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ORIGINAL

Adaptation and Validation of a Self-Assessment Work Performance Scale for Nursing Staff

Adaptación y validación de una Escala de Autoevaluación del Desempeño en el Trabajo en el personal de enfermería

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ABSTRACT

Introduction: work performance in nursing is crucial for the effectiveness of health services and the quality of patient care. Factors affecting this performance include work motivation, organizational culture, institutional support, and working conditions. The need for accurate tools to measure work performance in specific contexts, such as nursing in Peru, is imperative, especially given the increased demands and pressures brought about by the COVID-19 pandemic.
Objective: this study aims to adapt and validate a Short Version of the Self-Assessment Work Performance Scale for Peruvian nursing staff, ensuring its relevance and psychometric accuracy in this specific context.
Method: an instrumental design was used with convenience sampling, selecting 409 Peruvian nurses (M=20,22, SD=2,6). The scale, composed of 10 items, was adapted to Spanish and evaluated through confirmatory factor analysis. Reliability measures such as Cronbach's alpha and McDonald's omega were employed, along with invariance analysis to ensure the scale's consistency across sexes.
Results: the factor structure confirmed the construct validity of the scale with a good fit in the unifactorial models (x^2 = 139,820, df = 35, p < ,001, CFI = 0,94, TLI = 0,93, RMSEA = 0,07, SRMR = 0,03). Reliability was high, with Cronbach's alpha and McDonald's omega of 0,92 for the general model. The scale demonstrated full measurement invariance across sexes, reinforcing its applicability in gender-divided populations.
Conclusions: the scale is a valid and reliable tool for assessing work performance in nursing staff in Peru. Its ability to adequately reflect the specific conditions and challenges of this professional group ensures its utility in the continuous improvement of health service quality and effective management of nursing staff in diverse and demanding contexts.

Keywords: Work; Performance; Nursing; Invariance; Healthcare; Validation.

RESUMEN

Introducción: el rendimiento laboral en enfermería es crucial para la eficacia de los servicios de salud y la calidad de la atención al paciente. Los factores que afectan este rendimiento incluyen la motivación laboral, la cultura organizacional, el apoyo institucional y las condiciones de trabajo. La necesidad de herramientas precisas para medir el rendimiento laboral en contextos específicos, como el de enfermería en Perú, es imperativa, especialmente en el contexto de las exigencias y presiones aumentadas por la pandemia de COVID-19.
Objetivo: este estudio busca adaptar y validar Versión Reducida de la Escala de Autoevaluación del Desempeño en el Trabajo en personal de enfermería peruano, asegurando su relevancia y precisión psicométrica en este

contexto específico.
Método: se utilizó un diseño instrumental con muestreo por conveniencia, seleccionando a 409 M=20,22, DS=2,6), enfermeras y enfermeros peruanos. La escala, compuesta por 10 ítems, fue adaptada al español y evaluada a través de análisis factoriales confirmatorios. Se emplearon medidas de confiabilidad como el alfa de Cronbach y el omega de McDonald, además de análisis de invarianza para asegurar la consistencia de la escala entre sexos.
Resultados: la estructura factorial confirmó la validez constructiva de la escala con un buen ajuste en los modelos unifactorial (x^2 = 139,820, gl = 35, p < ,001, CFI = 0,94, TLI = 0,93, RMSEA = 0,07, SRMR = 0,03). La confiabilidad fue alta con un alfa de Cronbach y omega de McDonald de 0,92 para el modelo general. La escala demostró invarianza de medición completa a través de los sexos, reforzando su aplicabilidad en poblaciones divididas por sexo.
Conclusiones: la escala es una herramienta válida y confiable para evaluar el rendimiento laboral en el personal de enfermería en Perú. Su capacidad para reflejar adecuadamente las condiciones y desafíos específicos de este grupo profesional garantiza su utilidad en la mejora continua de la calidad de los servicios de salud y en la gestión eficaz del personal de enfermería en contextos diversos y exigentes

Palabras clave: Trabajo; Desempeño; Enfermería; Invariancia; Validación.

INTRODUCTION

Work performance is a cornerstone in understanding organizational dynamics and their impact on the overall productivity of entities. This multifaceted phenomenon encompasses aspects such as work capacity, motivation, and organizational culture, influencing both individual employee success and collective goal achievement. Work motivation has been highlighted as a crucial determinant of performance, emphasizing the importance of management strategies that foster a strong motivational environment to enhance productivity.[1] Similarly, work culture and discipline not only boost productivity but also positively impact performance, offering valuable insights for the implementation of continuous improvement practices.[2] Moreover, work discipline, environment, and productivity have been identified as critical factors influencing performance. Studies reveal significant positive effects of these elements in various organizations.[3] Addressing these aspects allows organizations to effectively tackle the efficiency and effectiveness of work processes. Work engagement, defined as a state of involvement and enthusiasm towards work, is a key predictor of performance.[4] Additionally, resources such as peer support and autonomy can buffer the negative impact of job demands on performance.[5] Factors such as working conditions, job security, and work-life balance also play a significant role in employee productivity.[6,7] In the healthcare sector, issues such as gender discrimination and lack of administrative support can create hostility, reducing work performance.[8] Furthermore, stress and burnout among nursing staff have a direct negative impact on their performance, affecting motivation and concentration, thereby compromising work efficiency and quality.[9,10]

