



The mental labyrinth of postgraduate research: a qualitative study of postgraduate mental health and wellbeing and the impact of the supervisory relationship

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Abstract

Postgraduate research students (PGRs) experience disproportionately high levels of psychological distress. Many factors contribute to this poor mental wellbeing and relate to each other in complex and dynamic ways. However, the relationship between PGRs and their supervisor(s) is known to strongly affect the wellbeing of the former. This study explores the mental health and wellbeing of PGRs with a focus on the role of the student—supervisor relationship. Using combined qualitative data from a large survey of PGRs and focus groups and reflexive thematic analysis, we found that PGRs experience the overarching process of obtaining a research degree as a mental labyrinth. Three constituent themes were identified: (1) inequity in navigating the labyrinth, (2) the labyrinth as a place of uncertainty and isolation, and (3) supervisors as labyrinth guides, not mental care providers. The results suggest that significant inequities exist which contribute to poorer mental wellbeing in particular subgroups of PGRs, both in general and specifically in relation to the supervisory relationship. Experiences of loneliness and ambiguity around progress were also identified as being detrimental to mental health. Furthermore, although supervisors can be a vital source of support and have a positive influence on PGR mental health, students recognise supervisors cannot reasonably be expected to act as professional mental health care providers and institutions must do more to provide equitable access to mental health support services.

Keywords Student mental health · Postgraduates · Doctoral students · Supervisory relationship · Mental wellbeing

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Introduction

Research on postgraduate researcher (PGR)¹ populations shows high levels of psychological distress and mental ill-health (Allen et al., 2022; Casey et al., 2022; Evans et al., 2018), with recent studies reporting approximately 40% of PGRs experienced moderate to severe depression and anxiety symptoms (Hazell et al., 2021; Milicev et al., 2021). Levecque et al. (2017) observed higher rates of poor psychological wellbeing in PGRs ($N=3659$) compared to highly-educated professionals. A large proportion of PGR survey respondents agreed that developing a mental health issue during their research was “the norm” (42.3% of 3058 respondents; Hazell et al., 2021, p. 3). The high prevalence of poor mental health in PGRs calls for a better understanding of PGR wellbeing (Schmidt & Hansson, 2018).

Research to date has elucidated various related factors. For instance, workaholism has been associated with reduced satisfaction with work, depression, anxiety, and perceived stress in this group (Caesens et al., 2014; Milicev et al., 2021; Peluso et al., 2011). PGRs report working more than their contracted hours (Kusurkar et al., 2021), reducing investment in social and personal lives, a protective factor for wellbeing (Hefner & Eisenberg, 2009; Stallman et al., 2018). Loneliness is also a significant source of distress in student populations (McIntyre et al., 2018). Additionally, experiences of rejection are common in academia and can be detrimental to PGRs’ mood (Gin et al., 2021). Maladaptive perfectionism is another commonly cited factor in poor work-life balance (Casey et al., 2022; Milicev et al., 2021; Woolston, 2021), exacerbated by lack of control over many aspects of a research degree (Gin et al., 2021). Conversely, resilience is negatively associated with depression and anxiety in PGRs (Milicev et al., 2021).

Along with individual factors, recent research has broadened to consider wider interpersonal and systemic factors, including the supervisory relationship (Dericks et al., 2019; Evans et al., 2018; Gin et al., 2021; Milicev et al., 2021; Schmidt & Hansson, 2018; Sverdlik et al., 2018). In many cases, supervisors are perceived as supportive and a source of positive feedback (Gin et al., 2021; McAlpine & McKinnon, 2013; Pitkin, 2021). However, unrealistic supervisory expectations can be a significant source of pressure on PGRs (Pitkin, 2021). When supervisory feedback is deemed insufficient in quality or volume, students may perceive they are underperforming (Gin et al., 2021), while a “hands-off” supervision style is associated with pessimism around PhD completion (Gruzdev et al., 2020). This can cause PGRs to consider leaving their doctoral research (Schmidt & Hansson, 2018). Furthermore, reduced satisfaction with supervisory support has been associated with higher degrees of anxiety, exhaustion, depressive symptoms, and cynicism in PhD students (Cornér et al., 2017; Milicev et al., 2021; Peluso et al., 2011). However, PGRs’ evaluation of the supervisory relationship was not found to be a significant predictor of depression or wellbeing in models which accounted for an extensive range of demographic, academic, and personality factors (Milicev et al., 2021). Additionally, supervisors rate this relationship as less important for successful academic outcomes than PGRs (Dhirasasna et al., 2021). Despite this, the supervisory relationship is perceived by PGRs to strongly affect their wellbeing and outcomes (Casey et al., 2022; Dericks et al., 2019; Hunter & Devine, 2016), and understanding the reasons for this can highlight areas for improvements in institutional practices.

