeing, but to capture literature exploring how to address PGR wellbeing. Clearly these two literatures are closely related, hence

CONTACT David Watson  David.Watson@uea.ac.uk  Norwich Business School, University of East Anglia, Room 2.35, Thomas Paine Study Centre, Norwich, UK

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Table 1. Factors impacting PGR mental health and wellbeing.

Factors identified in literature	Example references
Pressures of doctoral research – level of support in a context of normalisation of PGR study as a ‘stressful experience’	Sverdlik and Hall 2020; Metcalfe, Levecque, and Wilson 2018; Walker 2015
Supervisory relationship – structure and quality of working relationship with supervisors	Mackie and Bates 2019; Barry et al. 2018; Pyhältö et al. 2012
Financial concerns – scholarship conditions and length; pressures of combining study with paid work	Sverdlik et al. 2018; Barry et al. 2018; Metcalfe, Levecque, and Wilson 2018
Workload and control – PGRs can face multiple, diverse and competing demands not all of which are directly related to the programme of study	Mackie and Bates 2019; Metcalfe, Levecque, and Wilson 2018; Levecque et al. 2017
Harassment – close interpersonal relationships, dependence and cultural differences can create conditions for harassment	Page, Bull, and Chapman 2019; Metcalfe, Levecque, and Wilson 2018
Professional development and career progression – variable provision and access to facilities and training as well as multiple career trajectories of PGRs can create challenges	Mackie and Bates 2019; UBGA 2014
Research progress – the rate at which PGRs progress and in particular their perception of this process	Schmidt and Hansson 2018; Barry et al. 2018
Academic identity – scholarly community; feelings of inadequacy and lack of fit with department, supervisors or academia in general can be problematic	Sverdlik et al. 2018; Stubb, Pyhältö, and Lonka 2011
Individual factors – personality, family situation and other characteristics or situations specific to the individual play a role, potentially heightening wellbeing risks for some	Schmidt and Hansson 2018; Guthrie et al. 2017

we summarise the main factors identified as relevant to PGR wellbeing in Table 1, although, this is not intended to be exhaustive.

Notwithstanding the insights captured in Table 1, mental health and wellbeing remain relatively underexplored (Sverdlik et al. 2018), in comparison to research examining attrition and dropout from postgraduate research and how to address this (for example, Wright and Cochrane 2000; Skopek, Triventi, and Blossfeld 2020). For example, a recent review looking at factors contributing to PGR success explicitly excluded studies analysing wellbeing outcomes, which were considered not related to success (Salinas-Perez et al. 2019). Yet factors that impact on wellbeing are likely to have a significant effect on dropout (Schmidt and Hansson 2018), and vice versa, since progress in study has been identified as contributing to psychological health (Barry et al. 2018).

Moreover, mental health issues are known to be prevalent in graduate students in comparison to the general population, and many of those leaving Ph.D. programmes explicitly cite anxiety and depression (Kendal and Waterhouse-Watson 2020). The status of PGRs’ wellbeing is crucial to their development and progression and therefore to the health of the UK higher education sector (Metcalfe, Levecque, and Wilson 2018). Schmidt and Hansson (2018) argue that alongside standard measures of academic progress, measures of wellbeing should be incorporated throughout a course of Ph.D. study because of the potential costs of attrition due to poor wellbeing. Beyond the psychological costs to the individual, the potential financial, creative and research activity loss is substantial (Guthrie et al. 2017; Barry et al. 2018; Mackie and Bates 2019). Consistent with the wider literature on wellbeing in the workplace, the wellbeing of PGRs and their self-efficacy also has an important effect on their motivation and productivity (Guthrie et al. 2017; Barry et al. 2018; Sverdlik et al. 2018; Sverdlik and Hall 2020). Those who do progress through postgraduate research despite the challenges can still be impacted, and this experience may also set up expectations and habits for their future academic careers. The normalisation of the ‘pressure’ of postgraduate research could be further compounding the issues of mental health and wellbeing since the expectation of a stressful working environment can lead to under-reporting of problems (Metcalfe, Levecque, and Wilson 2018). The recent nature of much of the literature on PGR mental health and wellbeing reflects an expanding field of research, but may also point to a growing problem. At the same time, this attention has increased knowledge and awareness, identifying a wider range of salient factors and greater detail in understanding what influences PGR mental health and wellbeing and how this varies between individuals (Mackie and Bates 2019).

In summary, whilst the literature on PGR mental health and wellbeing remains relatively small, there is now a body of work that provides a good understanding of the relevant factors impacting on wellbeing, and their effects. There is also a general awareness within institutions, and across the Higher Education sector, of the need for action, and a plethora of practical interventions and recommendations for changes to institutional practices (UUK 2015; Hughes et al. 2018; Metcalfe, Levecque, and Wilson 2018). There is however a significant gap in understanding how successful (or not) interventions and institutional changes have been, and why. There is very little literature addressing this question, and a disconnect between identified stressors, who they affect and how they are inter-related (Mackie and Bates 2019).

The current paper addresses this gap in two ways. First, it presents the findings of a rapid review to summarise and synthesise research that has evaluated interventions, institutional changes or practices aimed at supporting PGR mental health and wellbeing. Second, the paper explores potential reasons for *lack* of effectiveness of different interventions, drawing on ideas from the field of policy analysis to propose a simple framework for revealing barriers to implementing interventions in practice.

We sought to identify literature that evaluated practices that supported PGR mental health and wellbeing in addition to studies explicitly identified as evaluations of a planned intervention. The review addressed the following key question:

What is the effectiveness of different interventions, practices and institutional arrangements in supporting PGR mental health and wellbeing?

