

Perceived Social Support and Mental Well-being among Higher Vocational Nursing Students in Eastern China: A Single-Centre Cross-sectional Study

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ABSTRACT

Background: Nursing students may experience substantial academic and clinical demands, which may negatively affect their mental health. Previous studies have suggested that perceived social support (PSS) is associated with higher levels of Mental Well-Being (MWB) among nursing students. Understanding this association may inform the development of strategies to support nursing students' MWB. **Objectives:** This study aimed to examine PSS and MWB levels among Chinese nursing students and the association between these two variables. **Methods:** A cross-sectional survey was conducted among 612 nursing students at a higher vocational college in Eastern China in March 2025. Data were collected using the Mental Health Continuum-Short Form (MHC-SF) and the Perceived Social Support Scale (PSSS). **Results:** The mean scores of PSS and MWB were 47.98 ± 10.69 and 43.97 ± 14.19 , respectively. PSS was positively correlated with MWB ($r = 0.347, p < 0.001$). Simple linear regression analysis revealed a significant association between PSS and MWB ($B = 0.461, 95\% \text{ CI } [0.362, 0.560], p < 0.001$). After adjusting for demographic and health-related factors, PSS remained significantly positively associated with MWB ($\beta = 0.317, p < 0.001$), with the addition of PSS increasing the explained variance by 9.8%. **Conclusion:** PSS was independently associated with better MWB among Chinese nursing students. Longitudinal or experimental studies are needed to determine whether strengthening social support can improve mental well-being.

Keywords: Mental Health; Nursing; Social Support; Students

INTRODUCTION

Mental well-being (MWB) is a multidimensional concept characterized by optimal physical and behavioral health, a sense of purpose in life, active participation in enjoyable work and play, pleasant relationships, and contentment (Gautam *et al.*, 2024). Among university students, MWB is closely related to academic performance, professional development, and future career sustainability (Zhang *et al.*, 2024). University students, particularly nursing students, are confronted with heavy academic tasks, rigorous clinical training, and significant psychological pressures associated with patient care (Karaduman *et al.*, 2022), which may place them at increased risk of mental health problems. Previous studies have indicated that nursing students experience considerable psychological challenges, including depressive symptoms (Tung *et al.*, 2018). Lower levels of MWB among nursing students are associated with psychological distress, burnout, and poorer academic outcomes (Wei *et al.*, 2021). Therefore, identifying factors associated with MWB is particularly important.

Perceived social support (PSS) is defined as the subjective perception that support is available from one's social network when needed (Yeo *et al.*, 2025), including sources such as family members, friends, and significant others (Rui & Guo, 2022). Higher levels of PSS have been associated with better psychological

Received: January 30, 2026 Received in revised form: August 16, 2026 Accepted: August 25, 2026

health and well-being under stressful conditions (Yilmaz, 2025; Zhou & Zhang, 2026). The relationship between PSS and MWB can be understood from the perspective of the main-effect model (Cohen & Wills, 1985), which posits that social support has a direct, beneficial effect on mental health regardless of stress levels. In this view, perceived social support serves as a psychological resource that is directly associated with better mental well-being. For nursing students, perceived social support may represent an important psychological resource linked to positive mental functioning.

Nursing students in China experience substantial stress arising from intense academic competition (Zhao *et al.*, 2015) and high expectations from families (Zheng *et al.*, 2023). Previous studies have reported considerable academic pressure among Chinese nursing students (Ma *et al.*, 2022; Zhang *et al.*, 2026). Higher vocational nursing students face additional educational and career-related demands. Their three-year educational program generally includes approximately two years of theoretical study and one year of practical training, while successful completion of the national nursing licensure examination is required before entering the nursing profession. These combined requirements may contribute to psychological pressure among higher vocational nursing students.

Although previous research has examined PSS and psychological outcomes among Chinese nursing students (Zhou *et al.*, 2022), research specifically examining the association between PSS and MWB has mainly been conducted among undergraduate populations, with limited research focusing on higher vocational nursing students. In addition, previous studies among Chinese nursing students have predominantly focused on negative psychological outcomes, such as anxiety and burnout, whereas positive mental health indicators, including MWB, have received less attention.

