

## Research Paper



# The awareness, characterization, and burden of Cognitive Impairment Associated with Schizophrenia (CIAS) in clinical practice: Results from a nationwide survey in Italy

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## ABSTRACT

**Introduction:** Cognitive Impairment (CIAS) is a core aspect of schizophrenia and one of the main obstacles to clinical and functional recovery in patients. People with CIAS have difficulties with learning and using information in real world. Despite its well-recognized role, it is not yet a diagnostic criterion in DSM-5 and ICD system. The effective management of CIAS represents a critical unmet need of schizophrenia treatment.

**Methods:** To evaluate the awareness of CIAS in the Italian landscape, we conducted a quantitative survey on psychiatrists highly specialized in schizophrenia, focused on its awareness, assessment, burden, and treatment.

**Results:** Of 152 participants, 139 (91.4 %) consider CIAS assessment important. The terminology most frequently used to describe CIAS is 'cognitive impairment'. CIAS is assessed, clinically or with formal tools, in approximately 43 % of patients after stabilisation either during follow-up visits ( $N = 88$ , 67.7 %) or during hospital stay ( $N = 57$ , 43.8 %). 65 % of evaluated patients are considered affected by CIAS. Formal assessment tools (tests, questionnaires, interviews) are used in about 20 % of the centers. The Mini Mental State Examination (MMSE) ( $N = 75$ , 72.1 %) and the Wechsler Adult Intelligence Scale (WAIS) ( $N = 62$ , 59.6 %) are the most frequently used tools for CIAS evaluation.

**Conclusions:** The clinical characteristics of the patient, structural barriers like the lack of trained personnel or inadequate economic resources, and organizational problems influence the assessment rate. Despite this awareness, greater effort must be made to overcome the barriers, especially economic and organizational ones, which prevent the assessment and treatment of CIAS from becoming established in routine clinical care.

## 1. Introduction

Schizophrenia is a chronic mental disorder that affects from 0.3 % to 0.7 % of the world's population (GBD 2019 Mental Disorders Collaborators, 2022; Rahman and Lauriello, 2016), and 0.5 % of the Italian

population (Marcellusi et al., 2018). Despite having a low-prevalence, schizophrenia ranks 12th among the 310 most disabling illnesses and injuries globally (GBD 2016 Disease and Injury Incidence and Prevalence Collaborators, 2017), with a highly variable prevalence and incidence worldwide within countries and at local and neighborhood levels

