Original paper

Job satisfaction and occupational stress among nurses in the Polish healthcare system

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Abstract

Introduction: The aging demographic of Polish nursing personnel, coupled with a widening generation gap, constitutes a pressing concern for the healthcare system. This is further exacerbated by existing limitations in staff availability and projections of a significant workforce deficit within the 20-40 age group.
Aim of the research: This study aims to investigate the levels of job satisfaction and the associated influencing factors among nurses aged 18 to 44. Furthermore, it seeks to identify specific occupational stressors that play a significant role in contributing to nurses' decisions to exit the profession.
Material and methods: This study employed an auditory questionnaire to gather data from 404 nurses (male and female) working in the Mazowieckie and Świętokrzyskie Voivodeships. The classification of occupational stressors was based on the theoretical framework developed by Levi and Frankenhaeuser.
Results: The statistical analysis revealed significant differences between nurses' age and their perceptions of social relations in the workplace, as well as their reported stress levels related to physical working conditions, time pressure, and coping with new technologies. A significant relationship was observed between nurses' age and their inclination to undertake professional retraining. Finally, a specific set of stressors was identified as a determinant in nurses' decisions to leave the profession.
Conclusions: Nurses aged 18 to 34 demonstrate increased vulnerability to occupational stress and a higher likelihood of considering career changes, especially among those for whom nursing constitutes their first professional role. Ensuring appropriate working conditions, effective supervisory support, and access to emotional regulation resources are essential components in promoting retention within the nursing workforce.

Introduction

Nursing is a profession of public trust, subject to specific regulations, significant responsibility, and stringent requirements regarding professional and ethical qualifications. The consistently high public trust afforded to nurses in Poland was evident in their fourth-place ranking (75.2% of evaluations/answers/responses) among professions of public trust in 2024 [1]. The demands inherent in nursing work create significant occupational stressors, potentially resulting in chronic workplace stress as a response to a perceived lack of balance between job demands and the individual's available resources and coping abilities [2, 3]. Notwithstanding the high social regard/respect/esteem for the nursing profession, the inherent demands of this occupation frequently result in substantial stress, potentially leading to the severe manifestation of burnout syndrome. Maslach defined the professional burnout as a "syndrome of emotional exhaustion, depersonalisation and reduced sense of personal achievement, which may occur in individuals working with other people in a specific manner" [4]. Burnout syndrome disproportionately affects professionals in human service occupations, particularly those who exhibit high levels of involvement in assisting others and experience a sense of inefficacy in their professional interactions [5], and lack of supervisory support [6].

According to the 2024 "Health at a Glance" [7] report published jointly by the European Commission and the OECD, Poland's nursing density in 2022 was 5.7 nurses per 1000 population/inhabitants/people, contrasting with the European Union average of 8.4 nurses per 1000 population/inhabitants/people. Data from the National Chamber of Nurses and Midwives (*Naczelna Izba Pielęgniarek i Położnych*, *NIPiP*) in Poland [8] indicate a significant demographic shift within the nursing workforce. Over the preceding fifteen years, the average age of nursing personnel has increased by nearly 10 years, reaching 54.87 years as of 31 December 2024. Data from late 2023 reveal a pronounced aging trend within the nursing popula-

tion, with the 51–60 and 61–70 age brackets representing the largest proportions of the workforce (31.5% and 25.3%, respectively). Notably, the cohort of nurses under 40 years of age comprised a considerably smaller fraction, at merely 16.5% [8]. Data and projections from the National Trade Union of Nurses and Midwives (*Ogólnopolski Związek Zawodowy Pielęgniarek i Położnych, OZZPiP*) [9] indicated a deficit of 156,000 nurses in 2023, with approximately 72% of hospitals reporting staffing shortages. Furthermore, this deficit is projected to escalate to 262,000 by the year 2039. Projections indicate a decrease in the number of nurses directly involved in patient care from 216,000 in 2023 to 199,000 by the year 2039 [9]. Such significant workforce shortages in the nursing sector result in considerable financial implications for the public budget, including, among other things, the financial obligations of increasing nurses' remuneration, and indirect costs related to the availability and quality of healthcare services.

