ARTÍCULO ORIGINAL

Gac Méd Caracas 2026;134(Supl 2):S306-S315
DOI: 10.47307/GMC.2026.134.S2.6

Cognitive Impairment in Patients with Schizophrenia: Prevalence and Clinical Correlates at the Maracaibo Psychiatric Hospital, Venezuela

Deterioro cognitivo en pacientes con esquizofrenia: prevalencia y correlatos clínicos en el Hospital Psiquiátrico de Maracaibo, Venezuela

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SUMMARY

Background: *Cognitive impairment is a core feature of schizophrenia and a key determinant of functional outcome, yet local evidence from Latin America remains limited. The objective of this study is to estimate the prevalence of MoCA-defined cognitive impairment and describe clinical correlates in patients with schizophrenia treated at a tertiary psychiatric hospital in Maracaibo, Venezuela.*
Material and methods: *Descriptive, cross-sectional study of 100 consecutive DSM-5-TR schizophrenia patients assessed between November 2023 and October 2024. Cognitive screening used the Montreal Cognitive Assessment (MoCA) with the standard education adjustment.*
Results: *The mean age was 37.9 ± 9.2 years, and 80 % were male. Cognitive impairment was present in 89 % of participants (89/100; 95 % CI, 81.4–93.7), predominantly mild. Mean total MoCA scores were 20.63 ± 4.10 (95 % CI, 19.10–22.16) in patients <35 years and 21.17 ±5.80 (95 % CI, 19.79-22.55) in those ≥35 years. Visuospatial/executive scores were higher in patients aged <35 years (mean difference: 0.69 points; 95 % CI: 0.39-0.99). Across illness-duration categories, the lowest mean total MoCA score was observed in the 6–10 years group (17.6 ± 1.05; 95 % CI, 16.85-18.35), and all participants in this category met criteria for impairment (10/10; 95 % CI, 72.2-100).*
Conclusions: *In this clinical sample, cognitive*

DOI: https://doi.org/10.47307/GMC.2026.134.S2.6

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Recibido: 22 de noviembre 2025
Aceptado: 25 diciembre 2025

impairment was common, and MoCA profiles varied across age and illness-duration strata. Routine cognitive screening may help identify patients who could benefit from targeted cognitive interventions.

Keywords: *Schizophrenia, cognitive impairment, Montreal cognitive assessment; prevalence; Venezuela; neuropsychological assessment.*

RESUMEN

Introducción: *El deterioro cognitivo es una característica central de la esquizofrenia y un determinante clave del resultado funcional; sin embargo, la evidencia local en América Latina sigue siendo limitada. El objetivo de este estudio es estimar la prevalencia del deterioro cognitivo definido por el MoCA y describir correlatos clínicos en pacientes con esquizofrenia tratados en un hospital psiquiátrico terciario en Maracaibo, Venezuela.*
Material y métodos: *Estudio descriptivo transversal de 100 pacientes consecutivos con esquizofrenia según DSM-5-TR, evaluados entre noviembre de 2023 y octubre de 2024. La evaluación cognitiva se realizó mediante la Evaluación Cognitiva de Montreal (MoCA), con ajuste por nivel educativo estándar.*
Resultados: *La edad media fue de 37,9 ± 9,2 años y el 80 % eran hombres. El deterioro cognitivo estuvo presente en el 89 % de los participantes (89/100; IC del 95 %, 81,4-93,7), predominantemente leve. Las puntuaciones medias totales de MoCA fueron de 20,63 ± 4,10 (IC del 95 %, 19,10-22,16) en pacientes <35 años y de 21,17 ± 5,80 (IC del 95 %, 19,79-22,55) en pacientes ≥35 años. Las puntuaciones visoespaciales/ejecutivas fueron más altas en pacientes <35 años (diferencia de medias de 0,69 puntos, IC del 95 %, 0,39-0,99). En todas las categorías de duración de la enfermedad, la puntuación media total de MoCA más baja se observó en el grupo de 6 a 10 años (17,6 ± 1,05; IC del 95 %, 16,85-18,35), y todos los participantes de esta categoría cumplieron los criterios de deterioro (10/10; IC del 95 %, 72,2-100).*
Conclusiones: *En esta muestra clínica, el deterioro cognitivo fue frecuente y los perfiles de MoCA variaron según la edad y la duración de la enfermedad. El cribado cognitivo rutinario puede ayudar a identificar a los pacientes que podrían beneficiarse de intervenciones cognitivas específicas.*