¹ The current study uses the term postgraduate researchers (PGRs) to refer to both masters and doctoral research students.

The complex interrelation of the above factors with PGR mental health and wellbeing was exemplified by Dhirasasna et al. (2021) using a systems approach. They demonstrated that these factors are dynamically linked and can switch between being positive or negative influences on wellbeing depending on context. This highlights a limitation of quantitative studies based on aggregated results which cannot adequately capture this dependence on context. While quantitative studies are vital for examining factors associated with mental health in PGRs, qualitative methods can generate in-depth, nuanced understandings of these issues from different perspectives (Miles et al., 2014).

Qualitative findings to date offer initial insights into the multifaceted and dynamic nature of student wellbeing (Schmidt & Hansson, 2018; Stubb et al., 2011) and related factors, such as the impact of stigma and experiences of discrimination on PGR absenteeism and presenteeism (Berry et al., 2021). For instance, Gin et al. (2021) focused specifically on depression within a sample of life sciences PhD students and illuminated the negative impact of research-related stress and isolation on mood. The authors acknowledged the need for future research to broaden enquiry to those without depression and echoed other calls to explore experiences across a range of disciplines and demographics (Stubb et al., 2011). A recent review of doctoral researcher's mental health included meta-synthesis of qualitative evidence around individual and system-wide factors impacting wellbeing, highlighting the importance of the supervisory relationship along with wider social support. The reviewers concluded there remains a need for further qualitative research providing more in-depth analysis of these issues (Hazell et al., 2020).

A deeper understanding of PGR mental health and wellbeing, and the impact of the supervisory relationship, is valuable for informing best practice and policy in higher education establishments. This should account for how student experiences vary significantly across supervisory teams, disciplines, and personal circumstances (Allen et al., 2022; Gardner, 2010; Golde, 2005). Aiming to address this identified gap, the present study sought to explore rich qualitative data from a diverse sample of PGRs across a broad range of institutions and disciplines within the UK. The present work complements the results of the quantitative analysis portion of the overarching mixed methods study, which found high rates of poor psychological wellbeing in a large sample of PGRs (Milicev et al., 2021), aiming to answer the following research questions:

1. How do PGRs experience mental health and wellbeing during their studies and what do they perceive as influencing this?
2. How do PGRs perceive and experience the role of the student–supervisor relationship in relation to mental health and wellbeing?
3. How do PGRs describe their expectations or preferences for their supervisors' role in supporting their mental health and wellbeing?

Method

The research presented here was part of a concurrent mixed-methods study on PGR mental health and wellbeing approved by the University of Glasgow College of Science and Engineering Ethics committee (application number 300180043). The qualitative component aimed to explore the lived experiences of PGR wellbeing and consisted of (1) open-ended survey questions within a mixed-methods online survey and (2) focus group discussions of the role of supervisors. The survey facilitated a broad exploration of a variety of

perspectives within the PGR community, while focus groups allowed for a deeper insight into participants' lived experience of the interplay between PGR wellbeing and the supervisory relationship (see Braun et al., 2021).

Qualitative survey component and focus group schedule development

There were five open-ended questions in the survey (Supplementary File 1) about experiences, needs, and concerns surrounding PGR mental health and wellbeing. The focus group schedule (Supplementary File 1) was constructed around three focal topics aligning with the Health Belief Model (HBM; Orji et al., 2012): (1) *perceived susceptibility and severity*, perceptions of how postgraduate research experience and the supervisory relationship impact wellbeing; (2) *benefits and barriers*, to sharing mental health and wellbeing issues with supervisors; and (3) *cues to action*, changes to supervisory relationships and institutional culture to encourage open discussion of mental health and improved wellbeing.

