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Perceived Social Support in Mental Disorder: Insights from the SSQ-6 and Its Associations with Sociodemographic Characteristics, Clinical Features, and Admission Patterns in a Tertiary Psychiatric Care Unit

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Abstract

Objectives: This study aims to evaluate perceived social support (SS) in inpatients with mental disorders, its association with sociodemographic and clinical characteristics, and its impact on hospitalization patterns, highlighting the importance of evaluating and enhancing SS.

Methods: This hospital-based study, using a cross-sectional design, was conducted at the Psychiatric Clinic of University Hospital Larissa, Greece and included 280 consecutive admitted patients. SS was assessed with short form social support questionnaire SSQ-6, and sociodemographic and clinical characteristics were examined along with possibility of reentry during a 32-month period.

Results: Most respondents reported low SS levels, with significant differences in SS quantity across diagnostic categories. Sociodemographic factors, including age, work status, housing conditions, medical insurance and the number of cohabitants, were significantly associated with both SS quantity and satisfaction. Clinical factors, including diagnosis, illness duration and prior admissions also showed significant associations with both dimensions of SS. Multivariate analysis identified increasing age, urbanicity, homelessness, retirement, and unemployment as independent risk factors for lower SS quantity, while cohabitation and affective disorder diagnoses were protective factors. Regarding SS satisfaction, homelessness, retirement, and prolonged illness duration, emerged as risk factors, while medical adherence was protective. Notably, SS quantity was marginally negatively associated with involuntary type of admission. Low SS significantly increased the likelihood of readmission during the 32-month follow-up period.

Conclusions: The study highlights the critical role of assessing and enhancing SS in hospitalized patients with mental disorders. Sociodemographic and clinical factors significantly influence SS, with poor SS contributing to a higher risk of involuntary admission and increased readmission likelihood.

Key words: social support, severe mental illness, involuntary hospitalization, readmission, cross-sectional study,

Introduction

Social support (SS) refers to the presence or availability of individuals who provide care, appreciation, and emotional support [1]. According to Social Support Theory, such interpersonal resources enhance psychological well-being and contribute to mental health stability, partly through the mechanisms described in the buffering hypothesis, which posits that adequate SS mitigates the adverse effects of stress and reduces vulnerability to relapse[2,3]. Routine screening of perceived SS is therefore clinically relevant, as individuals with severe mental illness (SMI) often experience unmet support needs requiring timely and targeted interventions [4,5]. Extensive research has shown that people with mental disorders typically report reduced levels of perceived SS [5,6]. A range of sociodemographic and clinical variables influence SS [7,8]. Perceived SS has been shown to act as a protective factor, aiding recovery in mental illness, reducing the risk of relapse, and minimizing inpatient service use [9–11]. Previous studies indicated that smaller social networks are associated with higher use of inpatients services among psychotic disorder patients [12,13]. Poor SS increases the risk of relapses due to social withdrawal and lack of motivation [11], while higher SS was linked to fewer hospitalizations and lower positive symptoms in patients with psychosis [14].

Although international studies have examined the association between SS and involuntary hospitalization, evidence remains inconsistent and somewhat limited [15–19]. In Greece, where involuntary admissions remain disproportionately high compared to other European countries and families play a central caregiving role, empirical research on SS in psychiatric inpatients is notably scarce [20–22]. This gap highlights the need for studies investigating the social determinants of hospitalization patterns within the Greek mental-health system.

Building upon existing literature, the present study aims to (a) assess perceived SS among hospitalized patients with SMI in a tertiary psychiatric unit, (b) identify sociodemographic and clinical factors that act as risk or protective factors for low SS, and (c) examine the contribution of SS to involuntary admission and readmission. By emphasizing the role of SS in shaping psychiatric outcomes, this study underscores the importance of assessing and strengthening SS as an integral component of clinical care.

Methods

A hospital-based cross-sectional study was conducted at the Psychiatric Clinic of the University Hospital of Larissa (UHL) between March 2021 and October 2023, enrolling 280 adult inpatients. Patients were included if they met the International

Classification of Diseases, 10th Revision (ICD-10) diagnostic criteria for mood disorders, schizoaffective disorders, schizophrenia spectrum disorders, anxiety disorders, personality disorders, or addiction-related disorders, and were able to provide written informed consent. Exclusion criteria were: (a) hospital stay shorter than four days, considered insufficient for clinical stabilization and reliable assessment; (b) organic brain syndromes; (c) severe cognitive impairment or mental incapacity interfering with comprehension of study procedures or questionnaire completion, as assessed by the attending psychiatrist; (d) major language barriers; and (e) acute medical conditions preventing participation.

