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ORIGINAL RESEARCH

Psychological Capital and Its Association With Burnout and Turnover Intention Among Hospital Nurses: A Prospective Cohort Study

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Abstract

Background: Burnout and turnover intention challenge nursing workforce stability, yet evidence distinguishing prospective psychological-resource associations from contemporaneous correlations remains limited. Psychological capital (PsyCap), comprising self-efficacy, hope, resilience and optimism, may contribute to healthier occupational trajectories.

Methods: A prospective observational cohort comprised 140 hospital nurses with monthly observations from January to December 2023 across four coded hospitals. The analysis included 1,511 person-month records. Baseline PsyCap was assessed with 24 six-point items; burnout domains and a three-item turnover-intention measure were recorded at each assessment. Population-averaged Gaussian generalised estimating equations with nurse-level clustering related baseline PsyCap to subsequent outcomes, accounting for the baseline outcome, elapsed month, age, sex, hospital sector and initial perceived work stress. Resignation was investigated using Cox proportional hazards regression.

Results: Baseline mean (SD) PsyCap was 4.10 (0.69), burnout composite was 35.72 (12.15) on a 0–100 scale and turnover intention was 2.26 (0.84) on a 1–5 scale. Of 140 nurses, 113 (80.7%) completed observation, 21 (15.0%) resigned and six (4.3%) were lost to follow-up. Across 1,371 post-baseline observations contributed by 136 nurses, each one-SD higher baseline PsyCap was associated with 2.38 fewer burnout-composite points (95% CI −3.85 to −0.91; p=0.0015) and 0.29 fewer turnover-intention points (95% CI −0.37 to −0.21; p<0.001). The adjusted resignation hazard ratio was 0.66 (95% CI 0.43–1.00; p=0.051).

Conclusions: Higher initial PsyCap was associated with lower subsequently reported burnout and turnover intention, even after adjustment for their baseline levels. The evidence for an association with actual resignation was imprecise. Longitudinal assessment of modifiable psychological resources may complement, but not replace, organisational efforts to improve nurses' working conditions.

Keywords: psychological capital; burnout; turnover intention; nurses; longitudinal studies; prospective cohort; workforce retention; generalised estimating equations.

1. Introduction

Maintaining a stable and psychologically healthy nursing workforce is central to safe hospital operations. Nurses work in environments that demand sustained attention, complex interpersonal communication, emotional regulation and rapid decisions under uncertainty. Their working conditions also frequently involve rotating shifts, night duty, staffing pressure and simultaneous responsibility for multiple patients. These demands are not inherently pathological, but prolonged exposure without sufficient organisational and personal resources can produce exhaustion, disengagement and intentions to withdraw from the workplace. Large observational studies have linked unfavourable staffing and practice environments with nurse burnout, dissatisfaction and compromised patient outcomes [1, 2, 3]. The implications of burnout therefore extend beyond an individual clinician's subjective discomfort to encompass continuity of care, recruitment costs, team functioning and institutional performance.

Burnout is generally conceptualised as an occupational response to chronic interpersonal and organisational stressors. Its classic dimensions are emotional exhaustion, depersonalisation or cynicism, and reduced personal accomplishment [4]. Emotional exhaustion captures depletion and a sense of having little capacity remaining for work demands. Depersonalisation reflects defensive detachment from recipients of care, whereas diminished accomplishment concerns less favourable perceptions of effectiveness and professional contribution. These dimensions are related but not interchangeable: a nurse might experience severe exhaustion while continuing to take pride in professional performance, and changes in one dimension need not imply equivalent changes in the others. An international review documented substantial variability in nurse burnout estimates across settings and instruments, reinforcing the importance of specifying exactly how the phenomenon is measured [5].

The job demands–resources model proposes that demanding work conditions primarily contribute to strain through energy depletion, whereas resources can support motivation and dampen harmful responses to stress [6, 7]. Conservation of resources theory likewise holds that people seek to obtain, retain and protect valued resources; sustained threats and actual losses are especially salient during stressful periods [8]. Both perspectives help explain why nurses exposed to similar clinical demands may nevertheless show different levels of exhaustion or intention to leave. They also suggest that examining protective psychological characteristics is important, provided that such characteristics are not used to obscure preventable organisational risks. Workload, staffing adequacy, leadership and supervisory support remain major components of the occupational context [9, 10, 11].

Psychological capital, commonly abbreviated as PsyCap, is a higher-order positive psychological resource integrating four distinguishable capacities: self-efficacy, hope, resilience and optimism. Self-efficacy concerns confidence in mobilising the effort needed to meet challenging tasks. Hope combines goal-directed agency with the ability to identify alternative pathways towards objectives. Resilience concerns effective recovery and adaptation following adversity, while optimism encompasses positive expectations accompanied by constructive explanatory tendencies. Rather than treating these components as merely independent personality traits, the PsyCap framework emphasises their shared contribution to purposeful, adaptive functioning [12]. Meta-analytic evidence from workplace research has associated PsyCap with more favourable attitudes, behaviours and performance [13]. Longitudinal evidence also indicates an association between PsyCap and employee well-being over time [14].

For nurses, PsyCap may influence how demanding clinical situations are appraised, how effectively setbacks are managed and whether professional goals remain attainable despite difficult shifts. Confidence may assist in handling complex tasks; hope may facilitate alternative problem-solving strategies; resilience may support recovery after adverse events; and optimism may sustain constructive engagement with colleagues and patients. Empirical nursing studies have connected PsyCap with burnout, professional commitment and other work outcomes, including studies of Chinese nurses and Korean hospital nurses [15, 16]. A study of newly qualified nurses linked authentic leadership and PsyCap to wellbeing across the transition into employment [17]. Recent evidence syntheses have also described PsyCap as a potentially valuable resource for nursing retention, although study design and contextual heterogeneity require caution in interpretation [18, 19].

Turnover intention must be distinguished from actual departure. It is a psychologically meaningful indicator of contemplated withdrawal, but some nurses who report an intention to leave remain employed, whereas others depart despite relatively low reported intention. Economic circumstances, contractual commitments, career opportunities, family needs and institutional practices can intervene between intention and action. Research across European hospitals has associated burnout and unfavourable practice environments with nurses' intention to leave the profession [20]. A review of nurse turnover highlighted the complexity of organisational, workforce and individual determinants [21]. Furthermore, longitudinal hospital evidence has associated burnout with actual organisational turnover, suggesting that resignation requires separate analysis rather than being inferred from questionnaire responses [22].

