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Team climate, job satisfaction, burnout and practice performance: results of a national survey of staff in general practices in England

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Abstract

Background Measures are needed to address recruitment and retention problems in general practice in England. A good team climate, the relational processes of team working, can mitigate pressured work environments, but little is known about it.

Objectives To explore factors associated with more favourable team climates in general practices and investigate associations between team climate and outcomes for staff and practice performance.

Methods All 6475 general practices in England were eligible to take part in an online cross-sectional survey. Clinical and non-clinical staff in practices were invited to participate. Data were gathered using the 14 item version of the Team Climate Inventory; analysis was conducted on 10 items because piloting indicated many participants could not answer four items about practice objectives. Secondary outcomes included single item measures of job satisfaction, intention to remain working in the practice and burnout. Practice performance measures were: attainment in the Quality and Outcomes pay-for-performance system (for clinical effectiveness) and patient experience ratings from the national General Practice Patient Survey. Staff outcomes were analysed, principally by role. Practices in which over 50% of staff participated were included in modelling of practice level outcomes.

Results A total of 9835 individual members of staff from 809 practices participated. Most indicated a favourable team climate in their practice, (mean 3.77, on scale 1–5 best, SD 0.84); 61.3% stated they were mostly or extremely satisfied in their jobs; 26.1% met the criteria for high burnout. General Practitioners, compared to other clinical and non-clinical staff, perceived team climate to be better, and reported less likelihood of leaving, yet lower job satisfaction and higher burnout. In practice-level modelling, team climate improved as practice size decreased. Staff outcomes (job satisfaction, likelihood of remaining in post, less burnout) were associated with a better practice team climate, as were patient experience ratings. Higher GP to patient ratios were associated with improved job satisfaction, less burnout and more favourable patient experience ratings.

Conclusions Policies focussed on improving team climate could improve staff outcomes and contribute to mitigating the workforce crisis in general practice in England. Guidance on fostering good team climates is needed for practices.

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Background

A workforce crisis in general practice in England has been building for many years [1] and was exacerbated by the COVID-19 pandemic [2, 3]. With the population increasing and ageing, and the rising prevalence of long-term conditions, the demand for primary care services had outstripped capacity [3, 4]. Workload pressures created retention and recruitment problems, particularly amongst general practitioners (GPs), that exacerbated staff shortages, worsened morale, reduced job satisfaction and increased burnout amongst remaining staff in a vicious cycle that urgently needs to be broken [4–8]. In international comparisons, England ranks high with respect to GP workload and burnout [9], raising concerns about future sustainability of the service [10]. Furthermore, stressful environments negatively affect service delivery, quality of care and the patient experience [11–15].

A series of policy initiatives have sought to address the workforce crisis. The General Practice Forward View in 2016 increased training places for GPs and provided funds for new roles (e.g. pharmacists, pharmacy technicians, physiotherapists, counsellors and podiatrists, amongst others) to extend the skill mix within practices beyond the traditional model of GPs working with nurses and health care assistants (HCAs) [16]. The subsequent Long Term Plan for the National Health Service (NHS) provided further funding for new allied health professional roles (the Additional Roles Reimbursement Scheme, ARRS), shared across groups of practices in Primary Care Networks [17, 18]. ARRS funding met its aim to install more than 26,000 extra staff into general practice by 2024 [19]. The number of UK medical graduates becoming GPs has, however, continued to decline and has not been offset by rising numbers of international doctors [20–23]. Additional training places for all categories of clinical professionals were created in the 2023 Workforce Strategy [24], but it will be several years before the impact of this initiative is felt.

Staff shortages and policy changes have prompted practices to adapt the organisation and delivery of care, creating additional stresses. Since the origins of the NHS in 1948, GPs had traditionally worked as independent partnerships, but this model has become increasingly less attractive. Some practices have merged into 'super practices' or joined in federations, while others have been taken over by corporations or hospital trusts to become externally managed. Additionally, many younger doctors shy away from the responsibilities of partnership and prefer the flexibility offered by salaried positions [23, 25].

Acknowledging changing and difficult working environments, a strategy to create a health and wellbeing culture across the NHS was launched in 2021 [2]. The strategy recognises the importance of relationships, leadership and management, and provides tools to help organisations meet their needs [26]. At the practice level, a favourable team climate has been shown to mitigate adverse effects on staff and quality of care in pressured workplaces [27, 28] and enable better team functioning and efficiency [29, 30]. Team climate refers to the relational processes of team working and psychosocial aspects such as trust, and shared perceptions of organisational policies, procedures and practices [31, 32]. As something that can be influenced by team leaders and managers [33], it offers potential as a lever for improving the working environment and staff retention.

This paper reports findings from a national survey of general practices in England that sought to gain an understanding of team climate since the Covid-19 pandemic. The primary objective was to explore practice and workforce characteristics associated with more favourable team climates. Secondary objectives were to investigate associations between practice team climate and outcomes for staff (job satisfaction, intention to remain working in the practice and burnout) and practice performance (clinical effectiveness and patient-reported experiences). The survey was part of a larger 'GP Teams' project (NIHR 17/08/34) on team composition in general practice intended to inform workforce policy and processes.

Methods

Design

An online cross-sectional survey of staff in general practices in England assessed perceptions of team climate, job satisfaction, intention to remain in post and burnout. Responses were analysed at individual level by staff role, and at practice level with reference to contextual information about practices from openly available sources.

Survey

In the light of the pressures in general practice, and to encourage participation, the questionnaire was kept brief (Supplementary materials 1). Well-validated and widely used instruments were used where possible.

Team climate was measured using the short version of the Team Climate Inventory (TCI). Participants were

asked to record, with respect to the working environment in their practice, their level of disagreement / agreement (5 point Likert scale: 1, strongly disagree to 5, strongly agree) with 14 statements across four domains (vision, about practice objectives; participatory safety, about information sharing; task orientation, critical appraisal of practice processes; support for innovation, openness to new ideas). Higher scores (i.e. agreement with statements) indicates a perception of a better team climate [34, 35]. Feedback from pre-testing the questionnaire in three practices revealed that some participants were unaware of their practice objectives so could not complete items in the vision domain. Hence a filter question was introduced to exclude participants unaware of their practice objectives from completing the vision items.

Job satisfaction was measured using a single overall satisfaction item (7 point ordinal scale: 1 extremely dissatisfied to 7 extremely satisfied) which has been found to represent individual components of the concept (such as income, working conditions, colleagues, autonomy, hours) [12, 13]. Future work intentions were assessed by asking how likely the respondent thought it was that they would be working in the practice in two years (5 point Likert scale: 1 very unlikely to 5 very likely), with an additional question about the future plans of those intending to leave.