For patients with multiple admissions during the study period, only the index admission was included in the baseline dataset to avoid duplication of clinical and sociodemographic information. Subsequent admissions were recorded and analyzed as the readmission outcome. The study protocol was approved by the UHL Scientific Board. All participants provided written informed consent after receiving a comprehensive explanation of the study aims and procedures. Data were collected through structured face-to-face interviews lasting 15–20 minutes, during which the researcher assisted participants in completing the questionnaire battery. Clinical and sociodemographic data were cross verified with medical records, which were used as the definitive source in case of discrepancies.

Sociodemographic and clinical variables (age, gender, family status, education, occupational status, income, living conditions, medical insurance, living conditions, number of cohabitants diagnosis at discharge (based on ICD-10), illness duration, comorbidities, past hospitalizations, current hospitalization duration, outpatient follow-up, and medication adherence) were treated as predictors or potential confounders.

Short Form Social Support Questionnaire, SSQ-6 The SSQ-6 questionnaire was used to calculate a Social Support Number Score (SSQN) and a Social Support Satisfaction Score (SSQS) [23]. This tool, designed to capture emotional support networks in various important life situations [24], has been adapted and validated for use in Greek population [25]. The SSQN was calculated using 6 items and the total score ranges from 0 to 54. For each item, participants listed the initials of between zero and 9 people to whom they can turn in different situations. The SSQS score was calculated by asking participants to rate their level of satisfaction with the support received in each of the 6 scenarios. Participants rate their satisfaction on a Likert scale from 1 (very unsatisfied) to 6 (very satisfied). The SSQS total score ranges from 6 to 36. SSQN and SSQS categorical variables were created using a median split with low social support categorized as below the median and high social support categorized as above the median (SSQN median: 7.0, SSQS

median: 31.0). The high reliability of the SSQN and SSQS subscales (Cronbach's $\alpha = 0.848$ and 0.912, respectively) has been documented in our previous study [26].

Statistical Analyses

Data analysis was performed using R statistical software (R Core Team: R: A Language and Environment for Statistical Computing, Vienna, Austria: Foundation for Statistical Computing, Available from: <https://www.r-project.org/>). Continuous variables were summarized as mean \pm standard deviation when the assumption of normality was satisfied, and as median (IQR) when normality was violated. Normality was assessed using the Kolmogorov-Smirnoff test. Depending on the distribution, comparisons were conducted with t-tests, ANOVA, Mann-Whitney U, or Kruskal-Wallis tests. Categorical variables were presented as frequencies and percentages. Comparisons of categorical variables utilized the Chi-square test or Fisher's exact test. The Chi-square test was applied when all expected cell frequencies were ≥ 5 , while Fisher's exact test was used when this assumption was not met. Correlations were evaluated using Pearson's or Spearman's tests, as appropriate. Comparisons and correlations were performed to explore the associations between social support (SS) and patients' sociodemographic and clinical characteristics, in order to identify factors related to low SS levels and to assess their potential impact on hospitalization patterns, including involuntary admission and risk of readmission. The key outcomes analyzed were the Social Support Questionnaire—Number (SSQN) and Social Support Questionnaire—Satisfaction (SSQS) scores, both treated as continuous variables, consistent with previous studies using the SSQ-6 instrument. Therefore, multiple linear regression was applied to examine associations between these scores and the sociodemographic and clinical variables.

Results

Sample characteristics

The study included 280 inpatients, of whom 180 (64.2%) were admitted involuntarily and 100 (35.8%) were voluntarily hospitalized. The median age was 50 years (IQR = 17.0), and 63.9% were male. Most participants were single (58.6%). Regarding employment status, 45.4% were unemployed, and 32.5% retired. The majority owned their residence (76.1%) and lived in urban areas (67.5%). Clinically, 50% of the patients had a schizophrenia-spectrum disorder and 33.6% affective disorder. A total of 72.8% had an illness duration of ≥ 10 years, and 59.3% reported no previous medication adherence. Regarding hospitalization history, 73.6% had at least one previous psychiatric admission. Full

sociodemographic and clinical details are provided in Tables 1 and 2 of our previous publication [26].

Assessment of Short Form Social Support Questionnaire Scores (SSQ-6) by legal type of admission

Social support scores differed between voluntarily and involuntarily hospitalized patients (Table 1). Involuntarily hospitalized patients showed lower SSQN scores compared with voluntary patients (mean \pm SD: 8.1 ± 7.3 vs. 9.8 ± 7.2), although the difference was not statistically significant (Coef = 0.97; 95% CI = 0.94–1.00; p = 0.074). A similar pattern was observed for SSQS, with involuntary patients reporting slightly lower scores (27.7 ± 9.2 vs. 29.1 ± 8.1), without statistical significance (Coef = 0.98; 95% CI = 0.95–1.01; p = 0.183). When examined categorically, patients with low SSQN were more frequently admitted involuntarily compared with those with high SSQN (68.2% vs. 59.3%; OR = 0.68; 95% CI = 0.42–1.12; p = 0.128), although this association was not statistically significant. Likewise, no significant association was observed between SSQS categories and admission status; the proportion of involuntary admissions was similar among patients with low and high SSQS (65.1% vs. 63.4%; OR = 0.93; 95% CI = 0.57–1.52; p = 0.775). Overall, more than half of the sample fell into the low social support categories for both SSQN and SSQS.

