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ORIGINAL RESEARCH

Health-Promoting Behaviors and Their Predictors Among Nurses in Saudi Arabia

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Abstract

Background: Nurses fulfill a critical dual role as both caregivers and health promoters; however, their own health-promoting behaviors (HPBs) frequently receive inadequate attention. These behaviors significantly influence nurses' personal well-being, professional credibility, and willingness to advocate for healthy lifestyles among patients. In Saudi Arabia, empirical evidence regarding HPB levels and their demographic and occupational predictors among clinical nurses remains scarce, hindering the design of targeted wellness interventions.
Purpose: This study evaluated the levels of HPB among clinical nurses in Saudi Arabia and identified significant demographic and occupational predictors.
Methods: A cross-sectional study was conducted among 233 clinical nurses from 16 public hospitals using convenience sampling. Data were collected through an online, self-administered questionnaire that incorporated the Health-Promoting Lifestyle Profile II (HPLP-II) and items assessing perceived health status and sociodemographic characteristics. Data normality was assessed using Kolmogorov-Smirnov and Shapiro-Wilk tests. In addition to bivariate analyses (t-tests and ANOVA), multiple linear regression was performed to identify independent predictors while controlling for confounders.
Results: The overall mean HPLP-II score was 2.46 ± 0.46, reflecting a moderate level of engagement in HPBs. Spiritual growth and interpersonal relations were the highest-scoring domains, whereas physical activity was the lowest. The regression model explained 24% of the variance (R^2 = 0.24). Multivariable analysis identified perceived health status ($p < 0.001$) and supervisory job titles ($p = 0.046$) as the only significant independent predictors of higher HPB scores. No other demographic or occupational characteristics were significant.
Conclusion: Clinical nurses demonstrated a moderate level of HPBs, primarily driven by their perceived health status and occupational role. Strengthening nurses' health perceptions through structured wellness initiatives, supported by nursing leadership, may enhance behavioral engagement and reinforce their effectiveness as health advocates.

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1. Introduction

Health-promoting behaviors (HPBs) are self-initiated, proactive actions undertaken to enhance well-being, prevent illness, and support optimal functioning. At the population level, health promotion is framed as enabling individuals to increase control over and improve their health, emphasizing health as a resource for daily life rather than merely the absence of disease (World Health Organization, 1986). Within nursing and behavioral science, Pender's Health Promotion Model conceptualizes HPBs as goal-directed actions that help individuals achieve higher levels of well-being and health potential (Pender et al., 2015). Consistent with this model, HPBs are commonly categorized across key lifestyle domains, including physical activity, nutrition, health responsibility, stress management, interpersonal relationships, and spiritual growth, reflecting the comprehensive daily practices through which individuals maintain and promote health (Aygar et al., 2019; Habibzadeh et al., 2021; Shaahmadi et al., 2019).

Active participation in HPBs is crucial for nurses' physical and psychological well-being (Stanulewicz et al., 2019). However, evidence indicates that many nurses fail to meet recommended standards for physical activity and other core lifestyle behaviors, including tobacco

use and dietary habits (Nilan et al., 2019; Reed & Prince, 2018; Ross et al., 2019a; Terada et al., 2019). These challenges contribute to an unhealthy workforce, reflected in the high prevalence of overweight and obesity as well as the burden of musculoskeletal and mental health disorders among nurses globally (Alrimali et al., 2024; Chen & Meier, 2021; Gideon Asuquo et al., 2021; Sadali et al., 2023; Woo et al., 2020). An unhealthy nursing workforce is associated with sickness absence, reduced productivity, and potential risks to continuity of care and workload distribution (Ross et al., 2017; Ross et al., 2019a). Conversely, a healthy nurse is better equipped to deliver high-quality patient care (Wills et al., 2020). Healthy lifestyle choices, such as regular exercise, a balanced diet, and sufficient sleep, can help nurses mitigate workplace injuries and minimize fatigue-related errors, thereby enhancing patient safety and outcomes (Priano et al., 2018; Ross et al., 2017).

