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Association of Anxiety and Depression with Work Engagement among Hospital Nurses in an Ethnically Diverse Region of Iran: A cross-sectional study

Mohammad Taghi Badeleh Shamushaki

badeleh@gmail.com

Golestan University of Medical Sciences

Mohammad Yasin Salimi

Golestan University of Medical Sciences

Mahdiye Daraei

Islamic Azad University of Gorgan

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Abstract

Background

Work engagement is a positive, work-related state of mind characterized by vigor, dedication, and absorption, and a key determinant of the quality and safety of nursing care. Nurses experience disproportionately high rates of anxiety and depressive symptoms. However, the relationship between these symptoms and engagement, and the role of sociodemographic and ethnolinguistic factors, remains poorly understood outside high-income settings. This study examined whether anxiety and depressive symptoms were associated with work engagement among hospital nurses, and whether sociodemographic characteristics, including ethnolinguistic background (mother tongue), were associated with engagement or modified this relationship.

Methods

We performed a cross-sectional study in 2025 on all 300 nurses employed at Panj-e-Azar Hospital, Gorgan, Iran. Anxiety and depressive symptoms were measured with the Hospital Anxiety and Depression Scale (HADS), and work engagement with the 17-item Utrecht Work Engagement Scale (UWES). Spearman correlations and univariate and multivariable linear regression models were fitted to examine associations of anxiety, depression, and demographic variables (sex, age, marital status, education, income, and mother tongue) with engagement. Statistical significance was set at $p < 0.05$.

Results

Clinically relevant anxiety (borderline or probable) was present in 43.3% of nurses, and depressive symptomatology in 55.4%. Higher anxiety and depressive symptoms were negatively correlated with vigor, dedication, and total work engagement (all $p < 0.001$), whereas absorption was correlated only with depression. In multivariable analysis, depressive symptoms were the strongest independent negative correlate of total work engagement and higher education the only positive independent correlate; anxiety, age, sex, marital status, income and mother tongue were not independently associated. Although the sample was drawn from an ethnically diverse region, self-reported mother tongue (Farsi, Turkmen, other) was unrelated to engagement in unadjusted and adjusted analyses.

Conclusions

Depressive symptoms are an important and independent negative correlate of work engagement among nurses, and their effect exceeded that of anxiety. Higher education was associated with greater engagement. In this predominantly Farsi-speaking sample, ethnolinguistic background was not associated with work engagement, suggesting that ethnicity-related influences, if present, operate

through workplace climate rather than background alone. Screening for symptoms **of** depression and increasing education and training can protect nurse engagement and, in turn, quality of care.

Background

Work engagement is a positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption [1]. It is a central resource for the quality and safety of health care. Engaged nurses deliver more reliable care, report higher job satisfaction, and are less likely to intend to leave the profession [2, 3]. The Job Demands-Resources (JD-R) model proposes that engagement arises when adequate job and personal resources buffer the strain imposed by job demands. In contrast, chronically high demands and depleted resources erode energy and favor burnout and disengagement [4, 5]. Within this framework, mental health can be understood both as an outcome of the balance between demands and resources and as a personal resource that shapes how nurses experience their work [6].

Anxiety and depressive symptoms are among the most common mental health problems in nursing. Meta-analytic evidence indicates that roughly one-third of nurses report clinically relevant anxiety or depressive symptoms, both during routine practice and during the COVID-19 pandemic [7–10]. In Iran, pooled estimates of depression prevalence among nurses range from about 22% to 27%, exceeding the general population [11, 12]. These symptoms are not only a burden in themselves; they may undermine the positive, energetic engagement that nurses bring to patient care [13, 14]. Occupational research further shows that work engagement and psychological distress are closely and negatively interlinked among nurses, with engagement mediating the relationship between distress and job satisfaction [15].

Despite this, relatively few studies have examined the joint association of anxiety and depressive symptoms with work engagement in nursing samples, and fewer still have considered how sociodemographic and ethnolinguistic background shape this relationship. Where such associations are studied, depression frequently shows a stronger inverse relationship with engagement than anxiety, consistent with the energy-draining, anhedonic core of depressed mood [13, 14, 16]. Education and income have also been linked to engagement, although findings are inconsistent across settings [17, 18].