Table 1: Descriptive and Univariable Analyses of Short Form Social Support Questionnaire (SSQ-6) Scores by Legal Type of Admission

Variable	Measure	Voluntary group of patient (n=100)	Involuntary group of patient (n=180)	Univariate Analyses	t / Wald χ^2	df (degrees of freedom)	R ²	P-value
SSQ N	Mean (SD)	9.8 (7.2)	8.1 (7.3)	Coef=0.97 (0.94-1.00)	t=1.81	278	0.02	0.074

SSQ N binary	Lo w	50 (31.8)	107 (68.2)	Reference				
	Hig h	50 (40.7)	73 (59.3)	OR=0.68 (0.42-1.12)	Wald $\chi^2=2.32$	1		0.128
SSQ S	Me an (SD)	29.1 (8.1)	27.7 (9.2)	Coef=0.98 (0.95-1.01)	t=1.33	278	0.01	0.183
SSQ S binary	Lo w	51 (34.9)	95 (65.1)	Reference				
	Hig h	49 (36.6)	85 (63.4)	OR=0.93 (0.57-1.52)	Wald $\chi^2=0.08$	1		0.775

Footnotes: ^a Univariable analyses include coefficients (Coef) for continuous variables and odds ratios (OR) for binary variables. ^b SD: Standard deviation. ^c SSQN: Social Support Number Score, SSQS: Social Support Satisfaction Score. ^d The cut-off values for categorizing low and high social support were determined using the median (SSQN: 7.0, SSQS: 31.0). ^e P-values indicate statistical significance: P<0.001(***), P<0.01(**), P<0.05(*), P-values close to 0.05 indicate borderline statistical significance

Short Form Social Support Questionnaire (SSQ-6) scores across diagnoses (ICD-10 Categories)

Individuals in the diagnostic category F20-F29 reported lower rates of social support (network and satisfaction) than the other diagnostic categories, while individuals with a diagnosis of F40-49 reported the highest rates. Table 2 shows that SSQN scores vary across different diagnostic groups. The p- value suggests that these differences are statistically significant.

Table 2 Comparison of Short Form Social Support Questionnaire (SSQ-6) Scores across Diagnoses (ICD-10 Categories)

	F10 -19 (n= 27)	F20 -29 (n= 140)	F30- 39 (n=9 4)	F40- F49 (n=7)	F60- F69 (n=12 0)	Total (N=28 0)	Test Statistic	df	P-value
SSQ N									
Me an (S D)	9.0 7 (6.7 6)	7.66 (6.5 0)	10.2 (8.73)	11.7 (4.31)	6.92 (3.23)	8.72 (7.29)	12.816	4	0.012 *(K- W)
Me dia n [IQ R]	7.0 0 [8.0 0]	6.00 [8.0 0]	8.00 [6.00]	11.0 [4.50]	6.50 [4.25]	7.00 [7.00]			
SS QS									
me an (S D)	27. 6 (10. 8)	27.0 (9.2 8)	29.9 (7.68)	29.9 (8.78)	29.8 (5.85)	28.2 (8.85)	8.508	4	0.075 (K-W)
Me dia n [IQ R]	34. 0 [17. 0]	30.0 [12. 3]	33.0 [9.00]	35.0 [9.00]	31.0 [11.5]	31.0 [13.0]			

Footnotes: ^a SD: Standard deviation. ^b IQR: Interquartile range. ^c SSQN: Social Support Number Score, SSQS: Social Support Satisfaction Score. ^d P-values indicate statistical significance: P< 0.001 (**), P < 0.01 (**), P < 0.05 (*), P-values close to 0.05 indicate borderline statistical significance ^e K-W: Kruskal-Wallis test

Associations of Short Form Social Support Questionnaire (SSQ-6) Scores with Sociodemographic and Clinical characteristics: Results from Univariate and Multivariate analyses

Univariable analyses (Table 3) identified significant associations between social support scores and several sociodemographic and clinical factors. Lower SSQN scores were associated with older age (Coef = -0.13; 95% CI -0.19 to -0.06; p < 0.001), homelessness (Coef = -7.21; 95% CI -12.34 to -2.08; p = 0.006), pensioner status (Coef = -5.01; 95% CI -7.31 to -2.71; p < 0.001), unemployment (Coef = -3.26; 95% CI -5.42 to -1.09; p = 0.003), living in "other" residence types (Coef = -5.82; 95% CI -10.27 to -1.37; p = 0.010), and multiple previous admissions (7-9: Coef = -3.66; 95% CI -6.84 to -0.48; >10: Coef = -4.18; 95% CI -7.02 to -1.33). Higher SSQN scores were associated with medical insurance (Coef = 1.88; 95% CI 0.09-3.68; p = 0.040), a greater number of cohabitants (Coef = 0.47; 95% CI 0.09-0.85; p = 0.015), and affective disorder diagnosis (F30-F39 vs F20-F29; Coef = 2.53; 95% CI 0.63-4.42; p = 0.009).