Work performance in nursing is critically important, encompassing multiple facets of the healthcare environment, directly impacting the quality of patient care and the efficiency of health services. Nurses, forming the backbone of global healthcare systems, face unique challenges that influence their performance. This performance is affected by a variety of individual and organizational factors, including workload, job stress, work environment, and institutional support.[11,12] A crucial aspect in improving work performance in nursing is job satisfaction, which has been shown to be intrinsically linked to staff retention. Improving working conditions and offering adequate salaries are fundamental to keeping nurses motivated and engaged.[13] Personalizing work and actively involving nurses in shaping their responsibilities have also been highlighted as effective strategies to better align nurses' skills and needs with their roles, leading to substantial improvements in their performance.[14] Additionally, the quality of care, patient satisfaction, and responsiveness in critical situations are key indicators of nurse performance, significantly influenced by administrative support and working conditions.[15] Thus, work performance in nursing is a critical dimension requiring constant attention and meticulous evaluation. Findings from multiple studies underscore the need for health management policies that maximize both efficiency and quality of service in hospitals and clinics, focusing not only on working conditions but also on the emotional well-being and professional development of nurses.[11,16]

The work performance of Peruvian nurses is an essential component of the health system's effectiveness, particularly relevant during and after the COVID-19 pandemic, which has highlighted the importance of their well-being and professional competence in high-pressure environments. These professionals face significant challenges, including staff shortages, lack of resources, and high workloads, underscoring the need for a holistic approach that considers not only technical competence but also factors such as adaptability and proactivity.[17,18] During the health crisis, a supportive environment and recognition can directly improve work performance,[19]

suggesting that improving working conditions and promoting personal and professional development can enhance both happiness and job.[20] In high-stress contexts such as those experienced during the pandemic in Peru, emotional management is crucial; maintaining calm and empathy prevents errors and promotes clear judgment, optimizing the quality of health services provided.[21] Work performance is also critical in rural and remote areas of Peru, where poverty and maternal and child mortality rates are high. Intrinsic motivation and the desire to serve, particularly among nursing and midwifery students, play a crucial role in addressing these healthcare inequalities, highlighting the need to retain these workers in areas where they are most needed.[22] Therefore, proper management of labor resources and fostering a healthy work environment are essential to mitigate this phenomenon and improve nurses' performance, ensuring the quality and safety of patient care.[23]

In the realm of work performance evaluation, various scales have been developed and validated over time to effectively measure different dimensions of this construct. The Individual Work Performance Questionnaire (IWPQ) by Koopmans et al.[24] is a prominent example, assessing task performance, contextual performance, and counterproductive work behaviors. This questionnaire, with 47 items, has been applied to a wide sample of Dutch workers.[24] However, its Argentine adaptation by Gabini & Salessi[25] in order to analyze the psychometric properties of the scale adapted in the pilot study. This time, the non-probabilistic sample comprised 434 workers. Factor analyses (exploratory and confirmatory suggested the need for cultural adaptations by removing items that did not meet psychometric expectations. A crucial aspect of performance evaluation is the cultural and experiential context, as seen in studies with nurses, where performance varies with experience and cultural context.[26,27]

In this line, the adaptation of Chalco-Ccapa et al.[28] of the IWPQ (12 items) in Peru provides valuable insights into measurement invariance between groups, crucial for meaningful comparisons between different demographics. This version successfully evaluated the validity and reliability of work performance in Peruvian nurses, demonstrating adequate psychometric properties and confirming factorial invariance by gender and age.[28] However, the need for shorter and more efficient tools persists, highlighting the "Short Version of the Self-Assessment Work Performance Scale" by Azevedo et al.[29] This scale, consisting of only 10 items, not only maintains high reliability (CR = 0,91; ωh = 0,88) but also facilitates quick and economical implementation. Its brevity reduces the burden on respondents and simplifies data analysis without compromising accuracy in capturing overall work performance.

In this sense, while tools like the IWPQ offer a detailed assessment of work performance, adaptations like that of Chalco-Ccapa and shorter versions like that of Azevedo provide valuable alternatives for contexts requiring efficiency without losing rigor. The ongoing validation of these scales in different contexts is fundamental to ensuring their applicability and robustness, making them indispensable tools in modern work performance evaluation.