Two limitations recur in this literature. First, cross-sectional designs cannot establish whether better psychological resources preceded lower burnout, arose in response to more favourable working conditions or were measured as a consequence of current wellbeing. Second, outcome definitions vary considerably: turnover intention may refer to leaving a unit, hospital, organisation or profession, while burnout indices sometimes combine dimensions that have different conceptual meanings. The interpretation of prospective associations therefore benefits from clearly dated observations, repeated measurements, baseline-outcome adjustment and analysis of observed departures. A rigorous observational approach can help establish temporal ordering without claiming that a modifiable psychological resource has been shown experimentally to cause improved retention.

The present cohort study examined whether initial PsyCap was associated with burnout and turnover intention across subsequent monthly assessments among hospital nurses. We also evaluated the separate burnout domains, described the reliability of the multidimensional measures and investigated resignation recorded during follow-up. We hypothesised that higher baseline PsyCap would be associated with less burnout, lower turnover intention and a lower hazard of leaving employment. The focus was on magnitude, precision and consistency of associations, rather than classifying nurses according to unsupported clinical thresholds or inferring the effect of an untested intervention.

2. Methods

2.1 Study design and setting

A prospective observational cohort framework was used to examine a defined group of hospital nurses assessed repeatedly throughout the 2023 calendar year. The records identify four institutions, coded HSP-01, HSP-02, HSP-03 and HSP-04, and two hospital sectors (public and private). Clinical units comprised medical, surgical, emergency, intensive care, obstetrics, paediatrics and other services. Assessments were organised into twelve monthly occasions, with the earliest observation designated as the participant's baseline. Each participant was assigned an anonymised nurse identifier, allowing reliable linkage of successive assessments without incorporating personal names into the analysis. The cohort was closed for analysis: there were no new participant identifiers after the first month.

The primary unit of enrolment was the nurse, whereas repeated questionnaire assessments constituted person-month observations. This distinction is important because 1,511 monthly records do not represent 1,511 independent respondents. Baseline values were derived only from the first measurement for each nurse, and outcomes from later months were treated as follow-up measurements. Survey dates and interval outcome dates were available in serial-date format and were interpreted as calendar dates for timing analyses. A recorded resignation or loss to follow-up was treated as terminating subsequent observations; December completion was defined by the terminal status field rather than inferred solely from the presence of a December questionnaire.

2.2 Participants and baseline characteristics

The analytic cohort comprised 140 nurses with baseline records. Baseline fields included age, sex, marital status, nursing qualification, professional grade, duration of nursing experience, hospital tenure and employment contract. Occupational characteristics included clinical unit, shift pattern, monthly night shifts, weekly working hours, number of patients per shift, monthly overtime, perceived staffing adequacy, supervisor support, job satisfaction, perceived work stress and workplace aggression. These measurements were treated descriptively and were not presumed to document independently verified administrative exposure histories. Baseline age and other fixed characteristics remained constant within participant identifiers, while shift-related and psychosocial measures could vary across monthly visits.

The records contained item-level responses and calculated summary variables for the core psychological constructs. No blank item responses were found among the 1,511 recorded assessments for the PsyCap, burnout and turnover-intention items. This observation concerns the completeness of assessments actually recorded and does not mean that participants leaving the cohort supplied further follow-up responses. By separating missing questionnaires due to attrition from missing answers within a completed questionnaire, the analysis avoided incorrectly presenting an unbalanced panel as a complete twelve-month panel for all participants.

2.3 Psychological capital measurement

PsyCap was operationalised using 24 items scored from 1 to 6. Six items addressed each domain: self-efficacy, hope, resilience and optimism. Domain scores were obtained as the arithmetic mean of their respective six responses; the overall score was the mean of all 24 items, with a theoretical range of 1 to 6. Higher scores denoted greater psychological capital. The 24-item total, ranging theoretically from 24 to 144, was also available, but the item mean was used for between-person comparability and transparent interpretation. Item totals were recalculated against the 24 individual responses and agreed with the recorded totals at all monthly assessments. The baseline mean was the primary exposure, assessed before the outcomes included in prospective analyses.

The item structure reflects the four-component PsyCap model described in organisational research [12]. Internal consistency was examined at baseline using Cronbach's alpha for the full scale and each domain. Alpha coefficients were used as indicators of item covariance and not as evidence of construct validity, measurement invariance or permission to use a proprietary questionnaire. The availability of repeated assessments also enabled descriptive examination of changes in PsyCap; however, the prespecified interpretive emphasis was on baseline PsyCap, reducing ambiguity about whether the psychological resource temporally preceded the outcomes.

2.4 Burnout assessment

Burnout was assessed using 22 items scored from 0 to 6: nine emotional-exhaustion items, five depersonalisation items and eight personal-accomplishment items. The corresponding summed subscale ranges were 0–54, 0–30 and 0–48. Higher emotional exhaustion and depersonalisation denote less favourable experiences, while higher personal accomplishment denotes a more favourable experience. To summarise the overall pattern without discarding domain-specific information, the analysis also used a 0–100 burnout composite defined as the equally weighted mean of standardised emotional exhaustion, depersonalisation and reversed personal accomplishment: $100 \times [(EE/54) + (DP/30) + ((48 - PA)/48)] / 3$. Larger composite values therefore indicate a less favourable burnout profile.

The composite was treated as a continuous descriptive and analytic index, not as a diagnostic test, validated clinical cut-point or substitute for the individual burnout subscales. The three component dimensions and the composite were analysed separately. This choice is consistent with the multidimensional conception of burnout and avoids relying on a single arbitrary category when interpreting changes in a working population [4, 11]. Internal consistency was assessed for each subscale, whereas the constructed composite was interpreted according to its transparent scoring formula rather than assigned a psychometric property not established by the records.

2.5 Turnover intention and employment outcomes

Turnover intention was represented by the mean of three items, each scored 1–5. Higher scores indicate a stronger expressed intention to leave. A binary field designated a mean score of at least 4 as elevated intention; this pre-existing operational indicator was summarised descriptively, while the primary longitudinal analysis retained the continuous scale to avoid information loss. Resignation and loss to follow-up were separately identified for each inter-assessment interval. The terminal record provided the outcome date and status. Resignation was treated as the event of interest; nurses who completed follow-up or were lost to follow-up were censored on their respective recorded dates. Thus, intention and departure were not conflated.

The distinction between monthly intention measurements and subsequent exit is particularly important for causal interpretation. An intention measured during a period of deteriorating work experience may rise without producing a resignation before the study ends. Conversely, a resignation can follow an external opportunity, household event or contract-related change not reflected in the psychological questionnaire. We therefore interpreted the association of PsyCap with turnover intention as a behavioural-attitudinal outcome and the association with recorded resignation as a distinct time-to-event outcome with fewer events and necessarily wider statistical uncertainty.