Burnout was measured by a single item from the emotional exhaustion dimension of the 16 item Maslach Burnout Inventory (MBI HSS). This asks about the frequency of feeling burnt out on a 7 point ordinal scale (0 never to 6 every day) with a score of 4 (once a week) or more deemed to signify high burnout. This item has been validated [14, 36] and used in other studies in primary care [37–39]. Burnout is widely attributed to chronic stress in the workplace triggered by factors such as work overload, emotional labour, role ambiguity, conflict, inadequate support and excessive working hours. Whilst moderated by individual personality and ability to cope, burnout develops progressively, exerting a negative impact on the work and personal life of the employee and on the organisation [15]. To ensure consistency in responses, a description of 'burnout', as used by others, was provided in the questionnaire: 'exhaustion; cynicism and detachment from the job; sense of ineffectiveness and lack of accomplishment' [40].

Completion of the questionnaire was anonymous. Participants were asked for minimal background information about their role, age group and gender, with 'prefer not to say' options offered to avoid discouraging involvement due to confidentiality concerns. Respondents were also asked about working arrangements and changes since the pandemic. The questionnaire was set up using the Joint Information Systems Committee (JISC®) online survey software [41]. To minimise missing data, respondents had to answer all questions before being able to submit.

Distribution

The survey was open for seven months (26th April 2022 to 20th November 2022). The Primary Care Delivery Managers of the 15 NIHR Clinical Research Networks (CRNs; Research Delivery Networks, RDNs, from April 2024) across England publicised the study among practices in their areas. Practices expressing interest were given information to distribute to staff, including full participant information and the link to the survey. Before gaining access to the questions, all individuals provided informed consent to participate. Practices were asked to invite all clinical and non-clinical staff, full and part-time, to participate. Visiting staff (e.g. from community services) were not eligible. Practices were asked to remind staff of the unique practice Organisation Data Service (ODS) code. This was required in the online survey to match individual responses to practices for analysis. To ensure anonymity, completed questionnaires were submitted to the secure server of the Oxford Royal College of General Practice Research and Surveillance Centre.

Sample size

All general practices in England were eligible to take part ($N=6475$, June 2022); [42]; but it is not known how many were contacted as some CRNs reported that they had limited ability to support recruitment due to capacity issues. Practices were told that their practice would be included in the analysis if 60% of their staff (head count) returned questionnaires. This requirement was to ensure that responses from a practice were a defensible representation of the practice team climate. Response rates by practice were monitored and CRNs circulated reminders where further responses were needed to meet the target recruitment. As an incentive, practices were told that they would be provided with results for their practice, benchmarked to national averages for comparable practices which they might find useful for future planning.

Practice level data

Information about practices was collected from various sources (Supplementary materials 2). Practice descriptors included patient and workforce characteristics, deprivation and rurality. National workforce data provided head counts and full-time equivalents (FTEs) of: GPs (partners, salaried, trainees, locums), nurses, other clinical staff engaged in direct patient care (DPC) and non-clinical staff (managers, administrators, receptionists, estates) in all practices in England [42]. Workforce composition variables were computed from the raw data,

e.g. proportion of practice FTE that is GP, or non-clinical; proportion of practice GP headcount that is international medical graduate (IMG). Two practice performance indicators were available: clinical effectiveness, represented by attainment in the 2021/22 Quality and Outcomes Framework (QOF) pay-for-performance system for chronic disease management, and patient experience ratings [43].

Analysis

Individual level

Mean TCI scores were calculated for all respondents by each of the four domains and overall (mean of 14 items). To mitigate the impact of missing data in the vision domain (respondents unaware of their practice's objectives), mean TCI scores were also calculated across just the other three domains (mean of 10 items). All individual staff responses were analysed using descriptive statistics by region, role, age group and gender. Participation rates were calculated with reference to national data on number of practices and practice workforce characteristics [42]. Mean TCI, job satisfaction, intention to remain in post and burnout scores were compared by participant role. Responses from GPs were compared by gender and age group. Associations with outcomes were explored using statistical tests appropriate to variable type.

Practice level

Participants were matched to practices using the unique practice ODS codes. Within-practice response rates were calculated based on practice staff headcounts from national workforce data [42]. Since many practices had not achieved the target 60% response rate, the cut-off rate for inclusion was lowered to 50%. The representativeness of the sample was assessed by comparison with the national profile of practices and the remaining practices that had taken part in the survey.

Practice summary measures for TCI (mean of 10 items), job satisfaction, intention to remain in post and burnout were calculated from the individual staff responses within each practice. Bivariate analyses were performed to explore associations between the 10-item mean TCI score and practice characteristics. Stepwise linear regression modelling identified:

(i) the practice characteristics and workforce configurations associated with mean practice TCI score;
(ii) the association of mean practice TCI score, along with other practice and workforce characteristics, with (a) staff outcomes at practice level (job satisfaction, intention to remain in post and burnout) and (b) two measures of practice performance (QOF achievement and patients' overall experience of the practice).

Analysis was conducted in IBM SPSS Statistics (version 29). Significance was set at $p < 0.05$.

Patient and public involvement

Two advisory panels met regularly with the members of the research team to assist with all aspects of project delivery. A panel of professionals and commissioners working in primary care advised on questionnaire design and distribution. A panel comprising members of the public provided service users' perspectives on the findings.

Ethical approvals

The survey formed part of the wider 'GP Teams' project (NIHR 17/08/34) which received a favourable ethical opinion from the North of Scotland Research Ethics Service (IRAS project QD: 256757; REC reference 19/NS/0188) and from NHS Health Research Authority (HRA) and Health and Care Research Wales (HCRW, January 2020).

Results

Individual level analysis

Of 9835 individual staff responses to the survey, over 50% came from four English CRN regions, with one providing over 20%. Amongst the 9835 responses, 874 (8.9%) participants preferred not to state their role. Among those providing their role, over one half (55.5%) were non-clinical staff. Of all staff nationally, 4.8% participated (4.4% of GPs). Most respondents were female (over 90% for nurse/DPC and non-clinical, 56% of GPs). Non-clinical staff were slightly over-represented in survey responses compared to national head count data (Table 1). The median time taken to complete the survey (Qualtrics data) was 3.5 min, IQR 1.75 to 6.0 min. Views on how the Covid-19 pandemic had affected how staff worked were varied – see Supplementary materials 3.

There were 3976 (40.4%) of the 9835 respondents who did not know their practice objectives and did not complete the four items related to this in the vision domain. The mean 10-item TCI score for all 9835 respondents was 3.77 (SD 0.84), median 3.90, with limited variability across domain scores suggesting most respondents agreed or strongly agreed (vs neutral or disagreed) that team working in their practices was aligned with a favourable climate as described in the TCI statements. Among the 5859 respondents aware of practice objectives, the 14-item mean score was 4.01, SD 0.68, median 4.0 (Supplementary materials 4). Non-completion of the vision domain in the 8961 participants indicating their roles was 30% among GPs, 46% among nurses/DPCs and 38% among non-clinical staff (Table 2) (Supplementary materials 5).