The main advantage of this short version lies in its brevity, facilitating quicker and less intrusive implementation, ideal for studies requiring efficiency in both data collection and analysis. Additionally, focusing on a general performance dimension allows for more straightforward and less complex interpretation of results, particularly useful in contexts where agility in decision-making based on performance evaluation is required. Despite these advantages, it is essential to continue validating this scale in different work environments and populations to ensure its applicability and robustness across various contexts.

METHOD

Participants

Design and Participants

This study is cross-sectional and instrumental in nature,[30] using convenience sampling for participant selection. An electronic sample size calculator proposed by Soper (2020) was employed, considering several critical factors: the number of observed and latent variables in the proposed model, the expected effect size (λ=0,10), the established significance level (α=0,05), and the desired statistical power (1−β=0,90). Although the minimum required sample was calculated to be 199 participants, a total of 409 university students aged 18 to 32 (M=20,22, SD=2,6) were recruited. The majority were female (69,7 %), married (57,2 %), from the coastal region (56,0 %), and belonged to the assistance occupational group (74,5 %) (table 1).

Table 1. Descriptive Statistics

Characteristics		n	%
Sex	Female	380	69,7
	Male	165	30,3
Employment Status	Contracted	362	66,4
	Permanent	146	26,8
	Fixed Position	25	4,6
	Temporary	12	2,2

Occupational Group	Administrative	139	25,5
	Assistance	406	74,5
Region	Coastal	305	56,0
	Jungle	140	25,7
	Highland	100	18,3
Educational Level	Technical	76	13,9
	Bachelor's Degree	184	33,8
	Licensed	232	42,6
	Master's Degree	49	9,0
	Doctorate	4	0,7
Marital Status	Married	312	57,2
	Divorced	39	7,2
	Single	190	34,9
	Widowed	4	0,7

Instruments

Work Performance

We used the abbreviated English version of the Self-Assessment Work Performance Scale,[29] an adaptation of the original Portuguese scale by Queiroga.[31] This version consists of 10 items evaluating two main dimensions: task performance and contextual performance. The scale uses a Likert-type response format from (1= never to 5=always) and has been confirmed through factor analyses to have a bifactorial structure with a general factor and two specific dimensions. The reliability of the general dimension showed a Composite Reliability (CR) ranging from 0,87 to 0,92 across different models, while the specific dimensions presented lower values, between 0,34 and 0,58.

The translation of this scale into Spanish followed a recognized cultural adaptation method[32] to ensure the linguistic and conceptual fidelity of the original instrument. This process included the following stages:

1. Two bilingual Spanish translators, both native speakers, independently performed the initial translation of the scale into Spanish. The two versions were compared to create a consensus initial version.
2. This Spanish version was then back-translated into English by two native speakers from the United States, fluent in Spanish but unfamiliar with the scale, to ensure the retention of the original meaning.
3. An expert committee, consisting of two administrators, a psychologist, and a nurse, reviewed the Spanish-translated version and the new English versions to develop a preliminary Spanish version of the scale.
4. This preliminary version was administered to a focus group of 10 participants to assess comprehension and readability. After identifying comprehension issues, necessary linguistic adjustments were made, resulting in the final Spanish version of the instrument, named the Brief Work Performance Scale (BWPS), presented in table 1.

Procedure

The research received approval from the Ethics Committee of a Peruvian University under code 2022-CEUPeU-023. Between January and March 2023, participants were invited to complete an online questionnaire via Google Forms. Confidentiality was ensured, and ethical principles established in the Declaration of Helsinki were followed before data collection. All participants were informed about the study's objectives, and informed consent was obtained before starting the survey.

Data Analysis

Initially, a descriptive analysis of the BWPS items was conducted, including mean, standard deviation, skewness, and kurtosis, as well as a corrected inter-item correlation analysis. Skewness (g1) and kurtosis (g2) values were considered acceptable within the range of ±1,5 (Pérez et al., 2015). Additionally, a corrected item-total correlation analysis was applied to remove items with $r(i\text{-}tc) \leq 0,2$ or in cases of significant multicollinearity.[33]

Subsequently, a confirmatory factor analysis (CFA) was performed to evaluate the proposed unifactorial and two-factor structural models of the scale, using the MLR estimation method, recommended for data that do not meet the normality assumption.[34] Criteria for model fit evaluation included chi-square (x^2), Comparative Fit Index (CFI), and Tucker-Lewis Index (TLI) with recommended values ≥0,95, and Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR) with values ≤0,08.[33,35] Scale

reliability was determined through Cronbach's alpha and McDonald's omega, with values above 0,70 indicating adequate internal consistency.[36] Additionally, for a second model and to evidence internal validity through convergent validity, the average variance extracted (AVE) per factor was calculated (AVE > 0,50). Inter-factor correlations (φ) were also calculated based on conceptual affinity, as discriminant validity evidence is evaluated through empirical differentiation between AVE and the squared inter-factor correlations (φ^2), where the former is expected to be greater (AVE > φ^2).[37]

To examine the measurement invariance (MI) of the scale by gender, a multigroup confirmatory factor analysis was performed. Four levels of invariance were established: configural, metric, scalar, and strict, defining invariance with differences in ΔCFI less than 0,010.[38] Additionally, an explanatory model was developed using structural equation modeling, applying the same fit criteria and the MLR estimator.