It is important to recognise that some literature tends to use the terms ‘mental health’ and ‘well-being’ quite interchangeably (see for example, Metcalfe, Levecque, and Wilson 2018 and Carter et al. 2017). This conflation is problematic because mental health issues affect a smaller subset of the population and refer to specific problems, whereas wellbeing is a broader term which has relevance for the population in general (Barkham et al. 2019). While an important distinction, we did not apply a specific definition or restrict our analysis to either term because we wanted to maximise the amount of literature gathered by the review, and we expected the literature base to be small. We adopted a broad conceptualisation, in line with the approach set out by the World Health Organisation, whereby mental health and wellbeing are seen as overlapping (WHO 2005). This does not assume that good mental health and good wellbeing are the same (see Galderisi et al. 2015 for a discussion) but does recognise that both were relevant to the aims of our review.

The paper proceeds as follows. Section 2 outlines the methods of the review. We then present the results of the review in section 3 before discussing the implications of the review findings for research, policy and practice in section 4. Section 5 sets out the framework for understanding barriers to implementing interventions and applies it to an example from Section 3.

2. Methods

This *rapid review* adopted systematic review methodology that was applied in a short time frame to synthesise relevant material (Grant and Booth 2009). As the review was aimed at informing work within a larger university project to improve PGR wellbeing it needed to be completed quickly and systematically to inform project decisions (Khangura et al. 2012). Systematic review methods call for structured searches using keywords associated with the research question that are then systematically screened to identify relevant publications. Findings from these publications are then synthesised. Rapid reviews follow a similar but streamlined process (Tricco et al. 2015), therefore they tend to be less comprehensive in their search strategy and interpretations of the findings captured are necessarily more tentative (Khangura et al. 2012).

To establish if the review was necessary we conducted initial searches for existing review-level studies prior to carrying out searches for the review itself (Cooper et al. 2018). These searches

only identified one study, exploring mental health in the research environment generally rather than focussing on PGR experiences (Guthrie et al. 2017). Although this rapid evidence review was not peer reviewed, it did look at interventions and their effectiveness, highlighting the weak and small evidence base evaluating interventions (Guthrie et al. 2017; Ch. 5). None of the interventions identified explicitly targeted PGRs. However, this is a field that is rapidly expanding and several reviews have been published, after the searches for this current review paper were completed (Schmidt and Hansson 2018, Sverdluk et al. 2018; Mackie and Bates 2019). These reviews predominantly concentrated on factors influencing mental health and wellbeing rather than interventions, as discussed above; although Mackie and Bates (2019) did include five intervention studies in their scoping review, evaluation was not their focus.

Search terms and strategy

Search terms were used to identify studies by their population, or sample and outcomes. These terms were intended to identify a broader range of studies than we would include in the review, applying exclusion criteria throughout the screening process to screen out irrelevant studies. The searches applied terms relating to the population and phenomenon of interest – PGR students and mental health and wellbeing (see supplementary material for full search terms). Following the inclusive approach to mental health and wellbeing set out in the introduction, we sought studies that evaluated interventions, practices and institutional arrangements in relation to wellbeing or mental health outcomes as defined by the studies themselves.

Results were then combined and duplicates removed. We also issued a call for evidence, and searched organisations' websites¹ that were thought likely to return relevant case studies. These methods did not produce any additional material related to our research question beyond those papers already identified through searches of the academic databases. The searches were completed in June 2018, but because of the amount of recent research in this area (Mackie and Bates 2019) the initial search results were supplemented with results from updated searches in August 2019, as detailed in the search flowchart (Figure 1).

The search results were screened for relevance by both authors, first by title, then abstract according to the criteria detailed in Table 2. All articles deemed eligible were screened again as full papers, and any disagreements between authors at the title and abstract stage were discussed and resolved. Any full papers rejected were double checked by the second author and the remaining titles were then retained, and relevant data extracted and synthesised. Some additional papers were identified through references and expert advice² as well as updating the search. This took the total number of studies included in the review to 21.

Quality assessment and evaluation of evidence

Quality appraisal of individual studies was guided by a tool developed for reviews where a diversity of methods is included both within and between studies (Pluye et al. 2009). Whilst this quality assessment informed our appraisal of the strength of the evidence, we do not provide specific quality ratings of the findings of individual studies. However, we do discuss the limitations of the evidence gathered by the review in final part of the findings section. We provide a narrative synthesis to 'tell the story' of the findings of studies captured in the review (Popay et al. 2006), this synthesis was developed from the data extracted from all studies included in the review. The data extraction itself was guided by a uniform approach in order to glean relevant information from each study.³ The data extraction provides the basis for Table 3 which summarises the effects of approaches to enhancing PGR wellbeing and also the narrative synthesis outlined in the findings. The narrative synthesis was then drafted by the first author and reviewed and discussed with the second author. Considering the literature on PGR wellbeing and through discursive and iterative development of the