Palabras clave: *Esquizofrenia; deterioro cognitivo, evaluación cognitiva de Montreal; prevalencia; Venezuela; evaluación neuropsicológica.*

INTRODUCTION

Schizophrenia is a severe and complex mental disorder that poses a significant global health challenge, affecting an estimated 24 million individuals, which corresponds to approximately 1 in 300 people (0.32 %) worldwide (1). This prevalence rate rises to 1 in 222 adults (0.45 %) (1). The personal, social, and economic burden of the illness is profound, often leading to long-term disability, social isolation, and a reduced life expectancy (2). While traditionally characterized by its striking positive psychotic symptoms, such as delusions, hallucinations, and disorganized speech, the clinical profile of the illness encompasses a far broader range of debilitating features (2). Beyond these more recognizable symptoms, many patients also struggle with negative symptoms, including avolition (a lack of motivation), alogia (poverty of speech), and anhedonia (inability to feel pleasure), which further impair daily functioning (3). Within these cognitive symptoms, alterations in memory, attention, processing speed, and executive function can persist throughout the course of the illness and do not respond adequately to conventional pharmacological treatments (3).

Indeed, cognitive dysfunction is recognized as a central and persistent feature of schizophrenia, affecting domains such as attention, working memory, processing speed, executive function, and social cognition (4). These impairments are not transient but are often present before the first psychotic episode and remain relatively stable over time, even during periods of symptomatic remission (5). Cognitive deficits are strong predictors of occupational and social functioning and often persist despite control of psychotic (positive) symptoms (5). Consequently, they are a primary determinant of a patient's ability to reintegrate into the community, maintain employment, and achieve functional recovery. Contemporary reviews estimate that a large proportion of patients with schizophrenia experience measurable cognitive deficits across multiple domains (6). However, the precise extent and pattern of impairment can vary considerably across studies and cultural and clinical settings,

with data from many low- and middle-income countries remaining particularly scarce (6). This gap in global data underscores the need for assessment tools that are not only effective but also culturally adaptable and easy to administer in diverse healthcare environments.

To effectively identify these deficits in clinical practice, brief and reliable screening tools are essential. The Montreal Cognitive Assessment (MoCA) is a brief, multidomain instrument validated across diverse neuropsychiatric populations and increasingly used to screen for cognitive deficits in schizophrenia (7). The MoCA evaluates several key domains: visuospatial/executive abilities, naming, attention, language, abstraction, delayed recall, and orientation. It yields a single total score out of 30, with established cut-offs indicating mild cognitive impairment (7). The tool's brevity, accessibility, and proven sensitivity make it highly attractive for use in busy psychiatric settings where more extensive neuropsychological batteries are often impractical (8).

In Venezuela, and particularly in the state of Zulia, systematic research characterizing cognitive impairment in schizophrenia is severely limited (9). Generating local estimates is crucial for several reasons: it informs clinical assessment practices, guides the development of targeted cognitive remediation strategies, and helps policymakers plan for rehabilitative resources tailored to the specific needs of the community (10). Therefore, the present study aimed to determine the prevalence of cognitive impairment using the MoCA in a sample of patients with schizophrenia attending the Maracaibo Psychiatric Hospital. A secondary objective was to explore potential associations between cognitive performance and key sociodemographic and clinical variables, including age, sex, education, socioeconomic status, employment status, duration of illness, medication type, and history of hospitalizations.

METHODS

Study design and setting

This was a descriptive, observational, cross-sectional study with correlational analysis. The study was conducted at the Hospital Psiquiátrico de Maracaibo, Zulia State, Venezuela, from November 2023 to October 2024. The local postgraduate academic committee approved the study protocol, and participants (or their legal representatives) provided informed consent in accordance with institutional procedures.