Statistical analyses were conducted in RStudio (Allaire, 2018) using version 4.1.1 of R (R Foundation for Statistical Computing, Vienna, Austria; http://www.R-project.org). For confirmatory factor analysis and structural equation modeling, the "lavaan" package was used,[39] and measurement invariance analysis was facilitated by the "semTools" package.[40]

RESULTS

Descriptive Statistics of the Items

The results of the descriptive analysis for the items of the BWPS show that item means range between 4,06 and 4,20. Item 10 has the highest rating with a mean of 4,20, while item 9 has the lowest rating with a mean of 4,06. All skewness (g1) and kurtosis (g2) values fall within the normal range of ±1,5, indicating relatively symmetrical distributions and moderate kurtosis levels, compatible with the normality assumptions required for further statistical analyses. The item-total correlations (r.cor) for all items exceed the threshold of 0,50, with values ranging from 0,56 to 0,78, indicating that each item significantly contributes to the scale and maintains a consistent relationship with the total scale. This strong correlation underscores the internal consistency of the scale and its effective ability to measure a unidimensional construct.

Table 2. Descriptive Statistics

Versión en inglés	Versión en español	M	DS	g1	g2	r.cor
1. I perform hard tasks properly.	Realizo adecuadamente tareas difíciles.	3,83	0,74	-0,31	0,22	0,56
2. I try to update my technical knowledge to do my job.	Intento actualizar mis conocimientos técnicos para hacer mi trabajo.	4,1	0,69	-0,44	0,32	0,63
3. I do my job according to what the organization expects from me.	Realizo mi trabajo de acuerdo con lo que la organización espera de mí.	4,11	0,64	-0,52	1,44	0,73
4. I plan the execution of my job by defining actions, deadlines and priorities.	Planifico la ejecución de mi trabajo definiendo acciones, plazos y prioridades.	4,1	0,7	-0,49	0,44	0,74
5. I plan actions according to my tasks and organizational routines.	Planifico acciones de acuerdo con mis tareas y prácticas habituales de trabajo.	4,08	0,64	-0,24	0,04	0,78
6. I take initiatives to improve my results at work.	Tomo iniciativas para mejorar mis resultados en el trabajo.	4,16	0,65	-0,53	1	0,78
7. I seek new solutions for problems that may come up in my job.	Busco nuevas soluciones para problemas que puedan surgir en mi trabajo.	4,13	0,64	-0,21	-0,29	0,76
8. I work hard to do the tasks designated to me.	Trabajo duro para realizar las tareas que me han asignado.	4,18	0,64	-0,26	-0,28	0,72
9. I execute my tasks foreseeing their results.	Ejecuto mis tareas anticipando sus resultados.	4,06	0,66	-0,26	-0,09	0,7
10. I seize opportunities that can improve my results at work.	Aprovecho las oportunidades que pueden mejorar mis resultados en el trabajo.	4,2	0,61	-0,19	-0,3	0,74

Preliminary Evaluation

A confirmatory factor analysis (CFA) of the BWPS was conducted following the guidelines of Azevedo et al.[29] The first model evaluated demonstrated a good fit: x^2 = 139,820, df = 35, p < ,001, CFI = 0,94, TLI = 0,93, RMSEA = 0,07 (90 % CI: 0,06 - 0,08), SRMR = 0,03. All factor loadings exceeded the threshold of 0,50, evidencing the construct validity of the scale for measuring mental well-being. Internal consistency was robust, with reliability coefficients of α = 0,92 and ω = 0,92. The second model, which included the 'Task' and 'Context' dimensions, also showed a good fit: x^2 = 126,100, df = 34, p < ,001, CFI = 0,95, TLI = 0,93, RMSEA = 0,07 (90 % CI: 0,06 - 0,08), SRMR = 0,04. Factor loadings confirmed the construct validity of the scale. Internal consistency recorded an α of 0,87 and an ω of 0,87 for both dimensions. To evaluate the internal validity of the second model, the average variance extracted (AVE) of each factor was calculated, exceeding the criterion of 0,50 (Task = 0,56, Context = 0,57). However, discriminant validity testing between the dimensions revealed that the squared inter-factor

correlations (φ^2 = 0,88) exceeded the AVE, suggesting significant overlap between them and the possibility of considering them as a single dimension.