Ethnicity and language constitute a second, under-studied layer of this question. Workplaces are increasingly ethnically diverse, and evidence indicates that ethnic minority status is associated with lower workplace belonging, higher depressive symptomatology, and lower engagement, effects that are partly buffered by an inclusive organizational climate [19–21]. Iran is ethnically and linguistically diverse, and Golestan Province, where the present study was conducted, is home to Persian (Farsi), Turkmen, and other ethnolinguistic groups living side by side. Whether such diversity translates into differences in nurses' mental health and work engagement has not been examined.

The present study therefore assessed the relationship between anxiety and depressive symptoms and work engagement among all nurses of a tertiary hospital in Gorgan, Iran, while simultaneously considering sociodemographic characteristics, including education, income, and mother tongue as an indicator of ethnicity.

Methods

Study design and participants

This descriptive-correlational, cross-sectional study was conducted between March 2025 and March 2026 in Gorgan, the capital of Golestan Province, northeastern Iran. The source population comprised all nurses employed at Panj-e-Azar Hospital; because the entire eligible workforce was invited and included, sampling was by census (n = 300). Eligibility criteria were: employment as a full-time nurse in a clinical ward during the study period; at least one year of full-time clinical work experience; voluntary participation with informed consent; no current use of sedative, anxiolytic, or hypnotic medication; no previous diagnosis of an anxiety or depressive disorder by a psychiatrist; and no major psychological crisis (e.g., bereavement or divorce) within the preceding three months. Nurses were excluded if they returned incomplete questionnaires, transferred to another ward or hospital during the study, or had a chronic physical or mental illness judged to influence the results.

Measures

A demographic questionnaire recorded sex, age, marital status, economic situation (income), educational level, and self-reported mother tongue, used as an indicator of ethnolinguistic background (Farsi, Turkmen, other).

Anxiety and depressive symptoms were measured with the validated Persian version of the Hospital Anxiety and Depression Scale (HADS), a 14-item self-report instrument comprising seven anxiety items (HADS-A) and seven depression items (HADS-D), each scored 0–3 (subscale range 0–21). As recommended by the instrument's developers, scores of 8–10 were classified as borderline and scores of 11 or higher as probable clinical cases. The HADS is a widely validated screening instrument across languages, populations, and occupational groups, including health professionals [22–24].

Work engagement was measured with the 17-item Utrecht Work Engagement Scale (UWES), which yields three subscales: vigor (six items), dedication (five items), and absorption (six items), and a total score (range 0- 102). Responses are on a frequency scale from 0 (never) to 6 (always). Although the factorial structure of the UWES has been debated, bifactor and total-score interpretations are widely supported. The instrument has demonstrated good reliability and invariance across countries, occupations, and nurses [25–27].

Statistical analysis

Using SPSS version 21, the Kolmogorov-Smirnov test showed that several subscale distributions departed from normality. Therefore, we evaluated bivariate associations with the non-parametric Spearman rank correlation coefficient (r). Univariate linear regression models were fitted for each psychological and demographic variable, followed by multivariable linear regression (enter method)

including all predictors simultaneously to identify independent correlates of work engagement and each engagement dimension. Results are reported as unstandardized regression coefficients (B) with standard errors (SE) and p-values. Statistical significance was defined as $p < 0.05$. Because the census covered the entire eligible workforce, no sampling-weight adjustment was required.

Ethical considerations

The study was approved by the Ethics Committee of Golestan University of Medical Sciences (IR.GOUMS.REC.1404.116) and conducted in accordance with the Declaration of Helsinki. All participants provided written informed consent and were free to withdraw at any time. All data were anonymized before analysis.

Results

Participant characteristics

All 300 eligible nurses completed the survey. Their mean age was 32.72 years (SD 6.96; range 22–53). Most participants were female (69.7%) and married (55.7%). The majority held a bachelor's degree (93.0%) and reported a moderate income (88.3%). Regarding ethnolinguistic background, 80.0% reported Farsi, 12.7% Turkmen, and 6.0% another mother tongue, reflecting the ethnic diversity of Golestan Province (Table 1).

