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Validation of the Job Satisfaction-Nursing Italian Score and Comparison Between Freelance and Employed Nurses: A Psychometric and Cross-Sectional Study

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Abstract: Background: Freelance nurses (FNs) are independent healthcare professionals not tied to a specific healthcare facility. In Italy, FNs are relatively unknown to the public and many healthcare professionals, who traditionally view nurses as subordinate workers. This study aimed to validate the Job Satisfaction (JS)-Nursing Italian Score, a tool for assessing JS among nurses, and to compare JS levels between employed nurses and FNs. **Methods:** A two-phase study design was used: validation and observational. In the validation phase, content validity was assessed using a content validity index, and reliability was evaluated with Cronbach's alpha and McDonald's omega. Construct validity was examined via exploratory factor analysis (EFA). In the observational phase, a cross-sectional analysis was conducted with 200 nurses assessing their JS using the JS-Nursing Italian Score. Multiple one-way Welch's ANOVAs were performed to compare groups. **Results:** Cronbach's alpha ($\alpha = 0.827$) and McDonald's omega ($\omega = 0.829$) indicated good reliability. Bartlett's Sphericity test ($p < 0.001$) and the Kaiser-Meyer-Olkin measure (0.74) supported the EFA, revealing four factors. Significant differences in JS were found between groups through ANOVA. **Conclusion:** The JS-Nursing Italian Score is a reliable tool for assessing JS. FNs reported significantly higher satisfaction compared to employed nurses. Future research should focus on further validating the JS-Nursing Italian Score, expanding its use across diverse settings to enhance nursing well-being.

Keywords: freelance nurses (FNs); well-being health workers; job satisfaction (JS); public health

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1. Introduction

In Italy, freelance nursing (FNs) is relatively unknown to the general population and even to many healthcare professionals, who have traditionally viewed nurses primarily as subordinate workers [1]. However, this perception is gradually shifting due to evolving healthcare needs and the growing recognition of the autonomy that freelancing can offer, supported by national regulations that extend economic protections [1,2]. According to data from the World Health Organization (WHO) and the National Institute of Statistics (ISTAT), the aging population and the rise in chronic diseases are steadily increasing [3,4].

This demographic trend implies a growing demand for community-based healthcare services, a need further emphasized by post-COVID-19 reforms aimed at implementing a One Health model [5,6]. In this context, FNs emerge as key professionals capable of providing personalized care focused on prevention, health education, and individual care, with services accessible at home [1,2]. Nursing is notoriously associated with high levels of stress and burnout due to complex work environments, irregular shifts, and heavy workloads. In Italy, this situation is further exacerbated by wages that are often disproportionate to the demands of the job [7-12].

These factors negatively impact nurses' mental and physical health, leading to reduced job satisfaction (JS) and a decline in the quality of care provided [13-20]. Freelancing can offer a potential solution to some of these issues, as greater autonomy and control over one's work can help reduce stress and burnout, thereby improving JS [21,22]. However, FNs also face significant challenges, such as economic insecurity and the need to manage administrative tasks independently [1,2,22,24]. Nurses' JS is influenced by multiple factors. Several studies have highlighted how work-related stress became particularly evident during the COVID-19 pandemic, which imposed extremely demanding and challenging working conditions [25-28].

In response to these pressures, the healthcare system had to adapt rapidly, revealing both the strengths and weaknesses of different nursing work modalities [25,26]. A key aspect that emerges from the comparison between employed nurses and FNs is the perception of autonomy and flexibility in their work [29]. FNs, who have the ability to directly manage their schedules and work methods, often report a greater sense of control and professional fulfillment. This increased autonomy can lead to reduced burnout and improved overall well-being [30].

However, it is important to note that freelancing also involves the responsibility of independently managing the administrative and financial aspects of the practice, which can be an additional source of stress. Moreover, the greater professional autonomy of FNs can foster a more innovative and personalized approach to care, improving the quality of services and increasing patient satisfaction. The personalized attention and the ability of build trusting relationships with patients can positively differentiate the service offered by FNs from those provided by employed nurses [31]. Conversely, employed nurses may benefit from greater economic security and structured support from healthcare institutions, aspects that can reduce anxiety related to job stability. However, the often rigid working conditions and lack of flexibility can contribute to increase stress and dissatisfaction [32].