Participants and procedure

The survey data ($N=479$) were collected on Jisc Online surveys platform (onlinesurveys.ac.uk) between December 2018 and July 2019. All UK-based PGRs registered for research-focussed master's or PhD programmes were eligible to participate (excluding taught, clinical, or professional doctorates) regardless of mode of study (full-time/part-time, on-campus/distance, active/suspended). PGRs from 47 universities across the UK took part. PGRs at a large research-focused UK institution were invited to complete the survey via institutional email (16% response rate), while others were recruited via social media and PGR networks. While survey data were collected from 47 universities in the UK, 5 focus groups ($n=20$; all PhD students) were conducted and audio-recorded by JM in February 2019 at one large university with survey respondents who agreed to further participation. Recordings were transcribed and anonymised professionally. Demographic information for the survey and focus group participants are reported in Supplementary File 2.

Analysis

Data were analysed utilising reflexive thematic analysis (TA; Braun & Clarke, 2006, 2019). Reflexive TA was used as it can accommodate different epistemological stances while systematically exploring similarities and differences across the dataset to generate insights (Braun & Clarke, 2006). A critical realist stance was adopted, congruent with the aim of exploring and interpreting participants' subjective experiences while attending to the context in which these experiences arise (Fletcher, 2017, 2020). This approach acknowledges how researchers' prior knowledge of the research area and personal experience of the phenomenon of interest shape the analysis process.

Analysis was led by AR and JM and adhered iteratively to the six steps of familiarisation, coding, generating, reviewing and defining themes, and write-up prescribed by Braun and Clarke (2006). Separately, JM and AR familiarised themselves with the data by reading and re-reading the focus group transcripts and survey responses. JM then created an overview of trends she observed across the data, while AR annotated the data with brief descriptions of her interpretation of the participants' meaning. From these, AR derived an initial list of descriptive codes, focused on participants' subjective

experience. During coding, JM and AR discussed their initial thoughts together with MG and NW, exploring the differences in their initial interpretations of the data. JM's overview focused on more detailed examples from the focus group data, while AR's focused on more broad trends across both data sets. Both AR and JM shared the overarching impression that participants' predominant sentiment was of the challenging nature of postgraduate research. However, we noted that we should carefully attend to deviant cases and important insights that might stem from smaller subsections of the data. For example, AR considered how participant accounts of the extent of challenge appeared to vary depending on different characteristics (e.g., full-time versus part-time, and funded versus unfunded). Additionally, AR and JM noted one focus group participant articulated a very positive appraisal of their studies, which provided an informative deviant case in which their differing perspective was considered within the context of their status as a mature student with relative financial security.

AR created "mind maps" of the relationship between codes to illustrate potential groupings around central organising ideas. From these, an initial thematic framework was generated, centred around a participant's description of postgraduate research being a "mental labyrinth". During familiarisation, AR noted in her reflexive journal, "this quote stopped me in my tracks" as it seemed to "chime with the uncertain and challenging process many of the participants are experiencing". AR presented the mind maps and initial thematic framework to JM, MG, and NW. Through discussion, the team sought to enhance credibility and congruence with a critical realist stance, for instance, considering how PGRs constructed accounts of the supervisory relationship which may differ from that of their supervisors' view. These discussions offered challenges to early indicators of "positivism creep" in which initial interpretations of participant data risked being positioned as definitive accounts of a singular shared reality. From these discussions, the thematic framework was further developed. During this process particularly, AR and JM sought to enhance rigour by ensuring all themes were supported by participant quotes taken in context and seeking out counterevidence to avoid focussing only on those experiences they most closely identified with, such as burnout and uncertainty.

The study team comprises PGR students (AR, JM, DRRB) and academics (NW, MG) so reflexive consideration of our positionality was of particular importance given the research topic. AR, JM, and DRRB engaged in reflexive activities to promote self-awareness of how their own status, characteristics, and experiences, including of personal mental health and wellbeing during doctoral research and of supervisory relationships, echoed or diverged from those of the participants. For example, AR noted that much of the thematic narrative did not align with her own experience and reflected on how this may be understood in the context of her relative privilege (e.g. funding and a good supervisory relationship), which was discussed within the team to consider how it could influence which data were, and were not, attended to more closely in the developing analysis.

Results

The analysis of the focus group and survey data generated three main themes, organised around a metaphor articulated by a participant who described the journey through the PGR process as a "mental labyrinth" (Lara, FG3²). This depicts the challenging and potentially

² Quotes attributed to [PNNN] denote Participant Number from survey data. Quotes attributed to *Name* [FGN] denote Participant Pseudonym and Focus Group Number.

circuitous route PGRs navigate in obtaining their degree, evidenced in different ways across the data. Findings elaborate how this journey, and the impact on PGR mental health and wellbeing, can be affected by three interrelated themes: (1) Inequitable structural factors; (2) Uncertainty and isolation; and (3) Guidance and dynamics within the supervisory relationship.