Table 1
Sociodemographic characteristics of nurses (n = 300)

Characteristic	Category	n	%
Age, years	mean (SD) [range]	32.72 (6.96) [22–53]	
Sex	Male	89	29.7
	Female	209	69.7
Marital status	Single	127	42.3
	Married	167	55.7
Education	Diploma / associate degree	8	2.7
	Bachelor's degree	279	93.0
	Master's degree	11	3.7
Income	Low	13	4.3
	Moderate	265	88.3
	High	19	6.3
Mother tongue	Farsi (Persian)	240	80.0
	Turkmen	38	12.7
	Other	18	6.0

Some category totals do not sum to 300 because of missing responses (not shown). Percentages are calculated within each variable.

Table 2 presents the descriptive statistics of the psychological measures. The mean anxiety score was 7.11 (SD 3.53), and the mean depressive symptom score was 7.79 (SD 3.29). Using the recommended cut-offs, 27.3% of nurses had borderline and 16.0% probable anxiety (43.3% in total); the corresponding figures for depression were 34.7% borderline and 20.7% probable (55.4% in total). Mean total work engagement was 46.76 (SD 16.25), with the highest dimension mean for dedication (17.25, SD 5.40), followed by absorption (15.16, SD 6.73) and vigor (14.45, SD 6.96).

Table 2
Mental health variables and work engagement scores

Variable	n	Mean	SD	Min	Max
HADS anxiety	298	7.11	3.53	0	18
HADS depression	298	7.79	3.29	0	15
Work engagement, total	300	46.76	16.25	5	93
Vigor	300	14.45	6.96	0	33
Dedication	299	17.25	5.40	1	30
Absorption	299	15.16	6.73	0	31

HADS, Hospital Anxiety and Depression Scale. HADS categories: anxiety, normal 170 (56.7%), borderline 82 (27.3%), probable 48 (16.0%); depression, normal 134 (44.7%), borderline 104 (34.7%), probable 62 (20.7%).

Correlations between anxiety, depression and work engagement

Spearman correlations are shown in Table 3. Anxiety was negatively correlated with vigor (r = -0.23), dedication (r = -0.36), and total work engagement (r = -0.21), all p < 0.001, but not with absorption (r = 0.02, p = 0.77). Depressive symptoms were negatively correlated with all engagement domains: vigor (r = -0.54), dedication (r = -0.43), absorption (r = -0.37), and total engagement (r = -0.53), all p < 0.001. Overall, the engagement subscales showed consistently stronger correlations with depression than with anxiety.

Table 3
Spearman correlations between HADS subscales and work engagement

Work engagement	Anxiety, r (p)	Depression, r (p)
Vigor	-0.23 (< 0.001)	-0.54 (< 0.001)
Dedication	-0.36 (< 0.001)	-0.43 (< 0.001)
Absorption	0.02 (0.77)	-0.37 (< 0.001)
Total	-0.21 (< 0.001)	-0.53 (< 0.001)

r, Spearman rank correlation coefficient; p, two-sided p-value.

Regression analyses of total work engagement

In univariate linear regression, depressive symptoms (B = -2.48, SE 0.25, p < 0.001), anxiety (B = -0.80, SE 0.26, p = 0.003), higher education (master's vs. bachelor's degree; B = 14.35, SE 4.94, p = 0.004) and high income (vs. moderate; B = 8.72, SE 3.85, p = 0.02) were each significantly associated with total work

engagement (Table 4, Fig. 1). Age, sex, marital status, and mother tongue were not associated with engagement in unadjusted analyses. In the multivariable model including all predictors simultaneously, depressive symptoms (B = -2.69, SE = 0.30, p < 0.001) and higher education (master's vs. bachelor's; B = 11.72, SE = 4.55, p = 0.01) retained independent associations, whereas anxiety (B = -0.32, SE = 0.27, p = 0.24) and all other sociodemographic variables did not (Table 4).

