



Social Dimensions of the Body: How Age, Gender, Educational Attainment, and Income Shape Physical Health Perceptions among Nurses

Muhammad Shahzad (Corresponding Author)

Lecturer, Department of Sociology, University of Gujrat, Punjab, Pakistan

m.shahzad@uog.edu.pk

Kirn Ashraf

Ph.D Scholar, Institute of Information Management, University of the Punjab, Lahore, Punjab, Pakistan

kirnfahd86@gmail.com

Hafiz Usama Ghafoor

MBBS Student, Faisalabad Medical University

usama.ghafoor@gmail.com

Samia Batool

Nursing Officer, Children Hospital & the Institute of Child Health, Multan, Pakistan

samianasir439@gmail.com

ABSTRACT

The perceived physical health of nurses directly associates with the quality of care they provide and their long-term occupational sustainability. Prior studies have suggested potential links between perceived physical health and sociodemographic and structural variables. Thus, this study examines the association between age, gender, educational attainment, and personal income with perceived physical health among nurses working in public sector hospitals of Pakistan. Using a cross-sectional survey and quantitative research design, data were collected from nurses. SPSS was employed to perform statistical tests. Kruskal-Wallis H tests, Man Whitney U test, and post hoc tests of Bonferroni revealed significant differences in perceived physical health based on age, gender, educational attainment, and personal income. These findings suggest that personal income, gender, and educational achievement are potent factors in shaping nurses' perceived physical health. The study calls for policies and actions to protect and promote perceived physical health of nurses. These potential policy and action frameworks must be sensitive to social contexts and milieus of nurses.

Keywords: Age, Gender, Educational Attainment, Personal Income, Perceived Physical Health.

Introduction

Perceived physical health, a subjective assessment of one's bodily well-being, serves as a reliable predictor of actual health outcomes, healthcare utilization, and work productivity (Mannethodi et al., 2025; Ruiz-Fernández et al., 2021; Siqueira et al., 2015). Among nurses, especially those employed in public sector hospitals, this perception is shaped not only by clinical exposures and workload but also by broader sociodemographic factors (Aljabri et al., 2022; Asturias, Andrew, Boardman, & Kerr, 2021; Pérez-Fuentes, Molero Jurado, Simon Marquez, & Gazquez Linares, 2019). Understanding how age, gender, educational attainment, and personal income intersect to influence nurses' health perceptions is essential for the development of effective occupational health strategies in resource-constrained public health systems (Christensen, Lægreid, & Stigen, 2006; Gani, 1996; Hussain et al., 2019; Shahzad, Ghafoor, & Ahmad, 2024).

Age-related differences in perceived physical health often reflect both biological aging and shifting health expectations (Aljabri et al., 2022; Dilmaghani, Armoon, & Moghaddam, 2022; Gonçalves, Sala, & Navarro, 2022). Younger nurses may report lower perceived health due to adaptation challenges, while older nurses may exhibit resilience rooted in professional experience and coping mechanisms (Alanazi, Alshamlani, & Baker, 2023). Gender remains another significant axis of disparity; female nurses, who constitute the majority of the profession, may underreport their health status due to heightened health awareness or dual work-family burdens. Conversely, male nurses, though

fewer, may report better health perceptions linked to different health socialization norms (Brulin et al., 2023).

Educational attainment and income function both independently and interactively to shape perceived health (Lohmann, John, & Dzay, 2019; Marriott, Grov, & Gonzalez, 2023; Sayeed & Fernando, 2018). Nurses with higher educational qualifications may possess greater health literacy and awareness, potentially leading to more critical evaluations of their health status. On the other hand, personal income often a proxy for access to healthcare, nutrition, and living conditions may have a direct impact on physical health perception, with lower-income nurses possibly underreporting health issues due to resource constraints or normalized hardship.

Given these intersecting dimensions, this study investigates the associations between age, gender, income, and educational attainment and perceived physical health among nurses in public sector hospitals. By examining these relationships, the research aims to identify demographic vulnerabilities and inform institutional health promotion policies tailored to diverse subgroups within the nursing workforce. Moreover, this study can potentially provide context-specific insights into occupational health disparities in Pakistan.

