

Physical Activity Awareness, Practice, and Well-Being among Urban Working Adults in India: A Gender-Comparative Study

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Abstract: *Global and Indian surveillance data consistently report persistent gender disparities in physical activity; however, limited research has examined whether these population-level differences are also evident within specific occupational groups, particularly among urban working adults. This study compares working men and women aged 25-50 in Bengaluru, India, on physical activity guideline awareness, physical activity practice, and psychological well-being, and examines the relationship between practice and well-being by gender. A cross-sectional survey of 90 working adults (61 women, 29 men) administered a nine-item guideline-based awareness measure, the International Physical Activity Questionnaire Short Form (IPAQ-SF), and the WHO-5 Well-Being Index. Nonparametric tests (Mann-Whitney U, chi-square, Spearman's rho) with effect sizes were used for all comparisons. Results were Awareness (59.1% correct overall), physical activity practice (1,295.7 MET-minutes/week overall; 60.0% classified as Moderate activity), and well-being (47.7% overall) did not differ significantly by gender (all $p > .10$; effect sizes small, $r = .04-.20$). No significant association was found between practice and well-being, overall or by gender ($p = -.21$ to $-.03$, all $p > .05$). Close to half the sample (47.8%) scored at or below the WHO-5 screening threshold, and median daily sitting time was high (8 hours) and equivalent across genders. Among urban, well-educated working adults, physical activity awareness and practice showed minimal gender differences, contrasting with larger gaps reported in national and global data. This indicates that gender disparities vary across occupational and educational groups. High sedentary time and below-threshold well-being across both genders highlight a shared need for workplace health interventions.*

Keywords: physical activity, gender differences, well-being, working adults, IPAQ, WHO-5, awareness, India

1. Introduction

Physical inactivity remains a leading modifiable risk factor for non-communicable disease worldwide, with the World Health Organisation estimating that nearly one-third of the global adult population, approximately 1.8 billion people, fails to meet activity levels.¹ Critically, this burden is not evenly distributed by gender. In the most comprehensive surveillance analysis to date, pooling 358 population-based surveys across 168 countries, Guthold et al.² found a global gender gap in insufficient activity of 31.7% among women versus 23.4% among men, a gap that had not narrowed between 2001 and 2016. The disparity is considerably larger in South Asia, specifically 43% of women versus 24% of men, with India showing an almost identical pattern (44% versus 25%).²

Evidence from India's national surveillance studies points to even more pronounced differences. The ICMR-INDIAB study, surveying 14,227 adults across four states, found 54.4% of the population physically inactive, with a 21% gender gap (63.0% of women versus 41.7% of men classified as inactive) and a marked urban-rural divide (65.0% versus 50.0% inactive, respectively).³ A separate comparative analysis of older Indian adults found that only 12.1% of women, against 25% of men, engaged in vigorous physical activity, with employment status emerging as the strongest predictor of participation.⁴

These population-level statistics, however, necessarily aggregate across highly heterogeneous educational and occupational strata. Qualitative research on Indian workplaces suggests the mechanisms sustaining this gap are structural and motivational rather than purely informational: women office workers report compounded difficulty from domestic and childcare responsibilities with minimal spousal support, even when awareness of activity's health value is present.⁵ Complementing this, India's national time-use data show employed women perform nearly five times more unpaid domestic and care work than men, a burden only partially relieved by education or job quality.⁶ Motivational research further indicates that self-efficacy and the autonomous, versus controlled, quality of exercise motivation, not activity volume alone, differentially predict behaviour by gender.^{7, 8} Meanwhile, evidence on physical activity's health returns suggests the stakes of this gap are asymmetric: in one large cohort study, women who met activity guidelines achieved comparable mortality benefit at roughly half the weekly dose required by men.⁹

What remains comparatively unexamined is whether the large gender gaps documented at national and global scale are reproduced within a specific, more homogeneous working-adult population, one that is urban, tertiary-educated, and employed in white-collar occupational roles or whether such gaps are concentrated in less advantaged strata that dominate national aggregates. This study addresses that question directly, comparing working men and women aged 25-50 in Bengaluru

on three constructs: guideline awareness, physical activity practice, and psychological well-being using validated, internationally standardised instruments within a single sample, and examining whether the practice and well-being relationship established in the broader literature^{10,11} differs by gender in this population.

2. Methods

2.1 Design and Sample

A cross-sectional, comparative survey design was used. Ninety working adults aged 25-50 (61 women, 67.8%; 29 men, 32.2%), currently employed for at least six months and residing in Bengaluru, were recruited through convenience/purposive online sampling. The sample was predominantly aged 41-45 (41.1%), highly educated (64.4% holding a postgraduate or professional/technical qualification), urban-resident (75.6%), and employed in sedentary or lightly active occupational roles (81.1% combined).