Therefore, further investigation is needed to understand the relationship between PSS and MWB among higher vocational nursing students. By focusing on this understudied population and using the continuous scores of the MHC-SF to assess mental well-being, this study aimed to examine the association between PSS and MWB among Chinese higher vocational nursing students. The findings may provide contextual evidence for developing future supportive strategies and educational programs for nursing students.

METHODOLOGY

Research Design

A cross-sectional study design was used to describe PSS and MWB levels among higher vocational nursing students and explore the association between these two variables.

Participants and Setting

Data were collected in March 2025 during the second semester of the 2024–2025 academic year, among nursing students at a higher vocational college in Eastern China. The nursing program included 19 classes with 747 enrolled students across three academic years. Total population sampling was adopted, and all eligible students were invited to participate. A priori sample size calculation was performed using G*Power 3.1. A medium effect size ($f^2 = 0.15$), an alpha level of 0.05, a statistical power of 0.90, and 15 predictors were specified. The medium effect size of $f^2 = 0.15$ was selected based on Cohen's conventional criterion for a medium effect (Cohen, 1988), as no sufficiently comparable prior study was identified to provide a reliable study-specific effect-size estimate. The calculation resulted in a minimum required sample size of 171. Students with clinically diagnosed severe mental disorders or undergoing psychological treatment were excluded because these conditions or treatments could affect MWB and confound the association examined. Those reporting general psychological distress or self-perceived mental health concerns without a formal diagnosis were included. In total, 612 nursing students were included in the analysis.

Research Instrument

PSS was measured using the Perceived Social Support Scale (PSSS), adapted from the Multidimensional Scale of Perceived Social Support developed by Zimet *et al.* (1988) and revised for the Chinese population by Jiang (2001). The 12-item scale assesses three dimensions: family, friends, and support from significant others. Items are rated on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree), with higher scores indicating higher levels of PSS. The PSSS has demonstrated good reliability, with Cronbach's $\alpha = 0.88$ and

test–retest reliability = 0.85. In the present study, Cronbach's α was 0.955.

MWB was measured using the Mental Health Continuum-Short Form (MHC-SF) developed by Keyes (2002) and adapted for the Chinese population by Song *et al.* (2025). This 14-item scale measures emotional well-being (EWB), psychological well-being (PWB), and social well-being (SWB). Items are rated on a 6-point Likert scale (0 = never, 1 = once or twice, 2 = about once a week, 3 = about 2 or 3 times a week, 4 = almost every day, 5 = every day), with higher scores indicating higher levels of MWB. Previous studies reported good internal consistency of the Chinese MHC-SF (Cronbach's α = 0.948) (Song *et al.*, 2025), and Cronbach's α in the present study was 0.934.

Procedure

Before data collection, students' course schedules were reviewed, and questionnaire sessions were arranged in advance. After class, students were given 20 minutes to complete the online questionnaire through their WeChat class groups using the Questionnaire Star platform. Written instructions explained the purpose of the study and the requirements for completing the questionnaire. Of the 747 eligible enrolled students who were invited to participate, 663 returned the questionnaire, corresponding to a response rate of 88.8%. The reasons for non-participation among the 84 students who did not return the questionnaire were not recorded. Questionnaires completed in less than three minutes or exhibiting highly repetitive response patterns were excluded. Of the 663 returned questionnaires, 22 were excluded because of a short completion time, 17 because of repetitive response patterns, and 12 because the respondents did not meet the eligibility criteria. No missing data were observed because all questionnaire items were mandatory. Finally, 612 valid questionnaires were included in the analysis.