Literature Review

Perceived physical health is a key indicator of both subjective well-being and objective health outcomes, and its determinants have been widely explored across populations (Jamebozorgi, Karamoozian, Bardsiri, & Sheikhbardsiri, 2022; Nam, Song, & Lee, 2018; Ruiz-Fernández et al., 2021; Wesołowska-Górniak, Nerek, Serafin, & Czarkowska-Pączek, 2022; Yörük & Güler, 2021). In the nursing profession, where physical and emotional demands are high, understanding the sociodemographic correlates of perceived health is critical for workforce sustainability and quality of care (Marriott et al., 2023; Tamsah et al., 2020). Age, gender, educational attainment, and income are among the most frequently studied predictors, though their effects often vary by context.

Age is consistently associated with self-rated health, though the nature of this relationship is complex (Pérez-Fuentes et al., 2019; Shen et al., 2021; Tarcan, Hikmet, Schooley, Top, & Tarcan, 2017). Several lines of evidence suggest that a decline in perceived physical health with increasing age, attributing it to the accumulation of chronic conditions and physical wear (Bergamaschi et al., 2019; Lluch-Canut et al., 2013; Mannethodi et al., 2025; Nam et al., 2018; Wesołowska-Górniak et al., 2022). However, others suggest that middle-aged nurses may report better health than their younger counterparts, possibly due to greater psychological resilience and adaptation to occupational stress (Alsalam & Rylance-Graham, 2023; Lijuan, Lin, Juntao, Kun, & Hongjuan, 2023; Wu, Qi, Luan, Liu, & Zhao, 2023; Yun & Ahn, 2022).

Data from several studies suggest that gender differences in perceived health are well-documented (Aljabri et al., 2022; Dilmaghani et al., 2022; Gonçalves et al., 2022). Women, including female nurses, are more likely to report health complaints and rate their physical health more negatively compared to men, even when objective health conditions are similar. These disparities have been linked to gendered social roles, greater health awareness among women, and higher exposure to caregiving responsibilities outside of work (Bergamaschi et al., 2019; Moghimi, Saberi Isfeedvajani, Javanbakht, & Khedmat, 2024).

Educational attainment is generally considered a protective factor for perceived health, largely due to its role in enhancing health literacy and decision-making capacity (La Torre et al., 2021).

However, in the nursing profession, this relationship may be more nuanced. Some studies suggest that higher-educated nurses may report poorer perceived health, possibly because they are more critical of their health or more aware of health risks (Asturias et al., 2021; Moreno et al., 2013).

Income, as a key social determinant of health, is also a significant predictor of perceived physical health. Individuals with higher income typically report better health due to improved access to resources, healthier lifestyles, and reduced exposure to occupational and environmental hazards (Bergamaschi et al., 2019; Zhu, Norman, & While, 2014). Among nurses, particularly in public hospitals where wages may be low, income-related disparities in perceived health may reflect broader systemic inequities in healthcare employment structures (Asturias et al., 2021; Mannethodi et al., 2025; Moghimi et al., 2024).

Despite this body of research, there is limited evidence specific to nurses in public sector hospitals in low- and middle-income countries (Lluch-Canut et al., 2013; Shen et al., 2021). This study addresses that gap by examining how age, gender, education, and income relate to perceived physical health among nurses in public hospitals. Thus, the study proposes these hypotheses: H1: There is a significant difference in perceived physical health across different age groups of nurses; H2: There is a significant difference in perceived physical health across different education levels of nurses. H3: There is a significant difference in perceived physical health between male and female nurses. H4: There is a significant difference in perceived physical health between low-income and high-income nurses.

Material and Methods

The study utilized a convenience sampling approach to recruit nurses working in public health facilities across Punjab, Pakistan. Data collection was conducted through a combination of in-person visits and online surveys distributed via social media platforms including Facebook and WhatsApp, ensuring broader participation across different types of healthcare facilities. The research focused specifically on health facilities at three administrative levels: District Head Quarters (DHQ), Tehsil Head Quarters (THQ), and Rural Health Centers (RHC) within one of Punjab's nine administrative divisions. We distributed 450 questionnaires to ensure adequate representation across facility types, receiving 340 responses for a 75% response rate. After excluding 30 incomplete or substantially missing questionnaires, the final analytical sample comprised 310 fully completed and usable responses.