In Italy, Law 43 of 2006 introduced the figure of the specialist nurse, adopting principles of nursing that are typical of Anglo-Saxon countries [33]. In 2018, IPASVI was replaced by the National Federation of Nursing Professions Orders (FNOPI) through a state law [34], marking a decisive step for the intellectual recognition of the profession, transitioning from a "college" to a "professional order." In terms of freelancing, despite the intramural regulations for physicians in the National Health System (SSN) being in place since 1992 [35], nurses were largely excluded until Law 56 of 2023, which partially abolished the exclusivity constraint for SSN healthcare professionals until 2025. This law allows nurses to work as freelancers outside of service hours with employer authorization. From an economic perspective, only Law 49 of 2023 [36] introduced "fair compensation" for nursing services provided through freelancing to businesses, thereby further enhancing the profession's

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valuation. Official FNOPI data indicates that the total number of Italian nurses is approximately 500,000, with about 10% operating as freelancers [1, 37].

2. Methods

2.1. Aims

2.1.1. Primary:

The study assessed the JS-Nursing Italian Score, a tool for assessing JS among nurses.

Research question: JS-Nursing Italian Score is a valid and reliable instrument for measuring JS among nurses in Italy?

2.1.1. Secondary:

The study compared JS levels between employed nurses and FNs.

Research question: Are there significant differences in JS levels between employed nurses and FNs?

2.2. Study design

The study was a Psychometric and Cross-Sectional Study, conducted in May 2023 in two phases: a validation phase and an observational phase. In the validation phase, we assessed the content, construct, and reliability of the JS-Nursing Italian Score. In the observational phase, we conducted a cross-sectional analysis to compare JS levels between employed nurses and FNs. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines [38,39] were followed for evidence reporting (Supplementary File 1).

2.3. Ethical Consideration

This study adhered to the principles outlined in the Helsinki Declaration. All participants were informed about the study's objectives, and the consent was obtained in compliance with all privacy regulations (Art. 13 EU Regulation 679/2016) before survey administration. The data were processed anonymously. Ethical approval was granted by the Istitutional Review Board of Ast Fermo with authorization code INF01/2023.

2.4. Sample and Inclusion Criteria

This study included FNs and nurses employed by public and private facilities operating in Italy. A key inclusion criterionwas the participants' registration with the Professional Nursing Association. To ensure a representative sample of the nursing population in Italy, participants were recruited through a targeted sampling strategy using LinkedIn, a professional networking platform. The survey was conducted over a one-month period from May 1, 2023, to May 31, 2023. This method allowed us to reach a broad and diverse group of nurses across various sectors.

2.5. Study Setting

The study setting encompassed nursing activities conducted both in hospital wards and in community care settings across Italy. This approach allowed for the evaluation of working conditions and professional experiences in various healthcare settings, providing a more comprehensive and representative overview of the diverse operational realities of nurses in Italy.

2.6. Instrument

To select the most suitable questionnaire for the chosen cohort of nurses, a preliminary bibliographic search was carried out on PubMed and CINAHL, along with an in-depth analysis of

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the Italian regulatory context. It was determined that the Quality of Nursing Work Life Survey (QNWL) was the most appropriate questionnaire for this purpose [40]. However, the Italian version of this questionnaire had not been exclusively tested on a nursing population, but rather on a mixed cohort that included medical personnel [41]. Questionnaires for assessing burnout [42,43] or measuring resilience [44] did not fully align with the survey's objectives. For these reasons, a specific survey was developed.

The questionnaire consists of an initial demographic section to describe the sample (age, gender, years of work experience, type of contract, and care setting), followed by 10 questions categorized in four domains: work relationship (colleagues/patients; questions 5, 7 and 10); external relations (institutional/professional; questions 8 and 9); general quality of life (family/personal; questions 1 and 2); work-related stress factor (internal/external; questions 3, 4 and 6). Each question was scored using a 5-point Likert scale [45], where the satisfaction level was assigned a score: 1 = "not satisfied", 2 = "slightly satisfied", 3 = "satisfied", 4 = "fairly satisfied", and 5 = "very satisfied" (Supplementary File 2 Italin and English versions).