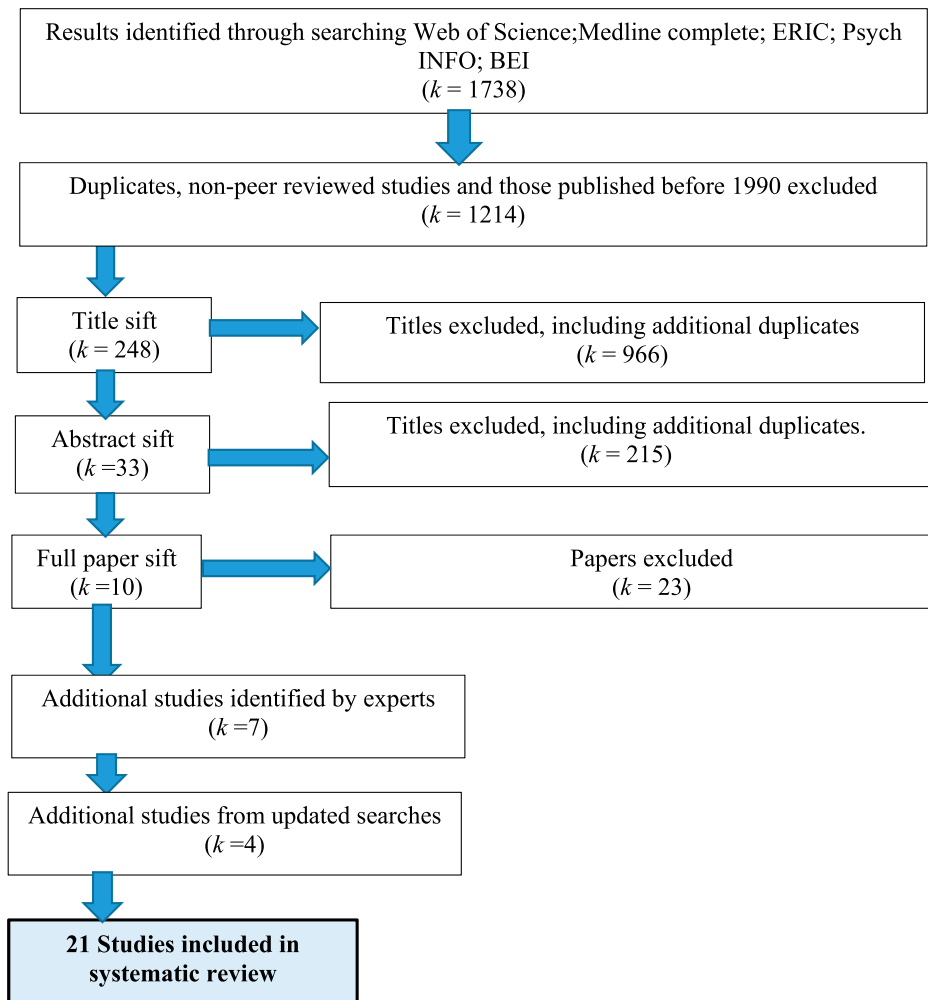


Figure 1. Flowchart of search process.

narrative synthesis between the authors a model of approaches to supporting PGR wellbeing was conceptualised. This model is underpinned by the findings of studies included in the review, which set out a range of ways in which PGR wellbeing can be influenced by interventions, practices and institutional arrangements.

3. Findings

Summary of included studies

Most included studies evaluated a relatively small population of PGRs and a clearly defined programme or intervention aimed at improving wellbeing in a general sense. Some studies addressed informal practices or institutional arrangements rather than interventions per se, and looked at other important outcomes for PGRs, such as degree progress or professional development. In total the studies included gathered data from 1066 students, 33 staff members (mainly supervisors) and 11 recent PGR graduates. However, a large proportion of this number (N = 594) came from one large study that surveyed students at a UK university to understand how they used student services to

Table 2. Inclusion/exclusion criteria.

	Include	Exclude
Population	<ul style="list-style-type: none">– UK Postgraduate Researchers or similar context e.g. EU, US, Australia– Wider population of students, but reports findings for PGRs as sub-group	<ul style="list-style-type: none">– Undergraduate students– Postgraduate (not research) students– College/FE students– Distinctly different context to UK Higher Education
Study design	<ul style="list-style-type: none">– Qualitative or quantitative empirical study– Intervention studies– Systematic review or meta-analyses– Evaluates specific intervention or institutional environment in regard to its impact on PGR mental health or wellbeing	<ul style="list-style-type: none">– Review, but not systematic in approach– Editorials, commentaries, opinion pieces, etc.
Outcomes	<ul style="list-style-type: none">– Mental health and wellbeing measured quantitatively e.g. WEMWEBS, GAD-7 or qualitatively conceptualised– Other measures that are identified as being linked to mental health and wellbeing in study	<ul style="list-style-type: none">– Course satisfaction
Date	<ul style="list-style-type: none">– Published within the last 20 years (1998 onwards)	<ul style="list-style-type: none">– Published more than 20 years ago (1997 and earlier)
Language	<ul style="list-style-type: none">– Published in English language	<ul style="list-style-type: none">– Non-English language publications
Publication status	<ul style="list-style-type: none">– Electronically accessible or in hard copy at authors' university– Peer-reviewed journal publication/book chapter/report– Publicly accessible reports and briefings that report methodology	<ul style="list-style-type: none">– Not immediately accessible– Editorials, commentaries, opinion pieces etc. that do not clearly report empirical findings or methodology– Thesis, dissertation

support mental health (Waight and Giordano 2018), and from one other study surveying PGRs (N = 142 respondents) at a large chemistry graduate school in the US (Mousavi et al. 2018). Across the studies, a range of methods were applied to evaluate mechanisms for supporting PGR wellbeing, but the majority adopted a qualitative approach (12 studies), 5 studies used a mixture of methods and 4 studies applied a purely quantitative approach to evaluation. The favouring of qualitative methods is not surprising given the relatively small average sample size of studies included (N = 25.8 excluding the study with largest sample (Waight and Giordano 2018)).

Of the four studies using just quantitative methods, three used longitudinal designs (Wright, 2006; Marais et al. 2018; Mousavi et al. 2018) one qualitative study also used a longitudinal design (Williams, Thakore, and McGee 2017), but most were cross-sectional. The fourth quantitative study included used a randomised control design (Barry et al. 2019), but the study follow-up period was short and it relied on a convenience sample, both factors that weaken the methodological approach. All included studies sampled PGRs and some also included staff perspectives (Green and Bowden 2012; Howells et al. 2017). One study, also sought views of recent graduates along with current PGRs who they mentored (McConnell, Geesa, and Lowery 2019; see also Geesa, Lowery and McConnell 2018), whilst another sampled views of current students, recent graduates and staff (Hobbs et al. 2015). Not all studies took place in the UK higher education sector, although many did. Eight studies were undertaken at institutions in the UK and Ireland, seven from Australia, two from New Zealand, three from the United States and one study at a French university. Within the 21 studies included in the review some focussed exclusively on the experiences of international students (Lee 2017; Mason and Hickman 2019; Chatterjee-Padmanabhan and Nielsen 2018) or minority groups (Williams, Thakore, and McGee 2017).