Statistical Analysis

All statistical analyses were conducted using SPSS version 26.0. Continuous variables are presented as mean $\pm$ standard deviation, and categorical variables are presented as frequencies and percentages. Normality was assessed using skewness and kurtosis statistics, with acceptable values defined as absolute skewness < 2 and absolute kurtosis < 3 , indicating that the assumption of approximate normality was satisfied (Kim, 2013). Homogeneity of variance was assessed using Levene's test. Group differences were analyzed using independent-sample *t*-tests and one-way ANOVA, with Welch's ANOVA applied when homogeneity was violated (Field, 2018). Pearson's correlation analysis was used to assess the association between PSS and MWB. Simple and hierarchical multiple linear regression analyses were conducted. Demographic and health-related variables were included as covariates in Model 1 based on their potential relevance to MWB, while PSS was entered in Model 2. Assumptions including linearity, normality, and homoscedasticity of residuals; independence of errors; multicollinearity; and influential observations were assessed. No violations were identified, with Durbin–Watson = 1.891, tolerance = 0.976, VIF = 1.025, and maximum Cook's distance = 0.043. All tests were two-tailed, with $p < 0.05$ considered statistically significant.

Ethical Consideration

The research proposal was approved by the Ethics Committee of MAHSA University, Malaysia, with approval number FOHSNE/NU/25/PhD05, dated 13th February 2025, for the overarching doctoral research program, and by the Ethics Committee of Huai'an Second People's Hospital, China, with approval number HEYLL2024069 on 13th December 2024.

All participants provided informed consent before participation. For participants under 18 years of age, additional parental consent was obtained by telephone before participation, and the students themselves also provided consent before completing the questionnaire.

RESULTS

Descriptive Statistics of the Sample

A total of 612 nursing students were included in the analysis. Most participants were female (83.01%) and aged 18–21 years (90.52%). First-year students accounted for the largest proportion (41.3%). Over half of the students were from rural areas (63.24%), and 58.66% had served as student leaders. Approximately one-

quarter of participants were only children (26.47%). Regarding family characteristics, most participants reported an average family economic status (44.12%) and lived in two-parent families (82.03%). Most of the students reported good health (89.71%).

Descriptive Statistics of PSS and MWB

The mean PSS score was 47.98 ± 10.69 . The mean scores of the three PSS dimensions were similar. The mean MWB score was 43.97 ± 14.19 , and EWB had a slightly higher mean score than the other two dimensions (Table 1).

Table 1: Total and Subscale Scores of PSS and MWB among Nursing Students

Variables	Number of Items	Total Mean (M $\pm$ SD)	Item Mean (M $\pm$ SD)
PSS	12	47.98 ± 10.69	4.00 ± 0.87
Family Support	4	16.01 ± 3.59	4.00 ± 0.90
Friend Support	4	15.99 ± 3.57	4.00 ± 0.89
Support from Significant Others	4	15.99 ± 3.57	4.00 ± 0.89
MWB	14	43.97 ± 14.19	3.14 ± 1.00
EWB	3	9.91 ± 3.33	3.30 ± 1.11
PWB	6	19.09 ± 6.57	3.18 ± 1.09
SWB	5	14.98 ± 5.69	3.00 ± 1.14

Note: PSS = perceived social support; MWB = Mental Well-Being; EWB = Emotional Well-Being; PWB = Psychological Well-Being; SWB = Social Well-Being; SD = Standard Deviation. Values are shown to two decimal places for consistency. Verified against raw data; apparent equality between friend support and significant other support is due to rounding (e.g., total scores 15.9886 ± 3.5750 vs. 15.9853 ± 3.5718 ; item means 3.9971 ± 0.9838 vs. 3.9963 ± 0.8929).

Differences in PSS and MWB across Demographic Characteristics

Univariate analyses indicated no significant differences in PSS across any demographic variables (all $p > 0.05$).

By contrast, MWB differed across several demographic characteristics. Students who had served as student leaders reported significantly higher MWB than those without such experience ($t(610) = 2.213$, $p = 0.027$, Cohen's $d = 0.18$). Significant group differences were observed for family economic status ($F(4, 607) = 9.895$, $p < 0.001$, $\eta^2 = 0.061$), family structure (Welch's $F(2, 76.065) = 13.442$, $p < 0.001$, $\eta^2 = 0.027$), and self-rated health (Welch's $F(2, 53.153) = 45.163$, $p < 0.001$, $\eta^2 = 0.068$). Students reporting excellent economic status showed relatively lower MWB scores, while those living with two-parent families or in single-parent families reported higher MWB scores than those living with other relatives/guardians. Students who reported satisfactory health had higher MWB scores than those reporting chronic physical illness or self-perceived mental health concerns. Bonferroni-adjusted post-hoc comparisons for these variables are presented in Supplementary Table S1. Due to the relatively small sample sizes of the very poor ($n = 25$) and excellent ($n = 39$) family economic-status groups, findings regarding family economic status should be interpreted cautiously (Table 2). In the adjusted regression analysis, a sensitivity analysis using the average economic-status group as the reference category yielded a broadly consistent pattern.