2.2 Instruments

Awareness of physical activity guidelines was measured using a nine-item instrument compiled directly from the WHO's published global recommendations for physical activity, each item rated on a four-point agreement scale and scored 0-9 (converted to a percentage). Physical activity practice was assessed using the International Physical Activity Questionnaire Short Form (IPAQSF),¹² which yields frequency and duration-based estimates of vigorous, moderate, and walking activity, converted to MET-minutes per week (vigorous $\times$ 8.0, moderate $\times$ 4.0, walking $\times$ 3.3) and classified into Low, Moderate, or High categories per standard IPAQ protocol.¹³ In its original twelve-country validation, the IPAQ short form demonstrated pooled test-retest reliability of $\rho \approx .76$ and criterion validity against accelerometry of $\rho \approx .30$.¹² Psychological well-being was assessed using the WHO-5 Well-Being Index,¹⁴ a five-item scale (0-100%) with a conventional screening cut-off of 50%.

2.3 Procedure and Analysis

Data were collected electronically with informed consent; all 90 responses were recorded within a single 25-hour window. IPAQ duration responses recorded as "not sure/don't know" (affecting 8-20% of cases depending on domain) were imputed using domain-specific sample medians, and single-bout durations were truncated at 180 minutes per protocol. Because Shapiro-Wilk tests indicated significant departures from normality for all three continuous variables (all $p < .01$), nonparametric tests were used throughout: Mann-Whitney U for two-group (gender) comparisons, chi-square for the association between gender and IPAQ category, and Spearman's rho for the practice and well-being association. Effect sizes (rank-biserial r for Mann-Whitney U; Cramér's V for chi-square) were computed and interpreted using Cohen's conventions.¹⁵ Analyses were conducted in Python (pandas, SciPy) at $\alpha = .05$.

3. Results

Table 1 summarises descriptive statistics for the three core variables, overall and by gender. Awareness averaged 59.1% correct (Male $M = 56.3\%$, $SD = 11.9$; Female $M = 60.5\%$, $SD = 14.0$). Total physical activity averaged 1,295.7 MET-minutes/week (Male $M = 1,304.3$; Female $M = 1,291.6$), with 60.0% of the sample classified in the IPAQ Moderate category (24.4% Low, 15.6% High). WHO-5 well-being averaged 47.7% (Male $M = 48.7\%$; Female $M = 47.3\%$), and 47.8% of the full sample scored at or below the conventional 50% screening threshold.

Table 1: Descriptive Statistics for Awareness, Practice, and Well-Being, Overall and by Gender (N = 90)

Variable	Overall M (SD)	Male M (SD), n=29	Female M (SD), n=61
Awareness (%)	59.14 (13.41)	56.32 (11.85)	60.47 (13.98)
Total PA (MET min/week)	1295.71 (1088.13)	1304.28 (898.72)	1291.63 (1174.45)
WHO-5 Well-Being (%)	47.73 (12.00)	48.69 (10.85)	47.28 (12.58)

None of the three primary gender comparisons reached statistical significance. Awareness did not differ significantly by gender, $U = 710.50$, $p = .123$, $r = .197$ (small effect); women scored numerically, though not significantly, higher than men. Total physical activity likewise did not differ significantly, $U = 978.50$, $p = .419$, $r = -.106$, nor did IPAQ activity category, $\chi^2(2) = 1.57$, $p = .457$, $V = .132$, though descriptively, women were more represented at both the Low (26.2% vs 20.7%) and High (18.0% vs 10.3%) extremes than men, suggesting a more polarised rather than uniformly lower activity distribution. WHO-5 well-being did not differ significantly by gender, $U = 921.00$, $p = .754$, $r = -.041$.

The association between physical activity practice and well-being was small, negative, and nonsignificant overall ($\rho = -.070$, $p = .509$), and remained non-significant when examined separately for men ($\rho = -.208$, $p = .278$) and women ($\rho = -.025$, $p = .846$). Table 2 summarises effect sizes across the three primary comparisons; all were small by conventional standards ($r = .04-.20$; $V = .13$), with the awareness comparison showing the largest effect, a pattern more consistent with a genuine small effect that this study's sample size (particularly the male subgroup, $n = 29$) was underpowered to detect, than with a true absence of gender difference.