2.7. Data Analysis

Descriptive statistics [median, mode, interquantile range (IQR)] were used to analyze the characteristics of the sample. The Content Validity Index (I-CVI) was assessed to evaluate content validity. Internal consistency was investigated by calculating Cronbach's alpha and MacDonald's Omega coefficients, while construct validity was assessed through an Exploratory Factor Analysis (EFA). One-Way Welch's ANOVA was performed individually to identity significant differences between variable groups. Data Analysis was performed using the software Jamovi V.2.3.21.0 [46].

3. Results

3.1. Sample Characteristics

A total of 200 questionnaires were correctly completed, divided into 46 FNs and 154 employees, with 108 working in public health services and 46 in private facilities, with 165 respondents being women (82.5%) and 35 being men (17.5%). The median age of the respondents was 39 years (IQR = 16.3), and the median years of service was 15 years (IQR = 14.5). The Shapiro-Wilk test indicated a non-normal distribution for both age ($W = 0.951$, $p < .001$) and years of service ($W = 0.961$, $p < .001$). A descriptive analysis of the sample was conducted using the median, mode, and IQR, stratifying the cited variables by gender, type of employment, and setting (summary Table 1).

This analysis revealed that 108 nurses (54%) reported working in public settings, 46 (23%) in private settings, and 46 (23%) as freelancers. Additionally, 98 nurses (49%) reported working in hospitals, 60 (30%) in community health centers, and 42 (21%) in home care settings.

Table 1. Sample Characteristics.

	Gender	N	Median	Mode	IQR
Years of service	F	165	15	15	14.0
	M	35	15	6	19.0
Age	F	165	40	39	15.0
	M	35	39	33	19.5
	Employee	**N**	**Median**	**Mode**	**IQR**
Years of service	Freelance	46	7.5	6	10.8
	Private	46	15.5	5	19.8
	Public	108	16	15	13.0
Age	Freelance	46	30.5	25	10.8
	Private	46	39	33	16.5
	Public	108	42	39	13.5
	Setting	**N**	**Median**	**Mode**	**IQR**

	Setting	Emplyee	N	Median	Mode	IQR
Years of service	Domiciliary	Freelance	26	9	10	10.25
		Private	8	14	1	16
		Public	8	16	30	20.5
	Hospital	Freelance	8	8.5	5	9
		Private	26	16	5	17.5
		Public	64	17	15	13
	Territorial	Freelance	12	5.5	2	13.25
		Private	12	17.5	12	20.5
		Public	36	14.50	12	7.25
Age	Domiciliary	Freelance	26	32	25	12.25
		Private	8	38.5	46	15.75
		Public	8	44	41	11.75

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Years of service	Domiciliary	42	10	10	10.8	Hospital	Freelance	8	31.50	26	10.75
	Hospital	98	16.5	15	15.8		Private	26	40.5	33	17.75
	Territorial	60	14	12	11.3		Public	64	45.5	50	12.5
Age	Domiciliary	42	35.5	26	13.5	Territorial	Freelance	12	29	25	6.75
	Hospital	98	44	33	16.0		Private	12	41	39	15.5
	Territorial	60	39	39	12.3		Public	36	39	39	9.25

Legend: IQR= Interquartile Range; F= Female; M= Male; [a] There is more than one mode, only the first is reported.

3.2. Content Validity Index

The content validity was assessed using the Content Validity Index (I-CVI). Ten nurses with more than 10 years of experience, working in the three settings under study, evaluated the relevance of the questions using a Likert scale ranging from 1 (not relevant) to 4 (highly relevant). All 10 items immediately received a relevance rating of > 0.8. No critical issues were reported.

3.3. Reliability

The questionnaire results were assessed using Cronbach's α coefficient and McDonald's ω coefficient. Both values indicated good levels of reliability overall ($\alpha = 0.827$, $\omega = 0.829$) and with the exclusion of individual items (α range [0.798-0.831], ω range [0.8-0.832]). The results of the Kaiser-Meyer-Olkin measure (0.74) and Bartlett's test of sphericity ($p < .001$) supported the conduct of an exploratory EFA. The EFA factor pattern, both without rotation and with orthogonal Varimax rotation, revealed the presence of 4 factors. The instrument explained 58.49% of the total variance. The factor loadings are reported in Table 2; except for Item 10, all items presented factor loadings higher than Stevens' cutoff (0.4) [47].

Table 2. Factor Loadings.