The respondent's demographics revealed important characteristics of the study sample. In terms of facility distribution, 82 nurses (26.45%) worked in district hospitals, 88 (28.39%) in tehsil hospitals, and 140 (45.16%) in rural health centers. Shift patterns showed 119 nurses (38.39%) worked morning shifts, 127 (40.97%) evening shifts, and 64 (20.65%) night shifts. Educational attainment varied among participants, with 31 (10%) having middle-level education, 119 (38.39%) matric-level, 92 (29.68%) intermediate-level, 44 (14.19%) graduate-level, and 24 (7.74%) holding master's degrees. Work hour patterns indicated 87 nurses (28.06%) worked standard 8-hour shifts, 119 (38.39%) worked 12-hour extended shifts, 76 (24.52%) worked intensive 16-hour shifts, and 28 (9.03%) worked prolonged 20-hour shifts. Regarding marital status, the sample included 95 single (30.65%), 157 married (50.65%), 26 separated (8.39%), 19 divorced (6.13%), and 13 widowed (4.19%) participants.

The research instrument consisted of a two-part questionnaire designed to capture both demographic information and physical health perceptions. The first section collected socio-demographic data including age, education level, gender, and personal income. The second section employed the Perceived Physical Health Scale, a validated instrument assessing nurses' physical well-being through six items measuring common workplace health concerns. These items evaluated physical pain (including neck, back, and arm and leg discomfort), fatigue, headaches, dizziness, workplace accidents or near-misses, and sleep disturbances. Each item used

a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Table 1

Item Loadings, Internal Reliability, Construct Validity, and Multicollinearity of Perceived Physical Health Scale

Items	Loadings	Internal reliability	CR	AVE	VIF
Perceived physical health scale		.802	.870	.527	
Perceived physical health _1	.719				1.498
Perceived physical health _2	.772				1.700
Perceived physical health _3	.700				1.451
Perceived physical health _4	.757				1.638
Perceived physical health _5	.694				1.283
Perceived physical health _6	.709				1.526
Median (Q1, Q3)	18.5(14,21)				

Note: CR= Composite Reliability, AVE= Average Variance Extracted, VIF= Variance Inflation Factor

The study used SPSS for data management and analysis. Kruskal Wallis, Mann Whitney u test, and post hoc test of Bonferroni were used to test the study hypotheses. Kruskal Wallis test is suggested when quantitative dependent variable is assess across more than two categories of independent variable. Likewise, Mann Whitney u test is employed when dependent variable is evaluated across two categories of independent variable. Moreover these statistical tests are recommended when data is non normal. Post hoc tests reveal important differences between groups.

The table 1 presents psychometric properties of the *Perceived Physical Health Scale*, a subscale of social wellbeing, including item loadings, reliability measures, and validity indicators. The item loadings, which reflect how strongly each item correlates with the underlying construct, range from 0.694 to 0.772. These values are all above the conventional threshold of 0.6, indicating that each item meaningfully contributes to measuring perceived physical health. The internal reliability, measured by Cronbach's alpha (α = 0.802), suggests good consistency among the scale items, as values above 0.7 are generally considered acceptable. Additionally, the composite reliability (CR = 0.870) further supports the scale's internal consistency, as CR values above 0.7 indicate that the items reliably measure the same construct.

The average variance extracted (AVE = 0.527) is slightly above the 0.5 benchmark, suggesting marginal convergent validity. This means the items share about 53% of their variance with the latent construct, which is acceptable but could be improved. The variance inflation factor (VIF) for each item ranges from 1.283 to 1.700, well below the conservative cutoff of 3 (or even 5), indicating no significant multicollinearity issues. This implies that the items are sufficiently distinct from one another, and none are redundant. The descriptive statistics at the bottom of the table show a median score of 18.5 with an interquartile range (IQR) of 14 to 21, suggesting moderate-to-high perceived physical health among respondents, though the wide IQR indicates notable variability in responses.