Table 2: Univariate Analysis of PSS and MWB Based on Demographic Characteristics

Variable	Group	n (%)	Mean $\pm$ SD (PSS)	Test Statistic (t/F) (PSS)	p-value (PSS)	Mean $\pm$ SD (MWB)	Test Statistic (t/F) (MWB)	p-value (MWB)
Sex	Male	104 (16.99)	48.93 ± 11.96	0.994	0.321	42.89 ± 15.86	-0.851	0.395
	Female	508 (83.01)	47.79 ± 10.41			44.19 ± 13.83		
Place of Origin	Urban	225 (36.76)	47.92 ± 10.65	-0.104	0.917	44.50 ± 13.63	0.702	0.483
	Rural	387 (63.24)	48.02 ± 10.73			43.67 ± 14.52		
Only Child Status	Yes	162 (26.47)	47.86 ± 10.85	-0.174	0.862	42.95 ± 15.05	-1.070	0.285
	No	450 (73.53)	48.03 ± 10.64			44.34 ± 13.87		
Student Leader	Yes	359 (58.66)	48.45 ± 10.90	1.282	0.200	45.04 ± 14.17	2.213	0.027
	No	253 (41.34)	47.32 ± 10.37			42.47 ± 14.12		

Year of Study	First year	253 (41.34)	48.28 ± 10.37	0.168	0.845	45.22 ± 13.32	2.250	0.106
	Second year	204 (33.33)	47.72 ± 11.28			43.80 ± 14.93		
	Third year	155 (25.33)	47.85 ± 10.46			42.17 ± 14.46		
Age	≤17	15 (2.45)	45.73 ± 10.96	1.203	0.306	37.20 ± 7.12	1.743	0.123
	18	116 (18.95)	46.67 ± 12.30			41.59 ± 15.04		
	19	168 (27.45)	47.24 ± 10.74			44.67 ± 13.29		
	20	152 (24.84)	49.14 ± 10.05			45.38 ± 14.05		
	21	118 (19.28)	48.80 ± 10.33			44.38 ± 15.17		
	≥22	43 (7.03)	48.91 ± 8.50			43.95 ± 14.11		
Family Economic Status	Excellent	39 (6.37)	47.00 ± 14.17	1.237	0.294	34.97 ± 11.85	9.895	< 0.001
	Good	212 (34.64)	48.29 ± 10.02			45.56 ± 13.17		
	Average	270 (44.12)	47.47 ± 10.60			42.24 ± 14.86		
	Poor	66 (10.78)	48.08 ± 9.33			47.92 ± 12.86		
	Very poor	25 (4.08)	52.16 ± 13.73			52.92 ± 12.06		
Family Structure	Two-parent family	502 (82.03)	47.88 ± 10.70	0.230	0.795	44.84 ± 14.48	13.442	< 0.001
	Single-parent family	77 (12.58)	48.16 ± 10.93			42.17 ± 12.09		
	Other relatives/guardians	33 (5.39)	49.15 ± 10.20			34.94 ± 10.52		
Self-Rated Health	Good health	549 (89.71)	48.17 ± 10.67	2.025	0.142	45.22 ± 14.07	45.163	< 0.001
	Chronic physical illness	31 (5.07)	46.39 ± 4.43			34.58 ± 6.41		
	Mental health concerns	32 (5.23)	46.28 ± 14.62			31.69 ± 12.57		

Note. PSS = perceived social support; MWB = mental well-being; SD = standard deviation.

Correlation between PSS and MWB

Pearson's correlation analysis showed a significant positive association between PSS and MWB ($r = 0.347, p < 0.001$).

Associations between PSS and MWB

Simple linear regression analysis revealed a significant positive association between PSS and MWB ($B = 0.461$; 95% CI [0.362, 0.560], $p < 0.001$), accounting for 12.0% of the variance in MWB ($R^2 = 0.120, F(1, 610) = 83.535, p < 0.001$).