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(Kirkbride et al., 2006). Persons with schizophrenia show a wide range of psychotic symptoms, mainly grouped into positive symptoms, consisting of hallucinations, delusions, formal thought disorders (such as tangentiality, incoherence or derailment), negative symptoms (such as poor motivation, asociality, or blunted affect). They also show cognitive symptoms (Ruiz-Castañeda et al., 2022; Correll and Schooler, 2020; McCutcheon et al., 2023; Bowie and Harvey, 2006; Maj et al., 2021), i.e., deficits in learning and retention of verbal information, impaired attention and working memory and, more generally, a reduced ability to learn and use information, independent of positive or negative symptoms (McCutcheon et al., 2023; Tripathi et al., 2018; Zanelli et al., 2019). Approximately 70–80 % (Murante and Cohen, 2017; Shmukler et al., 2015; Harvey et al., 2022; McCleery and Nuechterlein, 2019; Keefe et al., 2011) of people with a confirmed diagnosis of schizophrenia show cognitive impairment. In Italy, a study on the Italian Network for Research on Psychoses, in which CIAS was assessed in 852 outpatients with schizophrenia, 342 unaffected relatives and a sample of 774 healthy Italian subjects, showed that the global cognitive score of patients is more than one (GBD 2019 Mental Disorders Collaborators, 2022) standard deviation below the mean of the control population (Mucci et al., 2018). Cognitive Impairment Associated with Schizophrenia (CIAS) impacts the ability to perform activities of daily living, work productively, achieve social goals, build satisfying social networks and relationships, and adhere to treatment (Green et al., 2019; Vita et al., 2022a; Pinkham et al., 2018). All of these manifestations of CIAS may represent the first signs of disease risk and, even when mild, can be identified before the onset of psychotic symptoms (Cannon, 2015; Fusar-Poli et al., 2012; Gur et al., 2014; Lee et al., 2015; Sheffield et al., 2018). They are more severe in patients with a confirmed diagnosis of schizophrenia (Reichenberg, 2005), although a link with psychotic symptomatology has not been shown (Alkan et al., 2021). Greater severity of cognitive impairment has also been observed in individuals with an earlier age of onset of the disorders (De la Serna et al., 2023; Rajji et al., 2009). Recent studies (Catalan et al., 2022) show considerable heterogeneity in neurocognitive functioning among individuals and show that different domains are involved. Their characterization maybe challenging due to the lack of universally accepted diagnostic tools, the scarcity of trained personnel in several contexts, and the lack of patients' cooperation especially during acute phases of the illness. The relationship between premorbid functioning and cognitive impairment should also be considered. Patients with better functioning prior to the diagnosis of schizophrenia are more likely to present a less severe cognitive dysfunction than patients with a worse condition before the onset of the disease (Rabinowitz et al., 2002; Rabinowitz et al., 2006). Although there are few long-term longitudinal studies supporting an age-related decline in cognitive impairment, a slight association with late adulthood has been observed in patients with schizophrenia (Fett et al., 2020). In elderly patients, cognitive impairment worsens over time and is a considerable obstacle to clinical and functional recovery (Friedman et al., 2001).

Despite the critical impact of cognitive impairment on functional outcomes, there are no universally accepted tools for its detection, and assessment remains challenging. Recommended approaches (Vita et al., 2022b) include validated test batteries, such as the MATRICS Consensus Cognitive Battery (MCCB) (Nuechterlein et al., 2008; Marder, 2006) or the Brief Assessment of Cognition in Schizophrenia (BACS) (Keefe, 2004), supplemented by interview-based instruments like the Schizophrenia Cognition Rating Scale (SCoRS) (Keefe et al., 2015) or the Cognitive Assessment Interview (CAI) (Giordano et al., 2022). Among the screening instruments, the recommended one is the Screen for Cognitive Impairment in Psychiatry (SCIP) (Purdon, n.d.). MCCB, BACS, SCoRS and CAI while detailed and accurate, are often complex, require long administration times, cannot be easily managed, and interpreted in a clinical setting, and require significant resources for proper implementation. This contrasts with the need for simpler, more usable, and brief tools that can be easily applied in everyday clinical practice during

a typical medication management appointment, especially in resource-limited settings. The complexity and high cost of more comprehensive tools represent a barrier for many mental health centers, creating an urgent need for more accessible and less burdensome instruments.