Table 1 Description of *N* = 9835 individual staff responses from general practices in England[a], by role

Number (%)	General Practitioner	Nurse/other Direct Patient Care	Non-clinical[b]	Total when role stated	Total irrespective of role
Responses	1,933 (21.6%)	2,055 (22.9%)	4,973 (55.5%)	8,961 (100%)	
Age < 35 years	266 (14.2%)	366 (18.7%)	1,147 (24.8%)	1,799 (21.1%)	1835 (21.0%)
Age 35–54 years	1,260 (67.4%)	1,073 (54.8%)	1,974 (42.7%)	4,307 (51.0%)	4481 (51.3%)
Age > = 55 years	344 (18.4%)	518 (26.5%)	1,499 (32.4%)	2,361 (28.0%)	2417 (27.7%)
Total	1,870 (100%)	1,957 (100%)	4,620 (100%)	8,447 (100%)	8733 (100%)
Male	813 (44.2%)	179 (9.0%)	332 (6.9%)	1,324 (15.3%)	1339 (14.9%)
Female	1,025 (55.8%)	1,813 (91.0%)	4,464 (93.1%)	7,302 (84.7%)	7670 (85.1%)
Total	1,838 (100%)	1,992 (100%)	4,796 (100%)	8,626 (100%)	9009 (100%)
England: Staff headcount (% of all staff)	44,184 (23.5%)	44,783 (23.8%)	98,967 (52.7%)	187,934 (100%)	
Respondents as % of England headcount	1,933 (4.4%)	2,055 (4.6%)	4,973 (5.0%)	8,961 (4.8%)	

[a] Participation (n,% of total) from the 15 Clinical Research Network regions (became 12 Research Delivery Networks in April 2024) was: East of England 2213 (22.5%); West of England 1157 (11.8%); North West Coast 1104 (11.2%); North West London 1070 (10.9%); East Midlands 685 (7.0%); Yorkshire and Humberside 685 (7.0%); South West Peninsula 629 (6.4%); Thames Valley and South Midlands 440 (4.5%); Greater Manchester 425 (4.3%); North Thames 377 (3.8%); North East and North Cumbria 275 (2.8%); West Midlands 78 (0.8%); Wessex 70 (0.7%); Kent, Surrey, Sussex 47 (0.5%); South London 1 (0.0%); unmatched to a CRN 579 (5.9%). Total 9835 (100%)

[b] Non-clinical includes managerial, administrative, receptionist, estates

Table 2 Team climate, job satisfaction, intention to remain, burnout: responses of 9835 survey respondents

	Team Climate Inventory (TCI), mean of item scores by domain and overall (With reference to their practice, respondents select: 1 Strongly disagree, 2 Disagree, 3 Neither agree nor disagree, 4 Agree, or 5 Strongly agree for each of 10 statements that describe a good team climate)				Still working in practice in 2 years (1 Very unlikely; 2 Unlikely; 3 Neutral; 4 Likely; 5 Very likely)	Job Satisfaction (1 Extremely Dissatisfied; 2 Mostly dissatisfied; 3 Somewhat dissatisfied; 4 Neither; 5 Somewhat satisfied; 6 Mostly satisfied; 7 Extremely satisfied)	Burnout[a] (0 Never; 1 A few times a year; 2 Once a month or less; 3 A few times a month; 4 Once a week; 5 A few times a week; 6 Every day)
	Domain: Participative Safety	Domain: Task Orientation	Domain: Support for Innovation	Mean 10-item TCI overall score			
N	9835	9835	9835	9835	9835	9835	9835
Missing	0	0	0	0	0	0	0
Mean	3.84	3.75	3.71	3.77	3.79	5.30	2.45
SD	0.92	0.87	0.91	0.84	1.24	1.46	1.76
Median	4.00	4.00	4.00	3.90	4.00	6.00	2.00
25th percentile	3.25	3.33	3.00	3.30	3.00	5.00	1.00
75th percentile	4.50	4.33	4.33	4.40	5.00	6.00	4.00
Minimum	1	1	1	1	1	1	0
Maximum	5	5	5	5	5	7	6
***n* (%) of staff members with mean score < 3 i.e. Unfavourable**	1530 (15.6%)	1369 (13.9%)	1474 (15.0%)	1573 (16.0%)	Score 1 or 2, Very Unlikely / Unlikely 1627(16.5%)	Score 1 or 2, Extremely/Mostly Dissatisfied 661(6.7%)	Score > = 4 i.e. High Burnout 2571 (26.1%)
***n* (%) of staff members with mean score > = 3 and < 4 i.e. Neutral**	2447 (24.9%)	3173 (32.3%)	3149 (32.0%)	3582 (36.4%)	Score 3, Neutral 1683 (17.1%)	Score 3, 4 or 5, Largely Neutral 3146 (32.0%)	
***n* (%) of staff members with mean score > = 4 i.e. Favourable**	5858 (59.6%)	5293 (53.8%)	5212 (53.0%)	4680 (47.6%)	Score 4 or 5, Likely/ Very likely 6525 (66.3%)	Score 6 or 7, Mostly/ Extremely Satisfied 6028 (61.3%)	

[a] Burnout was described as 'exhaustion, cynicism and detachment from the job, sense of ineffectiveness and lack of accomplishment' [40]

