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Original Article

Clinical work perception and mental health in Danish resident doctors

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ABSTRACT

INTRODUCTION. The transition from medical school to clinical practice is a demanding phase for junior doctors. This study examined associations between clinical work perceptions, mental health and pre-graduate clinical experience among Danish junior doctors, focusing on early training experiences and well-being.

METHODS. A cross-sectional survey was sent to junior doctors in the North Denmark Region. The questionnaire was developed with input from junior doctor focus groups and included validated items from the Copenhagen Psychosocial Questionnaire, the WHO-5 Well-Being Index and the Major Depression Inventory.

RESULTS. Overall, 297 junior doctors (38% response rate) completed the survey. Whereas the majority (66-79%) reported positive perceptions of the introduction, supervision and preparedness, 25% doubted their ability to remain in the profession. Approximately one-third reported exhaustion or stress more than half the time. Moreover, 13% scored below 35 on the WHO-5 Well-Being Index, indicating a high risk of stress-related disorders. Overall, 18% had a Major Depression Inventory score ≥ 20, consistent with depression. Pre-graduate locum experience was significantly associated with greater perceived preparedness and confidence, but not reduced stress or depressive symptoms.

CONCLUSIONS. Substantial mental health concerns exist among Danish junior doctors. Pre-graduate experience enhances confidence but not emotional resilience. Institutional measures, such as structured supervision, mentorship and targeted well-being support, are needed in early medical careers.

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The transition from medical school to clinical practice is a critical and challenging period in a doctor's career [1, 2]. Junior doctors (JDs) must balance clinical responsibilities, long hours and continuous learning while developing professional competencies [3]. These factors place considerable pressure on their mental health and well-being. International studies show that JDs are at heightened risk of experiencing poor mental health, including depression, anxiety and reduced well-being [4-6]. Moreover, JDs' perception of their clinical work - encompassing their sense of competence, perceived support, workload and satisfaction with their training environment - plays a pivotal role in shaping professional development and mental health outcomes [7, 8].

Although a considerable body of research has focused on burnout in doctors [3, 7, 9], few studies have comprehensively addressed clinical work perception and mental health using broader and more nuanced measures that capture both positive and negative aspects, such as well-being, life satisfaction and depressive symptoms. The literature often overlooks contextual differences in healthcare systems and work expectations [9]. Furthermore, studies focusing on Danish JDs remain scarce, and no previous research has specifically examined the associations between clinical work perception and mental health - including well-being and symptoms of depression - within this population. This study contributes context-specific knowledge on these associations, extending existing international findings to a Danish setting. Addressing this gap is essential, as improving JDs' clinical training experiences and fostering supportive work environments may enhance mental health and well-being, benefiting not only the JDs themselves but also the quality of patient care.

This survey aimed to assess work perception and mental health among Danish JDs, with a particular focus on gender and postgraduate training level.

Methods

The survey targeted first- and second-year foundation trainees (FY1 and FY2) as well as speciality registrars (SR) enrolled in a four-to-five-year training programme following the foundation period. An email invitation to participate in an online survey was distributed to registered JDs in the North Denmark Region between 16 December 2021 and 03 April 2022. The invitation was sent via the North Denmark Region's Postgraduate Medical Education Office. A reminder was issued after two weeks.

The survey instrument consisted of a self-developed questionnaire assessing perceptions of clinical work, supplemented by validated instruments on depression and well-being: the Copenhagen Psychosocial Questionnaire (COPSOQ), the Major Depression Inventory (MDI) and the WHO-5 Well-Being Index (WHO-5) questionnaires. Questionnaire materials are provided in Supplementary - Appendix 1. Information on age, gender, educational background, medical school graduation, current level of clinical training (FY1, FY2 or SR) and pre-graduate locum experience was collected.

Work perception and self-concept

In the initial phase, two focus group interviews with four JDs were conducted to identify relevant aspects of work perception for inclusion in the survey. The findings were categorised into two domains: [1] work perception (organisational factors) and [2] self-concept (professional identity as a doctor). As no validated instrument covering these domains was identified, a self-developed questionnaire was designed (see Supplementary Material). Cognitive pilot testing was performed with two JDs not involved in the interviews to assess clarity and wording; the questionnaire was revised accordingly. No further validation procedures were undertaken.

Stress indicators

Four questions on health and well-being were extracted from the COPSOQ (Supplementary - Appendix 1), originally designed for evaluating the psychosocial work environment [10]. These questions were adapted to assess the frequency of feeling worn out, emotionally exhausted, stressed, or irritable, on a five-point scale ranging from "Not at all" to "All the time."