Overall, the scale demonstrates strong reliability and acceptable validity, making it suitable for research or assessment purposes. However, the AVE value, while meeting the minimum threshold, suggests room for refinement—particularly for items with lower loadings, such as Item 5 (0.694).

Results and Discussion

H1: There is a significant difference in perceived physical health across different age groups of nurses.

H1 evaluates whether statistically significant difference in perceived physical health across different age groups of nurses. The study findings show that there is significant difference in perceived physical health across different age groups of nurses. Moreover, the Table 2 presents a detailed comparison of perceived physical health across age and education groups. For age groups, the sample sizes show 129 respondents aged 21-30, 141 aged 31-40, and 32 aged 41-60. The Kruskal-Wallis test reveals highly significant differences in perceived physical health across these age categories ($\chi^2=26.797$, $df=2$, $p<0.001$). The 31-40 age group demonstrates the highest wellbeing with a mean rank of 179.13 and median score of 20 (interquartile range 16-23), significantly outperforming both younger respondents aged 21-30 (mean rank 125.80, median 16 with IQR 9-20) and older respondents aged 41-60 (mean rank 133.38, median 17 with IQR 12-20). This pattern suggests middle adulthood represents a wellbeing peak, with scores approximately 25% higher than the youngest group.

H2: There is a significant difference in perceived physical health across different education levels of nurses.

H2 evaluates whether there is a statistically significant difference in perceived physical health across different education levels of nurses. The results of the study indicate that there is a statistically significant difference in perceived physical health across different education levels of nurses. Additionally, the education level analysis includes 30 respondents with middle education, 117 matric graduates, 89 intermediates, 43 graduates, and 23 master's degree holders. The results show significant variation ($\chi^2=14.395$, $df=4$, $p=0.006$), with middle education respondents reporting the highest wellbeing (mean rank 194.70, median 20, IQR 18-23). Surprisingly, master's degree holders show the lowest wellbeing (mean rank 121.80, median 16, IQR 9-21), scoring 20% lower than the middle education group. Intermediate education respondents (median 18, IQR 16-22) and matric graduates (median 18, IQR 12.5-20) show comparable mid-range scores, while graduates (median 16, IQR 8-21) align closely with master's degree holders. These study results reveal several important patterns. The 31-40 age group's median perceived physical health score of 20 is 4 points (25%) higher than the 21-30 group's median of 16, while the education analysis shows a 4-point difference (20 vs 16) between the highest and lowest groups. The interquartile ranges indicate greater variability among younger adults (21-30) and graduate/master's degree holders, with ranges spanning 12-13 points compared to 7 points for the 31-40 age group. The chi-square values demonstrate that age differences (26.797) are nearly twice as pronounced as education differences (14.395), though both are statistically significant ($p<0.001$ and $p=0.006$ respectively). These findings suggest that while both factors influence perceived physical health, age appears to be a stronger determinant in this sample.

Table 2

Perceived Physical Health based on Age and Education Level of Nurses

Groups	n	Mean rank	Median (Q1, Q3)	df	Chi square	p
Age				2	26.797	.000
21-30	129	125.80	16 (9, 20)			
31-40	141	179.13	20 (16, 23)			
41-60	32	133.38	17 (12, 20)			
Education level				4	14.395	.006
Middle	30	194.70	20 (18, 23)			
Matric	117	143.06	18 (12.5, 20)			
Intermediate	89	163.62	18 (16, 22)			
Graduate	43	135.10	16 (8, 21)			
Master	23	121.80	16 (9, 21)			

The study also conducted post hoc tests. The post-hoc pairwise comparisons in Table 3 provide detailed insights into the specific differences in perceived physical health across age and education groups, building upon the earlier Kruskal-Wallis tests. For age groups, three statistically significant differences emerge ($p < 0.05$). Most notably, the 31-40 age group demonstrates significantly

higher wellbeing than both younger and older cohorts, with a mean difference of 3.72505 points compared to the 21-30 group ($p = 0.000$, 95% CI -5.3185 to -2.1316) and 2.67442 points compared to the 41-60 group ($p = 0.037$, 95% CI 0.1136 to 5.2353). These results suggest that middle adulthood represents a wellbeing peak, while the non-significant difference between the youngest (21-30) and oldest (41-60) groups (mean difference -1.05063, $p = 0.985$) indicates these age brackets face similar wellbeing challenges despite their different life stages.