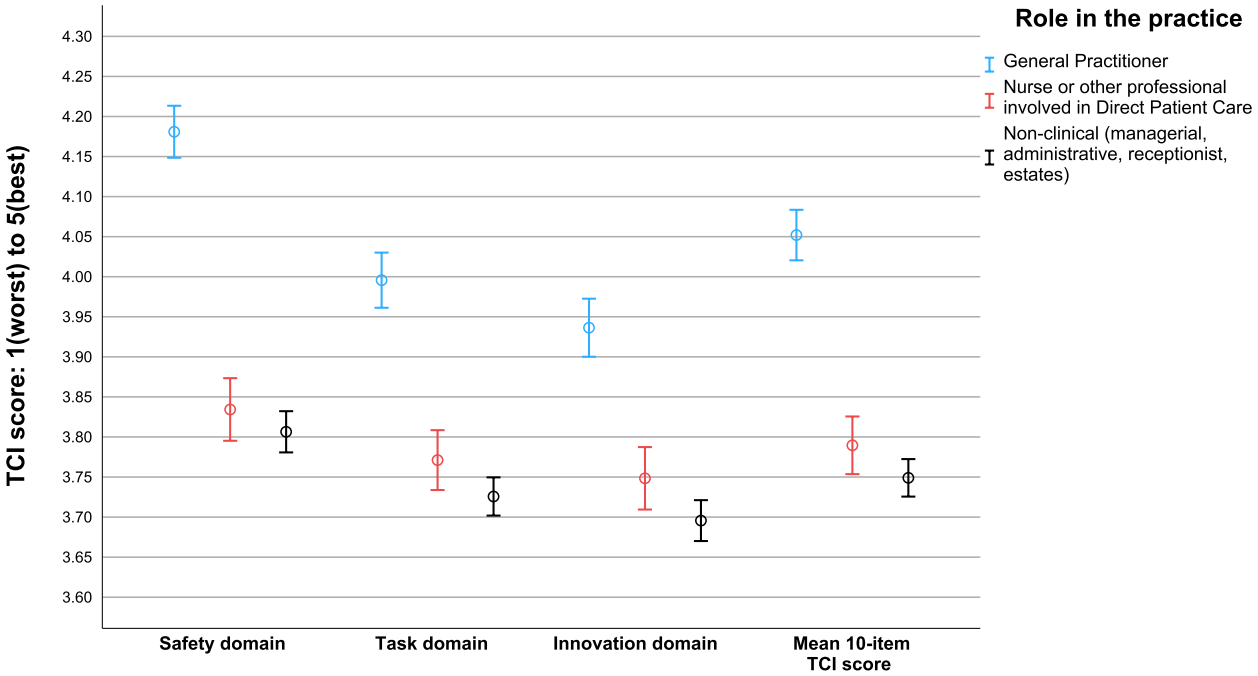

Fig. 1 Team climate inventory mean scores-comparison of roles. *N*=8961 survey participants who stated a role and completed the participatory safety, task orientation and support for innovation domains: Means with 95% confidence intervals

Most respondents (61.3%) stated they were mostly or extremely satisfied in their jobs (mean 5.3 on the 7-point scale); 16.1% expressed some degree of dissatisfaction. Just over a quarter of respondents (26.1%) reported high burnout (score > =4, once a week or more); most reported feeling burnt out once a month or less (Table 2). Higher burnout was associated with lower satisfaction ($n=9835$, Pearson's $r=-0.454$, $p<0.001$).

Responses by role

GPs perceived better team climate than the nurses/DPCs and non-clinical respondents in each domain (Fig. 1) and for 12 of the 14 individual items (Supplementary materials 5). In contrast, compared to both other groups of staff, lower proportions of GPs were mostly or extremely satisfied with their jobs and higher proportions of GPs reported high burnout. GPs, however, were more likely to say they would still be working in the practice in two years. (All comparisons statistically significant). A small number of respondents reported high burnout and being mostly or extremely satisfied with their jobs (784/8961, 14.6%) (Table 3). (Supplementary materials 6).

Responses from GPs

Of 1933 GPs, 1838 (95.1%) provided their gender. There was no significant difference between male and female GPs with respect to job satisfaction and likelihood of still being in the practice in two years, but a larger proportion of male GPs recorded high burnout (33.9% vs 27.3%, Chi square $p=0.002$). Also, male GPs recorded higher TCI scores in the participatory safety domain (mean 4.26 vs 4.16, t test $p=0.004$). Regarding age, statistically significant differences were: younger GPs (<35 years) rated team climate better and reported higher job satisfaction compared to older GPs; the 35–54 age group were more likely to state they would still be in their practice in two years and had higher burnout scores than younger and older GPs. (Supplementary materials 7).

Among the 277/1933 (14.3%) GPs stating it was likely or very likely that they would not be in the practice in two years, 119 (43.0%) intended to retire, of whom 50 also stated that they intended to undertake other work, 29 in healthcare and 21 in a non-healthcare setting. Most (83.9%) of the GPs intending to retire were aged 55 years or more (Supplementary materials 7).

Practice level analysis

Matching participants to practices

In total, 742 responses were excluded as they could not be matched to a practice ODS code. Either codes provided were incomplete or erroneous or respondents had entered names, roles or 'xxxx'. The remaining 9093 matched responses were from 809 different practices, i.e. 12.5% of 6475 practices nationally.

Of the 9093 matched respondents, 8286 (91.1%) provided their roles; 1815 (21.9%) were GPs, 1849 (22.3%)

nurses/DPCs and 4622 (55.8%) non-clinical staff. Of the 809 practices, 180 (22.2%) had only one staff response, 316 (39.1%) practices had no response from a GP and 57 (7.0%) had no responses from the other two staff groups (Nurses/DPCs; non-clinical). (Supplementary materials 8).

Response rates by practice and selection of sample of practices for analysis

The original target of a 60% staff response rate was achieved by only 154 of 809 (21.7%) practices, accounting for 4198 (46.2%) of all individual responses. Use of a 50% cut off enabled 208 of the 809 practices (26.7%) and 5273 (58.0%) of all respondents to be included, while also providing the most nationally representative sample. An additional advantage of the 50% threshold was that larger practices with small numbers of respondents were not included and there was a response from at least one GP and one other staff member in each practice. Details of the analysis of alternative subsamples and representativeness are given in Supplementary materials 9.

Analysis of 208 practices with 50% or more staff responses

Description of sample

The 208 practices with at least 50% of staff responding varied in size, patient demographics, deprivation, rurality and workforce characteristics (Table 4). More than half of the 208 practices came from three regions (East of England 23.1%, North West London 21.2%, North West Coast 10.6%). (Supplementary materials 10).

Practice level outcomes

Using the revised 10 item TCI, with mean 3.88 and median 3.91, indicated that staff in most of the 208 practices perceived a favourable climate. Practice median satisfaction scores demonstrated that staff in over 85% of practices were mostly or extremely satisfied with their jobs. There were only six practices where more than half of staff reported high burnout (Table 5). The three staff outcome measures were significantly correlated with each other and with team climate. Analysis of participants' responses by role confirmed the patterns found in the individual level analysis. (Supplementary materials 11).

Modelling of outcomes

Summary statistics for predictor variables in the regression modelling are shown in Table 4; bivariate correlations between predictors are in Supplementary materials 12.

Explorations of associations with team climate as the primary outcome demonstrated practice size as the dominant predictor (Supplementary materials 12). Polynomial (quadratic and cubic) functions of practice size, in addition to the linear variable, were therefore tested in all models in order to explore non-linear responses. After modelling team climate, practice mean TCI scores were used in modelling staff outcomes and practice performance. Final models are shown in Table 6 and summarised in Fig. 2.

Table 3 Job satisfaction, intention to remain in post and burnout responses: comparison by role ($N=8961$ stating a role)

	Outcome n, (%)	GPs $N=1933$	Nurses/DPCs $N=2055$	Non-clinical $N=4973$	Comparison of roles [a]
Job satisfaction	n, % mostly or extremely satisfied	1132 (58.6%)	1401 (68.2%)	3177 (63.9%)	Chi-sq: $p<0.001$
(1 Extremely dissatisfied to 7 Extremely satisfied)	Median (IQR) Mean (SD)	6.0 (5 to 6) 5.22 (1.44)	6.0 (5 to 6) 5.52 (1.36)	6.0 (5 to 6) 5.36 (1.46)	K-W: $p<0.001$ Overall: Nurse/DPC > Non-clinical > GP
Working in practice in 2 years	n, % stating likely or very likely	1439 (74.4%)	1423 (69.2%)	3294 (66.2%)	Chi-sq: $p<0.001$
(1 Very unlikely to 5 Very likely)	Median (IQR) Mean (SD)	4.0 (3 to 5) 3.98 (1.22)	4.0 (3 to 5) 3.85 (1.20)	4.0 (3 to 5) 3.78 (1.24)	K-W: $p<0.001$ Overall: GP > Nurse/DPC > Non-clinical
Burnout	n, % high burnout (once a week or more)	603 (31.2%)	411 (20.0%)	1249 (25.1%)	Chi-sq: $p<0.001$
(0 Never to 6 Every day; 4 Once a week)	Median (IQR) Mean (SD)	3.0 (1 to 4) 2.72 (1.72)	2.0 (1 to 3) 2.22 (1.66)	2.0 (1 to 4) 2.36 (1.79)	K-W: $p<0.001$ Overall: GP > Non-clinical > Nurse/DPC
% reporting high burnout and mostly or extremely satisfied		199 (10.3%)	147 (7.2%)	438 (8.8%)	Chi-sq:$p<0.001$ Overall: GP, Non-clinical > Nurse/DPC