Approaches to enhancing PGR wellbeing

The findings from the review are synthesised as Figure 2, a model that outlines four broad types of approach to supporting PGR mental health and wellbeing. Table 3 maps out how the different

Table 3. Map of approaches and outcomes supporting PGR wellbeing.

	What is evaluated	Area/S OF PGR model of wellbeing impacted				Outcomes		
		Supervisory Relationship	Psychological Resources	Personal & professional skills	Community	Improved	No effect	Negative
Barry et al. (2019)	8 week mindfulness intervention		X			Depression; Psychological capital	Stress; Anxiety	
Bennett and Folley (2014)	Use of social media to support wellbeing during PGR programme				X	Access to knowledge and mutual support to improve coping and flourishing in PGR study		Exposure to criticism and social media can become demoralising and a distraction
Chatterjee-Padmanabhan and Nielsen (2018)	Thesis writing group for international students			X		Empowerment and confidence developing researcher voice and identity; reduced anxiety		
Green and Bowden (2012)	Development of a completion mind-set through PGR supervision	X				Increased emotional support for PGRs and coping abilities		
Gurr (2001)	Model for aligning supervisory style with PGR need and creates space to discuss and agree parameters of relationship	X				Improved relationships with supervisor leading to more confidence and autonomy		
Hobbs et al. (2015)	Evaluates the formalisation of training for PGRs through required modules and credits and formation of community			X	X	Created sense of Ph.D. community and reduced isolation		Pressure to complete mandatory training and inequality in expectations potential negative issues

(Continued)

Table 3. Continued.

	What is evaluated	Area/S OF PGR model of wellbeing impacted				Outcomes		
		Supervisory Relationship	Psychological Resources	Personal & professional skills	Community	Improved	No effect	Negative
Howells et al. (2017)	Intervention to enhance gratitude practices in supervisors and PGRs	X				Students reported feeling calmer, happier, more resilient and confident. Supervisors also reported improved relational quality and better communication and trust between supervisors and students		
Hutchings (2017)	Student experiences of group supervision in face-to-face monthly meetings and technology mediated group supervision through virtual learning environment	X			X	Academic development; Emotional Intelligence; Self-development; increased sense of belonging/ connectedness; access to emotional support		Some aspects of virtual supervision did not support the quality interactions experienced face to face
Janson and Howard (2004)	Evaluates the process and impact of the creation of a self-initiated community of practice (CoP) amongst PGRs			X	X	Reduced isolation; Access to support enabled better coping with strain of Ph.D.; Problem solving skills to support Ph.D. progression		
Kearns, Gardiner, and Marshall (2008)	Cognitive, behavioural coaching intervention targeted at Ph.D.'s		X			Reduced stress and enhance ability to complete (associated with Time management skills; specific, regular times spent on the Ph.D.'s; specific plan for writing; realism in expectations of self)	No significant changes in relationship with supervisor and productivity or quality of relationship	
Lane and De Wilde (2018)	Evaluates confidence, effectiveness and wellbeing impacts of a			X		Confidence; time management; space to discuss problems with		

	coaching program for PGRs				supervisory relationship and deal with social isolation. Participants reported program helped them to see life beyond study and deal with anxiety and lack of hope/optimism		
Lee (2017)	Auto-ethnographic evaluation of author's own experiences as student advocate and peer support			X	Enhanced social networks, peer support and ability to cope with stressful issues (particularly for international students)		
Marais et al. (2018)	Positive psychology intervention to improve anxiety in PGRs.				Anxiety	Stress; Depression; Subjective & Psychological wellbeing	
Marchand (2017)	Action learning for a small group of anthropology students	X			Provided support, reduced isolation and helped in problem solving improved		Sharing and exploration of problematic personal issues was experienced as somewhat draining
Mason and Hickman (2019)	Shows positive effects of mentoring approach for international students for both mentors and mentees	X		X	Social and emotional benefits for PGRs and improved academic/practical skills. Also benefits for academic mentors – professional development, confidence and social benefits		
McConnell, Geesa, and Lowery (2019)	Peer mentoring programme designed to improve support and completion rates and times for PGRs	X		X	Increased support and reassurance reducing anxiety for PGR mentees. PGR mentors encouraged to		

(Continued)

Table 3. Continued.

What is evaluated	Area/S OF PGR model of wellbeing impacted				Outcomes		
	Supervisory Relationship	Psychological Resources	Personal & professional skills	Community	Improved	No effect	Negative
McPhail-Bell and Redman-MacLaren (2019)	An account of informal peer support practices between two PGRs who adopted a weekly practice of emailing each other work plans to support progression in the Ph.D. described as weekly check-ins			X	continue learning through self-validation of own experiences and increased self-reflexivity Enhanced reflection and supported wellbeing. Reduced doubts and isolation enhanced motivation		
Mousavi et al. (2018)	To evaluate a mental health initiative that is a collaboration between the community of chemistry graduate students (CCGS), academic leadership and mental health support staff	X			Improvement in working environment. Improved feelings of support and value amongst students and more comfortable in making friends and working together. Also noted change in culture in academic department to one where mental health is openly discussed and embedded in activities	Other variables measuring feelings of support and being valued showed a positive trend, but did not reach significance	
Waight and Giordano (2018)	Explores PGR student access to non-academic support (within and outside the university) in order to develop recommendations for improving institutional (university) services with	X			Focus groups useful for sharing experiences and building resilience		

Williams, Thakore, and McGee (2017)	an emphasis on mental health support Cross university coaching program for under-represented minority (URM) students				X		Coaches and peers identified as providing emotional support to PGRs, but also information to help them solve/manage issues. Program reduced sense of isolation for some
Wright (2006)	Counselling intervention for PGRs			X			Psychological distress reduced overall and academic impairment reduced
Totals		4	5	8		8	



Figure 2. Approaches to enhancing PGR wellbeing [graphic: see acknowledgements].

papers identified in the review correspond with Figure 2 and specifies the main outcomes identified as being relevant to PGR wellbeing or mental health.⁴ Each of the four broad types is discussed in more depth in the following sections which comprise a narrative synthesis of the data extracted from included studies, which we subsequently discuss as a whole alongside the limitations of the evidence captured in the review and implications arising.