Table 3

Multiple Comparisons of Perceived Physical Health

		Mean Difference	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
Age					
21-30	31-40	-3.72505*	.000	-5.3185	-2.1316
	41-60	-1.05063	.985	-3.6334	1.5322
31-40	21-30	3.72505*	.000	2.1316	5.3185
	41-60	2.67442*	.037	.1136	5.2353
41-60	21-30	1.05063	.985	-1.5322	3.6334
	31-40	-2.67442*	.037	-5.2353	-.1136
Education level					
Middle	Matric	3.53846*	.019	.3479	6.7290
	Intermediate	1.72659	1.000	-1.5648	5.0180
	Graduate	4.91473*	.002	1.2060	8.6235
	Master	5.55072*	.003	1.2299	9.8716
Matric	Middle	-3.53846*	.019	-6.7290	-.3479
	Intermediate	-1.81187	.201	-4.0047	.3810
	Graduate	1.37627	1.000	-1.4040	4.1566
	Master	2.01226	1.000	-1.5438	5.5683
Intermediate	Middle	-1.72659	1.000	-5.0180	1.5648
	Matric	1.81187	.201	-.3810	4.0047
	Graduate	3.18814*	.020	.2927	6.0836
	Master	3.82413*	.033	.1774	7.4709
Graduate	Middle	-4.91473*	.002	-8.6235	-1.2060
	Matric	-1.37627	1.000	-4.1566	1.4040
	Intermediate	-3.18814*	.020	-6.0836	-.2927
	Master	.63600	1.000	-3.3915	4.6635
Master	Middle	-5.55072*	.003	-9.8716	-1.2299
	Matric	-2.01226	1.000	-5.5683	1.5438
	Intermediate	-3.82413*	.033	-7.4709	-.1774
	Graduate	-.63600	1.000	-4.6635	3.3915
The mean difference is significant at the 0.05 level					

The mean difference is significant at the 0.05 level.

The education level comparisons reveal a more complex pattern, with five significant pairwise differences identified. Middle-educated individuals consistently report higher wellbeing than more educated groups, showing a 3.53846-point advantage over matric graduates ($p = 0.019$), a 4.91473-point advantage over general graduates ($p = 0.002$), and the largest difference of 5.55072 points over master's degree holders ($p = 0.003$). Intermediate-educated respondents also outperform both graduates (3.18814 points, $p = 0.020$) and master's holders (3.82413 points, $p = 0.033$). These findings present an education paradox where middle-educated individuals report the highest wellbeing, while those with master's degrees show the poorest outcomes among all education groups. The non-significant differences between matric, intermediate, and graduate groups suggest that perceived physical health plateaus at intermediate education levels before declining among the most educated.

The confidence intervals provide important context for interpreting these results. The narrower CIs for age group comparisons (e.g., -5.3185 to -2.1316 for 21-30 vs 31-40) indicate more precise estimates compared to some education group comparisons (e.g., 1.2299 to 9.8716 for middle vs master's), where wider intervals reflect greater variability. This pattern is particularly evident in comparisons involving smaller subgroups like master's degree holders ($n=23$) and the 41-60 age group ($n=32$), where the reduced sample sizes contribute to less precise estimates.

Table 4 presents the results of Mann-Whitney U tests comparing social wellbeing scores across gender and personal income categories. The table reveals statistically significant differences in both demographic factors, with effect sizes indicating meaningful practical differences.

H3: There is a significant difference in perceived physical health between male and female nurses.