The age structure of the nursing workforce reflects a significant challenge faced by healthcare facilities, where newly employed younger nurses frequently consider giving up the profession and pursuing alternative career paths. A potential motivating factor for entering the nursing profession in Poland is the remuneration, which reaches approximately 160% of the national average wage [7]. This places nursing among the highest compensated in Europe, on a par with Belgium. In contrast, the European Union average for this indicator stands at 120% [7]. However, the substantial demands inherent in the nursing profession, including significant responsibility, commitment, and dedication, often serve as potent workplace stressors that are not adequately counterbalanced by extrinsic motivators, such as remuneration or social prestige [10]. Given the observed age distribution and the documented workforce deficit, the attractiveness of nursing as a profession in Poland appears questionable. Therefore, this survey study specifically targeted the viewpoints of younger nurses.

Aim of the research

The aim of the research was to examine the job satisfaction levels and associated influencing factors as perceived by nursing personnel in the 18–44 age bracket. A further aim was to identify a specific set of stressors that contribute to nurses' decisions to leave the profession.

Material and methods

The study population comprised nurses employed in both public and private healthcare facilities in the Mazowieckie and Świętokrzyskie Voivodeships. Data were collected using a diagnostic survey method, employing author-designed auditory questionnaire distributed in an online format. The study was conducted in accordance with the highest ethical standards set out in the Declaration of Helsinki, and approval was granted by the relevant Ethics Committee. All participants gave their informed consent to take part in the study after being informed of its voluntary and anonymous nature and of their right to withdraw at any stage of the process.

A total of 511 questionnaires were collected. Eight were excluded from further analysis due to incorrect completion of the open-ended questions. Subsequently, of the 503 correctly completed questionnaires, only those completed by nurses within the age range specified by the study objective were selected. The final sample comprised 404 fully completed questionnaires from nurses aged 18–44 years, with a regional distribution of 263 participants from the Mazowieckie Voivodeship and 141 from the Świętokrzyskie Voivodeship. The characteristics of the nurses surveyed are shown in Table 1. The questionnaire incorporated five key dimensions: demographic data (9 items), professional satisfaction (5 items), workplace conditions (9 items), colleague support and interpersonal relations (6 items), and sources of occupational stress (22 items). Participants rated their satisfaction and stress levels using 40 closed-ended, single-choice questions utilising a 5-point Likert scale. The questionnaire incorporated two open-ended items aimed at eliciting respondents' motivations for choosing nursing as a profession, as well as reasons for them to potentially leave the occupation.

The study sample was segmented into three age brackets: 18–25, 26–34, and 35–44 years. This age-based division allowed for the examination of factors mediating differences in the evaluation of job satisfaction and the perception of occupational stress across different career stages in nursing. To identify stressors predictive of intent to leave the profession, participants were stratified into two groups according to their self-reported willingness to pursue retraining. Workplace stress factors were distinguished based on the five-category framework developed by Levi and Frankenhaeuser (1982, as cited in Terelak, 2007, pp. 281-287) [11, 12] and include the following categories:

- Intrinsic to the job itself – *physical working environment, poor physical working conditions, shortage of essential resources, shortages of staff, time pressure, physically demanding workload, coping with new situations, exposure to life-and-death situations, providing support in mourning, difficult patients, exposure to infectious diseases, coping with new technologies;*
- Social relations – *relations with colleagues, relations with direct supervisors, consideration of employee suggestions by management, relations between management and staff, management style in the facility*;
- Pertaining to professional career – *disappointment in/with work outcomes/ profession, lack of specialised training, job security, insufficient reward;*

Table 1. Characteristics of the study group of nurses

Variable	*N* (%)	Variable	*N* (%)
Sex		Education	
Female	364 (90.1)	University – Master's degree	102 (25.2)
Male	40 (9.9)	University – Bachelor's degree	299 (74.0)
Age		Secondary education	3 (0.7)
18–25 years	131 (32.4)	Place of work	
26–34 years	113 (28.0)	Hospital	293 (72.5)
35–44 years	160 (39.6)	Clinic	52 (12.9)
Place of work		Care and treatment centre, social home	24 (5.9)
Public	366 (90.6)	Hospice	8 (2.0)
Private	38 (9.4)	Other	27 (6.7)
Place of residence		Time worked in nursing	
Village	184 (45.5)	< 1 year	91 (22.5)
City, incl. (inhabitants):	220 (54.5)	1–3 years	153 (37.9)
< 50 000	62 (28.2)	3–5 years	64 (15.8)
50 000–150 000	42 (19.1)	5–10 years	53 (13.1)
150 000–500 000	83 (37.7)	10–15 years	29 (7.2)
> 500 000	33 (15.0)	> 15 years	14 (3.5)