1. Relationship between PGRs and their supervisors

The structure and quality of the working **relationship between PGRs and their supervisors** has long been identified as a key causal factor influencing PGR wellbeing (Mackie and Bates 2019, 569–71). Three studies directly addressed the relationship between PGRs and their supervisors (Gurr 2001; Green and Bowden 2012; Howells et al. 2017).

The interventions utilised tools to enhance communication and transparency, such as a tool to align supervisory style with PGR need (Gurr 2001), encouraging gratitude practices to improve the supervisory relationship (Howells et al. 2017), that had other benefits also. Increased confidence was expressed by students participating in some interventions (Gurr 2001; Howells et al. 2017), which enabled students to develop more autonomy and access more support if needed (Gurr 2001). The studies also highlighted the multiple ways in which supervisors can provide support, underlining emotional support as an important supervisory role, although one not typically

expected from supervisors (Green and Bowden 2012). A fourth study explored the role of group supervision in enabling students to draw on each other as resources for critical reflection, learning and emotional support, whilst also creating a sense of belonging in a group of professional doctoral students (Hutchings 2017). Experiencing supervision as a group facilitated PGR community, another important aspect of the conceptual model, and also raises the possibility of a different mode of supervision with implications for PGR wellbeing.

2. Psychological and emotional resources

The independent nature of postgraduate research can create isolation and presents challenges for self-motivation and self-management, highlighting the need for PGRs to develop resilience to thrive and progress. Five studies evaluated programmes explicitly aimed at building these **psychological or emotional resources**. The large-scale study by Waight and Giordano (2018) sought to comprehensively evaluate the extent to which students were aware of and accessing student services to support these psychological resources. The study underlined the importance of mental health services outside of university and informal sources of support, such as family friends and peers, with participants identifying the focus groups of the study itself as useful for sharing experiences and building resilience (Waight and Giordano 2018; see also Mousavi et al. 2018).

The four studies that evaluated programs designed to improve psychological resources showed reduced anxiety (Marais et al. 2018), reduced stress (Kearns, Gardiner, and Marshall 2008), improvements in depression and psychological capital (Barry et al. 2019), as well as fewer wellbeing problems and better course retention (Wright 2006). A cognitive behavioural coaching intervention aimed to combine cognitive skills for managing emotionally destructive behaviour with practical time and work management skills. The study argued that the psychological or emotional dimension needs to be embedded in PGR training (Kearns, Gardiner, and Marshall 2008), which is consistent with studies included in the review that highlighted how doctoral training can also address PGR anxieties. A more comprehensive mental health initiative was examined by Mousavi et al. (2018), who highlighted its collaborative nature. The initiative brought PGRs, faculty leadership and professional health services together to bring about a cultural change in the graduate school, to the point where mental health was openly discussed and embedded in departmental activities. This example of a holistic approach to developing psychological resources was embedded in a cultural change in the community around PGRs, demonstrating the impact of interventions beyond the individual level.

3. Personal and professional skills

Developing a sense of academic identity, career progression and development of **personal and professional skills** are key to PGR wellbeing and successful PGR study generally. The eight studies in this area evaluated different practices and initiatives to support personal and professional development, with several evaluating coaching or mentoring schemes for PGRs (Mason and Hickman 2019; Williams, Thakore, and McGee 2017; Lane and De Wilde 2018; McConnell, Geesa, and Lowery 2019). The investment of time and effort for mentors and coaching can be significant (Mason and Hickman 2019), and they may not always have the skills or knowledge that those they are supporting are looking for (Williams, Thakore, and McGee 2017; McConnell, Geesa, and Lowery 2019). In general though, these approaches were valued by those being mentored or coached and those providing guidance who experienced this as development (McConnell, Geesa, and Lowery 2019). Mentoring was also shown to help build PGR community, for example by pairing new students with current PGRs, developing peer groups and facilitating social events (Mason and Hickman 2019; Williams, Thakore, and McGee 2017; McConnell, Geesa, and Lowery 2019).

Coaching sessions can also offer a neutral space to help resolve issues in the relationship between supervisors and their students (Williams, Thakore, and McGee 2017; Lane and De Wilde 2018) having a positive effect on supervisory relationship, another key influence on PGR wellbeing. The coaching and mentoring programs captured in the review were focused on helping students to develop

personal and professional skills enabling the development of competencies and problem solving abilities (Janson and Howard 2004; Marchand 2017). However, they also had an impact on wellbeing in other ways, helping students to overcome isolation (Hobbs et al. 2015) and anxiety (Chatterjee-Padmanabhan and Nielsen 2018). Practices in this area of the PGR model support students ability to complete their study through the development of skills and this is indicated in some of the studies included, but the studies also highlight their role in developing community and dealing with issues associated with supervisory relationships. Some of the studies did note the demands of development, in terms of being a mentor or participating in training that was not necessarily relevant or valued. Therefore, sensitivity to individual training requirements and benefits is important.