To further examine whether this association was independent of demographic and health-related factors, hierarchical multiple linear regression analysis was conducted (Table 3). Model 1, including demographic covariates, explained 15.3% of the variance in MWB ($R^2 = 0.153$). Adding PSS in Model 2 significantly increased the explained variance by 9.8% ($\Delta R^2 = 0.098, p < 0.001$), with a total explained variance of 25.2% ($R^2 = 0.252$). Both models were statistically significant (Model 1: $F(15, 596) = 7.203, p < 0.001$; Model 2: $F(16, 595) = 12.505, p < 0.001$).

In the final adjusted model, PSS remained positively associated with MWB ($B = 0.421, SE = 0.048, \beta = 0.317, p < 0.001$). Students reporting good health had higher MWB scores than those reporting mental health concerns ($\beta = 0.252, p < 0.001$). First-year students had higher MWB than third-year students ($\beta = 0.114, p = 0.021$). Compared with students living with relatives or guardians, those living in two-parent families ($\beta = 0.192, p = 0.004$) or single-parent families ($\beta = 0.127, p = 0.048$) reported higher MWB. Conversely, compared with students reporting a very poor family economic status, those reporting excellent ($\beta = -0.247, p < 0.001$), good ($\beta = -0.242, p = 0.007$), or average ($\beta = -0.341, p < 0.001$) economic status showed significantly lower MWB. The association between student leadership experience and MWB observed in the univariate analysis was no longer significant after adjustment.

Table 3: Hierarchical Multiple Linear Regression Analysis Examining Factors Associated with MWB among Nursing Students

Variable	Model 1: Demographic Variables					Model 2: Adding Social Support				
	B (95% CI)	SE	β	t	p	B (95% CI)	SE	β	t	p
Constant	35.003 [23.500, 46.505]	5.857	–	5.977	< 0.001	13.216 [1.359, 25.074]	6.038	–	2.189	0.029
Demographic characteristics										
Sex (Female vs. Male)	-0.699 [-3.615, 2.218]	1.485	-0.019	-0.47	0.638	-0.222 [-2.968, 2.525]	1.399	-0.006	-0.159	0.874
Age (years)	0.939 [-0.026, 1.904]	0.491	0.085	1.910	0.057	0.628 [-0.283, 1.539]	0.464	0.057	1.355	0.176

Place of Origin (Rural vs. Urban)	-1.206 [-3.514, 1.102]	1.175	-0.041	-1.026	0.305	-1.384 [-3.556, 0.788]	1.106	-0.047	-1.252	0.211
Only Child (Yes vs. No)	1.103 [-1.352, 3.558]	1.250	0.034	0.882	0.378	0.940 [-1.370, 3.251]	1.176	0.029	0.799	0.424
Student Leader (Yes vs. No)	-1.581 [-3.779, 0.618]	1.119	-0.055	-1.412	0.158	-0.955 [-3.068, 1.078]	1.056	-0.035	-0.942	0.346
Year of Study (Ref: Third year)										
First Year	3.750 [0.796, 6.705]	1.504	0.130	2.493	0.013	3.283 [0.501, 6.066]	1.417	0.114	2.318	0.021
Second Year	1.625 [-1.162, 4.413]	1.419	0.054	1.145	0.253	1.710 [-0.913, 4.333]	1.336	0.057	1.280	0.201
Family economic status (Ref: Very poor)										
Excellent	-16.548 [-23.290, -9.807]	3.433	-0.285	-4.821	< 0.001	-14.340 [-20.703, -7.978]	3.24	-0.247	-4.426	< 0.001
Good	-8.718 [-14.286, -3.150]	2.835	-0.293	-3.075	0.002	-7.222 [-12.472, -1.972]	2.673	-0.242	-2.701	0.007
Average	-11.583 [-17.093, -6.074]	2.805	-0.406	-4.129	< 0.001	-9.753 [-14.953, -4.553]	2.648	-0.341	-3.683	< 0.001
Poor	-4.073 [-10.237, 2.092]	3.139	-0.089	-1.298	0.195	-2.328 [-8.141, 3.486]	2.960	-0.051	-0.786	0.432
Self-Rated Health (Ref: Mental health concerns)										
Good Health	12.762 [7.818, 17.706]	2.517	0.273	5.070	< 0.001	11.771 [7.114, 16.429]	2.371	0.252	4.964	< 0.001
Chronic Physical Illness	4.509 [-2.144, 11.161]	3.387	0.070	1.331	0.184	4.535 [-1.725, 10.795]	3.187	0.070	1.423	0.155
Family structure (Ref: Other relatives/guardians)										
Two-Parent Family	6.323 [1.135, 11.511]	2.642	0.171	2.393	0.017	7.104 [2.219, 11.989]	2.487	0.192	2.856	0.004
Single-Parent Family	4.952 [-0.740, 10.643]	2.898	0.116	1.709	0.088	5.414 [0.058, 10.771]	2.728	0.127	1.985	0.048
PSS	–	–	–	–	–	0.421 [0.328, 0.515]	0.048	0.317	8.836	< 0.001
Model Statistics	Model 1					Model 2				
R ²	0.153					0.252				
Adjusted R ²	0.132					0.232				
ΔR ²	–					0.098				
F	7.203***					12.505***				
df	15,596					16,595				
ΔF	–					78.074***				
Δdf	–					1,595				