Lower SSQS scores were associated with older age (Coef = -0.10; 95% CI -0.18 to -0.02; p = 0.012), homelessness (Coef = -12.76; 95% CI -18.88 to -6.63; p < 0.001), retired status (Coef = -4.34; 95% CI -7.17 to -1.50; p = 0.003), living in "other" residence types (Coef = -7.39; 95% CI -12.79 to -1.99; p = 0.007), and multiple previous admissions (7-9: Coef = -6.23; 95% CI -10.08 to -2.38; p = 0.002). Higher SSQS scores were observed among patients with medical adherence (Coef = 2.43; 95% CI 0.32-4.53; p = 0.024), medical insurance (Coef = 2.75; 95% CI 0.58-4.92; p = 0.013), cohabitants (Coef = 0.68; 95% CI 0.22-1.14; p = 0.004), and affective disorder diagnosis (F30-F39 vs F20-F29; Coef = 2.88; 95% CI 0.57-5.20; p = 0.015).

Table 3: Univariate Analyses (Multiple linear regression) of Social Support Number Score (SSQN) and Social Support Satisfaction Score (SSQS) with Sociodemographic and Clinical Factors

SSQN (Network)		Mea n(S D)	Coefficie nt (95% CI)	t-value	df	R²	P- valu e
Age	Rang e: 19- 90	8.7 (7.3)	-0.13 (- 0.19 to - 0.06)	-3.81	278	0.05	<0.0 01***
Residenc e Type	Apart ment	9.5 (8.2)	Reference group				

	Deta ched resid ence	8.3 (6.1)	-1.15 (- 2.88 to 0.59)	-1.33	278	0.01	0.19 5
	Othe r	3.6 (3.6)	-5.82 (- 10.27 to - 1.37)	-2.61	278	0.05	0.01 0**
Housing Conditio ns	Own ed resid ence	9.2 (7.4)	Reference group				
	Rent ed resid ence	8.6 (8.5)	-0.61 (- 3.39 to 2.16)	-0.42	278	0.001	0.66 5
	Mort gage d resid ence	8.5 (5.1)	-0.71 (- 7.90 to 6.47)	-0.18	278	0.0001	0.84 6
	Livin g as a guest	6.8 (4.0)	-2.46 (- 5.53 to 0.60)	-1.65	278	0.02	0.11 5
	Hom eless ness	2.0 (2.6)	-7.21 (- 12.34 to - 2.08)	-2.83	278	0.06	0.00 6**
Work status	Empl oyee	11.8 (9.0)	Reference group				
	Pensi oner	6.8 (5.4)	-5.01 (- 7.31 to - 2.71)	-4.29	278	0.13	<0.0 01***
	Une mplo yed	8.6 (7.1)	-3.26 (- 5.42 to - 1.09)	-2.92	278	0.08	0.00 3**
Insuranc e(binary)	Unis ured	7.5 (7.1)					
	Insur ed	9.4 (7.3)	1.88 (0.09 to 3.68)	2.05	278	0.02	0.04 0*

Number of cohabita- nts	[0.0, 30.0]	8.7 (7.3)	0.47 (0.09 to 0.85)	2.47	278	0.02	0.01 5**
Diagnosi- s (ICD- 10)	F20- F29	7.7 (6.5)	Reference group				
	F10- F19	9.1 (6.8)	1.41 (-1.58 to 4.40)	0.93	278	0.003	0.35 4
	F30- F39	10.2 (8.7)	2.53 (0.63 to 4.42)	2.61	278	0.05	0.00 9**
	F40- F49	11.7 (4.3)	4.05 (-1.46 to 9.56)	1.42	278	0.02	0.14 9
	F60- F69	6.9 (3.2)	-0.75 (- 5.03 to 3.53)	-0.34	278	0.001	0.73 1
Illness duration (years)	≤1	12.6 (7.1)	Reference group				
	1-3	11.4 (10. 5)	-1.14 (- 5.23 to 2.94)	-0.61	278	0.01	0.58 3
	4-9	9.3 (8.6)	-3.26 (- 7.12 to 0.60)	-1.88	278	0.03	0.09 8
	10-19	8.3 (5.3)	-4.28 (- 8.03 to - 0.52)	-2.13	278	0.04	0.02 6*
	20-29	6.5 (5.4)	-6.07 (- 9.86 to - 2.28)	-3.07	278	0.06	0.00 2**
	30-39	8.9 (6.3)	-3.71 (- 8.59 to 1.16)	-1.57	278	0.02	0.13 5
	≥40	3.8 (3.3)	-8.79 (- 15.91 to - 1.67)	-2.48	278	0.05	0.01 6