- Organisational structure and emotional climate – *responsibilities adequate/inadequate to skills and experience, uneven workload, lack of support from higher-level personnel, uncertainty regarding the scope of responsibility, emotional exhaustion;*
- Position in the organisation – *tasks exceeding competencies, unrealistic expectations from others, no participation in decision-making.*

Statistical analysis

Statistical analysis of the collected data was performed using the Statistica 13.0 software package. The χ^2 test of independence was employed to examine relationships between variables, and odds ratios were calculated to determine the probability of nursing staff leaving the profession. In addition, the Mann-Whitney *U* test was employed to compare two independent groups of respondents, and the Kruskal-Wallis ANOVA on ranks was used to assess differences among several groups of respondents regarding outcomes specified in ordinal scales.

Results

As regards the work stressors intrinsic to the job itself, the study has found statistically significant differences in terms of stress intensity across the three examined age groups for the variables of: *poor physical working conditions* – a significant difference between 18–25 years and 35–44 years age groups (post hoc $p = 0.0329$), with the youngest demographic group reporting the most severe experience of this particular stressor; *time pressure* – a significant difference between the 18–25 years and 35–44 years age groups (post hoc $p = 0.0293$), with the former group experiencing this stressor most severely; *coping with new technologies* – a significant difference in replies between 26–34 years and 35–44 years age groups (post hoc $p = 0.0439$), with the oldest group reporting the most severe impact of this stressor (Table 2). No statistically significant differences were observed across the studied age cohorts for the remaining stressors within this category. For the stress factors in the group of social relations in the workplace, statistically significant differences have been found across the three age groups for the following variables: *relations between management and staff* – a significant difference in replies between 18–25 years age group and the 26–34 and 35–44 years age groups (post hoc $p = 0.0386$, $p = 0.0279$), with the youngest group being the most positive about the relations; *management style in the facility* – a significant difference in replies between the 26–34 years and 35–44 years age groups (post hoc $p = 0.0461$), with the former being the most critical of the facility management style (Table 3). No statistical differences were observed across the studied age groups in their responses regarding other factors linked to social relations at the workplace, nor for the remaining three groups of stressors: organisational structure and emotional climate, position in the organisation, and professional career.

Table 2. Significant determinants of nurses' intention to leave the profession

Assessment of stress factors intrinsic to the job itself	*U*	*Z*	*P*-value*
Physical working environment	12328.00	3.4385	0.000585
Shortages of staff	13763.50	–2.0524	0.040135
Physically demanding workload	13441.50	–2.3633	0.018114
Coping with new technologies	13195.50	2.6008	0.009301
Assessment of stress factors related to social relations			
Relations with direct supervisors	12794.50	2.9880	0.002808
Consideration of employee suggestions by management	11071.50	4.6517	0.000003
Relations between management and staff	12452.50	3.3183	0.000906
Management style in the facility	10883.50	4.8333	0.000001
Assessment of stress factors linked to organisational structure and emotional climate			
Responsibilities adequate/inadequate to skills and experience	12468.00	3.3033	0.000956
Emotional exhaustion	13777.00	–2.0393	0.041418
Assessment of stress factors in the professional career category			
Disappointment in/with work outcomes/profession	13777.00	–2.0393	0.041418

**Mann-Whitney U-test.*

Table 3. Significant occupational stress sources among nurses by research categories

Assessment of stress factors intrinsic to the job itself	*H*	*P*-value*
Poor physical working conditions	8.7319	0.0127
Time pressure	8.1508	0.0170
Coping with new technologies	7.8187	0.0201
Assessment of stress factors in the social relations category		
Relations between management and personnel	6.2557	0.0435
Management style in the facility	7.6030	0.0223

**Kruskal-Wallis ANOVA.*

The χ^2 test of independence revealed a statistically significant association between nurses' age and their declared intention to retrain ($\chi^2 = 16.4$, $p = 0.00028$). Across the entire sample, 107 (26.5%) respondents expressed a desire to leave the profession, with a disproportionately higher fraction observed in the younger age cohorts: 46 (43.0%) nurses in the 18–25 years age group and 36 (33.6%) in the 26-34 years age group.