Table 4
Univariate and multivariable linear regression for total work engagement

Variable	Univariate B (SE)	p	Multivariable B (SE)	p
Depressive symptoms	-2.48 (0.25)	< 0.001	-2.69 (0.30)	< 0.001
Anxiety	-0.80 (0.26)	0.003	-0.32 (0.27)	0.24
Age (per year)	-0.10 (0.13)	0.46	n.s.	-
Female sex (vs. male)	2.16 (2.04)	0.29	n.s.	-
Married (vs. single)	2.05 (1.91)	0.28	n.s.	-
Income: low (vs. moderate)	-1.87 (4.61)	0.68	n.s.	-
Income: high (vs. moderate)	8.72 (3.85)	0.02	n.s.	-
Education: diploma (vs. bachelor)	6.14 (5.77)	0.29	n.s.	-
Education: master (vs. bachelor)	14.35 (4.94)	0.004	11.72 (4.55)	0.01
Mother tongue: Farsi (vs. other)	-3.32 (3.99)	0.41	n.s.	-
Mother tongue: Turkmen (vs. other)	-0.85 (4.67)	0.85	n.s.	-

B, unstandardized regression coefficient; SE, standard error; n.s., not statistically significant. The multivariable model includes all listed variables entered simultaneously. Coefficients for non-significant covariates are omitted for clarity; full output is available from the authors.

Regression analyses of engagement dimensions

Results for the engagement dimensions are summarized in Table 5. For vigor, depressive symptoms were the strongest independent correlate in unadjusted (B = -1.07, SE = 0.11, p < 0.001) and multivariable (B = -1.11, SE = 0.13, p < 0.001) models, and higher education retained a positive association (master's vs. bachelor's; B = 5.87, SE = 1.92, p = 0.002); other variables were not significant. For dedication, both anxiety (B = -0.23, SE = 0.10, p = 0.02) and depressive symptoms (B = -0.60, SE = 0.11, p < 0.001) were independently and negatively associated in the multivariable model. For absorption, depressive symptoms (B = -0.99, SE = 0.13, p < 0.001) and higher education (master's vs. bachelor's; B = 5.28, SE = 1.98, p = 0.01) were independently associated, whereas anxiety showed a small positive coefficient in the multivariable model (B = 0.47, SE = 0.12, p < 0.001), interpreted as a suppression effect. Across all analyses, mother tongue was not associated with any engagement dimension.

Table 5
Multivariable linear regression for work engagement dimensions

Outcome	Variable	Multivariable B (SE)	p
Vigor	Depressive symptoms	-1.11 (0.13)	< 0.001
	Education: master (vs. bachelor)	5.87 (1.92)	0.002
Dedication	Anxiety	-0.23 (0.10)	0.02
	Depressive symptoms	-0.60 (0.11)	< 0.001
Absorption	Anxiety	0.47 (0.12)	< 0.001
	Depressive symptoms	-0.99 (0.13)	< 0.001
	Education: master (vs. bachelor)	5.28 (1.98)	0.01

Separate multivariable models were fitted for vigor, dedication and absorption, each adjusted for the full set of predictors. Only statistically significant correlates are shown; age, sex, marital status, income and mother tongue were not significant in these models.

Discussion

In this census survey of 300 hospital nurses in northeastern Iran, anxiety and depressive symptoms were both negatively associated with work engagement, and the association was consistently stronger for depression than for anxiety across the engagement dimensions and the total score. In the multivariable model, depressive symptoms and higher education were the only independent correlates of total work engagement. These findings cohere with the conceptualization of depressive symptoms as an energy-draining state that erodes the vigor, dedication, and absorption that define engagement [4, 5, 13], and with longitudinal evidence that engagement and depressive symptoms are reciprocally and negatively related over time [14]. The stronger role of depression than anxiety replicates the general pattern observed in occupational samples [13, 15].

The high prevalence of clinically relevant symptoms in this sample deserves emphasis. Nearly 44% of nurses reported borderline or probable anxiety and 55% reported borderline or probable depressive symptomatology, figures broadly in line with meta-analytic estimates for nurses in Iran and internationally, and consistent with a workforce under sustained emotional and organizational strain [7–12]. Given that depressive symptoms were independent negative correlates of engagement, and that disengaged nurses provide lower-quality and less safe care and are more inclined to leave [2, 3, 28], these figures carry implications for both nurse well-being and patient outcomes.

Higher education was positively and independently associated with work engagement, especially vigor and absorption. However, the positive association of higher income with the total score was attenuated to non-significance after adjustment, suggesting that income effects are partly confounded by education and other characteristics. Education may act as a personal resource that strengthens role competence,

autonomy, and professional mastery within the JD-R framework [4, 5]. These findings echo prior work in which personal resources such as education were positively related to engagement, although effects vary by setting [17, 18, 29].