Previous Admissions	0	10.5 (8.2)	Reference group				
	1-3	8.8 (7.4)	-1.65 (-3.79 to 0.49)	-1.57	278	0.02	0.13 1
	4-6	8.6 (6.4)	-1.86 (-4.73 to 1.01)	-1.33	278	0.01	0.20 3
	7-9	6.8 (7.8)	-3.66 (-6.84 to -0.48)	-2.11	278	0.04	0.02 4*
	>10	6.3 (3.8)	-4.18 (-7.02 to -1.33)	-3.06	278	0.06	0.00 4**
SSQS (Satisfaction)							
Age	Rang e: 19–90	28.2 (8.9)	-0.10 (-0.18 to -0.02)	-2.55	278	0.02	0.01 2*
Residence Type	Apartmen t	28.8 (7.8)	Reference group				
	Deta ched hous e	28.1 (9.6)	-0.61 (-2.72 to 1.50)	-0.57	278	0.001	0.56 8
	other	21.4 (10.8)	-7.39 (-12.79 to -1.99)	-2.77	278	0.06	0.00 7**
Housing Conditions	Own ed Resid ence	28.9 (8.5)	Reference group				
	Rent ed	27.9 (9.6)	-1.02 (-4.33 to 2.30)	-0.60	278	0.01	0.54 7

	Residence						
	Mortgage d residence	28.5 (8.7)	-0.38 (- 8.96 to 8.20)	-0.08	278	0.0001	0.93 0
	Living as a guest	26.1 (8.9)	-2.76 (- 6.42 to 0.90)	-1.54	278	0.02	0.13 9
	Homeless ness	16.1 (7.1)	-12.76 (- 18.88 to - 6.63)	-4.00	278	0.15	<0.0 01***
Work status	Employee	30.7 (7.4)	Reference group				
	Pensioner	26.4 (10. 5)	-4.34 (- 7.17 to - 1.50)	-3.10	278	0.06	0.00 3
	Unemployed	28.3 (8.0)	-2.44 (- 5.11 to 0.22)	-1.88	278	0.02	0.07 3**
Insurance binary	Uninsured	26.4 (9.7)	-				
	Insured	29.1 (8.2)	2.75 (0.58 to 4.92)	2.52	278	0.02	0.01 3*
Number of Cohabitu nts	[0.0, 30.0]	28.2 (8.9)	0.68 (0.22 to 1.14)	2.90	278	0.03	0.00 4**
Diagnosi s (ICD-10)	F20- F29	27.0 (9.3)	Reference group				
	F10- F19	27.6 10.8)	0.58 (-3.07 to 4.22)	0.31	278	0.001	0.75 6
	F30- F39	29.9 (7.7)	2.88 (0.57 to 5.20)	2.38	278	0.04	0.01 5*

	F40-F49	29.9 (8.8)	2.88 (-3.84 to 9.60)	0.80	278	0.01	0.400
	F60-F69	29.8 (5.8)	2.77 (-2.45 to 7.99)	1.03	278	0.01	0.297
Illness duration (years)	≤ 1	31.4 (7.6)	Reference group				
	1-3	29.8 (8.2)	-1.51 (-6.40 to 3.38)	-0.63	278	0.01	0.543
	4-9	27.9 (8.8)	-3.46 (-8.08 to 1.16)	-1.45	278	0.02	0.142
	10-19	30.1 (6.6)	-1.28 (-5.77 to 3.21)	-0.56	278	0.01	0.577
	20-29	24.2 (10.2)	-7.11 (-11.64 to -2.57)	-3.05	278	0.06	0.002**
	30-39	32.1 (7.3)	0.71 (-5.13 to 6.55)	0.71	278	0.003	0.811
	≥ 40	21.4 (13.8)	-9.95 (-18.48 to -1.43)	-2.36	278	0.05	0.022*
Somatic Comorbidity	No	27.7 (9.1)	-				
	Yes	30.2 (7.7)	2.51 (-0.01 to 5.04)	1.97	278	0.02	0.051
Medical Adherence	No	27.2 (9.6)	-				
	Yes	29.6 (7.5)	2.43 (0.32 to 4.53)	2.23	278	0.02	0.024*
Previous Admissions	0	29.7 (8.2)	Reference group				

	1-3	28.9 (8.6)	-0.85 (- 3.45 to 1.74)	-0.64	278	0.01	0.51 7
	4-6	28.2 (8.7)	-1.54 (- 5.02 to 1.93)	-0.84	278	0.01	0.38 3
	7-9	23.5 (10. 5)	-6.23 (- 10.08 to - 2.38)	-3.25	278	0.08	0.00 2**
	>10	26.7 (8.8)	-3.03 (- 6.48 to 0.41)	-1.87	278	0.02	0.08 4