Application of the Mann-Whitney *U* test (Table 2) demonstrated that the statistically significant determinants of nurses' decisions to leave the profession include:

– in the category of stress factors intrinsic to the job itself: physically inadequate working environment, physically demanding workload, and (not) coping with new technologies;
– in the category of stress factors related to social relations: adverse/negative/poor relations with direct supervisors, management not taking employee suggestions into consideration, adverse/negative/poor relations between management and personnel, and negative perception of the management style of a facility;
– in the category of stress factors linked to organisational structure and emotional climate: responsibilities inadequate to skills and experience, and emotional exhaustion;
– in the category of professional career stress factors: disappointment in/with work outcome/profession.

The calculated odds ratio (OR = 1. 213457) indicates that individuals for whom nursing was their initial career choice exhibit a 21.3% higher risk of leaving the profession.

Moreover, the analysis of the specific results stratified by professional tenure indicated that nurses with less than 15 years of experience reported elevated stress levels across all five categories of stressors, as reflected in higher median response values (Me = 4 or 5) compared to their counterparts with 15 or more years of experience (Me = 2.5 or 3).

Discussion

Occupational activity plays a pivotal role in the development of adult individuals, impacting levels of their life satisfaction, facilitating the use of acquired skills and competencies, enabling the fulfilment of needs and expectations [13], providing economic means, and fostering a sense of personal value and control.

Findings from the ADP "People at Work 2022: A Global Workforce View" [14] study indicate that one in five Polish workers reports experiencing daily workplace stress. In the context of occupational overload within the nursing profession, these stressors are often characterised by their prolonged nature, thereby contributing to the development of chronic stress. One potential resolution involves the individual's detachment from the stress-inducing situation. However, this may often initiate the spiral of loss [15], encompassing consequences such as altered financial circumstances, the necessity of adapting to the demands of subsequent employment, job insecurity, etc. Notwithstanding these potential consequences, the consideration of occupational change remains highly prevalent among nurses in the 18–25 years age bracket. Twenge [16] suggests that younger generations demonstrate greater openness to career change. The findings of the present study are consistent with research conducted across 12 European countries and the United States, which indicated that the proportion of nurses intending to leave the profession ranges from 49% (Finland and Greece) to 14% (USA) [17, 18]. Furthermore, a substantial percentage of nurses (11–56%) reported being unsatisfied with their job. Job satisfaction can be contingent upon factors such as remuneration levels, the work environment and conditions, interpersonal relationships with colleagues and administrative staff, and the inherent nature of the work itself [19]. Nurses who evaluate their work environment as satisfactory are less inclined to consider professional departure. Analysis of the open-ended survey questions indicated that the principal drivers for choosing a career in nursing are altruistic motivations, specifically a desire to help others [20–22] coupled with the rewarding experience of patient gratitude, which contributes to a sense of meaning and professional satisfaction. This reflects an intrinsic need to apply skills and dedication to patient care [23]. The availability of flexible work hours, the option for employment across multiple healthcare facilities, and attractive earnings are significant factors conducive to the retention of nurses within the profession. Appropriate working conditions and positive interpersonal relationships within the team and with immediate/direct supervisors are of paramount importance for nurses' job satisfaction [24] and managerial support, including active listening, fosters their engagement in the workplace [25, 26]. Significant links of physical work overload and staff shortage with the declared intention to retrain suggest that the nurses experiencing higher levels of workload may feel overwhelmed and emotionally exhausted [17, 27]. As indicated by Hellín *et al*., excessive workload critically determines professional satisfaction levels [28], while Maslach and Jackson [29] emphasise that staff shortages contribute to occupational burnout and – in this context – providing support in managing emotions is paramount for ensuring employee well-being.