[a] Chi-sq Chi-squared test, *K-W* Kruskal–Wallis test

Table 4 Practice and workforce characteristics: summary statistics, $N = 208$ practices

PRACTICE CHARACTERISTICS		n	%		Decile	n	%
Location[a]	Urban	170	82.1	National deprivation decile[a]: 1 least deprived, 10 most deprived	1–2	39	18.8
	Rural	37	17.9		3–4	54	26.1
Practice trains GPs (Foundation years 1,2 (FY1,2) and / or specialist GP registrars (ST1-4)	Yes	118	56.7		5–6	57	27.5
	No	90	43.3		7–8	32	15.5
Practice employs GP locum(s)	Yes	24	11.5		9–10	25	12.1
	No	184	88.5				

	N	Mean	SD	Median	Minimum	Maximum	25th percentile	75th percentile
Practice size, number of patients, 000s (June 2022)[b]	208	11.495	9.019	9.485	1.500	90.000	6.783	13.787
% of patients aged over 65	208	18.610	7.393	18.376	0.079	43.541	13.138	23.076
WORKFORCE CHARACTERISTICS[c]								
% of total practice FTE that is clinical (GP + NURSE + DPC)	208	46.4	9.6	45.0	20.9	100 [$n = 1$]	40.7	51.5
% of total clinical FTE performed by GPs	208	48.4	16.6	48.9	0 [$n = 1$]	100 [$n = 2$]	36.1	58.8
% of total GP FTE performed by partners	207	65.7	26.3	68.7	0 [$n = 9$]	100 [$n = 38$]	50.0	84.0
% of total GP FTE performed by female GPs	207	52.7	24.8	52.2	0 [$n = 13$]	100 [$n = 15$]	38.4	69.2
% of total GP headcount who are aged 54 and under	207	74.3	25.8	80.0	0 [$n = 11$]	100 [$n = 52$]	62.5	100.0
% of total GP headcount qualified in the UK	208	74.5	25.0	80.0	0 [$n = 9$]	100 [$n = 52$]	60.0	98.4
Average GP FTE per GP headcount (indicates GP part time working)	207	0.78	0.20	0.74	0.34	1.87	0.65	0.89
Total Practice FTE per 1000 patients (workload)	208	2.22	0.77	2.12	0.50	5.68	1.72	2.55
Total GP FTE per 1000 patients (workload)	208	0.47	0.17	0.46	0 [$n = 1$]	0.99	0.36	0.57

[a] Location type and deprivation data missing for 1 practice

[b] Size distribution of practice: Small < = 6000 patients, $n = 46$ (22.1%); medium (6001 to 10,000 patients), $n = 68$ (32.7%); large > 10,000 patients, $n = 94$ (45.2%). Alternatively, 93 (44.7%) had < = 9000 patients and 115 (55.3%) had > 9000 patients). Minimum and maximum practice sizes rounded to preserve practice anonymity

[c] Variables involving GP FTE include only permanent GPs, i.e. exclude registrars/ trainees and locums

Factors associated with team climate

Practice size (number of patients) was the dominant factor to the exclusion of all other practice characteristics. Team climate worsened as practice size increased with diminished effect beyond 10,000 patients. The effect beyond 25,000 patients was indeterminate, owing to scarcity of data (there were only 10 practices with size ranging from 25,000 to 90,000).

Team climate and staff outcomes

The practice mean TCI score is significantly associated with all three staff outcomes. A 0.5 point improvement in practice mean TCI score (which might be considered practically relevant and realistically achievable from local interventions) is associated with statistically significant improvements in the scores for job satisfaction of 0.419 and likelihood of working in the practice in two years of 0.361, and a statistically significant reduction in burnout score of 0.491.

Various practice and workforce variables were also significant in the models although many of the coefficients were small (Table 6).

As well as the positive effect of team climate on job satisfaction, having a lower proportion of clinical FTE from GPs and a higher GP FTE to patient ratio are associated with higher job satisfaction. A small but diminishing positive effect on job satisfaction was identified as practice size increased becoming intangible at 25,000. Staff in practices with GP trainees were more likely to intend to remain working in the practice. Burnout was lower in practices with a higher GP to patient ratio and more GPs qualifying in the UK.

Factors associated with practice performance

Team climate was not significantly associated with clinical effectiveness as represented by the QOF score and the modelling of this outcome is not reported. Team climate is, however, associated positively with patient

Table 5 Practice summary outcome scores, *N* = 208 practices with > = 50% of staff responding (total of 5273 participants)

	Team Climate Inventory (TCI), mean of item scores by domain and overall (With reference to their practice, respondents select: 1 Strongly disagree, 2 Disagree, 3 Neither disagree nor agree, 4 Agree, or 5 Strongly agree for each of 10 statements that describe a good team climate)				Still working in practice in 2 years (1 Very unlikely; 2 Unlikely; 3 Neutral; 4 Likely; 5 Very likely)	Job Satisfaction (1 Extremely; 2 Mostly; 3 Somewhat Dissatisfied; 4 Neutral; 5 Somewhat; 6 Mostly; 7 Extremely Satisfied)	Burnout [a] (0 Never; 1 A few times a year; 2 Once a month or less; 3 A few times a month; 4 Once a week; 5 A few times a week; 6 Every day)	Practice performance measures[b]	
								Quality and Outcomes Framework: % of all points achieved 2021/2	General Practice Patient Survey 2022: % of patients reporting a positive experience of their practice
	Participative Safety	Task Orientation	Support for Innovation	Mean 10-item TCI score	Practice median	Practice median	Practice median		
N	208	208	208	208	208	208	208	208	206
Missing	0	0	0	0	0	0	0	0	2
Mean	3.96	3.85	3.81	3.88	4.10	5.85	2.18	92.27	76.12
SD	0.42	0.36	0.39	0.38	0.52	0.51	0.86	6.46	12.05
Median	4.01	3.83	3.83	3.91	4.0	6.0	2.0	93.18	77.71
25th percentile	3.68	3.61	3.54	3.63	4.0	6.0	1.5	89.33	68.26
75th percentile	4.22	4.11	4.08	4.13	4.0	6.0	3.0	96.48	86.11
Minimum	2.84	2.88	2.58	2.85	2.0	2.50	0.0	39.35	40.88
Maximum	4.80	4.62	4.67	4.64	5.0	7.0	5.0	100.0	100.0
n (%) practices with mean staff member scores < 3 i.e. Unfavourable	3 (1.4%)	4 (1.9%)	4 (1.9%)	4 (1.9%)	Median < 2.5 Very Unlikely/ Unlikely 1 (0.5%)	Median < 3 Extremely / Mostly Dissatisfied 1 (0.5%)	High Burnout > = 4 6 (2.9%)		
n (%) practices with mean staff member scores > = 3 and < 4 i.e. Neutral	98 (47.1%)	131 (63.0%)	137 (65.9%)	117 (56.3%)	2.5 < =Median < = 3.5 Neutral 19 (9.1%)	3 < = Median < = 5 Largely Neutral 28 (13.5%)			
n (%) practices with mean staff member scores > = 4, i.e. Favourable	107 (51.4%)	73 (35.1%)	67 (32.2%)	87 (41.8%)	Median > 3.5 Likely/ Very Likely 188 (90.4%)	Median > 5 Mostly / Extremely Satisfied 179 (86.1%)			