2.6 Statistical analysis

We summarised baseline categorical variables as counts and percentages, and continuous variables as means and standard deviations. Repeated outcome values were tabulated by survey month with the number of nurses contributing observations to that month. Pearson correlation coefficients described unadjusted cross-sectional associations between baseline PsyCap and baseline burnout or turnover intention. Cronbach's alpha was calculated from baseline item responses. All scores were examined for their expected mathematical ranges, and item-level PsyCap and emotional-exhaustion totals were checked against the summary variables. Analyses were performed with Python statistical routines using two-sided tests and 95% confidence intervals.

The primary prospective analyses related baseline PsyCap to repeated burnout and turnover-intention outcomes recorded after January. Gaussian generalised estimating equations with an exchangeable working correlation and robust sandwich standard errors accounted for repeated assessments within nurses [23]. Each model included baseline PsyCap standardised by its cohort SD (0.686 units), elapsed month, baseline age per ten years, sex, hospital sector, baseline perceived work stress and the baseline level of the specific outcome. Adjusting for the outcome at baseline aimed to distinguish prospective associations from simple cross-sectional differences already present when observation began. Coefficients therefore represent adjusted average follow-up differences per one baseline standard deviation of PsyCap, not causal effects or individual change scores.

Models were fitted separately for the burnout composite, emotional exhaustion, depersonalisation, personal accomplishment and turnover-intention mean. Standardisation of the PsyCap exposure allowed comparison of coefficient magnitudes across models while retaining clinically interpretable raw outcome units in tables. The forest plot additionally divides coefficients and confidence limits by the baseline standard deviation of each outcome to facilitate visual comparison. These standardised visual estimates remain observational, and their magnitudes should not be interpreted as a common clinical effect across distinct constructs. Month was modelled continuously, describing an average linear trend rather than claiming that each participant followed a linear course.

We used Cox proportional hazards regression to investigate the time from each nurse's baseline assessment to resignation, with exact event or censoring dates derived from the terminal interval record [24]. PsyCap was examined per baseline SD, first alone and then with age and sex. Only 21 resignations were observed, and the adjusted model was therefore deliberately parsimonious. For descriptive presentation, participants were divided at the median baseline PsyCap score, and the resulting Kaplan–Meier curves display the observed fraction remaining employed in the presence of censoring. No formal mediation analysis was performed because repeated burnout and intention values, shared measurement occasions and unmeasured workplace determinants do not justify a simple causal sequence.

The longitudinal models included participants with at least one post-baseline assessment. Four nurses had terminal outcomes during January and consequently contributed to baseline descriptions and time-to-event analyses but not to the repeated follow-up regressions. Participants leaving later contributed their available observations until departure or loss. No single-value imputation was undertaken for structurally absent post-exit visits. Conventional generalised estimating equations use the repeated measurements observed before withdrawal; unbiased estimation under dropout requires assumptions that may be violated when missingness depends on evolving outcomes, and informative attrition remains a plausible source of bias. The study is reported using the STROBE principles for observational studies [25].

3. Results

3.1 Cohort composition and follow-up

The cohort included 140 nurses from four hospitals, with hospital-specific baseline counts of 24, 45, 31 and 40, respectively. Each nurse had a January baseline assessment. Across January–December 2023, the cohort generated 1,511 person-month records, and the number of available observations declined from 140 in January to 115 in December. Terminal outcomes recorded 113 nurses completing follow-up (80.7%), 21 resignations (15.0%) and six losses to follow-up (4.3%). Three resignations and one loss occurred during January, leaving 136 nurses with at least one subsequent questionnaire. These 136 nurses contributed 1,371 post-baseline visits to the prospective marginal models. Figure 1 depicts the flow from baseline entry to terminal cohort status.

3.2 Baseline demographic and occupational profile

Baseline mean age was 31.6 years (SD 5.9), and mean nursing experience was 8.6 years (SD 6.0). Female nurses constituted 99/140 (70.7%). A total of 69 nurses worked in public hospitals and 71 in private hospitals. Staff nurses represented the largest professional group (91/140), followed by senior staff and charge nurses. Weekly working hours averaged 47.4, and monthly overtime averaged 25.9 hours. The mean number of patients cared for per shift was 6.3. Table 1 provides the demographic and working-pattern profile, which reflects variation in both professional experience and work demands.

3.3 Psychological capital and burnout at baseline

Overall baseline PsyCap averaged 4.10 (SD 0.69) on a 1–6 scale. Among its constituent domains, mean self-efficacy was 4.20, hope 4.20, resilience 4.01 and optimism 4.00. The burnout composite averaged 35.72 (SD 12.15), with emotional exhaustion 24.43, depersonalisation 8.41 and personal accomplishment 31.73. The turnover-intention mean was 2.26 (SD 0.84). These values demonstrate considerable between-nurse variation before subsequent observations were collected.

Internal consistency at baseline was high for the 24-item PsyCap measure (Cronbach's alpha 0.946). The four domain coefficients ranged from 0.792 to 0.847. Reliability was also acceptable for the burnout subscales and the three-item turnover-intention measure. At baseline, greater PsyCap correlated inversely with composite

burnout (r=-0.766, p<0.001), emotional exhaustion (r=-0.610, p<0.001), depersonalisation (r=-0.647, p<0.001) and turnover intention (r=-0.688, p<0.001). These baseline correlations are descriptive and were not substituted for the prospective regression estimates.

3.4 Monthly follow-up patterns

Descriptive means fluctuated modestly over the twelve assessments rather than following a uniform downward or upward course. The PsyCap mean was 4.10 in January, 4.14 in June and 4.07 in December. The corresponding burnout-composite means were 35.72, 34.99 and 35.39, while turnover-intention means were 2.26, 2.17 and 2.21. These small variations should be interpreted alongside the progressively changing number of participating nurses: participants who resigned or were lost ceased to contribute subsequent observations. Unadjusted monthly means can therefore change because of both within-nurse experience and cohort composition. Table 3 reports the observed monthly denominators and aggregate scores.

When trajectories were displayed after dividing nurses at the baseline PsyCap median (4.11), the lower-PsyCap group generally reported a greater burden of burnout across follow-up. The lower and upper groups contained 70 nurses each; 13 of the lower group and eight of the upper group resigned. These descriptive contrasts cannot establish a within-person effect or account for all baseline confounding. Figure 2 presents the repeated monthly mean burnout scores, with baseline grouping retained even when a nurse later departed.

3.5 Prospective associations with subsequent burnout and turnover intention

In the marginal repeated-measures models, higher baseline PsyCap predicted lower subsequent burnout composite scores after accounting for baseline burnout, age, sex, hospital sector, initial work stress and month of assessment. A one-SD increase in initial PsyCap was associated with a 2.38-point lower adjusted average burnout score (95% CI −3.85 to −0.91; p=0.0015). The result indicates an association with follow-up burden that persisted beyond the strong baseline cross-sectional correlation. The estimated linear monthly term in the composite model was small and was not statistically distinguishable from zero, so the analysis does not imply steadily improving or worsening burnout during the calendar year.