Note. ***= $p < 0.001$; B = unstandardized regression coefficient; SE = standard error; β = standardized regression coefficient; CI = confidence interval. Categorical variables were dummy coded, with reference categories indicated in parentheses.

DISCUSSION

In the present study, the Chinese nursing students reported a mean PSS score of 47.98 (SD=10.69). This level was comparable to that reported in a Chinese study (Zhu *et al.*, 2024) but was lower than levels reported in several international studies (Abualkibash *et al.*, 2025; Hamaideh *et al.*, 2024; Zhao *et al.*, 2023) and higher than that observed in other nursing student samples (Alsaqri *et al.*, 2019). Possible explanations for these differences include variations in the characteristics of nursing student samples, course duration, sociocultural backgrounds, and educational environments (Nageswaran & Apte, 2024). Further analysis was conducted on the scores of the three components of the PSS. Results showed that the support roles of family, friends, and significant others were relatively balanced. This distribution pattern was consistent with that of the studies by Alsaqri *et al.* (2019) and Abualkibash *et al.* (2025); however, Berdida *et al.* (2023) reported relatively lower support from significant others. PSS did not vary significantly according to demographic factors in the sample of nursing students. This result was consistent with that of the study by Nageswaran and Apte (2024).

Results showed that the mean MWB score in the present sample was 43.97 (SD = 14.19). Among the three dimensions of MWB, EWB had the highest mean score, followed by PWB, whereas SWB had the lowest mean score. This pattern suggests that nursing students may experience relatively stronger positive emotional states and personal psychological functioning, while social well-being may represent a comparatively weaker aspect of MWB. Previous studies have also reported variations in MWB dimensions across cultural contexts. For example, a study conducted in the Philippines found slightly higher levels of PWB than EWB, with SWB remaining relatively low (Bangcola, 2023), suggesting that the distributions of MWB dimensions may differ across cultural and educational settings. The reasons for the relatively higher EWB observed in the present study remain unclear.

Cultural values and emotional regulation patterns may be potential factors and warrant further investigation. Emotional restraint, although sometimes considered less adaptive in Western contexts, may serve certain adaptive functions in Chinese cultural contexts by facilitating interpersonal harmony (Chang & Xie, 2018). However, further research is needed to examine whether cultural values and emotional regulation patterns contribute to variations in MWB dimensions among nursing students.

The MWB of students from different groups was also compared. Students with leadership experience reported higher MWB scores, which might be associated with more opportunities for social engagement, greater access to peer resources, or higher self-efficacy (Abo Shereda, 2025). However, after adjusting for other covariates, the result was attenuated, suggesting that the observed relationship may be explained by other overlapping psychosocial or health-related factors rather than leadership experience alone. Zhou *et al.* (2022) suggested that the association between extracurricular or organizational participation and MWB may reflect broader psychosocial resources rather than the participation itself.