Mental well-being and depressive symptoms

The WHO-5 comprises 5 items assessing self-reported well-being in the past two weeks [11, 12]. The WHO-5 score ranges from 0 to 100, with lower scores indicating poorer well-being. A score of ≤ 50 suggests a higher risk of depression, while a score ranging from 0 to 35 indicates a particularly high risk of depression or stress-related

conditions. The MDI includes ten items measuring self-reported depressive symptoms over the past two weeks [13]. A sum score ranging from 0 to 50 is calculated, with lower scores indicating fewer depressive symptoms. An MDI score ≥ 20 indicates depression.

Pre-graduate locum experience

JDs were asked whether they had any pre-graduate locum experience. For this analysis, only FY1 data were evaluated, since FY2 and SR already have prior clinical experience, whereas FY1 doctors' clinical experience depends on whether they previously worked as locums.

Ethical considerations and data management

Under Danish law, questionnaire studies are not subject to ethical approval. The participating doctors were informed about the project and reminded of their right to withdraw from the study at any time. Informed consent was obtained from all participants. All data were securely collected and stored anonymously using the Research Electronic Data Capture (REDCap) Version 9.5.6 system, hosted by Aalborg University Hospital.

Statistics

Ordinal data were summarised as numbers and proportions for comparative analysis across training levels, gender and pre-graduate work experience. All multi-graded answers were dichotomised into positive and negative responses, thereby ensuring interpretability, avoiding sparse cell counts and improving the clarity of results. Age was described using median and IQR. Groups were compared using the chi-squared or the Cochran-Armitage test for trend. OR with 95% CI were estimated using logistic regression, adjusting for age, gender and pre-clinical training. $p < 0.05$ was considered statistically significant. All statistical analyses were performed using RStudio (Version 4.2.0, Boston, USA, 2022-04-22].

Trial registration: Registration F2025-058.

Results

The survey was distributed to 789 JDs and completed by 297 (38%). The median age was 31 years (IQR: 6), and 65% were women. Distribution by training level was: FY1 (n = 95, 32%), FY2 (n = 58, 20%) and SR (n = 144, 48%).

Work perception and self-concept

Overall, 66% reported receiving a good introduction to work tasks, 79% were satisfied with supervision and 69% felt prepared for daily clinical work (**Table 1**). Preparedness differed significantly by training level: 58% (FY1), 69% (FY2) and 77% (SR), $p < 0.001$.

TABLE 1 Distribution of different work perception categories at a high or very high degree level being reported in the self-concept questionnaire by the junior doctors, presented by gender and clinical training level.

	Gender						Clinical training level					
Question	Total, n (%) (N = 297)	men, n (%) (n = 103)	women, n (%) (n = 194)	OR[a] (95% CI)	OR adjusted[b] (95% CI)	p value	FY1, n (%) (n = 95)	FY2, n (%) (n = 58)	SR, n (%) (n = 144)	OR[c] (95% CI)	OR adjusted[d] (95% CI)	p value
Were you prepared for the daily clinical work when initiating your current job position?	206 (69)	73 (71)	133 (69)	1.10 (0.65-1.87)	0.94 (0.55-1.63)	NS	55 (58)	40 (69)	111 (77)	0.72 (0.58-0.88)	0.79 (0.62-1.02)	< 0.001
Do you feel comfortable in the role as a medical doctor?	223 (75)	84 (82)	139 (72)	1.72 (0.97-3.16)	1.57 (0.87-2.91)	0.07	59 (62)	48 (82)	116 (81)	0.70 (0.56-0.86)	0.75 (0.58-0.98)	< 0.001
Do you have doubt in yourself in your work as a medical doctor?	39 (13)	9 (10)	30 (16)	0.52 (0.22-1.10)	0.57 (0.24-1.23)	0.10	17 (18)	9 (16)	13 (9)	1.34 (1.02-1.76)	1.06 (0.74-1.50)	0.04
Are you afraid of making clinical mistakes	104 (35)	21 (20)	83 (43)	0.34 (0.19, 0.58)	0.35 (0.19-0.60)	< 0.001	41 (43)	18 (31)	45 (31)	1.24 (1.02-1.51)	1.06 (0.83-1.36)	0.06
Do you doubt staying in the profession as a medical doctor?	71 (24)	25 (24)	46 (24)	1.03 (0.58, 1.79)	1.12 (0.62-1.97)	NS	22 (23)	19 (33)	30 (20.8)	1.05 (0.84-1.31)	0.88 (0.66-1.16)	NS

FY1 = foundation yr 1; FY2 = foundation yr 2; NS = non-significant; SR = speciality registrar.
a) Reference group: men.
b) Reference group: men, adjusted for age and pre-clinical experience.
c) Reference group: FY1.
d) Reference group: FY1, adjusted for age, sex and pre-clinical experience.