As for the treatment of CIAS, to date there are no pharmacological or behavioral treatments approved by any regulatory agencies across the world (Maj et al., 2021; Maroney, 2022; Vita et al., 2024a). Currently available antipsychotics provide limited benefits, although some may have a more favorable impact than others (Blackman et al., 2022). Second-generation antipsychotics are overall preferable to first-generation ones to improve CIAS (Lee et al., 2024; Baldez et al., 2021; Clissold and Crowe, 2019; Ohi et al., 2022; Corponi et al., 2019; Fleischhacker et al., 2019; Parikh et al., 2017). Alongside pharmacological treatments, psychosocial interventions such as cognitive remediation (CR) (Lejeune et al., 2021; Vita et al., 2021; Barlati et al., 2013; Keepers et al., 2020), social skills training, cognitive behavioral therapy, and psychoeducation in combination with CR (Vita et al., 2021; Nibbio et al., 2020), have proven effective in reducing cognitive impairment, while improving functional outcomes and maintaining gains of recovery over the years (Vita et al., 2022b; Bowie et al., 2020; Laws et al., 2018; Sin et al., 2017; Turner et al., 2018; Buonocore et al., 2022; Vita et al., 2024b). A recent meta-analysis including 130 studies and a total of 8851 participants (Vita et al., 2021) showed that the presence of an active and trained therapist, the repetition of cognitive exercises, the development of new cognitive strategies and the integration of the intervention into a structured rehabilitation program are positive moderators of CR efficacy even in the most severe patients. Although promising, limitations mainly consisting of inadequate facilities, lack of best practice guidelines, costs, poor service delivery and scarcity of trained staff reduce its implementation in the rehabilitation process (Lewandowski, 2021; Fan et al., 2017; Medalia et al., 2019). Despite recognized challenges, addressing cognitive impairment as a therapeutic target in schizophrenia remains crucial for improving patient outcomes and reducing social burdens associated with the disorder. Effective interventions have the potential to improve treatment adherence, alleviate caregiver burden, and enhance occupational stability and in general reduce the burden, including the financial one, associated with the condition. Based on the above evidence, we designed and carried out a survey targeting Italian Mental Health Departments. The survey was designed to investigate CIAS awareness and assessment, as well as the degree of dissemination of best practices to address it in current clinical practice, evaluate tools used for assessing cognitive impairment, identify perceived barriers and challenges in the routine management of CIAS, explore the use of pharmacological and psychosocial interventions aimed at improving cognitive function in patients with schizophrenia, and understand the perspectives of Italian psychiatrists regarding these approaches.

## 2. Methods

We conducted a nationwide quantitative survey targeting experienced psychiatrists, i.e., directors of Mental Health Departments (Dipartimento di Salute Mentale, DSMs), directors of Psychiatric Units, directors of University Hospitals/centers, and directors of Residential Facilities (RFs). Computer Assisted Web Interview (CAWI) methodology was used to collect data. An initial screening telephone interview was conducted to assess participants' eligibility for the survey prior to sending the questionnaire by e-mail. Participants were considered eligible if patients with schizophrenia are treated in the centers they represent and was asked for their consent to participate in the survey.

### 2.1. Questionnaire

The survey consisted of 14 multiple-choice questions and focused on 3 main topics: Awareness of CIAS and its assessment (2 questions), CIAS assessment (8 questions), CIAS burden and treatment (2 questions) (Supplementary Material).

- Awareness of CIAS and its assessment: participants were asked to rate the relevance they attributed to the CIAS assessment in their daily clinical practice, from not relevant to very important, essential or priority. They were asked to indicate the most suitable terminology to define cognitive impairment in patients with schizophrenia when communicating with the patient and their parents or caregivers.
- CIAS assessment: four questions focused on the number of patients who regularly visit the centers the respondents represent, the percentage of patients diagnosed with schizophrenia, the percentage of patients in whom cognitive impairment is assessed and the percentage of patients in whom CIAS is detected. Participants were asked to indicate how neuropsychological assessments are performed (i.e., clinical assessment by medical interview, tests, or cognitive assessment interviews), when and which health professional is responsible for the assessment. They were asked to indicate which of the following factors limit or prevent CIAS assessment in daily clinical practice: reduced economic resources, organizational difficulties, lack of adequately trained staff, unwillingness of the patient, lack of awareness of the issue and lack of effective treatment. Participants were also asked to indicate which of the followings represented the main drivers for a cognitive assessment: the clinical characteristics of the patient, the demand for social support, and/or the observed reduced ability in daily activities.
- CIAS burden and treatment: participants were asked to indicate the main consequence of cognitive impairment in real-life functioning of a person diagnosed with schizophrenia and therapeutic interventions used in daily clinical practice.

Participants were also asked to describe the professional composition of the health centers they lead and to state their professional role. Almost all questions included “other (specify)” response option to allow respondents to provide a response not listed in the answer choices.