Participants

A census sampling method was used, with approximately five patients recruited per month. The sample comprised 100 consecutive patients diagnosed with schizophrenia according to DSM-5-TR diagnostic criteria who attended the hospital's outpatient or follow-up services and met inclusion criteria (11). This was a feasibility (census-based) sample determined by the number of eligible patients attending during the study period. With n = 100, a two-sided 95 % CI for a prevalence near 50 % has an approximate half-width of about 10 percentage points (and about 6 percentage points for an observed prevalence around 90 %), providing reasonable precision for prevalence estimates. At the same time, subgroup comparisons should be interpreted as exploratory. Inclusion criteria included 1) DSM-5-TR diagnosis of schizophrenia, 2) clinical remission at time of assessment (no acute psychotic decompensation), 3) capacity to complete cognitive testing, and 4) written informed consent. Exclusion criteria comprised epilepsy, intellectual disability, autism spectrum disorder, comorbid primary neurocognitive disorder, substance use disorder, patients without treatment adherence, homelessness, or electroconvulsive therapy within the prior six months, or a history of severe traumatic brain injury.

Procedures and measures

A single trained rater administered the MoCA to each participant according to standard instructions; when education was <12 years, an additional point was added to the total score, as recommended in standard practice (12). Sociodemographic data (age, sex, urban/rural residence, education level, occupation) and clinical variables (time since diagnosis, number of previous hospitalizations, time since last

psychotic crisis, current psychopharmacological regimen) were collected through review of clinical records and a structured interview. Medication exposure was recorded at the level of drug class (second-generation antipsychotics, benzodiazepines, anticonvulsants), but dose, treatment duration, and anticholinergic burden were not systematically quantified.

The MoCA produces domain subscores and a total score; commonly used thresholds identify normal cognition (≥26) and cognitive impairment (<26) (13). The MoCA is a 30-point screening tool that evaluates cognitive function across multiple domains: visuospatial/executive abilities via a clock-drawing task (3 points) and cube copying (2 points); identification of three animals (3 points); attention/concentration/ working memory through sustained attention, subtraction, and digit span tasks totaling 6 points; language via sentence repetition (2 points) and a 1-minute phonemic fluency task (≥11 "P" words = 1 point); abstraction assessed by word similarity (2 points); delayed recall of five learned words (5 points); and orientation to time and place (6 points), with one additional point added for education <12 years and scores ≥26 considered normal (13). The investigators analyzed the frequency of impairment (global and domain-level), mean scores across groups (age, sex, education, socioeconomic strata, time since diagnosis), and used statistical tests to examine associations.

Statistical analysis

Descriptive statistics (means with standard deviations and proportions) characterized the sample. In accordance with the journal's statistical reporting guidance, we report effect estimates with 95 % confidence intervals (CIs) for key outcomes, including the prevalence of cognitive impairment and subgroup MoCA means and mean differences. All analyses were performed using standard statistical software.

Ethics approval and consent to participate

This study was approved by the Universidad del Zulia (Approval No. 202510-25). All participants provided informed consent before participation in accordance with the Declaration of Helsinki.

RESULTS

Sample characteristics

The study sample comprised 100 patients (Table 1). Mean age was 37.9 ± 9.2 years (range 19-55); 30 % were younger than 35 years, and 70 % were ≥35 years. The sample comprised 80 % males and 20 % females. Most participants (85 %) were from urban areas, and 15 % from rural areas. Education levels: primary 20 %, secondary 65 %, tertiary technical 5 %, university 10 %. According to the modified Graffar socioeconomic classification, 54 % were in stratum IV and 36 % in stratum V (low and very low socioeconomic status). Employment: 65 % unemployed, 25 % employed, 5 % homemakers, 5 % manual workers. Clinically, the mean duration of illness was 18.0 ± 9.2 years. Hospitalization history: 10 % never hospitalized, 60 % had 1–2 hospitalizations, 25 % had 3-5, and 5 % had >5 prior hospitalizations. Time since last psychotic crisis: <1 year (20 %), 1-2 years (15 %), 3–5 years (50 %), and >5 years (15 %). All participants were on regular treatment at assessment; 100 % received second-generation antipsychotics, 80 % benzodiazepines and 70 % anticonvulsants (used as mood stabilizers or adjuncts).

MoCA results

Applying MoCA cut-offs (with schooling adjustment), 89 % of participants met criteria for cognitive impairment (89/100; 95 % CI, 81.4–93.7). The majority were categorized as mild impairment. Mild impairment was present in 93.3 % of patients <35 years (28/30; 95 % CI, 78.7-98.2) and 87.1 % of patients ≥35 years (61/70; 95 % CI, 77.3–93.1).