A consistent pattern was observed across individual burnout domains. Each one-SD higher initial PsyCap corresponded to 2.29 points less emotional exhaustion (95% CI −3.24 to −1.34), 1.75 points less depersonalisation (95% CI −2.20 to −1.30) and 2.74 points more personal accomplishment (95% CI 2.10 to 3.38), adjusting for the baseline level of each respective domain and the same covariates. Higher personal accomplishment is in the beneficial direction, whereas lower emotional exhaustion and depersonalisation are beneficial. The agreement across distinct components reduces the possibility that the main result is wholly attributable to an arbitrary weighting in the constructed composite, although common-method measurement and residual confounding remain relevant.

The association with turnover intention was also negative. The adjusted coefficient for baseline PsyCap was −0.291 points on the 1–5 intention scale for each baseline SD (95% CI −0.375 to −0.207; p<0.001). Because the model adjusted for baseline intention, the estimate reflects differences in subsequent scores among nurses with comparable initial intention and other modelled covariates. The result does not mean that every individual nurse with higher PsyCap experienced a decline of this magnitude, nor does it indicate that an intervention raising PsyCap by one SD would necessarily produce an equivalent change in intention.

The magnitude of these coefficients is not directly comparable across variables with different numerical ranges. After expressing each coefficient in units of the baseline outcome SD, the directional consistency remains evident: greater PsyCap corresponds to lower burnout, exhaustion, depersonalisation and intention, together with higher personal accomplishment. Figure 3 displays these standardised estimates and confidence intervals; the more precise estimates for repeated questionnaire outcomes should not be assumed to transfer to the much less frequent event of actual resignation.

3.6 Resignation during follow-up

Twenty-one of the 140 nurses had a terminal record indicating resignation, representing a crude observed proportion of 15.0% over the calendar-year observation period. Six nurses were censored because of loss to follow-up, while 113 were censored at the recorded completion date. The lower half of baseline PsyCap contained 13 resignations among 70 nurses (18.6%), compared with eight among 70 (11.4%) in the higher half. This contrast is descriptive and is sensitive to censoring and sample size. The survival curves provide a time-ordered illustration of employment retention rather than proof of a protective causal mechanism.

In Cox regression, higher baseline PsyCap was associated with a lower estimated hazard of resignation, but the confidence interval included unity. The unadjusted hazard ratio per SD was 0.657 (95% CI 0.431–1.003; p=0.052). With age and sex included, the hazard ratio was 0.656 (95% CI 0.429–1.002; p=0.051). The point estimate suggests a potentially meaningful inverse association, but the available 21 events do not permit a definitive conclusion about resignation risk. The result should not be described as a statistically established reduction in actual nurse turnover.

4. Discussion

4.1 Principal findings

This prospective study investigated psychological capital as a baseline resource associated with subsequent nurse burnout, turnover intention and recorded resignation. Three principal observations emerged. First, baseline PsyCap exhibited strong inverse cross-sectional associations with burnout and intention, but its relationship with follow-up outcomes remained observable even after baseline levels of those outcomes were included in the regression models. Second, the direction of the prospective association was consistent across emotional exhaustion, depersonalisation and personal accomplishment, rather than appearing only in a single composite score. Third, the evidence for actual resignation was less certain than the questionnaire findings: the estimated hazard was lower at higher baseline PsyCap, but the confidence interval was broad and crossed the null value. These distinctions are central to interpretation because an association with intention cannot be equated with an established effect on employment retention.

The prospective coefficients add information beyond a simple correlation between a positive psychological construct and an

unfavourable psychological state measured at the same time. Since initial PsyCap preceded the analysed follow-up outcomes, a purely simultaneous explanation is less compelling for the main longitudinal association. Moreover, including the initial burnout or intention score reduces the influence of stable baseline differences in those measures. However, baseline adjustment is not equivalent to randomisation. Characteristics such as dispositional affect, perceived organisational fairness, employment alternatives, personality and health status may influence both PsyCap and occupational outcomes, while some work stressors may change during observation. The strongest defensible conclusion is therefore that higher initial PsyCap marked a more favourable subsequent burnout and intention profile in this cohort.

4.2 Comparison with existing evidence

The findings accord with the broader psychological-capital literature, in which efficacy, hope, resilience and optimism are proposed to function synergistically as resources for meeting demanding tasks [12]. Avey et al. [14] observed longitudinal associations between PsyCap and employee well-being, while Avey et al. [13] identified associations with favourable job attitudes and performance in a meta-analysis. The present study extends the practical relevance of these observations to repeated monthly nursing assessments rather than a single end-of-study measure. The relatively high internal consistency of the 24-item measure suggests coherent item responses within this cohort, but the magnitude of alpha alone does not establish that PsyCap represents a single causal factor or that it is empirically distinct from all related wellbeing measures.

Nursing-specific research also provides convergent findings. Peng et al. [15] reported that psychological capital was related to job burnout among Chinese nurses and explored organisational commitment as a possible explanatory pathway. An et al. [16] linked psychological capital with burnout and nursing performance outcomes among Korean hospital nurses. Laschinger and Fida [17] studied the role of authentic leadership and psychological capital in new nurses' wellbeing, highlighting the simultaneous relevance of personal and organisational resources. The scoping review by Flinkman et al. [19] found that a substantial body of international nursing research associated PsyCap with favourable work-related outcomes, while Yuan et al. [18] identified important variability in PsyCap estimates across studies. Our findings are consistent with this literature but do not independently establish mediation, intervention efficacy or generalisability across health systems.

The association between burnout and turnover intention has been repeatedly documented. Jourdain and Chênevert [9] applied a job demands–resources perspective to nurses' intention to leave the profession, and Heinen et al. [20] identified burnout among the factors associated with intention across multiple European countries. Özkan [27] synthesised evidence linking burnout dimensions with turnover intention, while Al Sabei et al. [26] described how nursing work environment and job satisfaction relate to burnout, intention and perceived quality of care. The observed prospective association between initial PsyCap and later turnover intention may reflect the importance of psychological resources in this wider system, but it should not be taken to imply that favourable psychological resources can compensate for persistently unsafe staffing or unsupported practice environments.

The difference between intention and actual resignation is particularly informative. Kelly et al. [22] showed that nurse burnout can relate to organisational turnover over time, yet the causal determinants of departure are broader than exhaustion alone. In our cohort, the stronger and more precise association with intention contrasts with the borderline, imprecise relationship with resignation. The small number of exit events is an obvious statistical explanation, but conceptual differences also matter: intent is measured on a repeated self-report scale, whereas resignation is a discrete action influenced by the availability of other jobs, household finances, career progression and contractual circumstances. Treating the resignation findings as inconclusive avoids converting an attractive hypothesis into a claim unsupported by the observed event count.