Theme 1: Inequity in navigating the labyrinth

A recurrent view raised by participants was that the current system often did not adapt well to PGRs' diverse circumstances, for example, those with neurodiversity, self-funding, or caring responsibilities: "PGRs are so diverse in age and background, I don't think they cater to everyone" [P142]. The complexity of their journey through the PGR labyrinth is therefore exacerbated by the perceived lack of understanding and support for their diversity, rather than a lack of academic ability. This view was exemplified by Gina [FG1], who argued that the structure of a PhD was created in a social, economic, and political context that served a small group of society over others:

I think the model of a PhD was designed at a time when university education was very different and it was designed for a different person. [...] it's now people from a wide variety of backgrounds who're engaging in it and I look at it and I think - why would you do this? [...] it just feels like a kind of hazing ritual that you have to go through to enter academia. [Gina, FG1]

Gina's description of the PhD process as a "hazing ritual" evokes a potentially harmful rite of passage which a person must undergo to obtain admittance to an exclusive closed community. Indeed, many neurodiverse participants and those who live with a disability felt misunderstood and unsupported, which had a negative impact on their wellbeing, resulting in feelings of disenfranchisement towards academia:

I continuously consider giving up on my PGR studies. With a specific learning disability which affects my reading and writing: I do not feel welcome. [P339]

I'm so tired of the idea of how much you break yourself being a badge of honour. I do good science. I have good ideas. I'm a capable human being. But people just see my illness – and not in a good way. [P450]

Mark, who has dyslexia, specifically discussed how the additional responsibility for finding and implementing effective support made him feel like his perspective was not welcome:

They don't know really how to deal with a student who's not able to do that which they take for granted. So, in a way, it puts a lot of strain and pressure on me to continue to try and find solutions [...] it feels like your view of the world is not welcome in the institution, even though they tell you that everybody's welcome. Mark [FG2]

The labyrinth of PGR work was also described as more complex to navigate for participants who experienced high levels of financial and time pressures, such as international PGRs and those that are self-funded or have significant caring responsibilities. For

example, multiple participants noted the pressure created by these constraints prevented them from spending time on activities which would support their wellbeing:

...between actually having a social life, which doesn't exist at the moment, and working part time to the maximum amount I possibly can so that I can actually physically stay here. And then also the time and energy I need to put into my PhD. Sarah [FG5, self-funded PGR]

...because my visa requires me to be done in bang on three years. I don't get a writing up year, I don't get any extra month, I don't get to take any breaks. Lara [FG3, international PGR]

Funded PGRs also noted the pressure caused by having a finite funding period:

The constant feeling of paddling water, when having time pressure to finish and money woes at the end of that particular rainbow (when funding stops after three years). [P337]

Conversely, financial support and flexibility around deadlines were cited by others as enabling their PGR journey:

I don't think anyone in my school has ever finished their PhD on time, and that's expected, and to a certain extent supported, because we are required to do teaching as part of our PhD, but that's paid at I think the best rate I've seen in the college, because they're aware that students require additional support. Fatima [FG5]

Overall, participants illustrated how structural constraints and rigid institutional systems currently struggle to adapt adequately to individual circumstances and needs. This results in a more complex and highly pressured journey for some students, placing them at a disadvantage and negatively impacting their wellbeing. Flexibility in methods of working, supervision, and opportunities to access financial resources, on the other hand, were highlighted as supporting their journey and wellbeing through the labyrinthine process.

Theme 2: The labyrinth as a place of uncertainty and isolation

Feelings of uncertainty and loneliness were also widespread, interlinked features of the journey through the labyrinth of PGR work:

Felt very isolated and like I was stumbling around in the dark. [P36]

I feel that postgrads find themselves in a bit of a 'black hole' in terms of identification of well-being and mental health. [P75]

Likening the PGR experience to a "black hole" or "stumbling around in the dark" illustrates the need for greater illumination or clarity over their role and work. Some participants expressed ambiguity over their status, described as being "stuck halfway between being a student and a member of staff" [P278] and existing in "this strange space of being professional but also not professional" [Alice, FG5]. Others expressed more fundamental questions:

Am I on the right track? Is this where I'm meant to go? Is this, you know, up to standard? Dawn [FG2]

Zoe illustrates the protracted and challenging nature of such uncertainty:

I worked under the assumption before I started my PhD that it would kind of be a demystified process in that first year and it was not... so it was a really steep learning curve and it was very stressful. Zoe [FG4]

Using their social networks for support helped participants cope with, or be less negatively impacted by the more potentially harmful aspects of the PGR journey:

I find it very easy to just be like, okay, well, I feel very isolated at work, but that doesn't matter [...] I can go home and have the support network of friends and family, and that... that's fine for me. Fatima [FG5]

I'm lucky to have a strong relationship, close friends and a small supportive lab group. Without this, I believe my mental health and well-being would be worse. [P49]

However, in line with the first theme, it was acknowledged not everyone was equally "lucky" in this regard and inequities were evident in the degree of social support among participants. For example, PGRs that had relocated to undertake their degree often found it hard to cultivate social networks due to the solitary nature of their work:

Moving to a new city, knowing no-one and not having lectures with anyone has been challenging. The difficulty in connecting with people is what I am finding most difficult, due to a lack of time. [P4]

...if I hadn't already done my undergrad here and had friends I would have found it almost impossible to make new friends. [P142]

Strategies to foster social connectedness among PGRs must also account for the diversity in the PGR community to prevent already disadvantaged groups of students from feeling further isolated. For example, one participant expressed that some university social events were not fully accessible to them as a neurodivergent individual. This participant had insight into the types of events that could work for them, but this need was not being met:

I am autistic and struggle with the socialising aspect. It would be nice if social events were organised for those of us who struggle that were more structured and therefore had less pressure, for example board game nights or movie nights that can help us mingle with set tasks. [P202]

Overall, feelings of uncertainty around their identity and role as PGRs had negative consequences for mental health and wellbeing, as did the widespread feelings of loneliness. Feelings of ambiguity described by participants seemed to be precipitated or exacerbated by feelings of isolation, perhaps due to a lack of validation from peers. These findings illustrate students' perceived need for more clarity about roles and expectations and building connections from the outset of the PGR process.

Theme 3: Supervisors as labyrinth guides, not mental health care providers

Supervisors were widely viewed by participants as having a guiding role in helping PGRs navigate the PGR labyrinth. Participants who felt adequately supported by their supervisors spoke of their PGR journey more positively and seemed less impacted by feelings of uncertainty, isolation, and low self-efficacy. Supportive supervisors were described as providing a psychologically safe environment for the PGRs to communicate openly and seek help as required:

...she don't judge or don't say that, "Why can't you understand?" or something like that. She just advise me more... I can feel like it's okay for me to stumble. Vera [FG1]

Unfortunately, effective supervisory relationships were not ubiquitous, as "it's kind of potluck really what your supervisors are" [Emma, FG1].

The uncertainty discussed in the previous theme extended to aspects of the supervisory relationship. Mark described a lack of regular, clear guidance from his supervisors as inhibiting his progress, but found this difficult to address due to the inherent power imbalance:

For me, it was very difficult to go in there and be, like 'Look, guys, this doesn't work for me the way you're doing it, you have to give me feedback in a structured, formative way once a week' [...] I had to get [...] my disability advisor who said, like, he's going to need this. Mark [FG2]

Some participants described a lack of clarity about expectations from their supervisor on how the supervisory relationship should work, and advocated for roles and expectations to be more explicitly defined:

I find it deeply unclear and I very much miss having a relationship... where I understand what I can take from that person and how much they're there to support me. Gina [FG1]

Encouraging supervisors to have discussions around expectations with their students early on would be useful. [P291]

For example, Tamara was unclear about the meaning behind her supervisors' lack of guidance and, although she theorised that it could be because her supervisors thought she was competent, the lack of communication still had a negative impact:

I don't know whether my supervisors kind of feel as though 'Right, you can cope, you're fine.' And that's true – I can... But yeah...what I feel is a lack of support, and not being given any kind of guidance... I suppose I feel a bit let down. Tamara [FG2]

While supervisors were viewed as having a role in guiding students through the PGR labyrinth, there was notable ambivalence around discussing mental health concerns with supervisors. Most participants expressed that they would only discuss mental health issues if they expected their work to be adversely affected:

...unless it's something that I think it's going to have a real impact on my ability to do the job, then... then I'll just deal with it myself. Adam [FG3]

The purpose of discussing mental health issues in these instances was not to elicit support but to explain changes in productivity and negotiate revised expectations (e.g. altering deadlines):

I was, like, (exhales) relaxing a bit because if something happened, they will know that I'm not stupid because I'm dealing with this whole other thing. Ross [FG2]