Mean total MoCA scores were 20.63 ± 4.10 (95 % CI, 19.10–22.16) in participants <35 years and 21.17 ± 5.80 (95 % CI, 19.79–22.55) in those ≥35 years, corresponding to a mean difference of -0.54 points (95 % CI, -2.57 to 1.49). Visuospatial/executive domain scores were higher in participants aged <35 years (3.33 ± 0.47) than in those aged≥35 years (2.64 ± 1.04),

Table 1. Sociodemographic Characteristics.

Variable	Categories	%
Age (Mean ± standard deviation)		37.9 ± 9.2 years
Gender		
	Masculine	80.0
	Feminine	20.0
Origin		
	Rural	15.0
	Urban	85.0
Level of Education		
	Primary	20.0
	Secondary	65.0
	Technician	5.0
	University	10.0
Socioeconomic level		
	I	0.0
	II	0.0
	III	10.0
	IV	54.0
	V	36.0
Occupation		
	Unemployed	65.0
	Housewife	5.0
	Salaried employee	25.0
	Worker	5.0
Medication		
	Regular	100.0
	Irregular	0.0
Medications used		
	2nd generation antipsychotics	100.0
	Benzodiazepines	80.0
	Anticonvulsants	70.0
Number of previous hospitalizations		
	None	10.0
	1-2	60.0
	3-5	25.0
	>5	5.0
Last crisis		
	<1 year	20.0
	1-2 years	15.0
	3-5 years	50.0
	>5 years	15.0

with a mean difference of 0.69 points (95 % CI, 0.39–0.99).

Mean total MoCA scores across time since diagnosis categories were: <2 years, 25.0 ± 0.0; 2–5 years, 27.2 ± 3.16; 6–10 years, 17.6 ± 1.05; and >10 years, 23.6 ± 4.44. The 6–10 years group had the lowest mean score (17.6; 95 % CI, 16.85-18.35) and all participants in this category met criteria for cognitive impairment (10/10; 95 % CI, 72.2-100). Subgroup estimates by sex, education, occupation, and socioeconomic strata are summarized in Table 2.

Table 2. Montreal Cognitive Assessment (MoCA) total score and cognitive status by subgroup

Variable	Subgroup	Total MoCA score mean ± SD (95 % CI)	Mild cognitive, impairment, n (%) (95 % CI)	No cognitive impairment, n (%) (95 % CI)
Age				
	<35 years	20.63 ± 4.10 (19.10-22.16)	28 (93.3%) (78.7-98.2)	2 (6.7%) (1.8-21.3)
	≥35 years	21.17 ± 5.80 (19.79-22.55)	61 (87.1%) (77.3-93.1)	9 (12.9%) (6.9-22.7)
Gender				
	Male	20.62 ± 4.40 (19.64-21.60)	69 (86.2%) (77.0-92.1)	11(13.8%)(7.9-23.0)
	Female	22.75 ± 2.80 (21.44-24.06)	20 (100.0%) (83.9-100.0)	0 (0.0%) (0.0-16.1)
Level of education				
	Primary	18.00 ± 1.91 (17.11-18.89)	20 (100.0%) (83.9-100.0)	0 (0.0%) (0.0-16.1)
	Secondary	22.10 ± 4.55 (20.97-23.23)	56 (86.2%) (75.7-92.5)	9 (13.8%) (7.5-24.3)
	Technician	19.60 ± 0.80 (18.61-20.59)	5 (100.0%) (56.6-100.0)	0 (0.0%) (0.0-43.4)
	University	21.10 ± 3.06 (18.91-23.29)	8 (80.0%) (49.0-94.3)	2 (20.0%) (5.7-51.0)
Occupation				
	Unemployed	23.00 ± 0.22 (22.95-23.05)	54 (83.1%) (72.2-90.3)	11(16.9%)(9.7-27.8)
	Housewife	21.00 ± 2.01 (18.50-23.50)	5 (100.0%) (56.6-100.0)	0 (0.0%) (0.0-43.4)
	Salaried employee	21.40 ± 3.00 (20.16-22.64)	25 (100.0%) (86.7-100.0)	0 (0.0%) (0.0-13.3)
	Worker	16.60 ± 3.14 (12.70-20.50)	5 (100.0%) (56.6-100.0)	0 (0.0%) (0.0-43.4)
Socioeconomic level (modified Graffar)				
	III	22.20 ± 1.90 (20.84-23.56)	8 (80.0%) (49.0-94.3)	2 (20.0%) (5.7-51.0)
	IV	23.20 ± 1.11 (22.90-23.50)	45 (83.3%) (71.3-91.0)	9 (16.7%) (9.0-28.7)
	V	21.40 ± 2.70 (20.49-22.31)	36 (100.0%) (90.4-100.0)	0 (0.0%) (0.0-9.6)
Time since diagnosis				
	<2 years	25.00 ± 0.00 (25.00-25.00)	5 (100.0%) (56.6-100.0)	0 (0.0%) (0.0-43.4)
	2-5 years	27.20 ± 3.16 (24.94-29.46)	5 (50.0%) (23.7-76.3)	5(50.0%)(23.7-76.3)
	6-10 years	17.60 ± 1.05 (16.85-18.35)	10 (100.0%) (72.2-100.0)	0 (0.0%) (0.0-27.8)
	≥10 years	23.60 ± 4.44 (22.58-24.62)	69 (92.0%) (83.6-96.3)	6 (8.0%) (3.7-16.4)