Footnotes: ^a SD: Standard deviation. ^b 95% CI: 95% Confidence Interval. ^c SSQN: Social Support Number Score, SSQS: Social Support Satisfaction Score. ^d Reference group: Group used for comparison in the univariate analyses. ^e P-values indicate statistical significance: P<0.001(**), P<0.01 (**), P <0.05 (*), P-values close to 0.05 indicate borderline statistical significance

Multivariable analyses (Table 4) identified key determinants of social support quantity and satisfaction. For SSQN (network size), lower scores were independently associated with older age (Coef = -0.14; 95% CI -0.21 to -0.07; p < 0.001), living in "other" residence types (Coef = -5.45; 95% CI -9.72 to -1.17; p = 0.013), retirement (Coef = -2.95; 95% CI -5.29 to -0.62; p = 0.013), and unemployment (Coef = -2.40; 95% CI -4.56 to -0.24; p = 0.030). Conversely, higher SSQN scores were observed among individuals with more cohabitants (Coef = 0.39; 95% CI 0.03-0.76; p = 0.035), affective disorder diagnosis (F30-F39 vs F20-F29; Coef = 2.17; 95% CI 0.35-4.00; p = 0.020), and a greater number of children (Coef = 0.42; 95% CI 0.03-0.81; p = 0.034).

For SSQS (perceived satisfaction), lower scores were independently associated with living in "other" housing types (Coef = -8.15; 95% CI -14.19 to -2.11; p = 0.008) and retirement (Coef = -3.65; 95% CI -6.44 to -0.86; p = 0.011). Medical adherence was positively associated with SSQS (Coef = 2.06; 95% CI -0.00-4.13; p = 0.050).

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Table 4 Multivariate Analysis (Multiple linear regression) of Factors Associated with Social Support Number Score (SSQN) and Social Support Satisfaction (SSQS) Scores in Patients with Severe Mental Illness

Dependent Variable	Independent Variable	Coefficient (95% CI)	t value	P-value
SSQN(Network)	Age	-0.14 (-0.21 to -0.07)	-3.95	<0.001***
	Residence Type: detached house vs apartment	-1.20 (-3.00 to 0,59)	-1.33	0.187
	Residence Type: other vs apartment	--5.45 (-9.72 to -1.17)	-2.52	0.013*
	Urbanicity	-1.80(-3.68 to 0.07)	-1.91	0.059
	Work status: Retired vs Employee	-2.95 (-5.29 to 0.62,)	-2.50	0.013*
	Work status: Unemployed vs Employee	-2.40 (-4.56 to 0.24)	-2.19	0.030*
	Number of cohabitants	0.39 (0.03 to 0.76)	2.13	0.035*
	Diagnosis (ICD-10): F10-F19 vs F20-F29	2.42 (-0.71 to 5.54)	1.53	0.129
	Diagnosis (ICD-10): F30-F13 vs F20-F29	2.17 (0.35 to 4.00)	2.37	0.020*
	Diagnosis (ICD-10): F60-F69vs F20-F29	-3.05 (-7.16 to 1.05)	-1.46	0.144
	Diagnosis (ICD-10): F40-F49vs F20-F29	-0.02 (-0.06 to 0.01)	-1.44	0.154
	Substance Comorbidity	-1.88 (-4.01 to 0.24)	-1.76	0.082
	Number of children	0.42 (0.03 to 0.81)	2.14	0.034*
	Medical Insurance (yes)	-0.70 (-1.60 to 0.20)	-1.53	0.127
	Outpatient Monitoring	-0.80 (-1.65 to 0.06)	-1.84	0.068

Model statistics — Adjusted $R^2 = 0.15$; $F(13, 266) = 4.91$; $p < 0.001$.

SSQS (Satisfaction)	Housing Conditions: Rented Residence vs Owned Residence)	-0.60 (-3.80 to 2.60)	-0.37	0.712
	Housing Conditions: Mortgaged Residence vs Owned Residence)	-2.20 (-10.51 to 6.11)	-0.52	0.602
	Housing Conditions: Living as a guest vs Owned Residence)	-2.56 (-6.08 to 0.95)	-1.43	0.152
	Housing Conditions: Other vs Owned Residence)	-8.15 (-14.19 to -2.11)	-2.66	0.008**
	Work Status: Retiree vs Employee	-3.65 (-6.44 to 0.86)	-2.57	0.011*
	Work Status: Unemployed vs Employee	-1.29 (-3.94 to 1.37)	-0.96	0.340
	Number of cohabitants	0.67 (-0.03 to 1.37)	1.89	0.060
	Illness duration(years): 1-3 vs <1	-0.40 (-5.17 to 4.37)	-0.17	0.868
	Illness duration(years): 4-9 vs <1	-1.80 (-6.40 to 2.80)	-0.77	0.441
	Illness duration(years): 10-19 vs <1	0.52 (-3.99 to 5.04)	0.23	0.820
	Illness duration(years): 20-29 vs <1	-4.45 (-9.08 to 0.18)	-1.89	0.059
	Illness duration(years): 30-39 vs <1	1.85 (-4.10 to 7.80)	0.61	0.541
	Illness duration(years): 40 vs <1.	-6.82 (-15.32 to 1.68)	-1.58	0.116
	Medical adherence (yes vs no)	2.06 (-0.00 to 4.13)	1.97	0.050*