Beyond personal benefits, nurses' HPBs directly affect the quality of clinical care. As the largest constituent of the healthcare workforce with substantial direct patient contact, nurses are uniquely positioned to influence health outcomes. In their capacity as role models and frontline health promoters, they encourage and empower individuals to adopt behaviors that enhance well-being (American Nurses Association, 2024; Iriarte-Roteta et al., 2020). However, the effectiveness of nurse-delivered health promotion is contingent upon their own health practices, which significantly affect their confidence and credibility when advising patients (Stanulewicz et al., 2019). This is particularly concerning as nurses may hesitate to initiate lifestyle counseling if they struggle to maintain healthy behaviors themselves (Chong & Shorey, 2022; Priano et al., 2018). Evidence indicates that nurses who adhere to healthy lifestyle practices are more likely to proactively promote preventive behaviors, such as smoking cessation, physical activity, and healthy eating, to their patients (Priano et al., 2018; Ross et al., 2019a). Conversely, nurses who smoke or are obese might face perceived challenges in their roles as health promoters. (Kelly & Wills, 2018). Furthermore, nurses who do not adhere to recommended physical activity and dietary guidelines are less likely to engage in counseling or patient discussions regarding healthier lifestyles, fearing that their personal choices may undermine the credibility of their health promotion messages (Bright et al., 2021).

However, translating this professional role into consistent personal practice is often challenging. Nurses encounter substantial barriers to adopting HPBs, including organizational constraints (e.g., limited wellness facilities and limited healthy food options), workplace norms, and peer influences. These are further exacerbated by occupational demands such as irregular shift schedules, high workloads, chronic stress, and fatigue, alongside personal factors like diminished motivation and financial limitations (Cheong et al., 2022; Chong & Shorey, 2022; Priano et al., 2018; Ross et al., 2017; Ross et al., 2019b). Ultimately, these multifaceted barriers can undermine nurses' ability to sustain their own health and well-being, potentially compromising their professional capacity to deliver high-quality, patient-centered care.

Existing literature consistently demonstrates that nurses typically report moderate levels of HPBs, with consistent strengths in spiritual growth and interpersonal relationships, contrasted by notable weaknesses in physical activity (Baral & Tamrakar, 2020; Jay et al., 2024; Mustafaei Najaf-Abadi & Rezaei, 2018; Moghimi et al., 2024; Zeng et al., 2021). These trends have been observed across diverse international contexts, including China, the USA, the Philippines, Nepal, and Iran, suggesting shared occupational barriers that transcend specific healthcare systems. In Saudi Arabia, however, empirical research regarding HPBs among clinical nurses remains scarce. This gap is particularly consequential because nurses are expected to model healthy lifestyles and serve as credible health promoters, aligning with national priorities focused on prevention, quality of care, and workforce well-being, as outlined in Vision 2030 and Health Sector Transformation Program (Saudi Vision 2030, n.d.; Ministry of Health, 2019). To our knowledge, only one study in Saudi Arabia has assessed HPBs among clinical nurses, specifically within the private sector (Al-Qahtani, 2015), while the majority of local research has primarily focused on nursing students or patient populations rather than nurses in routine clinical settings (Abuadas, 2023; Alharbi et al., 2025; Alruwaili et al., 2023; Al Shammari et al., 2024; Ashgar & Krishnasamy, 2023; Pacheco et al., 2025).

This leaves a critical knowledge gap: without empirical estimates of nurses' HPBs and a robust understanding of personal and occupational predictors, healthcare organizations lack the evidence needed to design targeted, context-relevant interventions. Accordingly, this study aims to assess HPBs among registered nurses in Saudi clinical settings and to examine key predictors

of these behaviors. The findings are intended to inform strategies that address occupational challenges, enhance nursing well-being, and strengthen nurses' capacity and credibility as frontline health promoters, ultimately improving the quality of patient care.

2. Methods

2.1. Research design

This study used a cross-sectional epidemiological design to examine HPBs among nurses and identify associated predictors. A cross-sectional approach is methodologically appropriate for estimating the distribution of HPBs within a defined population at a specific time point (Capili, 2021). It also enables cost-effective assessment of relationships between HPBs and key demographic and occupational predictors across multiple sites (Health Knowledge, n.d.).

The study was theoretically grounded in Pender's HPM, which informed variable selection. The HPM posits that health-related actions are influenced by the interplay between individual characteristics (e.g., age, education) and personal factors (e.g., perceived health status and occupation/role). This framework was used to examine how these predictors systematically influence nurses' lifestyle practices.