Students living in two-parent families and single-parent families reported higher MWB scores than those living with relatives or guardians. This finding is consistent with previous studies suggesting that family-related resources and support may be associated with students' psychological well-being (Jauhari *et al.*, 2022; Roy, 2026). However, the mechanisms underlying this association, such as the role of family support or other psychosocial resources, were not directly examined in the present study and require further investigation. Moreover, self-rated health status was significantly associated with MWB, with students reporting better health also reporting higher levels of MWB. This finding is consistent with previous research by Zhou *et al.* (2022).

MWB also differed across perceived family economic status; however, the pattern did not follow a straightforward socioeconomic gradient. Students reporting 'excellent' economic status had relatively lower MWB scores, whereas the 'very poor' group showed relatively higher MWB scores. Given that the 'very poor' group contained only 25 participants and served as the reference category in the regression model, these estimates may be unstable and should be interpreted with caution. The mechanisms underlying these differences were not directly examined in the present study. Future studies with larger and more balanced subgroups, and with a more representative reference category, are needed to verify this pattern.

The present study also identified a significant positive association between PSS and MWB. Pearson's correlation analysis showed a moderate positive association between PSS and MWB, consistent with previous studies (Alsubaie *et al.*, 2019; Harandi *et al.*, 2017). Furthermore, after adjusting for demographic and health-related variables, PSS remained significantly associated with MWB. Adding PSS to the model increased the explained variance by 9.8%. Although this represents a meaningful contribution, most of the variance in MWB remained unexplained, indicating that other psychological, social, and contextual factors may also contribute to students' MWB.

These findings are consistent with the main-effect model proposed by Cohen and Wills (1985), which posits that social support has a direct, beneficial association with mental health. In this study, perceived social support was directly associated with mental well-being, supporting a main-effect interpretation.

Limitations

This study had several limitations. The cross-sectional design limited the ability to determine temporal direction or causal relationships between PSS and MWB. Although PSS was associated with MWB, the possibility that MWB may also influence perceptions of social support cannot be excluded. The study was conducted at only one vocational college in China, which may limit the generalizability of the findings to other types of nursing students, other regions, practicing nurses, or students from other disciplines. In addition, the exclusion of students with diagnosed severe mental disorders or those receiving psychological treatment may have introduced selection bias and restricted the range of MWB scores, which may have limited the applicability of the findings to students experiencing more severe mental health difficulties. Both PSS and MWB were assessed using self-report questionnaires, which may have resulted in common-method bias and social desirability bias. Although several demographic and health-related variables were adjusted for, other potential confounding factors were not examined, and some demographic subgroups had relatively small sample sizes, which may have affected the stability of subgroup comparisons. Moreover, the multiple univariate comparisons

may have increased the risk of Type I error, although Bonferroni adjustment was applied for post hoc comparisons. Therefore, the findings from these comparisons should be interpreted cautiously.

Future Scope

Future research should recruit larger and more diverse samples from multiple regions and types of institutions and should include students from other disciplines and practicing nurses to enhance the generalizability of the findings. Longitudinal studies are also needed to clarify the directionality of the relationship between PSS and MWB.

CONCLUSION

This study examined PSS and MWB among Chinese higher vocational nursing students, a group that has received limited attention in previous research. Perceived social support was positively associated with mental well-being, consistent with the main-effect model. The cross-sectional design means that only an association, not a causal relationship, can be established. Future research using longitudinal or experimental designs is needed to clarify the nature of this association.

CRedit Author Contributions Statement

Y.Z: Conceptualization, methodology, investigation, data curation, formal analysis, & writing – original draft. **V. R:** Supervision, writing – review & editing. **A. A:** Initial supervision and research guidance. **Y. L:** Methodology and formal analysis. **Z. Z:** Project administration and resources. **S. L:** Investigation & data curation.

AI Assistance Statement

AI tools were used for language editing and proofreading to improve the clarity and readability of the manuscript.

Conflict of Interest

The authors declare no conflict of interest.

ACKNOWLEDGEMENT

The authors are sincerely thankful to the nursing students in this study and acknowledge the support provided by the teaching staff during the research process.

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