4.3 Possible pathways and theoretical interpretation

Conservation of resources theory offers a coherent explanation of why higher baseline PsyCap could be associated with a more favourable later occupational profile [8]. Individuals who perceive that they possess sufficient resources may approach challenges as manageable, interpret setbacks less globally and sustain engagement during periods of high work demand. Conversely, repeated setbacks in the presence of limited coping resources may intensify the perceived threat of further loss. The present findings do not directly test these mechanisms, but they make a resource-based account plausible. Importantly, a nurse's PsyCap and working environment may reinforce one another: supportive supervision can facilitate confidence and optimism, while severe staffing problems can rapidly overwhelm even a psychologically resilient employee.

The job demands–resources framework further suggests that personal resources operate in conjunction with job resources such as staffing, autonomy, leadership and professional support [6, 7]. Evidence concerning work environment, job dissatisfaction and burnout among nurses supports the necessity of considering these contextual exposures [10, 11]. Our inclusion of initial work stress and hospital sector in regression models provides some contextual control but cannot fully capture staffing fluctuations, management practices or hospital-level culture. The four hospitals also constitute too few independent institutional clusters to make strong generalisations about between-hospital mechanisms. Future research should integrate repeated work-demand and resource measures and examine whether within-nurse changes in PsyCap precede, rather than merely accompany, subsequent changes in burnout.

The consistency across burnout domains is also conceptually meaningful. Reduced emotional exhaustion and depersonalisation might reflect more effective coping and maintenance of professional interpersonal engagement, whereas greater personal accomplishment could reflect efficacy-related confidence in completing clinical tasks. Such interpretations are compatible with the conceptual architecture of PsyCap, but they are not uniquely supported by the data. Response tendencies may affect self-reported psychological capital and perceived accomplishment in parallel, and common wording or positive affect can inflate associations among scales. Therefore, the magnitude of the adjusted associations should be interpreted as evidence of predictive relationship rather than a quantified independent biological or psychological mechanism.

4.4 Clinical leadership and workforce implications

The findings suggest that nursing leaders may benefit from attending to psychological resources as one component of

workforce wellbeing. Periodic, confidential assessment of staff experience may identify teams or units reporting low confidence, optimism, resilience or goal-directed coping, particularly when coupled with signs of exhaustion or withdrawal. Appropriate responses could include structured preceptorship, meaningful clinical feedback, peer-support arrangements, access to psychological services and opportunities to develop problem-solving skills. These approaches should be evaluated for acceptability, cost and demonstrable benefit rather than assumed effective because PsyCap is associated with favourable outcomes. A correlation with retention-related measures is not evidence that increasing questionnaire scores alone will improve retention.

An equally important implication is to avoid shifting responsibility for systemic burnout onto individual nurses. Studies connecting staffing, workload, leadership and burnout demonstrate that organisational arrangements may be fundamental causes of occupational strain [1, 2, 3]. Practical workforce strategies should prioritise safe staffing, equitable rosters, predictable rest periods, supportive supervision and transparent opportunities for advancement. Psychological-resource development may complement these measures, not substitute for them. This combined approach is consistent with nursing research showing that work environment and perceived organisational support contribute to retention-related outcomes [26, 28].

The association with turnover intention may also inform how institutions interpret employee surveys. A high intention score is a useful warning signal but should not be labelled as equivalent to future resignation. Likewise, a nurse with low reported intention may still leave for compelling personal or professional reasons. Administrators should monitor actual turnover alongside validated staff-experience measures, stratify results by unit or shift only when confidentiality can be preserved, and assess trends in the organisational conditions most amenable to change. Longitudinal staff data are valuable when analysed in a way that respects clustering within individuals and the changing composition of the workforce.

4.5 Methodological strengths

This analysis has several strengths. Monthly assessment occasions provide more detail than a two-wave design and allow observation of both short-term fluctuations and attrition over the calendar year. The primary exposure was measured at baseline, preceding the subsequent outcomes, and the marginal models adjusted for each baseline outcome. Nurse-level clustering appropriately prevented 1,511 person-month records from being treated as independent individuals. The reporting distinguishes psychological intention from recorded resignation and presents the small-event survival result with confidence intervals rather than relying solely on a p value. The scoring formula for the burnout composite is transparent, and the separate burnout subscales preserve the multidimensional construct. Finally, baseline internal consistency and clear denominators improve the interpretability and reproducibility of the numerical findings.

4.6 Directions for future research

Future studies should recruit larger samples across more hospitals, document the institutional context and follow nurses over longer periods that capture more employment exits. Repeated measurement could be paired with validated organisational indicators such as staffing ratios, sickness absence, scheduling quality, unit leadership and changes in contract conditions. Statistical approaches that distinguish stable differences between people from changes within the same individual would help evaluate whether an increase in PsyCap predicts lower subsequent burnout once reverse temporal paths are considered. Where feasible, preregistered interventions targeting psychological resources alongside improvements in work design could establish whether measured change is attributable to an intervention and whether it produces clinically or organisationally meaningful benefits.

Retention research would also benefit from explicitly differentiating intention to leave a ward, employer or profession, and from recording whether departures are voluntary, involuntary or associated with promotion or relocation. Competing-risk and multilevel analyses may become feasible in larger samples with sufficient events and institutions. Reporting instrument provenance, language adaptation, dimensional validity and missing-data procedures will further strengthen comparability across nursing populations. The present results provide a rationale for those investigations while maintaining an appropriately cautious interpretation of what can be established in a modest observational cohort.

5. Conclusion

In a prospective cohort of 140 hospital nurses assessed monthly during 2023, higher baseline psychological capital was associated with less subsequent burnout and lower turnover intention after adjustment for baseline outcome values and selected covariates. The pattern extended across emotional exhaustion, depersonalisation and personal accomplishment. An inverse association with recorded resignation was suggested, but its uncertainty did not permit a definitive conclusion. Psychological capital may be a useful marker of nurses' subsequent occupational wellbeing; however, interventions to support personal resources should be considered alongside organisational measures addressing staffing, workload and leadership. Larger, transparently documented longitudinal studies are required to clarify mechanisms and determine whether changes in psychological resources translate into improved workforce retention.

Declarations

Ethics approval and consent to participate: The institutional review board, approval identifier, informed-consent arrangements and permission to use the assessment instruments were obtained.