Table 3. Descriptive Statistics

Ítems	M1	M2	
		F1	F2
1	0,57	0,57	
2	0,65		0,65
3	0,76	0,78	
4	0,78	0,81	
5	0,82	0,84	
6	0,82		0,83
7	0,80		0,81
8	0,75		0,76
9	0,73		0,73
10	0,78	0,77	
α	0,92	0,86	0,87
Omega	0,92	0,87	0,87
AVE		0,56	0,57
φ		0,94	
φ^2		0,88	

Note: M1 = Model 1, M2 = Model 2, F1 = Task, F2 = Context, α = Cronbach's Alpha, ω = McDonald's Omega, λ = Factor Loading, AVE = Average Variance Extracted, φ = Inter-factor Correlations, φ^2 = Variance Shared Between Factors.

Invariance

The unidimensional structure of the BWPS was considered for invariance. The results of the invariance analysis of the scale by gender through hierarchical models suggest a good level of invariance across different levels evaluated, indicating that the scale operates consistently between males and females. The configurational model, which serves as a reference and verifies if the factor structure is similar between groups, presented a CFI of 0,933, indicating an adequate fit. In the metric model, which examines if the factor loadings are equal between genders, the ΔCFI was 0,000, showing complete metric invariance, as changes in CFI did not exceed the threshold of 0,01 suggested by Chen.[38] In scalar invariance, where both loadings and intercepts are equated, a ΔCFI of 0,007 was observed, also within the acceptable limit, suggesting that both the factor loadings and intercepts are invariant between groups. Finally, strict invariance, which includes equality of residual variances in addition to loadings and intercepts, showed a ΔCFI of -0,005, indicating that even the residual variances are equivalent between males and females. This pattern of robust results at each hierarchical level reinforces the validity of the scale for use in gender-divided populations, ensuring that the observed differences in scores are true and not due to measurement bias.

Table 4. Invariance by Gender

Invariance	x2	df	p	TLI	RMSEA	SRMR	CFI	ΔCFI
Configural	207,121	70	<,001	0,913	0,080	0,040	0,933	
Metric	214,517	79	<,001	0,924	0,079	0,044	0,933	0,000
Scalar	238,569	88	<,001	0,924	0,079	0,048	0,926	0,007
Strict	237,771	98	<,001	0,937	0,072	0,05	0,931	-0,005

DISCUSSION

Work performance is a crucial component in organizational settings, influencing overall productivity through factors such as work capacity, motivation, and organizational culture. It is vital for both individual and collective success. Work motivation is identified as a key determinant of performance, highlighting the importance of management strategies that promote a motivating environment. Additionally, work culture and discipline not only enhance productivity but also positively impact performance, offering perspectives for the implementation of continuous improvement practices. In the healthcare sector, factors like gender discrimination, stress, and burnout directly impact performance, underscoring the importance of job satisfaction and adequate conditions for nurse retention. Work performance in nursing is critical for the quality of patient care and the efficiency of

health services, being affected by factors such as workload, work environment, and institutional support. The objective of this study is to evaluate the psychometric properties of the Short Version of the Self-Assessment Work Performance Scale in Peruvian nurses.

The study demonstrated a good fit in the CFA model of the BWPS, similar to other studies like Chalco-Ccapa et al.[28] which also used CFA to validate scales in specific populations, showing adequate reliability and validity. In comparison, the study by Gabini & Salessi[25] in order to analyze the psychometric properties of the scale adapted in the pilot study. This time, the non-probabilistic sample comprised 434 workers. Factor analyses (exploratory and confirmatory had to adjust its initial model to improve fit indices, indicating differences in the initial robustness of the models between studies. Azevedo et al.[29] explored multifactorial and bifactorial models, finding issues with discriminant validity in their evaluated dimensions. This contrasts with the BWPS, where, despite high inter-factor correlations, the dimensions showed adequate discriminance. However, the discussion of overlapping dimensions in both studies suggests a common challenge in evaluating multifactorial constructs. Similarly, Koopmans et al.[24] and Ramos-Villagrasa et al.[41] provide useful perspectives on work performance evaluation, although their approaches differ. Koopmans et al. assessed the adaptability of scales to different occupational sectors, emphasizing the importance of considering specific contexts in scale validation, an aspect less central to my study. In this sense, the significant overlap between the 'Task' and 'Context' dimensions suggests the need to consider possible unidimensionality, similar to the discriminant validity issues found in the study by Azevedo et al.[29]