Ethnicity and work engagement

A particular aim of this study was to examine the role of ethnicity, operationalized here as self-reported mother tongue, in nurses' engagement. The setting is instructive: Gorgan and the wider Golestan Province are among Iran's most ethnically diverse regions, with long-standing Farsi- and Turkmen-speaking communities as well as speakers of other languages. In the nursing workforce studied here, Farsi speakers formed the large majority (80%), with Turkmen (12.7%) and other groups (6.0%) constituting linguistic minorities. Despite this salient diversity, mother tongue was not associated with work engagement in any unadjusted or adjusted model, and the point estimates for Farsi- and Turkmen-speaking nurses relative to the reference category were small and far from statistical significance.

Several interpretations are possible. First, the small size of the minority groups (38 Turkmen and 18 other speakers) limited statistical power to detect modest ethnic differences, and the estimates should not be read as strong evidence of a genuine null. Second, the literature suggests that ethnicity-related differences in workplace belonging, engagement and mental health are mediated less by background per se than by workplace climate, inclusion and the experience of being a numerical minority within a team [19, 20, 30]. In an occupational group as cohesive as nursing, professional identity, shared clinical demands and ward-based teamwork may outweigh ethnolinguistic background, a possibility consistent with evidence that a climate of inclusion buffers minority employees against lower self-efficacy and depressive symptoms [20]. Third, Farsi is the working language of nursing in this hospital, so language barriers, a key mechanism through which linguistic minority status affects work outcomes, may be minimal for nurses who are proficient in it. Taken together, the present results suggest that, within this predominantly Farsi-speaking workforce, ethnolinguistic background does not independently shape engagement; larger, deliberately stratified studies with validated measures and assessment of perceived inclusion climate are needed to test whether ethnic minority nurses face distinct engagement risks [21].

Three further observations merit comment. The paradoxical positive multivariable coefficient of anxiety for absorption most likely reflects collinearity or a suppression effect rather than a genuine protective association, and should be interpreted with caution. The cross-sectional design precludes causal inference, and reverse causation cannot be excluded: depressed nurses may be less engaged partly because their symptoms reduce energy, but sustained disengagement and strain may also contribute to depressive symptoms over time [14].

Limitations

This study has several limitations. First, the cross-sectional design does not permit causal or temporal conclusions. Second, all data were self-reported, including mental health symptoms, engagement, and income, which may introduce shared-method variance and social desirability bias. Third, the single-

hospital, census-based design limits generalizability to other hospitals and regions, although it eliminated non-response and selection biases within the target population. Fourth, although the region is ethnically diverse, the small number of participants in the Turkmen and other minority groups limited statistical power for ethnicity analyses. Fifth, mother tongue was used as a proxy for ethnicity and does not capture acculturation, perceived ethnic identity, or experiences of discrimination or inclusion. Finally, we handled small numbers of missing values in several demographic variables by complete-case analysis. Future studies should use larger, multi-center, longitudinal designs, validated ethnolinguistic assessments and measures of workplace inclusion climate.

Conclusions

Anxiety and depressive symptoms are negatively associated with work engagement among hospital nurses, and depressive symptoms are the stronger and, after adjustment, the only independent psychological correlate of total engagement. Higher education is independently associated with greater engagement. In this ethnically diverse but predominantly Farsi-speaking nursing workforce, ethnolinguistic background was not associated with engagement, suggesting that ethnicity-related influences, if present, act through workplace climate rather than background alone. Screening nurses for depressive symptoms and strengthening supportive resources, training, and professional development may protect work engagement and, ultimately, the quality and safety of patient care. Prospective and intervention studies are warranted to determine whether reducing depressive symptoms improves nurses' engagement.

Abbreviations

HADS
Hospital Anxiety and Depression Scale
HADS-A
HADS anxiety subscale
HADS-D
HADS depression subscale
JD-R
Job Demands-Resources
UWES
Utrecht Work Engagement Scale.

Declarations

Ethics approval and consent to participate.

The study was approved by the Ethics Committee of Golestan University of Medical Sciences (IR.GOUMS.REC.1404.116) and conducted in accordance with the Declaration of Helsinki. All

participants provided written informed consent.

Consent for publication.

Not applicable.