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References

1. Aiken LH, Clarke SP, Sloane DM, Sochalski J, Silber JH. Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. JAMA. 2002;288(16):1987–1993. doi:10.1001/jama.288.16.1987
2. McHugh MD, Kutney-Lee A, Cimiotti JP, Sloane DM, Aiken LH. Nurses' widespread job dissatisfaction, burnout, and frustration with health benefits signal problems for patient care. Health Affairs. 2011;30(2):202–210. doi:10.1377/hlthaff.2010.0100
3. Cimiotti JP, Aiken LH, Sloane DM, Wu ES. Nurse staffing, burnout, and health care–associated infection. American Journal of Infection Control. 2012;40(6):486–490. doi:10.1016/j.ajic.2012.02.029
4. Maslach C, Schaufeli WB, Leiter MP. Job burnout. Annual Review of Psychology. 2001;52:397–422. doi:10.1146/annurev.psych.52.1.397

5. Woo T, Ho R, Tang A, Tam W. Global prevalence of burnout symptoms among nurses: A systematic review and meta-analysis. Journal of Psychiatric Research. 2020;123:9–20. doi:10.1016/j.jpsychires.2019.12.015
6. Demerouti E, Bakker AB, Nachreiner F, Schaufeli WB. The job demands–resources model of burnout. Journal of Applied Psychology. 2001;86(3):499–512. doi:10.1037/0021-9010.86.3.499
7. Bakker AB, Demerouti E. The job demands–resources model: State of the art. Journal of Managerial Psychology. 2007;22(3):309–328. doi:10.1108/02683940710733115
8. Hobfoll SE. Conservation of resources: A new attempt at conceptualizing stress. American Psychologist. 1989;44(3):513–524. doi:10.1037/0003-066X.44.3.513
9. Jourdain G, Chênevert D. Job demands–resources, burnout and intention to leave the nursing profession: A questionnaire survey. International Journal of Nursing Studies. 2010;47(6):709–722. doi:10.1016/j.ijnurstu.2009.11.007
10. Nantsupawat A, Kunaviktikul W, Nantsupawat R, Wichaikhum O-A, Thienthong H, Poghosyan L. Effects of nurse work environment on job dissatisfaction, burnout, intention to leave. International Nursing Review. 2017;64(1):91–98. doi:10.1111/inr.12342
11. Dall'Ora C, Ball J, Reinius M, Griffiths P. Burnout in nursing: A theoretical review. Human Resources for Health. 2020;18:41. doi:10.1186/s12960-020-00469-9
12. Luthans F, Avolio BJ, Avey JB, Norman SM. Positive psychological capital: Measurement and relationship with performance and satisfaction. Personnel Psychology. 2007;60(3):541–572. doi:10.1111/j.1744-6570.2007.00083.x
13. Avey JB, Reichard RJ, Luthans F, Mhatre KH. Meta-analysis of the impact of positive psychological capital on employee attitudes, behaviors, and performance. Human Resource Development Quarterly. 2011;22(2):127–152. doi:10.1002/hrdq.20070
14. Avey JB, Luthans F, Smith RM, Palmer NF. Impact of positive psychological capital on employee well-being over time. Journal of Occupational Health Psychology. 2010;15(1):17–28. doi:10.1037/a0016998
15. Peng J, Jiang X, Zhang J, Xiao R, Song Y, Feng X, et al. The impact of psychological capital on job burnout of Chinese nurses: The mediator role of organizational commitment. PLOS ONE. 2013;8(12):e84193. doi:10.1371/journal.pone.0084193
16. An M, Shin ES, Choi MY, Lee Y, Hwang YY, Kim M. Positive psychological capital mediates the association between burnout and nursing performance outcomes among hospital nurses. International Journal of Environmental Research and Public Health. 2020;17(16):5988. doi:10.3390/ijerph17165988
17. Laschinger HKS, Fida R. New nurses burnout and workplace wellbeing: The influence of authentic leadership and psychological capital. Burnout Research. 2014;1(1):19–28. doi:10.1016/j.burn.2014.03.002
18. Yuan Z, Zhang X, Wang F, Jin M, Teng M, He H, Wang J. Levels of psychological capital among nurses: A systematic review and meta-analysis. International Nursing Review. 2023;70(1):89–96. doi:10.1111/inr.12803
19. Flinkman M, Coco K, Rudman A, Leino-Kilpi H. Registered nurses' psychological capital: A scoping review. International Journal of Nursing Practice. 2023;29(5):e13183. doi:10.1111/ijn.13183
20. Heinen MM, van Achterberg T, Schwendimann R, Zander B, Matthews A, Kózka M, et al. Nurses' intention to leave their profession: A cross sectional observational study in 10 European countries. International Journal of Nursing Studies. 2013;50(2):174–184. doi:10.1016/j.ijnurstu.2012.09.019
21. Hayes LJ, O'Brien-Pallas L, Duffield C, Shamian J, Buchan J, Hughes F, Laschinger HKS, North N. Nurse turnover: A literature review – An update. International Journal of Nursing Studies. 2012;49(7):887–905. doi:10.1016/j.ijnurstu.2011.10.001
22. Kelly LA, Gee PM, Butler RJ. Impact of nurse burnout on organizational and position turnover. Nursing Outlook. 2021;69(1):96–102. doi:10.1016/j.outlook.2020.06.008
23. Liang K-Y, Zeger SL. Longitudinal data analysis using generalized linear models. Biometrika. 1986;73(1):13–22. doi:10.1093/biomet/73.1.13
24. Cox DR. Regression models and life-tables. Journal of the Royal Statistical Society: Series B (Methodological). 1972;34(2):187–202. doi:10.1111/j.2517-6161.1972.tb00899.x
25. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: Guidelines for reporting observational studies. PLOS Medicine. 2007;4(10):e296. doi:10.1371/journal.pmed.0040296
26. Al Sabei SD, Labrague LJ, Miner Ross A, Karkada S, Albashayreh A, Al Masroori F, Al Hashmi N. Nursing work environment, turnover intention, job burnout, and quality of care: The moderating role of job satisfaction. Journal of Nursing Scholarship. 2020;52(1):95–104. doi:10.1111/jnu.12528
27. Özkan AH. The effect of burnout and its dimensions on turnover intention among nurses: A meta-analytic review. Journal of Nursing Management. 2022;30(3):660–669. doi:10.1111/jonm.13525
28. Liu W, Zhao S, Shi L, Zhang Z, Liu X, Li L, et al. Workplace violence, job satisfaction, burnout, perceived organisational support and their effects on turnover intention among Chinese nurses in tertiary hospitals: A cross-sectional study. BMJ Open. 2018;8:e019525. doi:10.1136/bmjopen-2017-019525
29. Alan H, Polat S, Tiryaki Şen H. The role of psychological capital in the relationship between nurses' job satisfaction and turnover intention. Perspectives in Psychiatric Care. 2022;58:2811–2819. doi:10.1111/ppc.13128
30. Diehl E, Rieger S, Letzel S, Schablon A, Nienhaus A, Escobar Pinzon LC, Dietz P. The relationship between workload and burnout among nurses: The buffering role of personal, social and organisational resources. PLOS ONE. 2021;16(1):e0245798. doi:10.1371/journal.pone.0245798
31. Lu H, Zhao Y, While A. Job satisfaction among hospital nurses: A literature review. International Journal of Nursing Studies. 2019;94:21–31. doi:10.1016/j.ijnurstu.2019.01.011
32. Salvagioni DAJ, Melanda FN, Mesas AE, González AD, Gabani FL, Andrade SM. Physical, psychological and occupational consequences of job burnout: A systematic review of prospective studies. PLOS ONE. 2017;12(10):e0185781. doi:10.1371/journal.pone.0185781