4. Community

Developing the PGR **community** in institutions is key. This can be achieved through shared working space, social events, group training programmes and online platforms. Several studies identified the formation of PGR communities as important for wellbeing, although not all of these set out to explicitly achieve this. The creation of community can establish mechanisms for sharing tacit knowledge, and a repository of resources that could be useful for coping and succeeding in Ph.D. study (Janson and Howard 2004; Bennett and Folley 2014). Emotional support as well as practical problem solving of issues related to PGR experience were key outcomes (Hutchings 2017; Lee 2017; Mason and Hickman 2019; McPhail-Bell and Redman-MacLaren 2019). Mechanisms for the creation of community may be particularly important for International students who might have limited social networks at the host institution and face cultural challenges (Lee 2017; Mason and Hickman 2019), particularly in managing their relationships with supervisors. The studies evaluating mechanisms for peer support and advice highlight the role of these in emotionally supporting mental health and wellbeing, but these mechanisms also facilitated sharing of skills and strategies for success in PGR study, assisting professional and personal development.

Discussion and limitations

The evidence synthesis indicates four broad approaches to supporting PGR wellbeing that act as key focus points for activities. However, there are many overlapping elements. Studies looking at how supervisory relationships can be strengthened to improve PGR wellbeing also underlined that these relationships can support personal and professional development, help to develop psychological resources, and PGR community depending on how supervision is structured and experienced. Similarly, the outcomes that follow from a coaching programme are not necessarily different to those arising from a student-led community of practice.

The literature on Ph.D. supervision underlines various ways it can impact PGRs negatively (Mackie and Bates 2019) particularly in the early stages of Ph.D. study where a change, uncertainty or conflict between supervisors can have a marked impact (Cornwall et al. 2019). International students may face particular challenges in establishing good relationships with supervisors (Elliot and Kobayashi 2019), as may marginalised groups who experience challenges to Ph.D. study more acutely (Mattocks and Briscoe-Palmer 2016). Therefore, the studies in the review that built trust, appreciation and communication between supervisors and PGRs demonstrate an important route to positive student-supervisor relationships, which is a protective factor for wellbeing (Hazell et al. 2020). Poor communication, cultural insensitivity or excessive criticism can damage supervisory relationships and PGR mental health (Li and Seale 2007). Therefore, supervisors' role in developing PGR students, in a holistic sense, alongside supporting academic development and eventual completion is an important consideration (Åkerlind and McAlpine 2017). Whilst international students may benefit from a personalised, holistic style of supervision (Egan et al. 2009), the review showed that PGR students also draw support from many other sources. Peer support, wider PGR community and coaching programmes offer spaces to resolve or cope with issues arising from within supervisory relationships.

Those interventions and practices that enable peer support and PGR community also help to address isolation and loneliness that can be experienced by Ph.D. students (Cornwall et al. 2019). The review highlights that this issue can be addressed in a number of ways, including informal practices of support (e.g. through email correspondence (McPhail-Bell and Redman-MacLaren 2019)), formalised mechanisms (e.g. mentoring programmes (Mason and Hickman 2019; Williams, Thakore, and McGee 2017)) and more indirectly (e.g. through shared professional skills programmes (Hobbs et al. 2015)). The presence of social support is protective of PGR wellbeing (Hazell et al. 2020) and whilst the Ph.D. may be regarded as an individual journey the presence of a supportive community to cope with emotional strain is important (Collins and Brown 2020) and can be developed by group supervision (Hutchings 2017) and other practices as evidenced by the review. Social support is not just important for PGR students, but also in the transition to postdoctoral research career (Vekkaila et al. 2018). The independent nature of Ph.D. study demands attention to how to support that combats isolation can be built into this experience and online communities can play a role, as evidenced by one study in the review (Bennett and Folley 2014).

Online resources can also be a helpful source of information utilised by students (Papadatou-Pastou et al. 2017; Waight and Giordano 2018) enabling them to practice 'self-care' to maintain wellbeing (Hazell et al. 2020). The inclusion of studies that demonstrated approaches to develop psychological resources for PGRs is in line with literature highlighting resilience and perseverance as core competencies for Ph.D. students (Durette, Fournier, and Lafon 2016) and individual interventions building psychological resources were shown to be effective in the review. However, studies also argued for the need to embed these capabilities into professional training (Kearns, Gardiner, and Marshall 2008) and supervision (Green and Bowden 2012), highlighting that supporting PGR wellbeing in a general sense and adopting practices that support PGR progression are also likely to benefit mental health and resilience (Kendal and Waterhouse-Watson 2020).

The qualitative nature of much of the data made it difficult to identify explicit outcomes that are distinguishable from one another. Many of the studies talked about wellbeing in broad terms, using terms like confidence and support. Several studies in the review evaluating different approaches identified increased confidence as an important outcome related to wellbeing (Gurr 2001; Mason and Hickman 2019; Chatterjee-Padmanabhan and Nielsen 2018; Lane and De Wilde 2018). This finding is in line with previous research that highlights increasing confidence as an important aspect of personal and professional development in PGR study (Mowbray and Halse 2010). Recent research has also identified the value for PGRs in both giving and receiving support (Vekkaila et al. 2018) reflecting the utility of approaches that involve mentoring or PGR community building. It was also clear that many of the approaches do not necessarily address wellbeing problems explicitly but are actions that may be considered good institutional practice and thereby contribute to wellbeing. They are likely to assist with timelier thesis submissions, fewer withdrawals, and better academic outcomes, which can be considered important for wellbeing as well as reducing mental health concerns.

In general, the different approaches evaluated were diverse, with a wide range of methods applied and small average sample sizes. Moreover, the evaluations were typically cross-sectional and often provided subjective accounts of the effectiveness of different mechanisms for supporting PGR wellbeing. These characteristics meant it is difficult to generalise from the findings of the review or appraise whether specific approaches are particularly effective. Despite not being able to offer generalisable evidence for the effectiveness of different approaches to supporting PGR wellbeing, the data captured in the review are rich, and can usefully inform approaches to supporting PGRs. Furthermore, the review also suggests that a narrow conceptualisation of wellbeing or mental health may actually be limiting in considering how best to support PGRs. Many of the included studies highlighted ways in which informal support mechanisms can be strengthened and individual resilience can be developed outside of formalised wellbeing interventions or mental health support services. The review does point to the continued value of dedicated mental health and wellbeing services, notably those supporting psychological resources, alongside broader approaches that

support PGR wellbeing in the four key areas identified. However, the review also highlights that the evidence base is still relatively small and the methodology adopted by studies identified in the review limits the extent to which we can say with certainty approaches to PGR wellbeing and mental health are effective or not.