The three staff outcomes were significantly correlated with each other and with team climate. Pearson correlation coefficient (r), *n* = 5273. 10 item TCI vs overall satisfaction 0.505, vs likely to be in the practice in 2 years time 0.439, vs how often feel burned out −0.275; job satisfaction vs likely to remain 0.439, vs how often feel burned out −0.433; likely to remain vs how often feel burned out −0.336 (all correlations p < 0.001)

[a] Burnout was described as 'exhaustion, cynicism and detachment from the job, sense of ineffectiveness and lack of accomplishment'[40]

[b] Public Health indicators for general practices in June 2023 [44]

Table 6 Results of Practice level regression modelling, final models[a], *N* = 208 practices with response rates at least 50% in staff survey

Dependent variables	Range	Final regression model {95% Confidence Intervals}	R^2	Interpretation
Mean practice TCI 10 item score	1 Worst to 5 Best	4.3155857 - 0.0597451*(practice size in thousands) {−0.0867164, −0.0327739} + 0.0015787*(practice size in thousands)^2 {0.0005114, 0.0026460} - 0.0000113*(practice size in thousands)^3 {−0.0000208, −0.0000018}	0.145	Going from 25,000 to 24,000 patients → Team Climate improvement of 0.003 Going from 20,000 to 19,000 patients → Team Climate improvement of 0.011 Going from 15,000 to 14,000 patients → Team Climate improvement of 0.021 Going from 10,000 to 9000 patients → Team Climate improvement of 0.033 Going from 5000 to 4000 patients → Team Climate improvement of 0.046
Median practice job satisfaction	1 Extremely dissatisfied to 7 Extremely satisfied	2.558481 + 0.838210*(mean practice 10 item TCI) {0.680785, 0.995636} + 0.021088*(practice size in thousands) {0.006326, 0.035849} - 0.000271*(practice size in thousands)^2 {-0.000478, -0.000065} - 0.008327*(clinical FTE % that is GP) {−0.012114, −0.004539} + 0.543252*(Total permanent GP FTE per 1000 patients) {0.181725, 0.904779}	0.380	Increasing the mean TCI score by 0.5 is associated with a 0.419 improvement in job satisfaction score Going from 4000 to 5000 patients → Job satisfaction improvement of 0.019 Going from 9000 to 10,000 patients → Job satisfaction improvement of 0.016 Going from 14,000 to 15,000 patients → Job satisfaction improvement of 0.013 Going from 19,000 to 20,000 patients → Job satisfaction improvement of 0.011 Going from 24,000 to 25,000 patients → Job satisfaction improvement of 0.008 A 10% decrease in the percentage of clinical FTE that is GP is associated with a 0.08 increase in job satisfaction score Adding an extra full time permanent GP in a practice with 10,000 patients is associated with a 0.054 improvement in job satisfaction score
Median practice intention to be working in practice in 2 years	1 Very unlikely to 5 Very likely	1.203 + 0.721*(mean practice 10 item TCI) {0.562, 0.880} + 0.179 if practice trains GPs {0.056, 0.302}	0.286	Increasing the mean practice TCI score by 0.5 points is associated with a 0.361 points improvement in the likelihood of working in the practice in 2 years score Being a GP training practice improves likely retention score by 0.179 points
Median practice burnout	0 Never to 6 Every day	6.604 − 0.982*(mean practice 10 item TCI) {−1.252, −0.712} −0.004*(% of GP headcount qualified in UK) {−0.009, −0.001} - 0.618*(Total permanent GP FTE per 1000 patients) {−1.222, −0.013}	0.234	Increasing the mean practice TCI score by 0.5 points is associated with a reduction in the burnout score by 0.491 A 10% increase in the percentage of GP head count qualified in the UK is associated with a 0.04 reduction in burnout Adding an extra full time permanent GP in a practice with 10,000 patients is associated with a 0.06 reduction in burnout
Percentage of patients having a fairly or very good experience of the practice ***N* = 206** (No patient experience data were available for 2 practices)	100% maximum	21.244 + 7.835*(mean practice 10 item TCI) {4.074,11.595} + 0.328*(% of practice patients > =65 years old) {0.110, 0.547} + 0.064*(% of GP FTE performed by female GPs) {0.005, 0.123} + 0.086*(% of GP headcount trained in UK) {0.027, 0.145} + 18.422*(Total permanent GP FTE per 1000 patients) {9.002, 27.842}	0.276	A 0.5 point improvement in mean practice TCI score is associated with a 3.92% increase in the proportion of patients reporting a fairly or very good experience of their practice A 5% improvement in the proportion of patients reporting a positive experience is associated with: - an increase of 0.271 permanent GPs / 1000 patients; - an increase of 78.1% in the % of GP FTE performed by female GPs; - an increase of 58.14% in the % of GP headcount qualified in the UK; - an increase of 15.24% in practice patients aged 65 or over

[a] Variables involving GP FTE include only permanent GPs, i.e. exclude registrars/ trainees and locums. Two predictor variables were excluded from the modelling due to concerns of data integrity: average GP FTE per GP headcount (measure of part time working) owing to unfeasibly high values of average GP FTE for at least 20 practices; the dichotomous variable workforce include locum GPs (Yes/No) due to concerns about the consistency of this variable over time