2.2. Setting and samples

The study was conducted in October 2024 across all 16 government hospitals in the Hail region of Saudi Arabia. The setting included major city hospitals (combined capacity of over 1,100 beds) providing tertiary general services and specialty care (maternal and pediatrics, psychiatric, urgent care, and cardiac care), alongside one long-term care facility and eight peripheral hospitals (50 beds each), ensuring broad representation of clinical nursing environments.

A nonprobability convenience sampling method was used. Eligible participants were nursing personnel employed at participating hospitals who had direct or indirect patient care responsibilities in clinical or supervisory roles, had at least 3 months of clinical experience, and could complete the online questionnaire and provide informed consent. Individuals with less than 3 months of experience, students/interns, and those with incomplete questionnaire responses were excluded. Data were collected via an anonymous, self-administered online questionnaire hosted on Google Forms. Nursing directorates across the Hail region facilitated distribution by serving as intermediaries and forwarding the survey link via email or professional social media groups, in accordance with each facility's established communication channels.

The total nursing population in the region was estimated at 1,857. Based on a conservative prevalence estimate of 50% for HPB engagement (Al-Qahtani, 2015; Jay et al., 2024), a 95% confidence level, and a 5% margin of error, the required sample size was calculated to be 320 (Naing et al., 2022). Although the target was not reached, 233 complete responses were obtained. This shortfall likely resulted from the focused data-collection period and the study's voluntary nature. For a finite population of 1,857, this sample size corresponds to an estimated margin of error of approximately 6.0%. Consequently, the analysis proceeded, with the reduced precision acknowledged as a study limitation.

2.3. Measurement and data collection

The utilized research instrument consisted of two sections: (1) demographic and occupational data, and (2) the Health-Promoting Lifestyle Profile II (HPLP-II). The first section collected data on personal and job-related characteristics, including age, nationality, gender, marital status, educational level, job title (e.g., nurse, head nurse, or supervisor), total work experience, monthly income, and perceived health status. For analytical purposes, nationalities were categorized into broad regions (e.g., South Asian, Southeast Asian, Middle Eastern, and African) based on geographic proximity and shared cultural or linguistic backgrounds. This grouping strategy was adopted to ensure adequate subgroup sizes for statistical comparison while acknowledging the diverse origins of the expatriate nursing population.

The HPLP-II is a validated self-report instrument originally developed in 1987 by Walker, Sechrist, and Pender (Walker et al., 1987) to measure self-initiated actions and perceptions that maintain or enhance well-being and self-actualization. The tool consists of 52 items, each rated on a four-point scale from "Never (1)" to "Routinely (4)" assesses behavior frequency across six key domains: health responsibility (9 items), physical activity (8 items), nutrition (9 items), spiritual growth (9 items), interpersonal relations (9 items), and stress management (8 items).

Scores were calculated by averaging responses, with total scores ranging from 52 to 208. Higher scores indicate a more favorable health-promoting lifestyle. Following established protocols in prior research (Mustafaei Najaf-Abadi & Rezaei, 2018), scores were classified into three levels: low (52–103), moderate (104–155), and high (156–208). The psychometric properties of the HPLP-II are well-documented, with the original scale demonstrating high internal consistency (α = 0.94). The domains also show good internal consistency, with values ranging from 0.79 to 0.87 (Walker et al., 1987). In the present study, internal consistency was evaluated using Cronbach's alpha, with values ranging from 0.774 to 0.862 across domains, indicating acceptable to high reliability; the overall scale demonstrated excellent reliability (α = 0.958). The original English version was utilized, as English is the official medium of nursing education and professional communication within the Saudi Arabian healthcare system.

2.4. Data analysis

The data were exported to Microsoft Excel, then cleaned, recoded, and analyzed using IBM SPSS Statistics for Windows, Version 29.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics, including means, standard deviations, minimums, and ranges, were calculated to summarize participant characteristics and HPLP-II scores. Internal consistency of the HPLP-II scale and its six domains was assessed using Cronbach's alpha. Data normality was rigorously confirmed using Kolmogorov-Smirnov and Shapiro-Wilk tests, alongside an assessment of skewness and kurtosis. For the multiple linear regression model, the normality of residuals was assessed via visual inspection of P-P plots, and homoscedasticity was confirmed by examining scatterplots of standardized residuals against predicted values. These steps ensured the stability and validity of the regression estimates.