	Factor				
	1	**2**	**3**	**4**	**Uniqueness**
Item 1	0.118	0.105	**0.9783**	0.128	0.00149
Item 2	0.207	0.249	**0.4623**	0.129	0.66506
Item 3	0.198	0.190	-0.0889	**0.347**	0.79668
Item 4	0.197	0.108	0.2147	**0.723**	0.38014
Item 5	**0.754**	0.123	0.1207	0.232	0.34848
Item 6	0.216	0.227	0.2763	**0.484**	0.59171
Item 7	**0.851**	0.192	0.1824	0.216	0.15890
Item 8	0.129	**0.845**	0.1661	0.234	0.18625
Item 9	0.223	**0.793**	0.1873	0.179	0.25491
Item 10	**0.330**	0.139	0.1437	0.259	0.78431

3.4. Comparison Between Multiple Groups

The global scores of the participants were stratified by sample characteristics, revealing several differences between the groups thus created (Table 3); Figure 1 graphically presents the descriptive statistics of the analyzed groups.

Table 3. Descriptive Analysis of Global Scores.

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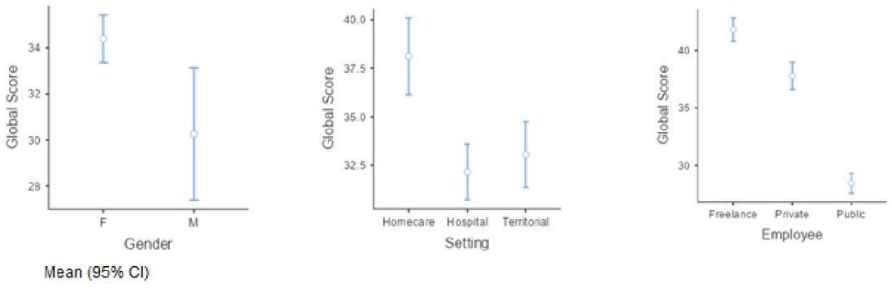
Global Score	Gender	N	Mean	Median	Mode	SD	IQR
	F	165	34.4	35	29	6.68	11.0
	M	35	30.3	28	29	8.35	14.5
Global Score	**Employee**	**N**	**Mean**	**Median**	**Mode**	**SD**	**IQR**
	Freelance	46	41.8	42	43	3.43	4.00
	Private	46	37.8	38	37	4.03	4.75
	Public	108	25.5	29	29	4.52	5.00
Global Score	**Setting**	**N**	**Mean**	**Median**	**Mode**	**SD**	**IQR**
	Home care	42	38.1	40	42	6.35	7.75
	Hospital	98	32.2	32	26	7.14	11.00
	Territorial	60	33.0	32	29	6.54	8.00

Legend: SD = Standard Deviation; IQR = Interquartile Range; F = Female; M = Male.

From the descriptive analysis of the global JS scores (Global Score) divided by gender, type of contract, and work setting, it emerges that women (N=165) report an average global score of 34.4 (median 35, mode 29, SD 6.68, and IQR 11.0), while men (N = 35) have an overall average score of 30.3 (median 28, mode 29, SD 8.35, and IQR 14.5). Regarding the type of contract, FNs (N = 46) reported an average score of 41.8 (median 42, mode 43, SD 3.43, and IQR 4.00). Nurses employed in the private sector (N = 46) achieved an average score of 37.8 (median 38, mode 37, SD 4.03, and IQR 4.75), while those in the public sector (N = 108) had an average score of 25.5 (median and mode 29, SD 4.52, and IQR 5.00).

Regarding the work setting, nurses working in home care (N = 42) achieved an average score of 38.1 (median 40, mode 42, SD 6.35, and IQR 7.75), those in hospitals (N = 98) 32.2 (median 32, mode 26, SD 7.14, and IQR 11.00), while nurses engaged in community care (N = 60) achieved an average score of 33.0 (median 32, mode 29, SD 6.54, and IQR 8.00). In summary, women show higher JS than men, with a higher average score and less dispersion, as indicated by the lower IQR. FNs have the highest satisfaction scores compared to those in the private and public sectors. Regarding the care setting, nurses working in home care report the highest satisfaction, followed by those in community care, and finally, those working in hospitals (Figure 1).

Figure 1. Descriptive Characteristics of Analyzed Groups



Legend. CI: Confident Interval.