Model summary: Adjusted R² = 0.15, F(16, 263) = 4.07, p < 0.001

Footnotes: ^a 95%CI: 95% Confidence Interval. ^b SSQN: Social Support Number Score, SSQS: Social Support Satisfaction Score. ^c P-values indicate statistical significance: P<0.001(**), P<0.01 (**), P <0.05 (*), P-values close to 0.05 indicate borderline statistical significance

Association of Levels of Social Support (SSQ-6) with Readmission during the study period

Regarding readmission (Table 5), patients with lower SSQN scores had a higher rate of readmission compared with those with higher SSQN (54.1% vs. 42.3%), although this difference did not reach statistical significance ($p = 0.057$). Conversely, SSQS was significantly related to readmission status: participants reporting low satisfaction levels were more frequently readmitted than those with higher satisfaction (54.8% vs. 42.5%; $p = 0.035$).

Table 5 Association of Levels of Social Support (SSQ-6) with Readmission during the study period

SSQN (Network)	Low (N=157)	High (N=123)	Test statistic	df	P-value
Readmission binary					
Yes	85 (54.1%)	52 (42.3%)	$\chi^2=3.64$	1	0.057
No	71 (45.2%)	69 (56.1%)			
Missing data	1 (0.6%)	2 (1.6%)			
SSQS (Satisfaction)	Low (N=146)	High (N=134)			
Readmission binary					
Yes	80 (54.8%)	57 (42.5%)	$\chi^2=4.41$	1	0.035*
No	64 (43.8%)	76 (56.7%)			
Missing data	2 (1.4%)	1 (0.7%)			

Footnotes: ^a SSQN: Social Support Number Score, SSQS: Social Support Significance Score. ^b P-values indicate statistical significance P<0.001 (**), P<0.01 (**), P<0.05 (*), P-values close to 0.05 indicate borderline statistical significance

Discussion

To our knowledge, this is the first hospital-based study in Greece to examine subjective social support (SS) across different diagnostic categories, explore its relationship with a broad range of sociodemographic and clinical variables, and evaluate its influence on hospitalization patterns in inpatients with SMI. The study assessed both network size and satisfaction with received emotional support,

providing a multidimensional perspective on perceived SS and its potential impact on clinical outcomes, including type of admission and readmission.

A substantial proportion of participants reported low SS, both in terms of network size (56.07%) and satisfaction (52.14%), consistent with previous studies documenting diminished support in individuals with SMI [5,6,27]. Analysis of SSQ-6 network scores revealed significant differences between diagnostic groups. Patients with schizophrenia spectrum disorders exhibited the lowest median network scores, confirming earlier findings using similar instruments [28] and supporting prior evidence on the social limitations associated with psychotic disorders [5,29]. The present finding highlights significant variations in perceived social support across different mental health diagnoses. Similarly, Goldberg notes that the smaller network size is associated with the primary diagnosis of psychotic disorder rather than affective disorder [29]. As pointed out earlier, each mental illness has its own sensitivity to environmental supporting factors [30]. Specifically, the significant lower levels of social support observed among individuals with schizophrenia spectrum disorders suggest potential challenges in forming and maintaining supportive networks, possibly linked to social withdrawal or cognitive impairments. In contrast, individuals with affective disorders may exhibit a greater inclination or ability to seek and sustain social relationships, reflecting their differing social and emotional needs. These disparities underscore the necessity of adopting a diagnosis-specific approach to enhance social support, integrating strategies that address unique barriers while leveraging existing strengths within each diagnostic group.

Demographic and clinical variables demonstrated complex associations with SSQ-6 scores. Older age was consistently associated with smaller networks and lower satisfaction, supporting previous research [31,32]. Urban residence showed a marginally non-significant association ($p=0.059$) with smaller networks, suggesting potential differences in social network structure between urban and rural populations, though findings are inconsistent with some studies reporting enhanced urban social networks [33]. Homelessness, unemployment, and retirement (primarily due to disability) emerged as key risk factors for diminished social support, both quantitatively and qualitatively, aligning with international evidence linking unemployment and social exclusion to reduced support [34,35]. Additionally, other studies emphasized the impact of income and occupational status on network diversity and their nuanced effects on network restriction in terms of social roles [7].