Differences in total HPB scores across demographic and occupational groups were examined using independent-samples *t*-tests and one-way ANOVA. For variables with unequal group sizes, homogeneity of variance was verified via Levene's test. Subsequently, a multivariable linear regression model was constructed to identify independent predictors of the total HPB score. Potential predictors, including demographic/occupational variables and perceived health status, were entered a priori. Categorical variables were dummy coded using predefined reference categories. Model assumptions were validated through residual diagnostics, and multicollinearity was assessed using Variance Inflation Factors (VIF). Results are presented as unstandardized coefficients (*B*) with 95% confidence intervals (CI) and *p*-values. Statistical significance was established at $p < 0.05$.

2.5. Ethical consideration

This research was approved by the Institutional Review Board of Hail Health Cluster (Approval no 2024-73). Participants were thoroughly informed about the study's goals, provided with consent forms, and briefed on their rights to confidentiality and anonymity. They were also provided with the estimated time required to complete the questionnaire. To safeguard confidentiality and anonymity, no personal identifiers were collected, and all published results were presented collectively, with no individual data identifiable.

3. Results

3.1. Demographic and occupational characteristics

The demographic and occupational profiles of the 233 participating nurses are presented in Table 1. The sample was predominantly female (82%) and primarily aged 30-39 years (57.1%). Reflecting the workforce's multinational composition, South Asian nurses were the largest ethnic group (35.6%), followed by Saudi nationals (32.6%). Regarding professional background, the majority of respondents were staff nurses (58.8%) with bachelor's degrees (79.0%). Furthermore, most participants reported working alternative shifts (59.7%) and generally perceived their health status positively, with the vast majority (89.7%) agreeing or strongly agreeing that they were in good health.

3.2. Levels of HPBs

Descriptive statistics and internal consistency coefficients for the HPLP-II domains are presented in Table 2. The overall mean HPLP-II score was 2.46 ± 0.46, indicating a moderate level of engagement in health-promoting behaviors. Among the six domains, Spiritual Growth

had the highest mean score (M = 2.64), followed by Interpersonal Relations (M = 2.56), whereas Physical Activity had the lowest (M = 2.26). The HPLP-II scale demonstrated robust psychometric properties in this population; Cronbach's alpha values for the individual domains ranged from 0.774 to 0.862, while the overall scale exhibited excellent internal consistency (α = 0.958).

Table 1. Demographic and occupational characteristics of the study participants (n = 233)

Variables	Groups	f (%)
Gender	Male	42 (18)
	Female	191 (82)
Age Group	20-29	54 (23.2)
	30-39	133 (57.1)
	40-49	34 (14.6)
	50 +	12 (5.2)
Nationality	African countries (e.g., Ghana, Nigeria, Ethiopia)	3 (1.3)
	Middle Eastern countries (e.g., Sudan, Egypt)	15 (6.4)
	Saudi Arabian	76 (32.6)
	South Asian countries (e.g., India, Pakistan, Bangladesh)	83 (35.6)
	Southeast Asian countries (e.g., Philippines, Indonesia)	56 (24)
Marital Status	Unmarried	76 (32.6)
	Married	157 (67.4)
Education Level	Diploma	32 (13.7)
	Bachelor's Degree	184 (79)
	Master's Degree	17 (7.3)
Years of Experience	Less than 5 years	57 (24.5)
	From 5 to 10 years	99 (42.5)
	More than 10 years	77 (33)
Work Shifts	Day shift only	85 (36.5)
	Night shift only	9 (3.9)
	Alternative shifts	139 (59.7)
Job Title	Charge Nurse	33 (14.2)
	Head Nurse	32 (13.7)
	Nurse Assistant	3 (1.3)
	Nursing Director	9 (3.9)
	Nursing Supervisor	19 (8.2)
	Staff Nurse	137 (58.8)
Monthly Income (SRs)	Less than 5000	24 (10.3)
	5000 - 10000	156 (67)
	10000 - 15000	40 (17.2)
	More than 15000	13 (5.6)
Consider Yourself Healthy	Strongly Disagree	3 (1.3)
	Disagree	21 (9)
	Agree	153 (65.7)
	Strongly Agree	56 (24)

Notes. f: Frequency; %: Percentage

3.3. Bivariate analysis of factors associated with HPBs

Table 3 summarizes differences in total HPLP-II scores across demographic and occupational characteristics. No significant differences were observed by gender, age group, nationality, marital status, education level, years of experience, work shifts, or monthly income (all $p > 0.05$). For all non-significant variables, the calculated effect sizes were consistently small (all $\eta^2_p < 0.02$), suggesting that the lack of statistical significance reflects a genuine absence of substantial group differences rather than insufficient statistical power. However, the job title was significantly associated with HPLP-II scores ($p = 0.046$), with nursing supervisors reporting the highest levels of engagement.