To test the significance of the differences observed in relation to the type of employment, setting, and gender of the participants concerning the global score, the normality of the data distribution and homoscedasticity were tested to assess the feasibility of performing a factorial ANOVA. The normality tests (Shapiro-Wilk, p = 0.056; Kolmogorov-Smirnov, p = 0.428) indicated no significant deviation from normality in the data. However, Levene's test was significant (F = 2.43, p = 0.016), violating the principle of homoscedasticity. Unable to perform factorial ANOVA, Welch's correction for one-way ANOVA was used, repeated separately for each investigated variable. The normality of

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the distribution was further evaluated using the Kolmogorov-Smirnov test (KS test), with significant values obtained for all three investigated variables (Table 4).

Table 4. One-way ANOVA (Welch).

Dependent Variable	Grouping Variable	Normality Test	Normality p	F	df1	df2	p
Global Score	Gender	KS test	0.106	7.58	1	43.7	0.009
	Employee	KS test	0.166	213	2	102	<.001
	Setting	KS test	0.372	12.6	2	106	<.001

Legend: p = p-value; F = F-statistic; df1: Degrees of freedom (numerator); df2: Degrees of freedom (denominator)

The post hoc tests confirmed these significances, except for the differences between the overall scores in the hospital and the community setting (Table 5).

Table 5. Post hoc test (Games-Howell) for each variable.

POST HOC TEST (Games-Howell): Gender				
		F	M	
F	Mean Difference	-	4.14	
	p-value	-	**0.009**	
M	Mean Difference		-	
	p-value		-	
POST HOC TEST (Games-Howell): Employee				
		Freelance	Private	Public
Freelance	Mean Difference	-	4.02	13.34
	p-value	-	**<.001**	**<.001**
Private	Mean Difference		-	9.32
	p-value		-	<.001
Public	Mean Difference			-
	p-value			-
POST HOC TEST (Games-Howell): Setting				
		Homecare	Hospital	Territorial
Homecare	Mean Difference	-	5.97	5.07
	p-value	-	<.001	<.001
Hospital	Mean Difference		-	-0.897
	p-value		-	0.699
Territorial	Mean Difference			-
	p-value			-

Legend: F = Female; M = Male.

4. Discussion

This study aimed to validate the JS-Nursing Italian Score, a tool for assessing JS among nurses, and to compare JS levels between employed nurses and FNs. By analysing these aspects, the study seeks to provide an empirical basis for future policies and interventions that can improve working conditions and, consequently, the quality of nursing care [48-50]. Our research involved a sample of Italian nurses divided among public employees, private employees, and freelancers. This composition reflects the structure of the nursing sector in Italy, where the majority of nurses are employed in the public sector, with a growing but still minority presence of freelancers [51].

This scenario is not unique to Italy, many European countries have a similar distribution. For example, in France and Germany, the majority of nurses are still employed in the public sector, whereas in countries like the United Kingdom, the appeal of freelancing is growing but remains a minority choice compared to public employment [52]. In terms of work settings, most of our participants operate in hospitals, followed by territorial facilities and home care contexts. This is in line with the general trend observed in numerous European countries where hospital work is prevalent [53]. However, in countries like the Netherlands, Belgium, and Finland, there is a progressive shift towards home and territorial care, with the intent of decongesting hospitals and providing more personalized care to patients [54].

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This trend may not yet be fully developed in the Italian healthcare context as the policies for territorial and home care are relatively recent, having been significantly implemented only after the COVID-19 pandemic. Therefore, more time will be needed before more specific and comprehensive data on these changes become available [55]. Analysing the JS-Nursing Italian Score questionnaire, significant differences were highlighted among the categories of nurses examined. FNs reported higher scores in all four domains of the questionnaire: work relationships, external relationships, general quality of life, and work-related stress factors [56,57]. In terms of work relationships, greater autonomy and flexibility in managing their work seem to play a crucial role for freelancers. The ability to self-determine work hours and methods can significantly contribute to a positive perception of work relationships. This autonomy is less present among employee nurses, who often have to adhere to rigid hierarchies and predefined schedules. In various European contexts, where the culture of flexible work is more developed, a positive correlation between work autonomy and professional satisfaction is observed [58].