Participants expressed discomfort around openly discussing mental health, even in notionally safe supervisory relationships:

My supervisor is probably one of the best supervisors around to have in terms of talking about mental health and I still find it difficult to do. [P6]

This was partly attributed to the perception that supervisors should not be responsible for, or were not equipped to give, mental health support:

...a lot of this [mental health support] really isn't in their remit. Dawn [FG2]
This sounds horrible, but if they're not going to be helpful, why would I bother dredging it up? [Lara, FG3]

Some participants felt it was unfair on both supervisors and PGRs to expect direct mental health support to form part of the supervisory relationship:

This is unpaid and unrecognised extra emotional labour on their part. Why does the university rely on informal networks of care to protect its PhD students? [P360]

While supervisors were not viewed as, or expected to be, the primary source of mental health support, many participants still felt supervisors had a role to play and identified the need for "much better training for academic staff in terms of understanding how mental health affects students and how to support them" [P176]. The types of training discussed (e.g. mental health first aid) suggested participants wanted supervisors to have a better understanding and recognition of mental health issues. Additionally, when participants considered sharing mental health issues, they expressed a desire for supervisors to respond in a non-stigmatising manner and signpost PGRs to relevant services.

A key barrier to open discussion was the participants' struggle to navigate the power dynamic of the supervisory relationship in the context of stigma around mental health. There was an underlying tension in addressing personal wellbeing while maintaining what participants perceived to be a professional image. These participants felt going to their supervisor around mental health support could risk the supervisor re-assessing them in a negative light:

I want to maintain like a professional relationship and showing that I'm, like, reliable and resilient and all these different things even when I'm struggling. Emma [FG1]
It's the power relationship, you know? [...] we're going to need references in the future. Tamara [FG2]

In light of this, some participants felt that they would benefit from having an "independent" [P450] contact for support:

I wish there was another person [...] I don't want to be crying in front of my supervisor [...] he's a lovely guy and he's really supported me, but if there was an alternative, I would be going to that. Alice [FG5]

Indeed, many participants reported "seeking professional help", "counselling", "talking to healthcare professionals", and "medication". However, mental health support provided by institutions and healthcare services was often perceived as inaccessible due to long waiting times, or not visible due to poor communication:

We need professional help that the NHS [National Health Service] sadly can't provide (I'm on a never-ending waiting list). [P188]

I think that the University has a lot of excellent resources and training in place to deal with this, but the actual advertisement is seriously lacking. [P345]

Some overcame these barriers by accessing private mental healthcare but recognised this is not an option for many PGRs, further highlighting inequities:

Paying for a therapist as a sort of extra supervisor has been essential this year to help

me support my self-esteem and stay on track with my studies. [P145]

I found the help I received hugely beneficial. But that is obviously discriminatory towards students who cannot afford to go private. [P291]

The prevailing view was that effective supervisory guidance could support PGR wellbeing during the journey through the labyrinth, whereas a lack of clear guidance could amplify the uncertainty and isolation, which impair wellbeing. Participants made a clear distinction between the role of supervisors as supportive guides through their academic journey and the role of professional mental health service providers, not expecting the supervisors' involvement in PGR mental health and wellbeing to exceed non-specialist support such as revising deadlines and signposting to appropriate institutional support services. However, it was generally felt that providing supervisors with appropriate training, clarifying expectations about the nature of the student–supervisor relationship in the context of mental health support, and recognising the persisting stigma surrounding mental health in the context of the power imbalance in the supervisory relationship would all help improve PGR wellbeing.

Discussion

This study offers a deeper understanding of PGR mental health and wellbeing and impact of the supervisory relationship, illuminating multifaceted structural inequities that compounded feelings of isolation and uncertainty navigating the “mental labyrinth” of the complex PGR process. Moreover, our findings show that supervisory relationships can mitigate or exacerbate the impact of these factors on PGRs' psychological wellbeing. Participants' experiences of the PGR system as an often uncertain, isolating, and inequitable labyrinth may help explain the higher rates of mental health problems in PGRs than comparably well-educated people (Hazell et al., 2021; Levecque et al., 2017). Findings highlighted inequity for groups of PGRs facing additional challenges, including neurodiverse students, international students, students with demanding extracurricular responsibilities, and those facing financial constraints, in keeping with previous research (Hughes & Spanner, 2019; Metcalfe et al., 2018). Despite a proliferation of literature in this field internationally, particularly following the COVID-19 pandemic, as reported by a recent bibliometric analysis (Okoro et al., 2022), a gap remains concerning the lived experiences of PGRs, which the present study sought to address.