A total of 75% felt comfortable in their role as a JD; this share was lower among FY1 (62%) than among FY2 (82%) and SR (81%), $p < 0.001$. Self-doubt was reported by 13% overall, more frequently among FY1 (18%) than among SR (9%), $p = 0.04$. Concern about making mistakes was reported by 35% overall and was significantly more common in women (43% versus 20%, $p < 0.001$). In all, 24% reported serious doubt about remaining in the profession, with no significant differences by gender or training level.

Stress indicators

23-37% reported frequent exhaustion, emotional drain, stress or irritability; 19% reported all four most or all the time (**Table 2**). Stress indicators were more common among FY1, with significantly higher levels of exhaustion and emotional drain ($p = 0.04$).

TABLE 2 Stress indicators of the Copenhagen Psychosocial Questionnaire being reported present all the time, most of the time, or a little more than half the time within the past three months by the junior doctors, by clinical training level.

		Clinical training level					
In the past 3 mos., how often have you been feeling?	Total, n (%) (N = 297)	FY1, n (%) (n = 95)	FY2, n (%) (n = 58)	SR, n (%) (n = 144)	OR[a] (95% CI)	OR adjusted[b] (95% CI)	p value
Exhausted	109 (37)	44 (46)	18 (31)	47 (33)	1.24 (1.02-1.52)	1.42 (1.12-1.81)	0.04
Emotionally drained	101 (34)	40 (42)	19 (33)	42 (29)	1.27 (1.04-1.55)	1.30 (1.02-1.65)	0.04
Stressed	98 (33)	37 (39)	18 (31)	43 (30)	1.17 (0.96-1.43)	1.28 (1.01-1.62)	NS
Irritable	67 (23)	24 (25)	13 (22)	30 (21)	1.07 (0.85-1.33)	1.11 (0.92-1.05)	NS

FY1 = foundation yr 1; FY2 = foundation yr 2; NS = non-significant; SR = speciality registrar.
a) Reference group: FY1.
b) Reference group: FY1, Adjusted for age, sex and pre-clinical experience.

Mental well-being and depressive symptoms

The mean WHO-5 score was 57.5 (SD: 19.0). Thirteen percent scored ≤ 35, indicating a high risk of mental illness; this was more frequent among SR (17%) than among FY doctors (9%), $p < 0.05$. The mean MDI score was 11 (SD: 19.0). 18% scored ≥ 20, indicating depression; no significant subgroup differences were found.

Pre-graduate locum experience

Among FY1, 49 out of 95 (52%) had prior locum experience. No significant differences were observed in stress, well-being or depression (**Table 3**). However, FY1 with locum experience were less likely to doubt remaining in

the profession (14% versus 33%, p = 0.03) and more likely to feel comfortable as JDs (74% versus 50%, p = 0.02).

TABLE 3 Works perception, stress indicators and mental health characteristics in first-year foundation trainee, by status of pre-graduate locum doctor work experience.

	Pre-graduate clinical work experience?		
	yes (N_{yes} = 49)	no (N_{no} = 46)	p value
Work perception and self-concept: work perception and self-concept questionnaire, n (%)			
I feel well prepared for the clinical work life in my current position	33 (67.3)	22 (47.8)	0.05
I feel comfortable in the role as a medical doctor	36 (73.5)	23 (50.0)	0.018
I doubt myself professionally	8 (16.3)	9 (19.6)	0.68
I am afraid of making mistakes	22 (44.9)	19 (41.3)	0.72
I have been doubting staying in the profession as a medical doctor	7 (14.3)	15 (32.6)	0.03
Stress indicators: COPSOQ, n (%)			
In the past 3 mos., I have for > ½ the time been:			
Feeling exhausted	21 (42.9)	23 (50.0)	0.423
Emotionally drained	20 (40.8)	20 (43.5)	0.722
Mental well-being: WHO-5 well-being index			
Median (IQR), sccore	64 (28)	56 (28)	0.23
WHO-5 score categories, n (%):	0.539		
0-35: high risk of mental illness	4 (8.2)	5 (10.9)	
36-50: poor well-being	14 (28.6)	14 (30.4)	
> 50: no indication of poor well-being	31 (63.3)	26 (56.5)	
Depressive symptoms: MDI			
Median (IQR), score	11.5 (13.25)	9.5 (11.75)	0.77
MDI score categories, n (%):			0.195
0-19: no depression	40 (81.6)	37 (80.4)	
≥ 20: depression	8 (16.3)	7 (15.2)	

COPSOQ = Copenhagen Psychosocial Questionnaire; MDI = Major Depression Inventory; WHO-5 = WHO-5 Well-Being Index.