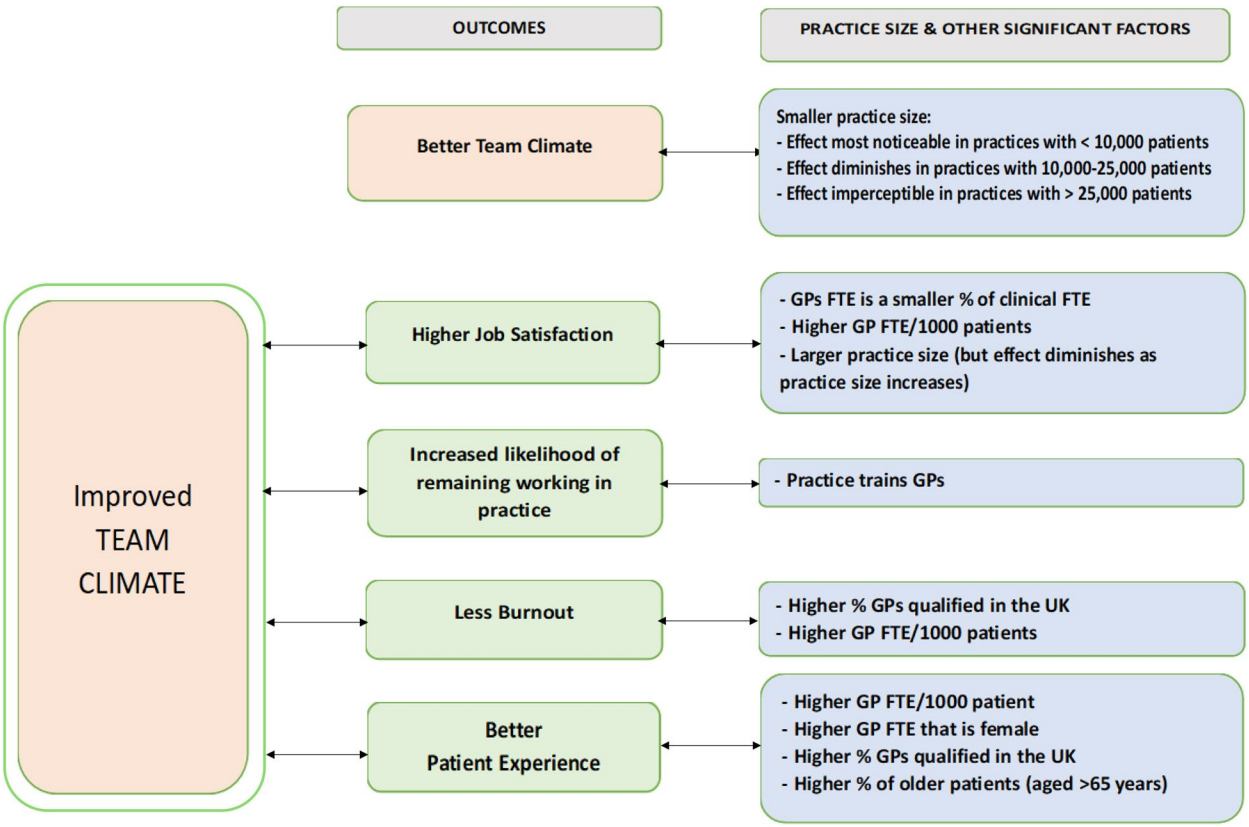

Fig. 2 Summary of findings from practice level regression analysis for 5 outcome variables, $n = 208$ practices

experience. A 0.5 point improvement in practice mean TCI score is associated with a 3.92% increase in the proportion of patients reporting a fairly good or very good experience of their practice. Other factors significantly associated with more favourable patient ratings were: a higher GP to patient ratio; a larger proportion of the GP FTE performed by female doctors; a higher proportion of GPs who qualified in the UK; and a higher proportion of older (over 65 years) patients.

Discussion

Overview of findings

Although most respondents reported a favourable team climate in their practices, around one third were unaware of their practice objectives (or vision), alignment with which is important for cultivating a good team climate [31]. Over 60% of respondents reported an overall satisfaction with their jobs and just over a quarter met the criterion for high burnout (emotional exhaustion once a week or more). Compared to other respondents (nurses, DPC and non-clinical staff), GPs reported better team climate and less intention to leave, but less job satisfaction and higher burnout.

Differences in the organisation and social contexts of practices are recognised as giving rise to variability in ways of working, effectiveness and staff wellbeing [45] and our findings confirm this. In the practice-level analysis, team climate was found to worsen as practice size (number of patients) increased although the effect levelled off above 10,000 patients. A more favourable team climate was associated with better staff outcomes (higher job satisfaction, better potential staff retention and lower levels of burnout) and better patient experiences. This is consistent with the relationships identified by others between good work environments and team dynamics, and better staff outcomes and quality of care [32, 46–50]. Various practice and workforce characteristics were found to be associated with team climate, staff and patient outcomes as summarised in Fig. 2; however, many effect sizes were small.

Comparison with other studies

The TCI has been widely used in many settings including in primary care in England [32, 51], Canada [29, 50, 52], USA [53] and Australia [49]. These studies have reported similar practice mean TCIs (around 3.8) to those found in our study [51, 54]. Consistent with our

findings, others have reported: better team climates in smaller practices [29, 48, 52, 53, 55]; a positive association of team climate with patient experiences [32, 49], as well as with staff outcomes including job satisfaction, intention to remain in post [49, 50] and lower burnout [38, 56]; no association between team climate and QOF (clinical effectiveness) achievement [55] (although better team climate has been found to improve care for people with chronic conditions [32, 50]). Some studies highlight the importance of team climate related variables for staff wellbeing, including teamwork efficiency [37], or good team communication, participatory decision making and the avoidance of chaotic work environments [57, 58]. Workload and understaffing have also been linked to burnout in primary care [57, 58].

Our study indicated higher levels of burnout (emotional exhaustion at least once a week) among GPs than other staff (over 30% vs 20 −25%). This may reflect greater responsibilities inherent in the GP role. Burnout in our GP sample was, however, lower than for family medicine physicians in US studies using the same single item measure or other validated single item measures [37, 39]. This may reflect international differences in doctors' work contexts or cultural variations in the reporting of burnout [59]. Also, unlike other studies in which burnout was more prevalent among female GPs [37, 39], our study indicates higher burnout among male GPs. This may be a sample-specific feature or because women GPs are more likely to be working part-time.

Consistent with an earlier study of German GPs [12], those in our survey reported lower satisfaction compared to other staff groups although higher proportions of GPs (around 75%) than other staff expected still to be working at the practice in two years. Even amongst the growing numbers of salaried GPs there are few opportunities for employment in other settings whereas openings exist for other health professionals in hospitals and community teams. The proportion of GPs intending to leave patient care within two years was lower in our study than in one conducted pre-pandemic (around 10% compared to 20%) [5]. Volunteers who participated in our study could have been relatively content or staff wanting to leave pre-pandemic could already have done so. Some 10% of GPs reported both high burnout and satisfaction, compared to 35% of physicians in a US primary care study [37]. Other recent research involving GPs in England has identified an association between diagnostic uncertainty, emotional exhaustion and staff turnover [60] and that there were higher rates of prescribing strong opioids and antibiotics in practices where there was greater job dissatisfaction, more burnout and higher turnover intentions [61].