The field of research and literature on PGR wellbeing is developing apace and this is adding important insight to our understanding of this issue and its implications for the research sector. PGRs are an important cohort, particularly for the future of the research sector and also in terms of their academic output and contribution to research teams (Levecque et al. 2017). The experience in undertaking a Ph.D. is also formative of their research career more generally since it involves training researchers to fit into their future working environment (Bégin and G  rard 2013). If this experience is normalised as stressful then this is likely to set up harmful expectations and habits for research careers (Cornwall et al. 2019), thus influencing the experience of work in the sector more generally. Whilst wellbeing should be an important consideration in and of itself, it also has a bearing on productivity, as the wider literature on workplace wellbeing confirms (Whitman, Van Rooy, and Viswesvaran 2010; Oswald, Proto, and Sgroi 2015).

The rapid nature of this review and methodology applied, alongside the rate at which literature on the topic is expanding means the review is unlikely to have captured all relevant information available. However, a paper identified in our searches was also recommended to us by its authors as a result of our call for evidence, suggesting our search strategy and terms had produced valid results. Universities themselves are also likely to hold valuable information evaluating practices that is not available as published research, either as grey literature or in academic outlets. The PGR cohort, which is typically quite small and varied in each institution presents challenges to undertaking more extensive quantitative research to understand the effects of particular practices and interventions. Researchers and practitioners will need to select appropriate techniques and combine methods where necessary. Although the review did identify quantitative studies, and one large survey, in particular, there are limitations to what these kinds of approaches can tell us about practices at a more micro level. If PGR numbers continue to grow then quantitative methods may become more applicable, however, the review emphasises the worth of qualitative studies, which remain valuable for capturing rich data of subjective experiences, particularly those of students themselves.

4. Implications for research, policy and practice

This review has uncovered a wide range of practices that can support wellbeing that can be regarded as good institutional practices for universities to adopt developing a conceptual model that can be a useful basis for these practices. We highlight five particular recommendations for action by individuals and HE institutions and explore how potential barriers to implementing actions can be overcome in the following section.

First, the studies captured in the review underline the benefits of developing PGR community using a range of methods adapted to specific contexts, this may include cohort training programmes and student-led initiatives. Where initiatives are student led, some institutional support is likely to be required, and institutions need to be wary of asking too much of students. Collaborative approaches where faculty and students work together can reach beyond the PGR community to improve the culture of a school or department more widely and be effective in supporting wellbeing, particularly if they draw on professional mental health staff (Mousavi et al. 2018). Opportunities for PGR students to meaningfully inform department or university-wide initiatives need to be considered.

Second, virtual communities can be complementary to the development of shared space and activities and connect PGRs at a broader level of community, but if relied on solely may not generate the same support. Online support and social media platforms can provide support but are not comprehensive, and online spaces can potentially be negative for wellbeing. Awareness of online support may be limited, and trusted public health services may be preferred. Therefore, universities

should make efforts to understand what sources of online support PGRs access and use, and what may be most helpful.

Third, dedicated mental health support services are important, but interventions that facilitate personal development and build resilience are likely to be useful preventative strategies. Moreover, these are an important aspect of academic and professional development that will support PGRs as they transition into early career researchers. Institutions need to consider how their practices support PGR wellbeing alongside staff and other students. The wellbeing of early career researchers and post-docs is also important, particularly given competition for academic roles and the pressures on successful Ph.D. graduates seeking to develop their career (Levecque et al. 2017; Hayter and Parker 2019).

Fourth, pay particular attention to the quality of the supervisory relationship. Institutions and individual departments should consider how to embed emotional support in supervisor training and the development and use of tools/strategies to manage and improve the supervisory relationship. This may necessitate additional support for supervisors and localisation of support services.

Finally, peer support and mentoring are important sources of good mental health and professional development, but also demand resources and commitment from individuals and may require specialised knowledge/skills. They can in some cases create a burden on mentors. The impact on all PGRs participating needs to be considered. Universities could consider facilitating peer support through professional development and training to encourage buy in from PGRs and others.

5. Understanding barriers to implementing interventions

The review above has helped formulate practical recommendations, but there remain key questions for those addressing PGR mental health and wellbeing in the higher education sector. Despite the depth of knowledge about the factors affecting PGR wellbeing and awareness amongst institutions and policy makers of the need to act on mental health, gaps remain in terms of successful action (Mackie and Bates 2019). While the recommendations above suggest potentially useful mechanisms for improving PGR wellbeing, the success of actions also depends on their prioritisation and integration with current processes, and arrangements that shape how organisations and individuals carry out their work. Following mainstream scholarship in political studies (e.g. Peters 2012), we argue that institutional contexts bound and shape how new initiatives play out in practice.

Different institutions, decision-making processes, sectors and decision support tools must work to different time frames, different objectives, different capacities, different analytical processes and different boundaries. Successful wellbeing and mental health interventions can be frustrated or altered at any of these points. Therefore, having ‘sufficient understanding’ of wellbeing problems, or using examples of ‘best practice’ from elsewhere, does not necessarily mean that this knowledge will be used to successfully transform practice. The contextual factors that affect transfer of ideas between political systems are familiar to scholars of political studies – see, for example, the overviews by Knill (2005) and Benson and Jordan (2011). In the case of wellbeing interventions in higher education, lesson-learning, sharing good practice and building networks around ideas and interventions are all important, but it is also critical to understand factors that shape HE organisations’ abilities to successfully take this knowledge forward and address wellbeing problems.