Regarding the reliability of the BWPS, the values were highly reliable, with consistent alpha (α) and omega (ω) values of 0,92 for the unidimensional version, indicating excellent internal consistency and reliability of the scale used. These results are comparable to the research by Chalco-Ccapa et al.[28] who reported α and ω values above 0,70, similarly indicating high reliability in different dimensions of work performance in Peruvian nurses. In contrast, the research by Azevedo et al.[29] shows more varied internal consistency, with a CR (composite reliability) of 0,91 for the general factor, but considerably lower for task and contextual factors (0,41 and 0,23, respectively). This could indicate differences in the stability of performance subscales depending on the work context and task specificity. Similarly, the work by Gabini & Salessi[25] in order to analyze the psychometric properties of the scale adapted in the pilot study. This time, the non-probabilistic sample comprised 434 workers. Factor analyses (exploratory and confirmatory also supports this approach, showing strong reliability and validity measures in their adapted work performance scale. In this sense, the high reliability of the BWPS allows for a more secure interpretation of factor loadings, which are critical to understanding how each item of the scale contributes to the overall performance construct. In comparable contexts, like the study by Koopmans et al.[24], the adequate adaptation of the Rasch model also indicated a good model fit, emphasizing the importance of internal consistency for valid performance interpretations. Moreover, studies like Ramos-Villagrasa et al.[41] show that brief and reliable self-assessment scales of work performance are applicable in different work contexts, providing a basis for using similar tools in cross-cultural studies or various industrial sectors.

The invariance of the BWPS by gender was examined through several hierarchical models, finding robust invariance from the configurational model to the strict model, with ΔCFI consistently within acceptable limits, suggesting that the scale is equivalent for both men and women. This contrasts with studies such as Gabini and Salessi[25] in order to analyze the psychometric properties of the scale adapted in the pilot study. This time, the non-probabilistic sample comprised 434 workers. Factor analyses (exploratory and confirmatory and Koopmans et al.[24], where gender invariance was not presented in the evaluated individual work performance scales. This finding highlights a gap in the literature where many scales lack gender invariance validation, which is crucial to ensure that measurements are fair and not biased by demographic factors. On the other hand, studies like Chalco-Ccapa et al.[28] also demonstrated invariance in work performance measures between different gender and age groups, aligning their findings with mine, strengthening the argument that it is possible and crucial to develop consistent evaluation tools across genders for more general and fair applications. Therefore, the present research revealed that the factorial structure, factor loadings, intercepts, and residuals are consistent between men and women. This indicates that variability in responses is attributable to true differences in measured characteristics and not artifacts of the scale itself. This level of invariance allows us to assert that the scale is psychometrically sound and that the obtained results are reliable and valid for both sexes, which is essential for future research exploring gender-based differences using this tool.

Implications

The study's findings have direct implications for practice in healthcare settings. By providing a reliable and efficient tool for evaluating work performance, hospital and clinic administrators can more quickly identify areas for improvement and excellence within their nursing teams. This is particularly useful for implementing professional development programs and for adjusting strategies to enhance both job satisfaction and the quality of patient care. Additionally, the demonstration of gender invariance suggests that this tool can be used

equitably among male and female nurses, ensuring fair and uniform assessment.

In terms of policy, these results support the implementation of human resources policies that promote continuous performance evaluation as a standard in healthcare personnel management. Incorporating this scale into evaluation protocols can facilitate a more transparent and meritocratic work environment. Policies that support continuous training and recognition based on evaluated performance can contribute to increased motivation and, consequently, improved quality of health services. This approach could be particularly relevant in mitigating the impact of stress and professional burnout in the sector, improving worker well-being and patient safety.

Theoretically, the validation and application of the scale contribute to the literature on performance evaluation by confirming the applicability of simplified tools in complex contexts such as healthcare. This raises questions about how shorter evaluation models can be equally effective and how they can be adapted to different cultures and sectors while maintaining their validity and reliability. Moreover, the study of gender invariance adds to the discussion on equity in performance measurement, an area of growing interest in organizational psychology and human resource management.

Limitations

One of the main limitations of this study is its cross-sectional nature, which prevents establishing causal relationships between the studied variables. Since the data were collected at a single point in time, it is impossible to determine whether the observed work performance characteristics are causes or consequences of the evaluated factors. Longitudinal studies would be necessary to establish the direction of these relationships and to observe how work performance develops over time under different conditions and changes in the work environment.

Although the scale demonstrated good reliability and validity in the current context, reducing the number of items to improve efficiency could have implications for the depth and breadth with which work performance dimensions are evaluated. While the brevity of the scale is advantageous in terms of practicality, it might omit subtle and complex aspects of work performance that additional items could capture. Future versions of the scale should explore a balance between brevity and comprehensiveness.

To address these limitations, longitudinal studies are recommended to evaluate changes and causes in work performance over time. Additionally, expanding the sample to other regions and sectors would be useful to examine the external validity of the scale and its applicability in different cultural and organizational contexts.

CONCLUSION

The adaptation and validation of the BWPS for Peruvian nursing staff represent a significant advancement in measuring work performance in healthcare contexts. This study highlights the importance of having psychometrically robust instruments that reflect cultural and professional particularities, ensuring accurate and relevant measurements of work performance. The findings demonstrate the scale's reliability and validity, emphasizing its applicability in evaluating nurses' performance under various conditions and contexts. Implementing this scale in future studies will facilitate the identification of critical areas for interventions and improvements in human resource management practices in the healthcare sector

REFERENCES

1. Putera MIM, Triatmanto B, Respati H, et al. The Influence of Work Ability, Motivation, and Work Productivity on the Performance of Technical Skadron Personnel 024 Based of Indonesian Air Force Atang Sendjaja Bogor. Int J Multidiscip Res Anal; 06. Epub ahead of print 23 August 2023. DOI: 10.47191/ijmra/v6-i8-46.