The study sample comprised nursing personnel from the Mazowieckie and Świętokrzyskie Voivodeships, which allowed for obtaining a certain level of regional representation. However, this sample does not constitute a fully comprehensive cross-section of the national nursing population in Poland. Regional disparities in employment frameworks and work environments could impact the results, but the distinct characteristics of the two sampled voivodeships suggest that the obtained data provide sufficiently generalised insights into the patterns prevailing across the Polish nursing workforce. Therefore, the conclusions drawn from this study may serve as a preliminary foundation for broader extrapolations. However, further studies with more representative sampling strategies across various geographical locations and healthcare settings in Poland may be required to validate the findings of the present research.

Conclusions

The results of the present investigation/research/study reveal that nurses in the 18–34 years age group are characterised by a different life orientation and a greater likelihood of considering occupational change compared to their counterparts aged 35 years and above. The increased vulnerability to occupational stress exhibited by younger nurses highlights the critical need for the adoption of strategies designed to enhance working conditions and ensure emotional support.

As the skill level of nurses continues to rise, they become increasingly more capable of functioning as innovators and collaborators in the development of healthcare systems, across public and clinical domains [30]. This evolving contribution further emphasises the necessity of formulating strategies designed to reduce turnover within this professional group. Given the prevailing demographic trends of an aging society and the already observed issues of nursing staff shortages leading to workforce depletion, it is warranted to invest in support programmes to equip nurses with effective coping mechanisms for the demands of their profession, which, in turn, will contribute to the stability and enhanced quality of healthcare services.

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Ethical approval

This study is part of a larger project, "Complex Post-Traumatic Stress, Psychological Resilience and Interpersonal Emotion Regulation, and Occupational Burnout in Nurses Working in Hospital Wards", which received approval from the Ethics Committee (Approval Number: 53/2024).

Conflict of interest

The authors declare no conflict of interest.