## 2.2. Statistical analysis

Data were analyzed using the statistical software package SAS 9.4 (SAS Corporation, Cary NC). All data are presented as percentages calculated on participants or responses unless otherwise stated. Summary statistics such as mean, weighted mean, and SD were used to describe the data when appropriate.

## 3. Results

### 3.1. Participants to the survey

A total of 152 practicing psychiatrists took part in the survey. Thirty-seven (24.3 %) were directors of DSMs, 76 (50.0 %) were directors of Psychiatric Units, 32 (21.1 %) were directors of University Hospitals/centers, and 6 (3.9 %) were directors of RFs. One participant chose not to declare the professional role. Most of the respondents came from Northern Italy (44 %), followed by the South and Islands (38 %), and finally Central Italy (18 %) (Fig. 1). All participants completed the questionnaire.

### 3.2. Awareness and assessment of CIAS in the Italian clinical practice

For most participants ( $N = 139$ , 91.4 %), CIAS assessment is considered important in daily clinical practice. Specifically, 17.1 % ( $N = 26$ ) of them considered it essential, 47.3 % ( $N = 72$ ) very important, 26.9 % ( $N = 41$ ) fairly important, 6.5 % ( $N = 10$ ) not very important and 2.0 % ( $n = 3$ ) not at all important. Cognitive evaluation, with routine clinical interview or with formal assessment tools, is performed in 86.0 % ( $N = 130$ ) of centers interviewed, on an average of 43.0 % of the patients with schizophrenia (Fig. 2). For the remaining respondents ( $N = 22$ , 14.0 %), CIAS assessment is not conducted. On average,