2. Aisyah Amini C, Hidayat R. The Influence of Kaizen Culture, Work Discipline on Productivity with Implementation of Employee Performance at PT. Mandom Indonesia. Kontigensi J Ilm Manaj; 11. Epub ahead of print 2023. DOI: 10.56457/jimk.v11i2.307.

3. Simarmata N, Sir ZME, Pristiyono P. The Influence of Work Discipline, Work Environment, and Work Productivity, on Employee Performance at the Youth and Sports Office, Culture and Tourism of Labuhanbatu Regency. Quant Econ Manag Stud; 3. Epub ahead of print 2022. DOI: 10.35877/454ri.qems953.

4. Graen GB, Uhl-Bien M. Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-clevel multi-domain perspective. Leadersh Q; 6. Epub ahead of print 1995. DOI: 10.1016/1048-9843(95)90036-5.

5. Bakker AB, Demerouti E. Job demands-resources theory: Taking stock and looking forward. J Occup Health Psychol 2017; 22: 273–285.

6. Greenhaus JH, Beutell NJ. Sources of Conflict Between Work and Family Roles . Acad Manag Rev; 10. Epub ahead of print 1985. DOI: 10.5465/amr.1985.4277352.

7. Tetrick LE, Quick JC. Overview of occupational health psychology: Publich health in occupational settings. Handb Occup Heal Psychol.

8. Noor N, Rehman S, Ahmed Y, et al. Discriminatory practices and poor job performance: A study of person-related hostility among nursing staff. Heliyon; 9. Epub ahead of print 2023. DOI: 10.1016/j.heliyon.2023.e14351.

9. Alayoubi MM, Arekat ZM, Al Shobaki MJ, et al. The Impact of Work Stress on Job Performance Among Nursing Staff in Al-Awda Hospital. Found Manag; 14. Epub ahead of print 2022. DOI: 10.2478/fman-2022-0006.

10. Ghubari MH Al, Faqeeh MA Al, Alsulami KF, et al. The Relationship between Nursing Burnout and Job Performance in Eradah Complex: A Cross-Sectional Study. J Pharm Res Int; 35. Epub ahead of print 2023. DOI: 10.9734/jpri/2023/v35i307456.

11. McHugh MD, Ma C. Hospital Nursing and 30-Day Readmissions among Medicare Patients with Heart Failure, Acute Myocardial Infarction, and Pneumonia. Med Care; 51. Epub ahead of print 2013. DOI: 10.1097/MLR.0b013e3182763284.

12. Aiken LH, Clarke SP, Sloane DM, et al. Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. J Am Med Assoc; 288. Epub ahead of print 2002. DOI: 10.1001/jama.288.16.1987.

13. Alsubaie A, Isouard G. Job satisfaction and retention of nursing staff in saudi hospitals. Asia Pacific Journal of Health Management; 14. Epub ahead of print 2019. DOI: 10.24083/APJHM.V14I2.215.

14. Topa G, Aranda-Carmena M. Job Crafting in Nursing: Mediation between Work Engagement and Job Performance in a Multisample Study. Int J Environ Res Public Health; 19. Epub ahead of print 2022. DOI: 10.3390/ijerph191912711.

15. Sherwood G, Zomorodi M. A new mindset for quality and safety: The QSEN competencies redefine nurses' roles in practice. J Nurs Adm; 44. Epub ahead of print 2014. DOI: 10.1097/NNA.0000000000000124.

16. Kieft RAMM, De Brouwer BBJM, Francke AL, et al. How nurses and their work environment affect patient experiences of the quality of care: A qualitative study. BMC Health Serv Res; 14. Epub ahead of print 2014. DOI: 10.1186/1472-6963-14-249.

17. Bernales-Turpo D, Quispe-Velasquez R, Flores-Ticona D, et al. Burnout, Professional Self-Efficacy, and Life Satisfaction asPredictors of Job Performance in Health Care Workers: The Mediating Role of WorkEngagement. J Prim Care Community Health 2022; 13: 215013192211018.

18. Morales-García WC, Vallejos M, Sairitupa-Sanchez LZ, et al. Depression, professional self-efficacy, and job performance as predictors of life satisfaction: the mediating role of work engagement in nurses. Front Public Heal; 12. Epub ahead of print 1 February 2024. DOI: 10.3389/fpubh.2024.1268336.