Discussion

This study underscores that JDs are mentally vulnerable, particularly during the early transition from university to clinical practice. Whereas most JDs expressed satisfaction with introduction and supervision, notable disparities in perceived preparedness for clinical responsibilities were evident across training levels. As expected, FY1s reported feeling significantly less prepared than SRs, suggesting that clinical confidence develops progressively with experience.

Our findings support the view that the transition into clinical roles may itself be a critical stressor for early-career doctors. Developing clinical confidence takes time and likely contributes to the heightened stress observed during this phase.

Within the Danish medical education system, several interventions could facilitate smoother transitions. Structured mentorship programmes may foster stronger professional identity and clinical confidence through regular feedback and supportive relationships [14, 15]. Similarly, resilience-building initiatives and onboarding workshops addressing stress management, clinical role expectations and emotional preparedness may ease the demands of early practice [16]. Additionally, simulation-based training, focusing on complex scenarios and emergency decision-making, could better prepare trainees for full clinical immersion [17].

Nearly one-quarter of the respondents doubted continuing in the profession, which is consistent with international evidence of emotional strain during early-career transition [3].

One-third of respondents reported experiencing symptoms of burnout, such as exhaustion, emotional drain and stress, with these symptoms being particularly prevalent among FY1 trainees. The WHO-5 indicated that 13% of

respondents were at significant risk of developing depression or stress-related conditions. This aligns with other studies that have described doctor burnout as an “epidemic” [18]. These findings suggest that mental health challenges in medical education are not confined to the initial transition period but are also rooted in workplace conditions and the broader professional environment throughout a medical career.

Institutional support should therefore extend beyond early clinical training. Enhanced supervisory engagement throughout the career span, regular reflection sessions and peer networking opportunities - such as near-peer mentorship - may mitigate emotional exhaustion and foster a sense of community [19]. These structures may reduce professional isolation and normalise the challenges that doctors face.

Although no significant gender differences were observed in measured stress, mental health or depression risk, marked disparities emerged in perceptions of clinical roles. More than 40% of female respondents reported fear of making clinical mistakes, with a clear tendency toward increased self-doubt and reduced comfort in assuming the role of medical doctor compared to their male counterparts. These findings suggest that gender-related factors may influence confidence and professional identity. Addressing such disparities may require targeted support strategies, including structured mentorship, leadership training and confidence-building workshops, alongside efforts to promote inclusive communication and peer support [20].

Pre-graduate clinical experience was associated with improved preparedness and role confidence among FY1 trainees, which is consistent with previous findings that early exposure fosters smoother transitions into full-time clinical practice [15]. Likewise, FY1s with pre-graduate locum experience were less likely to express doubts about remaining in the profession. However, pre-graduate experience did not significantly reduce overall levels of stress or depression in our study. This suggests that while early clinical familiarity may buffer perceptions of competence, it does not fully mitigate the emotional strain JDs experience, underscoring the need for support beyond clinical exposure.

To strengthen long-term doctor well-being and address systemic factors contributing to distress, targeted policy-level action is warranted. National guidelines on doctor mental well-being could provide a standardised framework for supporting mental health across training stages and clinical settings. These should include minimum standards for onboarding, supervision, workload limits and access to confidential psychological support. Establishing structured well-being programmes, regular burnout screening and protected time for reflection may further safeguard doctor health.

The study has some limitations. The 38% response rate may introduce selection bias, although the demographic composition of respondents aligns with national distributions, suggesting limited non-response bias. Some items on work perception and self-concept were self-developed and not formally validated, which may affect reliability. The cross-sectional design precludes causal inference, and dichotomising ordinal data may have reduced variability and masked subtle associations. A strength of this study is the inclusion of pre-graduate experience and its relation to mental health - an area rarely explored in JD research.

Conclusions

This study highlights that the transition from medical school to clinical practice represents a particularly vulnerable period for JDs, marked by elevated stress and mental health challenges. The findings underscore the need for national-level policies and guidelines that establish minimum standards for supervision, workload, onboarding and access to psychological support throughout the medical career. These results can guide institutional and national efforts to strengthen mentorship, supervision and early-career support for JD.

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