Regarding external relationships, freelancers feel a greater respect and recognition of their professional competence. This may be due to the need to maintain high standards to attract and retain clients. In countries where the freelancing model is well-established, such as the Netherlands, healthcare professionals often enjoy greater social and professional consideration [59-61]. This recognition not only improves job satisfaction but can also positively influence the quality of service offered. General quality of life is another domain where freelancers excel. The ability to manage their free time and family life is significantly enhanced by flexible hours. This aspect was particularly emphasized during the COVID-19 pandemic, when many employed nurses worldwide faced exhausting shifts and a high workload, especially in intensive care units [62-64].

About work-related stress factors, freelancers reported lower stress levels compared to employees. The ability to choose assignments and work hours based on personal needs significantly reduces stress. This is a strength of freelance work that clearly emerges even in international contexts. In Nordic countries, where the culture of work well-being is particularly developed, freelancers often report a lower incidence of burnout and work-related stress [65]. These results are corroborated by international literature, which highlights how the pandemic further accentuated the differences between employed and freelance nurses. In typically North American countries, recent studies have shown that freelancers tend to report higher job satisfaction, thanks to flexibility and the possibility of obtaining higher compensation [66].

However, these differences can vary significantly depending on the national context and specific labor market regulations. In Italy, the regulation of freelance work is still evolving and could benefit from a comparative analysis with more established healthcare systems in several clinical setting and increasingly of high technological impact [67-70]. Finally, the factor analysis of the JS-Nursing Italian Score confirmed the validity of the instrument, with high loading values for most items, indicating good internal consistency.

These results suggest that the questionnaire is a valid tool for measuring JS among Italian nurses. However, to further strengthen the validity and reliability of the tool, it will be necessary to apply it to larger and more diverse national samples, as well as in international contexts. This study provides an empirical basis for analysing the working conditions of nurses and promoting future measures that increase professional autonomy and work flexibility, which could significantly contribute to improving JS, reducing stress levels, and enhancing the quality of nursing care. Additionally, a more in-depth international comparison could offer further insights to optimize work practices and health policies, taking into account the cultural and organizational specificities of different national contexts.

4.1. Limitations

This study presents several limitations that should be considered when interpreting the results. Firstly, the sample used, although diverse, may not be representative of the entire Italian nursing population. Additionally, the validation of the JS-Nursing Italian Score questionnaire is still preliminary and requires further verification on larger samples to confirm its reliability and validity.

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Another limitation is the cross-sectional design of the study, which does not allow for establishing causal relationships between the variables examined. Perceptions of JS can be influenced by numerous external factors not considered in this study, such as regional economic conditions and specific local healthcare policies. Finally, the data collection was based on self-assessments by the participants, which could introduce social desirability bias or result in responses that are not entirely accurate.

4.2. Implications for nursing practice and nursing policy

In terms of limitations, our study has several strengths worth considering. Firstly, it is easily repeatable and reproducible in different healthcare settings, both in terms of the healthcare system and the care models use. Secondly, having obtained objective quantitative results, it could serve as a reference study for the objectification of organizational well-being among nurses in Italy, and beyond. Furthermore, it could encourage specific research on this topic, particularly regarding stress and organizational well-being for nurses across multiple care settings.

5. Conclusion

This study provides a preliminary overview of the differences in JS perceptions between employed and FNs in Italy. The results indicate that FNs report higher satisfaction in the four domains analysed: work relationships, external relationships, general quality of life, and work-related stress factors, suggesting that autonomy and work flexibility are key elements for improving JS among nurses. Consequently, promoting more flexible work models and offering greater opportunities for freelancing could help improve the well-being and satisfaction of Italian nurses, with potential benefits for the quality of care provided. Looking ahead, it will be essential to conduct further research on larger and more diverse samples to confirm and expand these findings. Longitudinal studies could offer a deeper insight into the temporal dynamics in JS and identify causal factors not addressed in our research.

Supplementary Materials: The following supporting information can be downloaded at the website of this paper posted on Preprints.org. Supplementary File 1: STROBE Statement—checklist; Supplementary File 1: Questionnaire JS-Nursing Italian Score (English and Italian version).

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Institutional Review Board Statement: This study adhered to the principles outlined in the Helsinki Declaration. Ethical approval was granted by the Istitutional Review Board of Ast Fermo with authorization code INF 01/2023, date February 22, 2023.

Informed Consent Statement: All participants were informed about the study's objectives, and the consent was obtained in compliance with all privacy regulations (Art. 13 EU Regulation 679/2016) before survey administration. The data were processed anonymously.

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