For gender comparisons, the analysis included a total sample size that isn't explicitly stated but can be inferred from the mean ranks. Male participants reported significantly higher wellbeing scores (median = 21, IQR = 16-25) compared to female participants (median = 18, IQR = 12-20). This difference is statistically significant (Mann-Whitney U = 3562.500, $z = -3.957$, $p < 0.001$) with a small-to-medium effect size ($r = 0.228$). The mean ranks of 199.53 for males versus 143.31 for females further confirm this pattern, suggesting that males in this sample generally experience better social wellbeing than females. The interquartile ranges show that while 75% of males score at or above 16 points, only 25% of females reach this threshold, indicating a substantial portion of the female population reports lower wellbeing.

Table 4

Perceived Physical Health Comparison based on Gender and Personal Income

Var	Cat	n	Media n (Q1, Q3)	Mean rank	m-w U	Z valu e	r valu e	p valu e
Gend er					3562.50	-3.957	.228	.000
	Male	44	21 (16, 25)	199.53				
	Female	25	18 (12, 20)	143.31				
Perso nal incom e					7219	-5.307	.305	.000
	Low	17	20 (17, 21)	174.78				
	High	13	16 (9, 20)	121.11				

H4: There is a significant difference in perceived physical health between low-income and high-income nurses.

The income comparison yielded even more pronounced differences. Participants with high income (median = 16, IQR = 9-20) reported significantly lower wellbeing than those with low income (median = 20, IQR = 17-21), which contradicts conventional expectations about income and wellbeing. This difference was highly significant ($U = 7219$, $z = -5.307$, $p < 0.001$) with a medium effect size ($r = 0.305$). The mean ranks of 174.78 for low-income versus 121.11 for high-income individuals underscore this unexpected pattern. The narrow IQR for low-income participants (17-21) compared to the wider spread for high-income participants (9-20) suggests greater consistency in wellbeing among those with lower incomes, while high-income individuals show much more variability in their wellbeing scores. These results present several important findings. First, the gender difference aligns with some previous research showing males often report higher subjective wellbeing measures, possibly due to measurement biases or genuine differences in social experiences (La Torre et al., 2021; Pérez-Fuentes et al., 2019). Second, the income findings challenge conventional wisdom that higher income equates to better wellbeing, suggesting that in this population, factors associated with higher income may negatively impact wellbeing (Bergamaschi et al., 2019; Yörük & Güler, 2021). The effect sizes, while modest, are large enough to be practically meaningful in social science research (Cohen's benchmarks suggest $r = 0.1$ is small, 0.3 medium, and 0.5 large).

Conclusion

To conclude, this study examined the associations between age, gender, educational attainment, and personal income with perceived physical health among nurses working in public sector hospitals. The findings reveal significant differences in perceived health across these sociodemographic variables. Nurses aged 31–40, males, those with lower educational attainment, and individuals in the lower-income category reported better perceived physical health compared to their counterparts. These results suggest that perceived health is not solely a reflection of objective health status but is shaped by complex social, occupational, and psychological factors. The implications of these findings are twofold. First, health promotion policies for public sector nurses must be sensitive to demographic variability and avoid one-size-fits-all approaches. Second, further research is needed to explore the underlying mechanisms driving these associations.

References

Alanazi, N. H., Alshamlani, Y., & Baker, O. G. (2023). The association between nurse managers' transformational leadership and quality of patient care: A systematic review. *Int Nurs Rev*, 70(2), 175-184. doi: 10.1111/inr.12819

Aljabri, D., Alshatti, F., Alumran, A., Al-Rayes, S., Alsalman, D., Althumairi, A., . . . Alanzi, T. (2022). Sociodemographic and occupational factors associated with burnout: A study among frontline healthcare workers during the COVID-19 pandemic. *Frontiers in Public Health*, 10, 854687.

Alsalam, A., & Rylance-Graham, R. (2023). The causative factors of psychological distress and mental ill-health among ICU nurses during the pandemic. *Br J Nurs*, 32(21), 1026-1030. doi: 10.12968/bjon.2023.32.21.1026

Asturias, N., Andrew, S., Boardman, G., & Kerr, D. (2021). The influence of socio-demographic factors on stress and coping strategies among undergraduate nursing students. *Nurse education today*, 99, 104780.