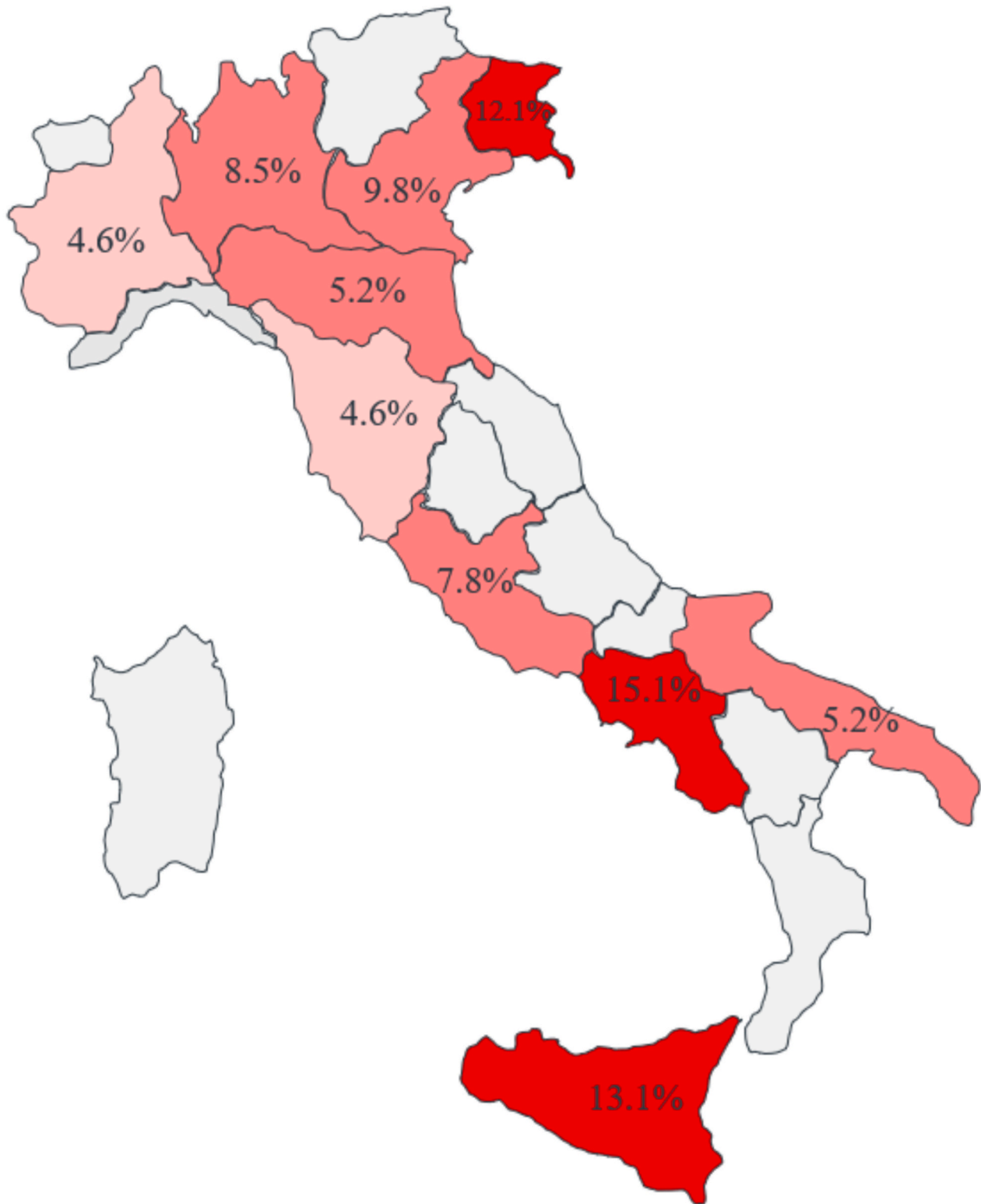
respondents confirmed that 65 % of the evaluated patients are affected by CIAS. The most frequent terminology used to communicate CIAS to the patient and family members/caregivers is “cognitive impairment”, chosen by 36.8 % ( $N = 56$ ) of the participants, followed by “cognitive symptoms” ( $N = 45$ , 29.6 %), “cognitive deficits” ( $N = 42$ , 27.6 %) and “cognitive disorders” ( $N = 40$ , 26.3 %) (Table 1). The terms “cognitive dysfunction”, “cognitive decline”, and “cognitive alteration” were used less frequently: 19.7 % ( $N = 30$ ), 15.1 % ( $N = 23$ ) and 13.8 % ( $N = 21$ ), respectively. Most respondents indicated 2 or >2 alternatives (several options were allowed in the survey). Psychologists, psychiatrists, and psychiatric rehabilitation technicians are the mental health professionals involved in cognitive assessment with psychologists performing most evaluations according to 83 respondents (79.8 %). Psychiatrists perform CIAS assessment in 37.5 % ( $N = 39$ ) of the cases, while psychiatric rehabilitation technician in 8.7 % ( $N = 9$ ) of the cases. Interestingly, the psychologists are solely responsible for CIAS assessments in 58.7 % ( $N = 61$ ) of the cases (i.e., 90–100 % evaluations) as reported by the interviewed psychiatrists. Neurologists, neuropsychologists, and Educators may also participate in the assessment, although to a lesser extent.