Tables

Table 1. Baseline characteristics of the nurse cohort (N = 140)

Characteristic	Baseline value
Female sex	99 (70.7%)
Male sex	41 (29.3%)
Age, years	31.63 ± 5.91
Nursing experience, years	8.61 ± 5.99
Hospital tenure, years	4.97 ± 4.13
Public hospital sector	69 (49.3%)
Private hospital sector	71 (50.7%)
BSN qualification	94 (67.1%)
Diploma qualification	40 (28.6%)
Postgraduate qualification	6 (4.3%)
Permanent contract	121 (86.4%)
Staff nurse grade	91 (65.0%)
Senior staff nurse grade	28 (20.0%)
Charge nurse grade	21 (15.0%)
Weekly working hours	47.39 ± 5.48
Monthly overtime hours	25.94 ± 17.34
Night shifts per month	5.27 ± 4.71
Patients per shift	6.34 ± 2.05
Perceived work stress (1–5)	3.32 ± 0.70
Staffing adequacy (1–5)	2.78 ± 0.88
Supervisor support (1–5)	3.26 ± 0.82

Values are n (%) for categorical variables and mean ± SD for continuous variables. BSN, Bachelor of Science in Nursing. Percentages use the 140 baseline participants as the denominator.

Table 2. Baseline scores, internal consistency and correlations with psychological capital

Measure	Mean ± SD	Cronbach α	r with PsyCap
Overall psychological capital (1–6)	4.10 ± 0.69	0.946	Reference exposure
Self-efficacy (1–6)	4.20 ± 0.69	0.792	—
Hope (1–6)	4.20 ± 0.79	0.847	—
Resilience (1–6)	4.01 ± 0.73	0.818	—
Optimism (1–6)	4.00 ± 0.76	0.821	—
Emotional exhaustion (0–54)	24.43 ± 8.56	0.876	-0.610
Depersonalisation (0–30)	8.41 ± 3.96	0.753	-0.647
Personal accomplishment (0–48)	31.73 ± 6.08	0.823	Not estimated
Burnout composite (0–100)	35.72 ± 12.15	Constructed index	-0.766
Turnover intention (1–5)	2.26 ± 0.84	0.840	-0.688

Cronbach's alpha calculated from baseline item responses (N = 140). Correlation coefficients are unadjusted Pearson estimates. Higher personal accomplishment is favourable, whereas higher burnout composite and turnover intention are unfavourable.

Table 3. Monthly psychological capital, burnout and turnover-intention scores during 2023

Month	N	PsyCap mean (1–6)	Burnout (0–100)	Turnover intention (1–5)
01	140	4.10 ± 0.69	35.72 ± 12.15	2.26 ± 0.84
02	136	4.12 ± 0.75	34.77 ± 14.29	2.28 ± 0.99
03	131	4.08 ± 0.71	35.36 ± 13.13	2.23 ± 0.90
04	130	4.06 ± 0.71	36.50 ± 13.22	2.26 ± 0.87
05	127	4.11 ± 0.72	35.03 ± 13.35	2.19 ± 0.88
06	125	4.14 ± 0.67	34.99 ± 11.47	2.17 ± 0.77
07	125	4.10 ± 0.68	35.22 ± 12.66	2.19 ± 0.84
08	124	4.09 ± 0.69	35.30 ± 12.52	2.26 ± 0.84
09	122	4.08 ± 0.70	34.91 ± 12.18	2.24 ± 0.79
10	119	4.08 ± 0.69	36.10 ± 12.10	2.25 ± 0.80
11	117	4.09 ± 0.69	35.08 ± 12.87	2.25 ± 0.76
12	115	4.07 ± 0.72	35.39 ± 12.72	2.21 ± 0.83

Values are observed monthly mean ± SD. N declines following recorded resignation or loss to follow-up; each monthly denominator counts nurses, not independent recruitment events.

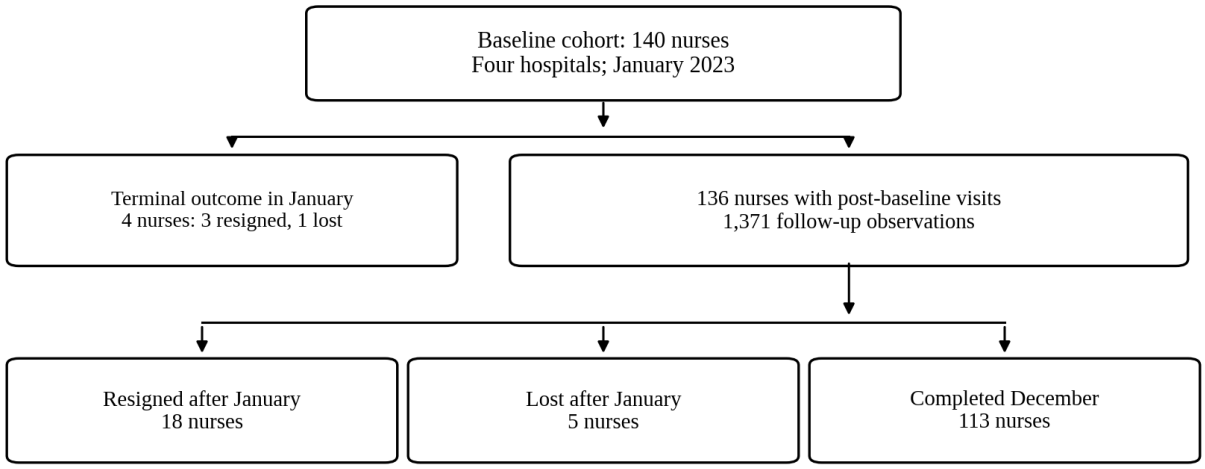
Table 4. Prospective adjusted associations between baseline psychological capital and monthly follow-up outcomes

Outcome	Adjusted β	95% confidence interval	p value
Burnout composite (0–100)	-2.379	-3.846 to -0.913	0.0015
Emotional exhaustion (0–54)	-2.291	-3.242 to -1.340	<0.001
Depersonalisation (0–30)	-1.749	-2.200 to -1.298	<0.001
Personal accomplishment (0–48)	+2.741	+2.100 to +3.382	<0.001
Turnover intention (1–5)	-0.291	-0.375 to -0.207	<0.001

Gaussian GEE with exchangeable within-nurse working correlation and robust SE; 1,371 follow-up observations from 136 nurses. Adjusted for the corresponding baseline outcome, month since baseline, age, sex, public/private hospital sector and baseline work stress. β is the mean outcome-scale difference per one SD (0.686 points) greater baseline PsyCap.