DISCUSSION

This study found a high prevalence (89 %) of cognitive impairment among patients with schizophrenia treated at a tertiary psychiatric hospital in Maracaibo, Venezuela. Most impairments were mild, and deficits were evident across multiple cognitive domains, consistent with literature describing pervasive cognitive dysfunction in schizophrenia, with a 75 %-85 % range reported (14). This high prevalence underscores the central importance of cognitive dysfunction as a core feature of schizophrenia (15). The high prevalence aligns with prior reports indicating that a majority of people with schizophrenia have measurable cognitive deficits that adversely affect real-world functioning (16).

The demographic profile of our sample, with male predominance (80 %) and a mean age of 37.9±9.2 years, is consistent with previous studies. Cardona et al. (2017) found male predominance in a sample of 43 schizophrenia patients with ages between 16 and 65 years (17). Similarly, Ponce and Caqueo (2022) reported a mean sample age of 41.1 years, with 56.8 % being male (18). Regarding age-related differences, visuospatial/executive scores were higher in participants younger than 35 years than in those aged 35 years or older (mean difference = 0.69 points; 95 % CI, 0.39-0.99), suggesting relatively greater vulnerability of executive and

visuospatial processing with older age in this clinical population. This finding aligns with research by Mosiolek (2016), who reported a statistically significant association between cognitive impairment and age, with greater impairment among patients aged 46-55 years (19).

The high unemployment rate (65 %) observed in our sample reflects the significant functional impact of cognitive impairment on occupational performance. This finding is consistent with Gómez (2023), whose results indicated that deterioration in working memory and attention significantly affected patients' ability to perform daily activities, including self-care and social interaction (20). The relationship between cognitive deficits and employment difficulties emphasizes the need for vocational rehabilitation programs that incorporate cognitive training components (21,22). The educational profile of our sample, with 65 % having completed secondary education, provides context for interpreting cognitive assessment results. While no significant association was found between educational level and cognitive impairment in our study, some research suggests that higher educational attainment may provide some protective effect against cognitive decline or better compensatory mechanisms (23,24).

Socioeconomic characteristics of the sample, with 54 % in the low socioeconomic stratum and 36 % in extreme poverty, reflect the complex relationship between mental illness and social disadvantage (25,26). While we did not find significant associations between socioeconomic status and cognitive impairment, the predominantly low socioeconomic status of our sample may limit access to cognitive rehabilitation services and comprehensive treatment approaches. The clinical characteristics of our sample, including a mean illness duration of 18.0±9.2 years and 60 % having experienced at least one psychiatric hospitalization, and the finding that 50 % of patients had their last crisis 3-5 years ago, suggest a relatively stable clinical status at the time of assessment, which is important for valid cognitive evaluation (27).