Our study found that inequities, feeling “unwelcome”, and loneliness particularly affected international participants and those that identified as neurodiverse. As the demographic diversity of the PGR student body increases, improving social connectedness and mental health support must include adaptations for the unique stressors faced by such groups. The detrimental impact of loneliness and isolation on participants' wellbeing and the recognised value of strong social networks identified in our work supports previous research (Hazell et al., 2020). Lack of social connection can have serious consequences for PGRs, with a reduced sense of belonging significantly associated with increased intention to quit their degrees (van Rooij et al., 2021). In turn, high attrition rates have negative consequences for supervisors, institutions, and their reputations, as well as their subsequent ability to attract students.

Uncertainty has been found to be pervasive across all stages of the PGR process, up to and including seeking post-PGR employment (Howell & Sweeny, 2020 [Study 3]), as further substantiated by our participants' accounts. They expressed that ambiguity over academic progress negatively affected their confidence and mental wellbeing. This supports research which observed an association between low self-rated competence and burnout (Kusurkar et al.,

2021). The transition from student to emerging researcher was also emphasised by our participants as a specific source of ambiguity which can potentially lead to distress. This aligns with a meta-analysis which found a moderate association between depression and role ambiguity in working adults (S. Schmidt et al., 2014). However, some PGRs frame this ambiguity as a privilege where they consider themselves to have expert knowledge about their topic, yet can still freely seek advice from supervisors without losing self-esteem (Stubb et al., 2011). Managing uncertainty is a necessary part of becoming socialised into the academic community as an independent researcher (Gardner, 2008). Taken together, this evidence suggests a holistic view of uncertainty within the PGR process is required. PGRs should be supported to capitalise on situations where uncertainty can be reframed as a growth opportunity to develop their skills as researchers. Successfully overcoming such challenges and expressing mastery can develop confidence, self-esteem, and bolster psychological wellbeing (Gin et al., 2021). However, supervisors and institutional practices can act to reduce uncertainty in aspects of the PGR experience where it may be detrimental to the PGR's skill development or wellbeing. Implementing policies and procedures which reduce detrimental uncertainty (e.g. promoting shared expectations of the supervisory relationship) may mitigate a common source of distress for PGRs.

A key finding is the importance of a more equitable access to positive, supportive, and unambiguous supervisory relationships. This provides further evidence for the substantial influence of this relationship on PGR mental health and success (Casey et al., 2022; Dericks et al., 2019; Liang et al., 2021; McAlpine & McKinnon, 2013; Sverdlik et al., 2018). PGRs and supervisors have previously been found to differ in their opinions about what influences PGR wellbeing (Dhirasasna et al., 2021). Our results suggest this mismatch of expectations is rooted in the uncertainty and ambiguity which exist in many student-supervisor relationships. This is particularly notable in relation to the level of support supervisors provide, both in terms of academics and wellbeing, which was often lower than PGRs' prior expectations. Although supervisors will vary in their ability and willingness to address PGR mental health issues, clarifying expectations on both sides of the relationship can be beneficial. Institutional practice and policy can encourage this in various ways. Firstly, promoting communication between parties which accounts for individuals' unique circumstances and needs may reduce uncertainties and address the mismatches in expectations between PGRs and supervisors. Secondly, setting minimum standards for supervisory duty of care and providing appropriate training for supervisors to ensure they are equipped to meet these standards may be warranted. Any implementation of such standards must account for the additional workload necessitated by provision of high-quality supervision. Institutions must also recognise that successful PGR supervision is fundamental to many academics' career progression. Furthermore, achieving high institutional rankings is partly predicated on research degree programmes producing successful researchers and publication statistics. As such, substantial investment in ensuring supportive high-quality supervision is beneficial to institutions and supervisors, as well as helping address the unacceptably high prevalence of PGR mental distress.