Clinical variables revealed significant associations with social support. Longer duration of mental illness was negatively correlated with SSQ-6 (network and satisfaction) and identified as an independent risk factor for SS satisfaction,

consistent with prior research [35,36]. However, a prospective study by Muller et al. suggested that network diversity and perceived social support may not fully align with the concept of social disintegration over the course of mental illness [7]. The reduction in social support networks could stem from the erosive impact of mental illness on interpersonal relationships and the stigma associated with psychiatric conditions. Individuals with chronic mental illness may struggle to recognize or value received support, resulting in lower satisfaction levels with their social networks. Moreover, long-term illness may distort the quality of information regarding a patient's support system, further complicating the assessment of social support [37]. Frequent hospital admissions were associated with smaller networks and lower satisfaction with social support, consistent with prior findings [8]. Additionally, medication compliance emerged as a protective factor for perceived satisfaction, a result supported by international literature [38].

While the quantity of SS was only marginally associated with the legal type of admission, patients with larger networks were less likely to experience involuntary hospitalization. This aligns with literature indicating that poor social support may predispose to involuntary admissions [17,19,20].

Furthermore, poor social support was significantly associated with an increased likelihood of readmission during the study period, a result also supported by international studies [10,11]. These significant findings underscore the pivotal role of social support in influencing hospitalization patterns and managing serious mental illness, as outlined previously in empirical findings and in Social Support theory. Adequate social support not only helps prevent crises but also reduces the need for hospitalization. Conversely, a lack of emotional support can lead to social isolation, exacerbate psychological distress, and increase the risk of hospitalization.

The cross-sectional nature of the study cannot determine causality. However, these results suggest the need for interventions to improve SS and reduce hospitalizations. Some possible interventions might include: peer group therapies to provide a safe and supportive environment where patients can share their experiences, draw support from others and develop social skills [39], education of patients and their families about the importance of social support and communication skills to improve relationships and support in their environment [40], special vocational rehabilitation programs for unemployed and retirees to enhance perceived SS [41], enhancement of monitoring of patients with long term mental illness, enhancement of medical adherence [42] and finally, development and strengthening of community mental health and social services in order to

provide more support options for patients and reduce the need for hospitalization [43].

Limitations and Strengths

The study has a number of limitations that must be taken into account in the result interpretation. First, the cross-sectional nature of the present does not allow exploring the cause-and-effect relationship of the sociodemographic and illness-related parameters and social support. Additionally, social support was assessed at a single time point; longitudinal evaluation would offer greater insight into changes over time and their clinical implications. The study also relied on self-reported measures, which may be subject to social desirability bias.. In addition, patients were not assessed for other aspects that relate to SS, such as perceived stress [44], family functioning [45] and personality traits [46]. These parameters should be considered for future research. Finally, a portion of the sample was recruited in March 2021, when COVID-19 restrictions were still active in Greece. These conditions may have influenced perceived social support and help-seeking behavior, potentially introducing selection bias, although admission procedures at the psychiatric unit remained unchanged during this period.

However, compared to previous studies on SS, the present study has a larger sample size despite the widely recognized difficulties in the recruitment of involuntary admitted patients in an acute setting [47], it examines a larger range of factors, including type of hospitalization, readmission and different diagnosis, that are very applicable to clinical practice and patient care. Taking into consideration that the domestic rates of involuntary admission compared to international standards are extremely high [48] our results have additional weight. In addition, the scientific originality of the present extensive study is supported by the fact that it incorporates and brings to the forefront the social dimension of health, subjective aspects and a wide range of psychosocial factors with respect to inpatients in an acute setting.

Conclusions

Social support, both in terms of network size and satisfaction, is closely linked to a range of demographic and clinical variables, with profound implications for patient outcomes. Most inpatients reported low levels of social support, particularly those with schizophrenia spectrum disorders, emphasizing diagnosis-specific disparities. These differences underline the need for tailored interventions that address the unique social and emotional needs of each diagnostic group. Demographic factors, such as older age, homelessness, unemployment, and retirement, were associated with diminished social support, while clinical factors, including the duration of illness and frequent hospitalizations, further compounded this reduction. Conversely, medication compliance emerged as a protective factor for perceived support satisfaction. Poor social support was a

significant predictor of readmission and marginally associated with involuntary hospitalization, underscoring its critical role in preventing relapses and reducing hospital dependency. This study reinforces the importance of assessing and addressing social support as an integral component of care for individuals with SMI, offering valuable insights for future research and clinical practice.

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Declarations

This study was approved by the Internal Ethics and Deontology Committee of the Department of Medicine, University of Thessaly and was conducted in accordance with the Declaration of Helsinki. All participants provided written informed consent prior to their participation.

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Conflict of Interest Statement

The authors declare that there are no conflicts of interest regarding the publication of this paper

Author Contributions

Maria T. Dalliou contributed to the conception and design of the study, data collection, analysis, interpretation of findings and drafting of the manuscript.

Konstantinos S. Bonotis contributed to the conception and design of the study, interpretation of findings, provided clinical expertise, and participated in manuscript revision.

Christos Hadjichristodoulou and Ioannis Stefanidis participated in the final supervision of the study.

All authors read and approved the final version of the manuscript.

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