In this final section of the paper, we do two things. First, we propose a simple theoretical framework for understanding where barriers to successful implementation of interventions may arise. Second, we combine this with the approaches to enhancing PGR wellbeing that arose from our review (Figure 2) to propose a model for addressing barriers at the intervention, department, or university level. Drawing on research by Russel and Turnpenny (2020; see also Russel, Turnpenny, and Jordan 2018) about challenges faced when attempting to embed knowledge in the natural environment in policy-making, and adapting it to PGR wellbeing, we propose a three-level framework for

understanding where barriers to successful implementation of interventions may arise. Such barriers can occur at the *individual, organisational and wider social and political level* and whilst it is possible to explore barriers individually or at one particular level, they should not be considered as discrete. Clearly, the wider social and political context has an impact on how and why HE institutions approach PGR wellbeing and mental health, which in turn will influence how individuals themselves perceive and access interventions, below we provide a summary and examples of barriers at the different levels in the context of PGR wellbeing.

The *individual level* includes the behaviour of individuals involved in decision-making and intervention design and implementation, and also the individuals with mental health/wellbeing needs – and the resource and other constraints upon them. Barriers here might include limited awareness, understanding, time, or money; and scepticism about how interventions add to or complement existing practices and ideas. The *organisational level* includes organisational procedures and management structures, how knowledge and ideas are transferred, norms and incentive structures. Barriers may include fragmented and conflicting requirements across different university functions and decision-making levels, differing ideas about the type of intervention to be deployed – and whose ideas are most influential; and weak leadership. The *social and political context* includes broader societal and political values, norms and goals and relations between HE and other organisations. Barriers at this level can manifest in different ways, such as competing for underlying societal values, business and political priorities about what is important, and differing demands emerging from them – which may not be aligned with or may take priority over PGR wellbeing. Values, such as maximising student numbers, minimising resource use, world class research, financial survival, may be

a) Intervention aim: Improve supervisory relationship



b) Specific Intervention features

- Mental health awareness training for supervisors
- Use of new planning tool to provide clear structure and align expectations in working relationship
- Group supervisory meetings involving students and supervisors in the same cohort

d) How barriers might be addressed

Co-development and understanding different actors' perspectives, for example:

- Initial discussion session on wellbeing and mental health involving supervisors and PGRs
 - exploring the importance of wellbeing in underpinning excellent research.
- Awareness sessions for students on supervisor role in relation to wellbeing.
- Development session with supervisors to incorporate ideas into new planning tool with further opportunities to review.
- Approach is piloted and reviewed by PGR director in tandem with supervisors and PGR representatives. New approach to supervision used as means to spread awareness and take up of institutional support for PGR wellbeing.

c) Examples of potential barriers

Individual: Supervisors already have own approach to managing PGRs, they do not see mental health as their role. PGRs also do not see supervisors as someone they would approach.

Organizational: supervisors not allocated enough time by the institution to include additional training; senior staff believe wellbeing is already supported well at institutional level

Social and Political context: priority is seen as PGRs completing on time and producing world-class research above all else

Figure 3. Combining approaches to PGR wellbeing with barriers framework.

explicitly expressed or implicitly assumed. There may also be different conceptions of wellbeing and associated causes of poor mental health. For example, some may believe problems are mainly caused by individual lack of resilience, while others may look to a social conception of wellbeing.

The above examples of barriers at the three levels are not intended to be exhaustive or necessarily relevant in every instance. However, they can inform a framework to address barriers and examine actual practice in combination with approaches to enhancing PGR wellbeing (Figure 2) and the practical recommendations of the review. Given the limited size and scope of the intervention literature on PGR wellbeing and mental health, consideration of potential barriers by those working in the sector at the outset of planning actions is likely to be important. Barriers could be addressed in different ways, for example, through a facilitated discussion workshop, including appropriate representatives of PGRs, academics, professional services, students' union and senior leaders. A workshop could integrate the planning of a particular intervention/s with identification and consideration of barriers to determine actions, but addressing barriers effectively is likely to require continued consultation and adaptation. In Figure 3 above, using the example of an intervention to improve the supervisor-PGR relationship, we show how the approaches to enhancing PGR wellbeing might be combined with the barriers framework through consultative workshops to more effectively lead to successful action.

Conclusion

Whilst universities are beginning to attend to wellbeing more strategically and are undoubtedly mindful of growing needs in relation to student wellbeing more generally, PGRs are a group that can be overlooked, as neither wholly staff nor conventional students. This combined with the particular nature of postgraduate research means that this is an at-risk population. Failure to attend to PGR wellbeing and the wellbeing of those working in the research sector more generally may result in losses to scientific advancement, significant costs and limit the supply of talent in the research workforce. The conceptual model we build from reviewing the literature on interventions and practices that support PGR wellbeing can form the basis of a more strategic approach that is also likely to improve retention and completion times. The review suggests that institutions need to be able to strike a balance between dedicated services for wellbeing and mental health and wider culture and climate that underpins wellbeing for PGRs. Thought also needs to be given to potential barriers to implementation of particular interventions and how barriers to PGR wellbeing can be overcome at individual, organisational and wider social/ political levels. Finally, the above analysis makes clear that PGR wellbeing cannot be separated from the working conditions and practices in the higher education sector generally and the wider labour market. Meaningful action to improve PGR mental health and wellbeing needs to be considered within that context.

Notes

1. Organizational websites were: Student minds; NUS; Universities UK; HEFCE; Advance HE (formerly Higher Education Academy); Higher Education Policy Institute; UK Council for Graduate Education; Vitae; Times Higher Education
2. See acknowledgements for details of experts contacted for potentially relevant sources.
3. See supplementary material for data extraction guidance and detailed summary table of papers included, which is available by emailing the first author
4. More detailed summary information of studies included in the review is contained in supplementary material.
5. This organisation has now been replaced by *The Office for Students and Research England*.

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