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Author Contribution

MTB and MYS conceived and designed the study. MYS collected the data and performed the statistical analyses. MTB and MD interpreted the data and drafted the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials.

The datasets analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests.

The authors declare that they have no competing interests.

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Figures

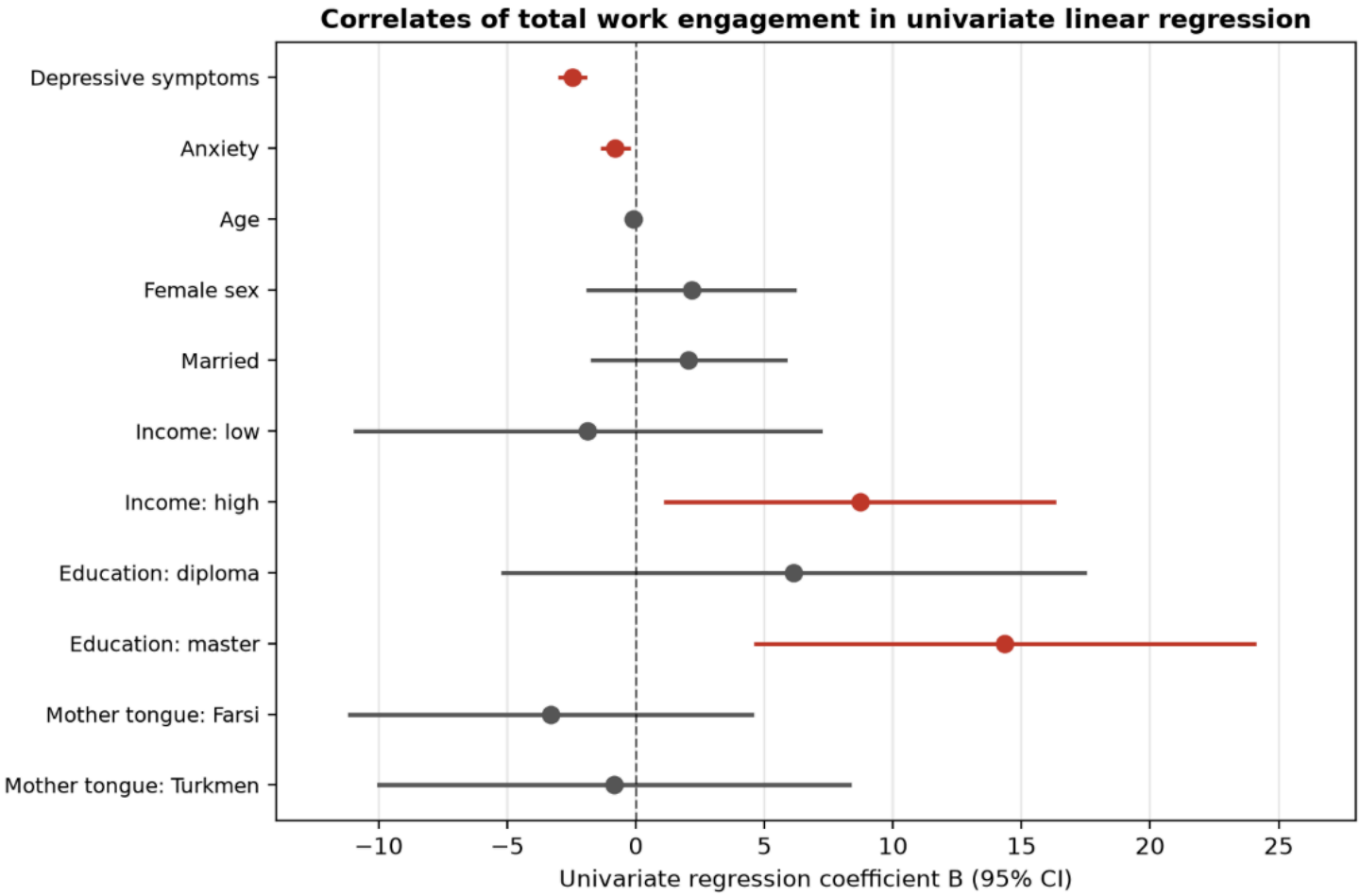


Figure 1

Forest plot of univariate regression coefficients (B with 95% CI) for total work engagement. Red markers indicate statistically significant correlates.