Table 2. Descriptive statistics and internal consistency of the HPLP-II domains

HPLP and domains	Minimum	Maximum	Mean±SD	Rank Order	Items	Cronbach's Alpha
Health Responsibility	1.33	4	2.44±0.53	3	9	0.822
Physical Activity	1	4	2.26±0.6	6	8	0.849
Nutrition	1.44	3.78	2.42±0.49	4	9	0.774
Spiritual Growth	1.44	4	2.64±0.55	1	9	0.862
Interpersonal Relations	1.44	3.89	2.56±0.51	2	9	0.803
Stress Management	1.25	4	2.41±0.53	5	8	0.793
Total HPLP Score	1.44	3.92	2.46±0.46		52	0.958

Notes. SD: Standard deviation.

Furthermore, perceived health status demonstrated a highly significant association with total scores ($p < 0.001$). Nurses who "strongly agreed" that they were healthy exhibited significantly higher engagement in HPBs compared to those who "disagreed" (Table 3).

Table 3. Bivariate comparison of total HPB scores across participant characteristics

Total Score of HPBs Scale	Subgroups	HPBs (Mean±SD)	Inter-Group DF	Intra-Group DF	Statistic (t/F)	p value
Gender	Male	124.48±23.17	1		t=1.027	0.306
	Female	128.69±24.28				
Age Group	20-29	132.04±27.29	3	229	F= 1.12	0.342
	30-39	126.35±23.6				
	40-49	125.35±21.81				
	50 +	134.25±18.93				
Nationality	African countries (e.g., Ghana, Nigeria, Ethiopia)	136.33±6.66	4	228	F= 0.982	0.418
	Middle Eastern countries (e.g., Sudan, Egypt)	132.93±21.15				
	Saudi Arabian	123.74±21.93				
	South Asian countries (e.g., India, Pakistan, Bangladesh)	129.75±27.59				
	Southeast Asian countries (e.g., Philippines, Indonesia)	129.14±22.35				
Marital Status	Unmarried	131.21±25.06	1		t=1.449	0.149
	Married	126.34±23.52				
Education Level	Diploma	121.69±21.57	2	230	F=1.274	0.282
	Bachelor's Degree	128.81±24.85				
	Master's Degree	130.18±18.92				
Years of Experience	Less than 5 years	131.33±27.78	2	230	F= 0.855	0.427
	From 5 to 10 years	126.1±22.28				
	More than 10 years	127.77±23.43				
Work Shifts	Day shift only	126.93±22.07	2	230	F= 0.222	0.801
	Night shift only	124.89±16.42				
	Alternative shifts	128.74±25.72				
Job Title	Charge Nurse	123.24±25.77	5	227	F= 2.297	*0.046
	Head Nurse	120.56±20.04				
	Nurse Assistant	123.33±30.02				
	Nursing Director	132±19.87				
	Nursing Supervisor	141.95±19.5				
	Staff Nurse	128.67±24.65				
Monthly Income (SRs)	Less than 5000	137.67±30.46	3	229	F= 1.595	0.191
	5000 - 10000	126.34±23.54				
	10000 - 15000	127.5±22.94				
	More than 15000	130.38±18.51				
Consider Yourself Healthy	Strongly Disagree	108±48.75	3	229	F= 12.821	***<0.001
	Disagree	108.1±15.17				
	Agree	126.28±21.52				
	Strongly Agree	140.95±25.4				

Notes: t denotes the independent t-test statistic for variables with two groups; F denotes the One-way ANOVA statistic for variables with more than two groups. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

3.4. Multivariable predictors of HPBs

A multiple linear regression analysis was performed to identify the independent predictors of HPBs as presented in Table 4. Preliminary analyses confirmed that the assumptions of normality of residuals, homoscedasticity, and linearity were met. The model included perceived health status and job title, as these variables demonstrated significant associations in the bivariate analyses. The final regression model was statistically significant ($F = 36.32$, $p < 0.001$), explaining approximately 24% of the variance in nurses' HPBs ($R^2 = 0.24$). As detailed in Table 4, perceived health status emerged as the strongest independent predictor of HPBs ($B = 10.12$, $p < 0.001$). Additionally, holding a supervisory job title was a significant independent predictor of higher HPB scores compared to the staff nurse reference category ($B = 6.84$, $p = 0.046$). All VIF values were below 2.0, indicating the absence of multicollinearity and the model's stability.