References

1. Aktualny ranking najbardziej poważanych zawodów (2025) [online]. SW Research; 2025 [Accessed 10 April 2025]. Available from: https://swresearch.pl/ranking-zawodow
2. Heszen-Niejodek I. Teoria stresu psychologicznego i radzenia sobie. In: Psychologia. Strelau J, editor. Gdańskie Wydawnictwo Psychologiczne, Gdańsk 2007; 465-492.
3. Kaszubska A. Stres w pracy. Poradnik dla pracownika [online]. Państwowa Inspekcja Pracy, Warszawa 2023. [Accessed 9 March 2025] Available from: https://www.pip.gov.pl/files/126/Dla-pracownikow/599/Stres-por-pracow-dodruk2016-Intern.pdf
4. Maslach C. Wypalenie – w perspektywie wielowymiarowej. In: Wypalenie zawodowe. Przyczyny i zapobieganie. Sęk H, editor. Wydawnictwo Naukowe PWN, Warszawa 2004; 13-31.
5. Maslach C, Jackson SE. The burnout syndrome in the health professions. In: Social Psychology of Health and Illness. Sanders G, Suts J, editors. Lawrence Erlbaum, Hillsdale, New York 1982; 227-278.
6. Golińska L, Świętochowski W. Temperamentalne i osobowościowe determinanty wypalenia zawodowego u nauczycieli. Psychologia Wychowawcza. 1998; 41(5): 385-398.
7. Health at a Glance. [online] OECD; 2024 [Accessed 10 April 2025]. Available from: https://www.oecd.org/en/publications/health-at-a-glance-europe-2024_b3704e14-en.html
8. Naczelna Rada Pielęgniarek i Położnych. Raport: Raport o stanie pielęgniarstwa i położnictwa w Polsce [online]. Naczelna Rada Pielęgniarek i Położnych; 2023 [Accessed 9 March 2025]. Available from: https://nipip.pl/raporty/
9. Zdobylak K, Dąbrowski J. Raport OZZPiP: Analizy kadrowe pielęgniarek [online]. OZZPiP; 2025 [Accessed 9 March 2025] Available from: https://ozzpip.pl/wp-content/uploads/2025/04/Analizy_kadrowe_pielegniarek_raport_koncowy_2025_03_31.pdf
10. Karłyk-Ćwik A. Wypalenie zawodowe pedagogów a wybrane czynniki socjodemograficzne. Pedagogika Społeczna. 2019; 2(72): 163-182.
11. Levi L, Frankenhaeuser M, Gardell B. Report on work stress related to social structures and processes. In: Stress and human health. Elliott GR, Eisdorfer C, editors. Springer, New York 1982; 119-146.
12. Terelak JF. Stres zawodowy. Wydawnictwo Uniwersytetu Kardynała Stefana Wyszyńskiego, Warszawa 2007; 281-287.
13. Trempała J, editor. Psychologia rozwoju człowieka. Państwowe Wydawnictwo Naukowe, Warszawa 2023; 298.
14. People at Work 2022: A Global Workforce View [online]. [Accessed 10 April 2025]. Available from: https://pl.adp.com/baza-wiedzy-hr/insights/people-at-work-2022-a-global-workforce-view.aspx
15. Heszen-Celińska I, Sęk H, editors. Psychologia zdrowia. Wydawnictwo PWN, Warszawa 2020; 139.
16. Twenge JM. Generation me, the origins of birth cohort differences in personality traits, and cross-temporal meta-analysis. Soc Personal Psychol Compass. 2008; 2(3): 1440-1454.
17. Aiken LH, Sloane DM, Bruyneel L, Van den Heede K, Sermeus W; RN4CAST Consortium. Nurses' reports of working conditions and hospital quality of care in 12 countries in Europe. Int J Nurs Stud. 2013; Feb; 50(2): 143-153.
18. WHO. Health and care workforce in Europe: time to act. Copenhagen: WHO Regional Office for Europe; Licence: CC BY-NC-SA 3.0 IGO. 2022. [Accessed 9 March 2025]. Available from: https://www.who.int/europe/publications/i/item/9789289058339.
19. Krepia V, Diamantidou V, Kourakos M, Kafkia T. Job satisfaction of nurses: a literature review. Int J Caring Sci. 2023; 16(3): 1754.
20. Ostalecka K, Makowicz D, Satysfakcja z pracy personelu pielęgniarskiego na terenie województwa podkarpackiego 2022 [online]. [Accessed 9 March 2025]. Avaiable from: https://pans.krosno.pl/pielegniarstwo-magisterskie/wp-content/uploads/sites/54/2022/09/Satysfakcja-z-pracy-personelu-pielegniarskiego-na-terenie-wojewodztwa-podkarpackiego.pdf
21. Smoleń M, Kędra E. Motywy wyboru kształcenia na kierunku pielęgniarstwo w opinii studentów Państwowej Medycznej Wyższej Szkoły Zawodowej w Opolu. Pielęgniarstwo Polskie. 2018; 68(2): 141-151.
22. Franek G, Kulik H, Ferdyn M. Zainteresowanie zawodem pielęgniarki wśród młodzieży szkół licealnych. Problemy Pielęgniarstwa. 2012; 20(4): 423-430.
23. Ozdoba P, Dziurka M, Pilewska-Kozak A, Dobrowolska B. Hospital ethical climate and job satisfaction among nurses: a scoping review. Int J Environ Res Public Health. 2022; 19(8): 4554.
24. Kupcewicz E, Szczypiński W, Kędzia A. Satysfakcja z życia w kontekście życia zawodowego pielęgniarek. Pielęgniarstwo i Zdrowie Publiczne. 2018; 8(1): 27-32.
25. Buchan J, Charlesworth A, Gershlick B, Seccombet I. A Critical Moment: NHS Staffing Trends, Retention and Attrition. Health Foundation, London 2019.
26. Hayes B, Bonner A, Pryor J. Factors contributing to nurse job satisfaction in the acute hospital setting: a review of recent literature. J Nurs Manag. 2010; 18(7): 804-814.
27. Lu H, While AE, Barriball KL. Job satisfaction and its related factors: a questionnaire survey of hospital nurses in Mainland China. Int J Nurs Stud. 2007 May; 44(4): 574-588.
28. Hellín Gil MF, Ruiz Hernández JA, Ibáñez-López FJ, Seva Llor AM, Roldán Valcárcel MD, Mikla M, López Montesinos MJ. Relationship between job satisfaction and workload of nurses in adult inpatient units. Int J Environ Res Public Health. 2022; 19(18): 11701.
29. Maslach C, Jackson SE. The Maslach Burnout Inventory. Palo Alto, CA: Consulting Psychologist Press. 1981.

30. Jouppila T, Tiainen T. Nurses' participation in the design of an intensive care unit: the use of virtual mock-ups. HERD. 2020 Apr; 14(2): 301-312.

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