Bergamaschi, A., d'Arripe-Longueville, F., Gray, L. L., Colson, S. S., Goujard, C., Ferez, S., . . . Pradier, C. (2019). Perceived HIV-related physical fatigue, sociodemographic characteristics and physical activity: A cross-sectional study. *Journal of Clinical Nursing*, 28(11-12), 2147-2156.

Brulin, E., Lidwall, U., Seing, I., Nyberg, A., Landstad, B., Sjöström, M., . . . Nilsen, P. (2023). Healthcare in distress: A survey of mental health problems and the role of gender among nurses and physicians in Sweden. *J Affect Disord*, 339, 104-110. doi: 10.1016/j.jad.2023.07.042

Christensen, T., Lægreid, P., & Stigen, I. M. (2006). Performance management and public sector reform: The Norwegian hospital reform. *International Public Management Journal*, 9(2), 113-139.

Dilmaghani, R. B., Armoon, B., & Moghaddam, L. F. (2022). Work-family conflict and the professional quality of life and their sociodemographic characteristics among nurses: a cross-sectional study in Tehran, Iran. *BMC nursing*, 21(1), 289.

Gani, A. (1996). Improving quality in public sector hospitals in Indonesia. *The International journal of health planning and management*, 11(3), 275-296.

Gonçalves, L., Sala, R., & Navarro, J.-B. (2022). Resilience and occupational health of health care workers: a moderator analysis of organizational resilience and sociodemographic attributes. *International archives of occupational and environmental health*, 95(1), 223-232.

Hussain, A., Sial, M. S., Usman, S. M., Hwang, J., Jiang, Y., & Shafiq, A. (2019). What factors affect patient satisfaction in public sector hospitals: Evidence from an emerging economy. *International journal of environmental research and public health*, 16(6), 994.

Jamebozorgi, M. H., Karamoozian, A., Bardsiri, T. I., & Sheikhbardsiri, H. (2022). Nurses burnout, resilience, and its association with socio-demographic factors during COVID-19 pandemic. *Frontiers in psychiatry*, 12, 803506.