The universal use of second-generation antipsychotics (100 %) in our sample reflects current treatment guidelines for schizophrenia (28). The high prevalence of concurrent benzodiazepine (80 %) and anticonvulsant (70 %) use suggests complex medication regimens, possibly related to comorbid conditions or adjunctive symptom control (29). These medications can influence cognitive performance, particularly benzodiazepines and other sedating agents that may affect attention, psychomotor speed, and memory. Because medication data were recorded by drug class and we did not quantify dose, treatment duration, or anticholinergic burden, we could not adjust for medication-related cognitive effects. Therefore, the MoCA findings should be interpreted as cognitive performance in treated, clinically stable patients rather than medication-free cognitive status.

A noteworthy finding was the association between illness duration and cognitive performance, with the 6-10 years group showing the lowest mean MoCA scores and a 100 % prevalence of impairment. Although classical models suggest that cognitive deficits in schizophrenia appear early and are relatively stable, some studies report heterogeneity in the temporal course, with some domains worsening with illness chronicity or recurrent relapses (30,31). Our cross-sectional results suggest that cognitive decline may be particularly detectable during specific phases of illness progression or reflect cohort effects, treatment differences, or other unmeasured confounders (e.g., metabolic comorbidity, negative symptom burden, substance use history). Longitudinal studies would clarify whether the 6–10-year window reflects a critical phase of cognitive decline or a sampling artifact.

The significant difference in visuospatial/executive scores between younger and older groups (worse in the≥ 35-year group) warrants discussion. Executive dysfunction is a core deficit in schizophrenia and contributes strongly to functional impairment (32). Our findings suggest age-related vulnerability in executive/visuospatial processing, possibly reflecting the cumulative impact of illness, age-related brain changes, or interaction with educational/occupational disengagement. The fact that the overall total scores did not differ significantly by age (mean totals: (20,21) suggests pervasive deficits across ages but subtle domain shifts with aging.

Limitations

Some limitations should be considered when interpreting these results. First, the cross-sectional design precludes causal inference, and longitudinal follow-up would be needed to characterize trajectories. Second, recruitment was single-site and predominantly from low socioeconomic strata, which may limit generalizability. Third, MoCA is a screening instrument, and we did not administer a comprehensive neuropsychological battery or neuroimaging, largely due to feasibility constraints. Fourth, medication exposure was recorded by drug class. Still, doses, treatment duration, and anticholinergic burden were not quantified, and we could not adjust for comorbidities or past substance use, which may confound cognitive performance. Finally, although the overall sample size provided reasonable precision for the prevalence estimate, several subgroups were small, limiting precision and precluding multivariable modeling. Subgroup comparisons should therefore be interpreted as exploratory. Similar feasibility constraints are common in mental health research in low-resource settings (33,34). Future studies should incorporate longitudinal designs, standardized cognitive batteries, and more detailed measurement of medication exposure and comorbidities.

Clinical implications

The high prevalence of cognitive impairment observed in this study supports incorporating brief cognitive screening into routine care for patients with schizophrenia, since cognitive deficits may be under-recognized in standard clinical evaluations and are relevant to day-to-day functioning. Differences in MoCA performance across illness-duration strata highlight the need for longitudinal studies to clarify trajectories and determinants over time. Given the high unemployment rate in this sample, integrated rehabilitation programs that include cognitive remediation and vocational support may be particularly relevant in this setting.

CONCLUSION

In this cross-sectional clinical sample of patients with schizophrenia treated at a tertiary psychiatric hospital in Maracaibo, cognitive impairment was common (89 % by MoCA). MoCA scores varied across age and illness-duration strata, with differences most apparent in visuospatial/executive functioning and in the group with 6-10 years since diagnosis. These findings support routine cognitive screening in clinical practice and motivate future longitudinal studies with more detailed measurement of medication exposure and other potential confounders to clarify mechanisms and inform targeted interventions.

Declarations

Acknowledgments: None

Ethics approval and consent to participate: The study was approved by the Division of Graduate Studies / Academic Committee of the Psychiatry Residency Program at Universidad del Zulia. Participants or their legal representatives provided informed consent.

Consent for publication: Not applicable (no identifiable patient images/data).

Availability of data and materials: De-identified dataset (MoCA scores and clinical/socio-demographic variables) is available from the corresponding author on reasonable request.

Competing interests: The authors declare no competing interests.

Funding: No specific funding was received for this study.

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