Figures

Figure 1. Flow of the nurse cohort across monthly assessment occasions. Post-baseline regression observations exclude four nurses without a month-2-or-later assessment.



Final status among all 140: 113 completed, 21 resigned, 6 lost to follow-up

Total person-month records: 1,511 across 12 survey occasions

Figure 2. Observed monthly mean burnout-composite scores according to baseline psychological capital above or below the cohort median. Lines are descriptive; group denominators diminish after attrition.

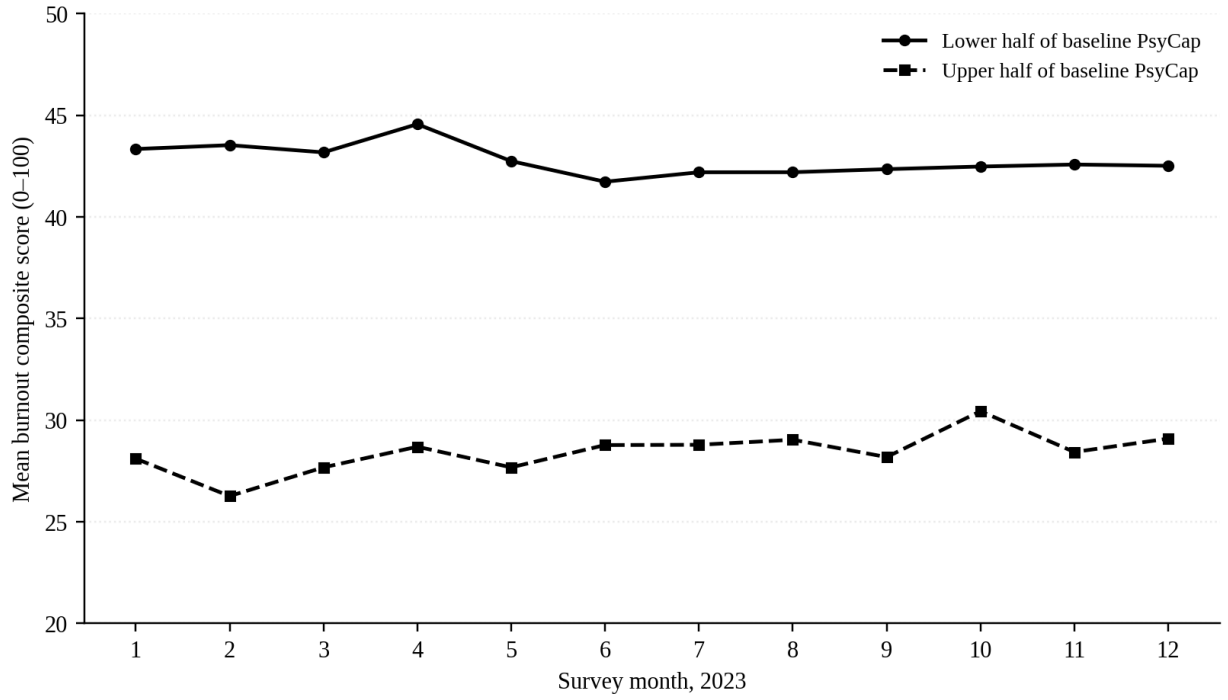


Figure 3. Standardised adjusted prospective coefficients for baseline psychological capital. Each coefficient and 95% confidence interval is divided by the respective outcome's baseline SD; negative values are favourable except that positive values are favourable for personal accomplishment.

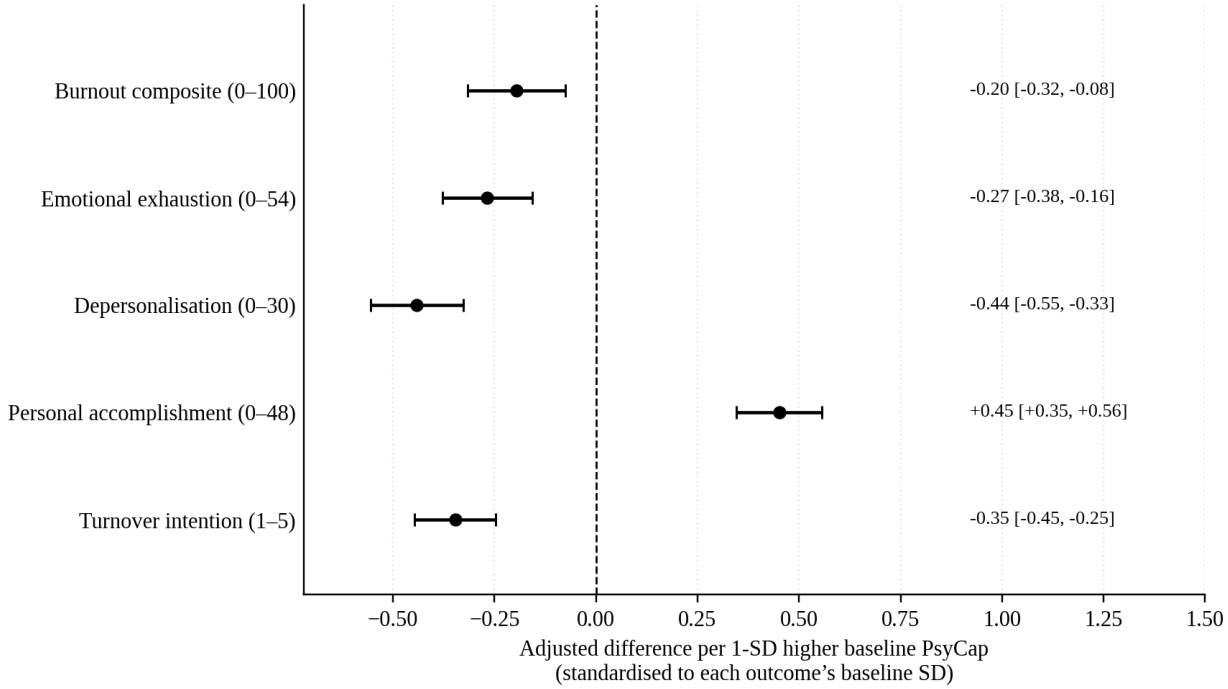


Figure 4. Kaplan–Meier probability of remaining employed by baseline psychological capital median group. Resignation is the event; completion and loss to follow-up are censored at recorded outcome dates.