Table 2: Effect Sizes for the Primary Gender Comparisons

Comparison	Test statistic	p	Effect size
Awareness by gender	$U = 710.50$	0.123	$r = .197$ (small)
Total PA by gender	$U = 978.50$	0.419	$r = -.106$ (negligible-small)
IPAQ category by gender	$\chi^2(2) = 1.57$	0.457	$V = .132$ (small)
WHO-5 by gender	$U = 921.00$	0.754	$r = -.041$ (negligible)

Two further findings merit note. Median daily sitting time was high (approximately 8 hours) and statistically equivalent across

genders ($U = 803.00$, $p = .449$). In an exploratory analysis not linked to the study's primary hypotheses, semi-urban respondents ($n = 22$) reported significantly higher sitting time than urban respondents ($n = 68$; $U = 990.00$, $p = .014$, $r = -.324$), the only statistically significant result across all analyses conducted - a finding requiring confirmation in a larger, purpose-designed sample before being treated as established.

4. Discussion

This study's central finding is one of convergence: none of the three hypothesised gender differences reached significance, and effect sizes were uniformly small. This departs markedly from the gender gaps reported nationally and globally 8 to 21 percentage points, favouring men, across three independent large-scale sources.²⁻⁴ Given this study's modest sample, statistical power alone cannot fully explain so large a discrepancy; a true population-scale gap of this magnitude would likely have produced at least a directionally consistent pattern in a sample of 90, which was not observed.

A more plausible explanation is sample-specific stratification. National and global figures aggregate across far more heterogeneous educational and occupational populations than the present urban, tertiary-educated, white-collar sample. Within a homogeneously well-educated group, awareness of guideline content may reach a ceiling with little room for further gender differentiation, consistent with the narrow overall spread of awareness scores observed (33.3 - 88.9%). Read through the Health Belief Model,^{16,17} this suggests that cognitive constructs such as perceived susceptibility and benefit may already be broadly shared across genders in this stratum, while the more consequential gender difference, perceived barriers and self-efficacy, was not measured here but is strongly implicated by qualitative Indian workplace evidence.⁵

The null practice and well-being association, while contrary to a well-established broader literature linking activity to reduced depression risk and psychological distress,^{10,11} is compatible with Self-Determination Theory's central claim that it is the autonomous quality of motivated behaviour, not its sheer volume, that drives well-being benefit.^{18,19} A MET-minutes measure captures quantity only; two respondents with identical activity volume could differ sharply in whether that activity was autonomously chosen or externally compelled, and only the former would be expected to yield well-being benefit under this framework.

Even where practice appears to converge across genders, this should not be read as evidence that structural gender constraints have disappeared. India's time-use evidence indicates that employed women continue to carry a substantially larger unpaid domestic workload than men, largely irrespective of education or job quality.⁶ Equivalent physical activity output may therefore be achieved at unequal total time-budget cost - a possibility this study's design cannot directly test but which is consistent with the near-half of the sample scoring below the well-being screening threshold. The two findings independent of gender (i) high, equivalent sedentary time, and elevated

below-threshold well-being (ii) point to a shared, gender-neutral occupational health concern meriting workplace attention regardless of the study's comparative aims.

This study has several limitations. The sample was recruited by convenience/online sampling within a single ~25-hour window, is not representative of the broader Indian working-adult population, and is modest in size with an uneven gender split (68% female), limiting power to detect small effects. All measures relied on self-report; IPAQ's own validation literature reports criterion validity against accelerometry of only $\rho \approx .30$,¹² a ceiling on measurement precision independent of this study's sample size. The cross-sectional design precludes causal inference, and internal consistency for the WHO-5 was unexpectedly low in this specific sample ($\alpha = .03$), warranting caution in interpreting well-being scores. Perceived barriers and motivational quality, theoretically the more likely loci of residual gender difference, were not directly measured.

5. Conclusion

Within this sample of urban, educated, working Indian adults, physical activity awareness and practice appear to have substantially converged across genders, in clear contrast to the much larger gaps reported in national and international surveillance data. Rather than indicating that gendered barriers to physical activity have resolved, this pattern suggests such barriers may be unevenly distributed across occupational and educational strata, and that within relatively advantaged urban strata they may operate chiefly through structural time-cost and motivational-quality channels rather than through awareness or raw activity volume. Future research using larger, stratified samples with validated barriers and motivational-quality measures, alongside objective activity monitoring, is needed to test this stratification hypothesis directly. In the meantime, the high prevalence of below-threshold well-being and pervasive sedentary time observed across both genders in this study support workplace wellness interventions addressing sedentary behaviour as a priority independent of gender-targeted programming.

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