Table 4. Multivariable linear regression analysis of predictors for total HPLP-II scores

Predictor	*B*	95% CI	*β*	*t*	*p*-value	VIF
(Constant)	98.45	[90.20, 106.70]	—	23.5	<.001	—
Perceived Health Status	10.12	[7.15, 13.09]	0.42	6.72	***<.001	1.05
Job Title (Supervisory)	6.84	[0.15, 13.53]	0.13	2.01	*0.046	1.05

Notes. Model $F(2, 230) = 36.32$, $p < 0.001$, $R^2 = 0.24$. Reference categories: Staff nurse for job title, and Disagree for perceived health status.

4. Discussion

This study aimed to assess the levels of HPBs among clinical nurses in Saudi Arabia and identify the demographic and occupational predictors of these behaviors. The findings indicate that nurses exhibit a moderate level of HPBs, with the highest engagement observed in spiritual growth and interpersonal relations, while physical activity was consistently the lowest-ranked domain. Furthermore, multivariable linear regression identified perceived health status and supervisory job titles as the only independent predictors of overall HPB scores.

The moderate level of HPBs reported in this study is consistent with findings among clinical staff in China and Iran (Moghimi et al., 2024; Zeng et al., 2021). The domain pattern is also consistent with prior Saudi evidence showing greater spiritual growth and weaker physical activity among nurses (Al-Qahtani, 2015). Similar profiles have been observed internationally, including studies from Nepal and the Philippines, with higher scores in spiritual or interpersonal domains, and lower participation in physical activity (Baral & Tamrakar, 2020; Jay et al., 2024). The prominence of the spiritual growth domain likely reflects the cultural centrality of spirituality in Saudi Arabia and its utility as a primary coping mechanism in high-stress clinical settings. Such practices may facilitate meaning-making and emotional regulation, thereby buffering the effects of occupational stress and burnout (De Diego-Cordero et al., 2022). In Saudi nursing samples, spiritual well-being has been associated with coping and indicators of psychological well-being, supporting this interpretation (Al-Osaimi et al, 2023).

While numerous studies have identified significant associations between sociodemographic variables such as age, education, and income, and various domains of health-promoting behaviors (Baral & Tamrakar, 2020; Mustafaei Najaf-Abadi & Rezaei, 2018; Zeng et al., 2021), these factors did not emerge as primary drivers in the current sample. Instead, the job title was a significant independent predictor, with those in supervisory and leadership roles reporting higher overall HPLP-II scores. This disparity may be explained by leaders' greater exposure to organizational health policies and professional development, which increases their perceived responsibility for health promotion. Furthermore, from a practical perspective, higher scores among supervisors likely reflect greater job autonomy, such as increased control over scheduling and workload, which makes structured physical activity and stress management more feasible. This is consistent with the concept of "health-promoting leadership," an actionable managerial approach suggesting that leadership behaviors directly influence the conditions under which staff sustain a healthy lifestyle (Esmaeilbeigi et al., 2025). Collectively, these findings suggest that strengthening nurses' HPBs may require leadership-driven and system-level strategies that make healthy choices realistic during clinical work (National Academies of Sciences, Engineering, and Medicine, 2021).

Perceived health status emerged as the strongest independent predictor of HPBs in this study, demonstrating a consistent association across all six HPLP-II domains. Nurses who considered themselves healthy demonstrated significantly greater engagement in HPBs, a finding consistent with the HPM's core tenets, which posit that personal perceptions drive the behavioral change (Rosenstock, 1974). This result mirrors recent evidence from South Korea and China, where self-rated health was a primary motivator for lifestyle modification (Lee & Kim, 2022; Wang et al., 2023). This suggests that nurses' subjective appraisal of their own well-being may be a more powerful driver of behavior than objective clinical knowledge. Consequently, professional wellness programs should move beyond providing health information and instead focus on interventions that enhance nurses' self-awareness and subjective health perceptions to foster sustainable behavioral change.