- La Torre, G., Sestili, C., Imeshtari, V., Masciullo, C., Rizzo, F., Guida, G., . . . Mannocci, A. (2021). Association of health status, sociodemographic factors and burnout in healthcare professionals: Results from a multicentre observational study in Italy. *Public Health*, 195, 15-17.
- Lijuan, Q., Lin, Y., Juntao, L., Kun, Y., & Hongjuan, C. (2023). Anxiety, depression, and stress among nurses under the stress of flooding and the COVID-19 pandemic. *Int Nurs Rev*, 70(4), 535-543. doi: 10.1111/inr.12874
- Lluch-Canut, T., Puig-Llobet, M., Sánchez-Ortega, A., Roldán-Merino, J., Ferré-Grau, C., & Group, P. M. H. R. (2013). Assessing positive mental health in people with chronic physical health problems: correlations with socio-demographic variables and physical health status. *BMC Public Health*, 13, 1-11.
- Lohmann, J., John, D., & Dzay, A. (2019). Prevalence and factors associated with poor mental health among healthcare professionals in low- and lower-middle-income countries: A systematic review protocol. *Systematic Reviews*, 8(1). doi: 10.1186/s13643-019-1201-7
- Mannethodi, K., Joy, G. V., Singh, K., Pitiquen, E. E., Chaabna, N., Kunjavara, J., & Nashwan, A. J. (2025). Exploring the link between physical activity and professional quality of life among nurses: a cross-sectional study in Qatar. *BMC nursing*, 24(1), 325.
- Marriott, S. C., Grov, E. K., & Gonzalez, M. T. (2023). Nurse Educators' Pedagogical Approaches Addressing Student Nurses' Mental Health Care Competence: A Qualitative Study. *Issues Ment Health Nurs*, 44(3), 152-161. doi: 10.1080/01612840.2022.2163440
- Moghim, A., Saberi Isfeedvajani, M., Javanbakht, M., & Khedmat, L. (2024). Health-promoting lifestyle behaviors and its association with sociodemographic characteristics in hospital clinical staff. *Frontiers in Public Health*, 12, 1391094.
- Moreno, A. P., Gallardo, P. S., Arnedo, C. F., Molina, L. S., de la Puerta Calatayud, M. L., Martín, A. B., . . . de Pedro Gómez, J. (2013). Influence of socio-demographic, labour and professional factors on nursing perception concerning practice environment in Primary Health Care. *Atención Primaria*, 45(9), 476-485.
- Nam, S., Song, M., & Lee, S.-J. (2018). Relationships of musculoskeletal symptoms, sociodemographics, and body mass index with leisure-time physical activity among nurses. *Workplace health & safety*, 66(12), 577-587.
- Pérez-Fuentes, M. d. C., Molero Jurado, M. d. M., Simon Marquez, M. d. M., & Gazquez Linares, J. J. (2019). Analysis of sociodemographic and psychological variables involved in sleep quality in nurses. *International journal of environmental research and public health*, 16(20), 3846.
- Ruiz-Fernández, M. D., Ramos-Pichardo, J. D., Ibañez-Masero, O., Sánchez-Ruiz, M. J., Fernández-Leyva, A., & Ortega-Galán, Á. M. (2021). Perceived health, perceived social support and professional quality of life in hospital emergency nurses. *International Emergency Nursing*, 59, 101079.
- Sayeed, S., & Fernando, D. (2018). Poor mental health: The relationship between poverty and mental health in lower and middle income countries. *AMSA Journal of Global Health*, 12(1).
- Shahzad, M., Ghafoor, U., & Ahmad, N. (2024). Socio-demographic and work-related factors associated with mental health disparities among nurses working in public sector hospitals. *International Review of Sociology*, 34(2), 378-395.
- Shen, Y., Zhan, Y., Zheng, H., Liu, H., Wan, Y., & Zhou, W. (2021). Anxiety and its association with perceived stress and insomnia among nurses fighting against COVID-19 in Wuhan: a cross-sectional survey. *Journal of Clinical Nursing*, 30(17-18), 2654-2664.
- Siqueira, K., Griep, R. H., Rotenberg, L., Costa, A., Melo, E., & Fonseca, M. d. J. (2015). Interrelationships between nursing workers' state of nutrition, socio demographic factors, work and health habits. *Ciência & Saúde Coletiva*, 20, 1925-1935.
- Tarcan, M., Hikmet, N., Schooley, B., Top, M., & Tarcan, G. Y. (2017). An analysis of the relationship between burnout, socio-demographic and workplace factors and job satisfaction among emergency department health professionals. *Applied nursing research*, 34, 40-47.
- Temsah, M. H., Al-Sohime, F., Alamro, N., Al-Eyadhy, A., Al-Hasan, K., Jamal, A., . . . Somily, A. M. (2020). The psychological impact of COVID-19 pandemic on health care workers in a MERS-CoV endemic country. *Journal of Infection and Public Health*, 13(6). doi: 10.1016/j.jiph.2020.05.021
- Wesołowska-Górniak, K., Nerek, A., Serafin, L., & Czarkowska-Pączek, B. (2022). The relationship between Sociodemographic, Professional, and incentive factors and self-reported level of physical activity in the Nurse Population: a cross-sectional study. *International journal of environmental research and public health*, 19(12), 7221.
- Wu, H., Qi, K., Luan, B., Liu, Z., & Zhao, Q. (2023). Association between occupational stress and mental health of nurses during the COVID-19 pandemic: A cross-sectional research. *Nurs Open*, 10(12), 7694-7702. doi: 10.1002/nop2.2010
- Yörük, S., & Güler, D. (2021). The relationship between psychological resilience, burnout, stress, and sociodemographic factors with depression in nurses and midwives during the COVID-19 pandemic: A cross-sectional study in Turkey. *Perspectives in psychiatric care*, 57(1), 390-398.
- Yun, S., & Ahn, S. V. (2022). Correlation between COVID-19 and Nurses' Job Stress and Burnout. *Health Insurance Review & Assessment Service Research*, 2(2). doi: 10.52937/hira.22.2.2.e5
- Zhu, D., Norman, I. J., & While, A. E. (2014). Nurses' misperceptions of weight status associated with their body weight, demographics and health status. *Public health nutrition*, 17(3), 569-578.