Strengths and limitations

This study is unique in attempting to capture national data on team climate and staff outcomes in general practice in England. A key strength is that it addresses ongoing challenges around recruitment and retention of staff in this setting and informs future policy and planning.

Limitations include potential self-selection bias; the practices and staff within practices that participated may have been those with more capacity and this may be reflected in low burnout, high job satisfaction and limited variability around team climate scores. There were challenges in achieving participation within practices such that only 208 practices reaching 50% staff response were included in the practice-level analysis. Although this sample is larger than in other team climate studies in primary care [29, 32, 48, 52, 55], it represents only 3.2% of practices in England. Even though the national workforce data are quality checked before release, there may be inaccuracies in the recorded headcounts such that some practices may have been wrongly included or excluded from the practice-level analysis. Practices included in this sample differed from other practices nationally, being larger, in less deprived areas, more likely to be involved in training and having higher proportions of the practice FTE in clinical roles. Also, most responses were from four distinct areas of England due to the limited capacity of some CRNs for supporting recruitment. It is not known how many practices were contacted with information about the study, so it was not possible to calculate an exact response rate. Moreover, the considerable pressure on general practices in England at the time of the study meant many were reluctant to participate in research.

The survey was administered two years after Covid-19 pandemic began and the ongoing adjustments may have affected responses. Approximately 9% of respondents preferred not to indicate their roles, age or gender, which meant that some data were lost. This reluctance may reflect concerns about confidentiality even though submission was to the research team via a third party server and requests for personal details were kept to a minimum to preserve anonymity. Lack of nuanced information restricted analysis of subgroups (for example, comparing salaried and partner GPs and nurses with other direct patient care professionals). Some responses did not include a practice ODS code and therefore could not be included. Variation in views within practices was not explored, so use of practice means might have introduced bias [62]. The analysis was cross sectional and based on measures of association and does not establish direction of influence. (For a fuller discussion of strengths and limitations see Supplementary materials 13).

Implications of findings for practice, policy and research

The observed associations between team climate and outcomes for staff and patients suggest that a policy promoting interventions to enhance team climate may have potential to improve staff recruitment and retention as well as patient care [63]. Moreover, an approach to the whole working environment might be more impactful than initiatives targeting either job satisfaction or burnout. At local level, education and support could enhance understanding of the contribution of team climate to promote a cohesive staff outlook [64, 65] addressing, for example, our finding that around one third of staff were unaware of practice objectives (nearly half of nurses/DPCs). The finding that GPs perceive a more favourable team climate than the rest of their staff also needs attention. It may imply an element of detachment that itself could have an adverse effect on working relationships. Whilst the factors contributing to effective team functioning are widely acknowledged to include shared goals, good communication, mutual trust and support, strong leadership, a culture of learning and a participatory (rather than hierarchical) approach [30, 53, 66], more research is required into the complex interactions within general practice [67].

The findings of the study both support and challenge current policies. The growth in numbers of other (non-GP) front line professionals in recent years implies a lower workload for staff and improved access for patients which is consistent with our finding that higher GP to patient ratios predict greater job satisfaction and patient experiences. Our analysis also indicates that when GPs provide a lower proportion of clinical care, job satisfaction is improved. Others have observed that GPs may appreciate the opportunity to delegate tasks that can be done by others [46, 47, 57], and that the job satisfaction of other members of the primary care team may be enhanced by being given further opportunities to use their abilities [12]. Conversely, our findings suggest that team climate is better when practices are smaller. This is in line with other research that links smaller practices with a better patient experience and improved outcomes [68]. With the current trend for practices to increase in size, this suggests a need to review how practice organisation and processes affect the relational climate and patient experience [69]. Others have suggested micro-teams or 'teamlets' can foster productive working environments and improve coordination and continuity of care [29, 70]. In this model, clinicians work with dedicated nurses and medical assistants to manage a panel of patients and groups of teamlets are supported by an extended integrated team that includes additional roles such as physiotherapists, pharmacists, dieticians, counsellors and midwives [71]. Such an arrangement presents an opportunity for a return to assigned patient lists for practitioners. Concerns have been raised about the so-called ''collusion of anonymity" from combined practice lists in the NHS and its effects on continuity of care, utilisation, costs, mortality and patient satisfaction [72]. Physician's assistants and advanced nurses routinely manage their own panels of patients in US primary care [27, 28] and this might warrant consideration in British general practice.

The unique features of training practices have also been linked to better performance [73] and were associated in our study with higher likely staff retention. Our findings also suggest associations between having more GPs qualified abroad in a practice with more staff burnout and worse patient experiences. While increasing reliance is placed on IMGs to address the GP shortage, a focus on seamless integration could be beneficial. Further investigation, including by qualitative methods, is required to improve understanding of these associations revealed in the analyses [67, 74].

Conclusion

Team climate, typified by the nature of relationships between team members, is associated with staff job satisfaction and emotional exhaustion and patients' experiences of care. Creating a favourable team climate is a potentially inexpensive way to ensure effective team working. Team climate is something that can be influenced by practice leaders, and supportive and productive working environments can be created even in the face of difficult external pressures. Guidance is required to help practices establish and maintain cohesive teams.

Abbreviations

ARRS	Additional Roles Reimbursement Scheme
CRNs	Clinical Research Networks
DPC	Direct Patient Care
FTEs	Full-Time Equivalents
GPs	General Practitioners
IMGs	International Medical Graduates
NHS	National Health Service
NIHR	National Institute for Health Research
ODS	Organisation Data Service
QOF	Quality and Outcomes Framework
RDNs	Research Delivery Networks
SD	Standard Deviation
TCI	Team Climate Inventory

Supplementary Information

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Supplementary Material 1

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Authors' contributions
All authors (PW, HG, BJ, CA, JS, TB, MT. PB, JC, RC, CM, SP, SR, KS, MJ,SdeL) contributed to the conception and design of the work and have reviewed and approved the final version. CA, JS, MT, BJ and SdeL helped with the acquisition of the data; PW undertook the analysis; PW, HG and BJ drafted the work. PB oversaw service user engagement throughout the work.

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Data availability
Data used in this study are openly available from: https://digital.nhs.uk/data-and-information/publications/statistical/general-and-personal-medical-services/30-june-2022/ and https://fingertips.phe.org.uk/profile/general-practice.

Declarations

Ethics approval and consent to participate
The study was reviewed and approved by the University of Surrey Ethics Committee (UEC 2019 077 FHMS); North of Scotland Research Ethics Services NHS Grampian (19/NS/0188); and NHS Health Research Authority, Health and Care Research Wales (HCRW). The HRA and NHS REC are conducted under the UK Policy Framework for health and social care research; the sources for the framework include International Council for Harmonisation of Technical Requirements of Pharmaceuticals for Human Use, Good Clinical Practice (ICH GCP) and the Declaration of Helsinki.
Staff invited to complete the survey were given full participant information and the link to the survey. Before gaining access to the questions, individuals provided informed consent by agreeing to take part in the survey.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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