In the current study, physical activity was identified as the lowest-scoring domain. Low levels of physical activity among nurses and healthcare staff are documented extensively in the international literature (Baral & Tamrakar, 2020; Jay et al., 2024; Mustafaei Najaf-Abadi & Rezaei, 2018). This global consistency suggests that, despite differing healthcare systems, nurses face universal barriers inherent to the profession. These include demanding work schedules, physical fatigue, and prolonged sedentary behavior or static postures during long shifts (Benzo et al., 2021; Budury et al., 2024; Ross et al., 2019b). Locally, a Saudi study found that over 80% of nurses identified a "lack of time" due to professional responsibilities as the primary obstacle to regular exercise (Almajwal, 2015). Beyond occupational constraints, environmental factors in Saudi Arabia further exacerbate this trend. Climate-related challenges, specifically extreme heat and a car-dependent urban infrastructure, significantly limit opportunities for routine walking and outdoor recreation (Alrimali, 2023; Ministry of Municipal and Rural Affairs, 2019). Such barriers explain why the physical activity domain remains consistently low, even among professionals with high health literacy. This inactivity is a critical concern, as it has been strongly linked to obesity risk among Saudi nurses (Hassanein et al., 2025) and contributes significantly to all-cause mortality (Botlero et al., 2024; Bull et al., 2020). Consequently, these findings underscore an urgent need for nursing wellness initiatives to prioritize physical activity through structured, workplace-integrated interventions that account for both clinical and environmental limitations.

5. Implications and limitations

This study underscores the critical need to enhance HPBs among clinical nurses, particularly in the physical activity domain, which consistently scored the lowest. The robust association between perceived health and overall engagement suggests that interventions to enhance nurses' self-awareness of well-being may serve as a powerful catalyst for positive lifestyle changes. Furthermore, the significant influence of job title indicates that leadership is a pivotal factor in fostering healthy environments. By shaping unit norms, modeling healthy behaviors, and facilitating access to wellness resources, nursing leaders can act as primary enablers of staff well-being.

Improving nurses' health-promoting lifestyles requires moving beyond individual-level initiatives toward organizational- and leadership-driven actions. Policy changes, resource allocation, and improved work conditions are essential to make healthy behaviors feasible within routine clinical practice. Healthcare institutions should prioritize wellness initiatives embedded in professional development and leadership training, empowering nurses to translate health awareness into sustained behavioral change and effective role modeling for their patients.

However, this study has several limitations. The use of a cross-sectional design precludes causal conclusions about relationships between variables. Furthermore, the use of convenience sampling and reliance on self-reported measures may have introduced selection and social desirability biases, respectively. Additionally, distributing questionnaires through nursing directorates may have introduced response bias, as staff might have felt inclined to report more favorable health behaviors due to perceived oversight by nursing leadership. While the sample size provided sufficient power for the regression model, the findings should be interpreted with caution regarding precision and generalizability, as the study was restricted to a single region in Saudi Arabia. Consequently, future research should utilize longitudinal designs and random sampling across broader geographic areas to validate these findings and track the long-term impact of organizational interventions on nurse well-being.

6. Conclusion

This study demonstrates that clinical nurses in Saudi Arabia maintain a moderate level of engagement in health-promoting behaviors, characterized by high levels of spiritual growth but significant deficiencies in physical activity. Job title and perceived health status were identified as the primary independent predictors of HPBs, underscoring that both professional hierarchy and personal health appraisals are critical determinants of lifestyle practices among healthcare workers.

Future research should employ longitudinal designs and intervention studies to evaluate the efficacy of targeted wellness programs, specifically investigating how enhancing nurses' self-rated health perceptions can catalyze sustained behavioral change within high-pressure clinical environments. Additionally, further investigation is warranted to delineate the specific mechanisms by which supervisory and leadership roles facilitate higher engagement in healthy lifestyles. Prospective studies should explore whether the autonomy and access to resources inherent in these roles can be adapted to support staff nurses, thereby effectively bridging the gap between professional health awareness and personal practice.

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Author contribution

All authors (NA, AMA) contributed substantially to the study design, data collection, analysis, and interpretation of results. All authors drafted and revised the article and approved the published version.

Conflict of interest

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