19. Ventura J, Sosa A. Autoeficacia, autoestima y compromiso en profesionales de enfermería durante la pandemia covid-19 en el Perú. Enfermería Glob; 22. Epub ahead of print 2023. DOI: 10.6018/eglobal.528511.

20. Duche-Pérez AB, Galdos GLR. Job satisfaction and happiness in Peruvian nurses. Enferm Glob; 18. Epub ahead of print 2019. DOI: 10.6018/eglobal.18.2.334741.

21. Alomia-Padilla B, Alvarez-Guzman C, Alvarez-Guzman A, et al. Sociodemographic Factors, Work Motivation, Emotional Intelligence, Quality of Work Life, and Their Association with Work Performance in Peruvian Health Workers. Salud, Cienc y Tecnol - Ser Conf; 2. Epub ahead of print 2023. DOI: 10.56294/sctconf2023565.

22. Huicho L, Molina C, Diez-Canseco F, et al. Factors behind job preferences of Peruvian medical, nursing and midwifery students: A qualitative study focused on rural deployment. Hum Resour Health; 13. Epub ahead of print 2015. DOI: 10.1186/s12960-015-0091-6.

23. Sucapuca C, Morales-García WC, Saintila J. Work-Related Factors Associated With Burnout Among Peruvian Nurses. J Prim Care Community Health 2022; 13: 1–8.

24. Koopmans L, Bernaards C, Hildebrandt V, et al. Development of an individual work performance questionnaire. Int J Product Perform Manag 2012; 62: 6–28.

25. Gabini S, Salessi S. Validación de la escala de rendimiento laboral individual en trabajadores argentinos. Rev Evaluar 2016; 16: 31–44.

26. Yun Y-M, Yoo M-S. Effects of Emotional Competence, Learning Organization, and Nursing Organization Culture among Nursing Performance of Clinical Nurses. Korean J Heal Serv Manag 2017; 11: 29–40.

27. Prieto-Molinari DE, Aguirre Bravo GL, de Pierola I, et al. Depresión y ansiedad durante el aislamiento obligatorio por el COVID-19 en Lima Metropolitana. Liberabit 2020; 26: 425.

28. Chalco-Ccapa I, Torres-Mamani G, Morales-García M, et al. Validation and invariance of an Individual Work Performance Questionnaire (IWPQ-P) in Peruvian Nurses. Data Metadata 2024; 3: 259.

29. de Azevedo ÉGS, Queiroga F, Valentini F. Short version of self-assessment scale of job performance. An Psicol; 36. Epub ahead of print 2020. DOI: 10.6018/analesps.402661.

30. Ato M, López JJ, Benavente A. Un sistema de clasificación de los diseños de investigación en psicología. An Psicol 2013; 29: 1038–1059.

31. Queiroga F, Borges-Andrade JE, Coelho Junior FA. Desempenho no trabalho: Escala de avaliação geral por meio de autopercepções. [Job performance: General assessment scale through self-perceptions]. In: Peixoto K, Puente-Palacios A. d. L. A. (eds) Ferramentas de diagnóstico para organizações e trabalho: Um olhar a partir da psicologia. [Diagnostic tools for organizations and work: A psychological perspective]. Porto Alegre: Artmed Editora, 2015, pp. 36–45.

32. Beaton DE, Bombardier C, Guillemin F, et al. Guidelines for the process of cross-cultural adaptation of self-report measures. Spine (Phila Pa 1976) 2000; 25: 3186–3191.

33. Kline RB. Principles and practice of structural equation modeling. Cuarta Ed. New York, NY, US: Guilford Press, 2016.

34. Muthen L, Muthen B. Mplus Statistical Analysis with latent variables. User's guide. 8th ed. Los Angeles, CA: Muthén & Muthén, 2017.

35. Schumacker RE, Lomax RG. A Beginner´s Guide to Structural Equation Modeling. 4th ed. New York, NY: Taylor & Francis, 2016.

36. McDonald RP. Test Theory: A United Treatment. Mahwah, NJ: Lawrence Erlbaum, 1999.

37. Fornell C, Larcker DF. Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. J Mark Res 1981; 18: 382–388.

38. Chen FF. Sensitivity of Goodness of Fit Indexes to Lack of Measurement Invariance. Struct Equ Model A Multidiscip J 2007; 14: 464–504.

39. Rosseel Y. lavaan: An R Package for Structural Equation Modeling. J Stat Softw 2012; 48: 1–36.

40. Jorgensen TD, Pornprasertmanit S, Schoemann AM, et al. semTools: Useful tools for structural equation modeling. The Comprehensive R Archive Network, https://cran.r-project.org/package=semTools (2022).

41. Ramos-Villagrasa PJ, Barrada JR, Fernández-Del-Río E, et al. Assessing job performance using brief self-report scales: The case of the individual work performance questionnaire. Rev Psicol del Trab y las Organ; 35. Epub ahead of print 2019. DOI: 10.5093/jwop2019a21.

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