An important and novel finding of our work is that PGRs explicitly oppose any expectation that supervisors should provide direct mental health support. Furthermore, PGRs describe the power dynamic within the supervisory relationship and perceived cultural pressure to uphold a professional image. Given that successfully completing a postgraduate degree is pivotal for establishing an academic career (Laudel & Gläser, 2008), PGRs articulated the tension between open discussion of mental health and the risk of negatively biasing their supervisor(s)' opinion of them as a researcher, with attendant risks for career prospects (Berry et al., 2021). Continued efforts to reduce mental health stigma should reduce this perceived risk over time. Increased access to services supporting PGR mental health is warranted, both within universities and by external healthcare organisations. These should provide evidence-based care, with

psychoeducational and skills-based interventions with supervised practice found to be significantly more effective than passive approaches (Barnett et al., 2021; Conley et al., 2015; Hughes & Spanner, 2019). Preventative programmes targeted at higher education students are also available (e.g. Homer et al., 2021; Hughes et al., 2022) and may help influence institutional culture to challenge the normalisation of mental health issues for PGRs. Institution-led support and improved systemic provision of services also minimise the risk of supervisors being overwhelmed by emotional labour. These findings also challenge supervisors to reflect on the persistence of historically hierarchical (e.g. patriarchal, post-colonial) power structures still affecting academia, to recognise and help address the counterproductive impact this can exert within supervisory relationship dynamics and the systems in which they are a part.

Strengths and limitations

The systematic and rigorous application of reflexive thematic analysis to collated survey and focus group data provided nuanced and valuable insight into PGRs' perceptions of their research experiences, including the supervisory relationship, and impact on their mental health and wellbeing. Furthermore, although focus group participants were all enrolled at the same university, survey participants were drawn from 47 different universities and a broad range of disciplines and demographics, and this heterogeneity provides insights into a wide variety of PGR experiences.

While the survey was open to PGRs on both PhD and master's degrees, focus group participants were all PhD students. As such, themes generated from our combined dataset may underrepresent the experiences of non PhD researchers. Participation in the study was also optional which may have biased our sample towards PGRs that have had negative experiences with regard to their mental health and the effects of the supervisory relationship. Conversely, the views of people whose mental health has been most seriously negatively affected by the PGR process might be underrepresented since these individuals are more likely to have disengaged from their research degrees or elected not to revisit painful personal experiences.

Future work

The present study focused on the PGR perspective. Future research exploring the experiences and expectations of supervisors would help identify discrepancies between them and those of PGRs to inform policies and practices to help align expectations (e.g. through improved induction and annual review processes). Further exploration of the unique challenges faced by different groups of PGRs, as well as taught, clinical, and professional doctorates, would identify interventions best suited to address the specific needs of distinct groups. This should include students with existing health concerns, additional caring responsibilities, part time, and distance learning students. It is acknowledged that university cultures, and concomitant structural challenges, vary across institutions and countries. For instance, analysis of global prevalence indicates heightened vulnerability for anxiety among graduate students in some countries (Saudi Arabia, India, and Nepal) compared to others (USA, China), although differences in methodological quality and number of studies between regions limit the direct comparisons that can confidently be drawn at this stage (Chi et al., 2023). The present study is limited to the UK context and further research is needed to explore transferability of findings to other countries, with different institutional and research cultures as well as funding and employment structures.

Conclusion

Through qualitatively analysing students' accounts of mental health and wellbeing and the role of the supervisory relationship, our study offers an in-depth understanding of these issues from the PGR perspective. This generated an overarching portrayal of an uncertain and isolated journey through the "mental labyrinth" of the PGR process, in which supervisors were viewed to have a crucial role as supportive guides but were not expected or sought to step beyond that into a role of mental health care provision. Resource constraints and rigid institutional structures which failed to offer adequate flexibility and support resulted in inequities for certain groups with diverse needs, highlighted as additional barriers to navigating successfully through the labyrinthine process. The interrelatedness of our themes demonstrated how inequity could compound isolation and uncertainty for PGRs, exacerbating mental distress and impacting power dynamics within supervisory relationships which, in turn, could inhibit access to appropriate guidance and additional support when necessary. Our findings suggest reducing the prevalence of poor mental health and wellbeing in PGRs requires a system-wide and institutionally led approach to address structural issues currently preventing equitable access to the environment and resources needed to navigate a contemporary PGR degree. This should ensure supervisors are equipped with suitable training and resources to flexibly guide students through the process. It must also include preventative measures and policies integrated with improved access to mental health services. Ultimately, improving PGR mental health and wellbeing will result in greater success for PGRs, supervisors, institutions, and the wider research community.

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Data Availability The qualitative data that support the findings of this study are not openly available due to ethical restrictions. The associated anonymised quantitative data set is deposited with UK Data Service: <https://doi.org/10.5255/UKDA-SN-855193>.

Declarations

Competing interests The authors declare no competing interests.

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