### 3.3. Assessing CIAS: when and how

For most of the psychiatrists ( $N = 104$ , 80.0 %) who routinely complete CIAS assessment ( $N = 130$ ), the cognitive component is evaluated by means of a clinical assessment and at least one formal tool with the former being adopted in 87.5 % ( $N = 91$ ) and the latter in 69.2 % ( $N = 87$ ) of the centers. Nevertheless, formal evaluation tools (tests, questionnaires, interviews) are routinely used in 20 % of the cases. In 67.7 % ( $N = 88$ ) of the centers carrying out the CIAS assessment ( $N = 130$ ), cognitive impairment is evaluated during the follow-up visits once the patient is stabilized. It is assessed during the hospital stay after the acute phase in 43.8 % centers ( $N = 57$ ), while in 28.4 % ( $N = 37$ ) of the centers during the first visit (Fig. 3). According to the respondents, in 29.8 % of the centers ( $N = 31$ ) there is a dedicated multidisciplinary team for CIAS assessment. Formal assessment with tools is performed in 20 % of the centers: tests, test batteries and interview-based assessment tools are used. The Mini Mental State Examination (MMSE) is the most frequently used test ( $N = 75$ , 72.1 %), followed by the Wechsler Adult Intelligence Scale (WAIS) ( $N = 62$ , 59.6 %). The percentage of centers using MCCB and BACS test are comparable ( $N = 22$ , 21.2 %, and  $N = 19$ , 18.3 % respectively). The UCSD Performance-Based Skills Assessment (UPSA) is used in only 9.6 % ( $N = 10$ ) of the centers. No differences were reported for the administration of the interviews. The CAI and SCoRS are each administered in 27.9 % ( $N = 29$ ) of the centers (Fig. 4). Interviews are always administered in combination with at least one test/battery, generally administered at the same time. Tests and batteries are also mostly used in combination rather than as standalone instruments.

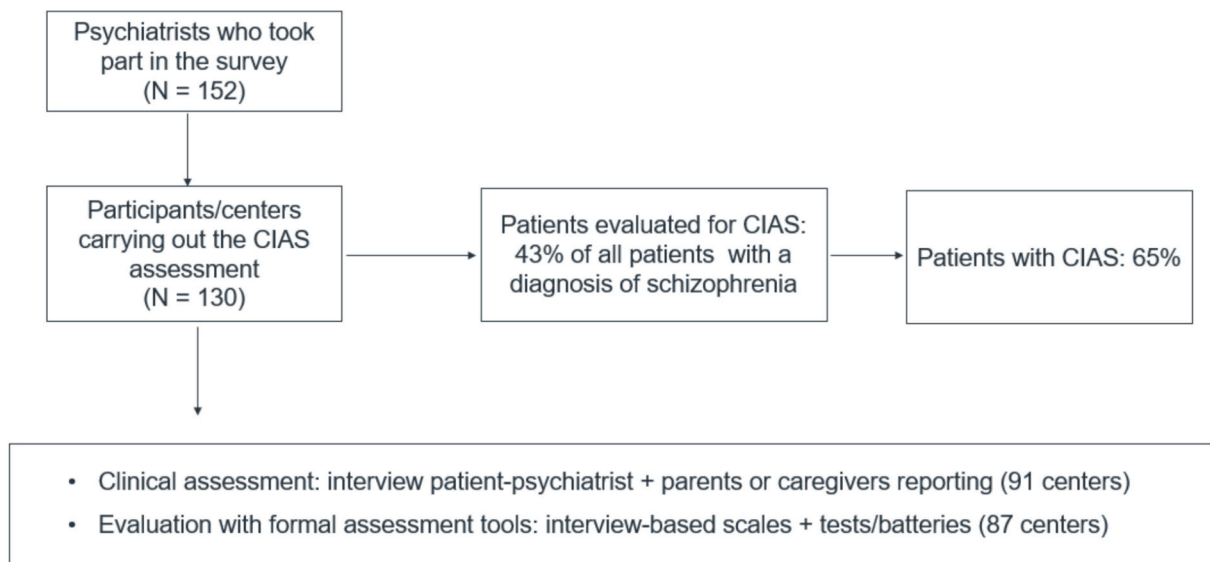
### 3.4. Factors promoting or hindering the CIAS evaluation

For psychiatrists ( $N = 110$ ; 84.6 %) who perform cognitive assessment ( $N = 130$ ) the clinical characteristics of the patient have the greatest influence on the decision to evaluate CIAS (Table 2). Impairment in performing daily activities such as reduced autonomy is the second most important factor for 57.6 % ( $N = 75$ ) of the psychiatrists followed by claiming disability or other forms of support for 42.3 % ( $N = 55$ ) physicians. It is mostly uncommon for the patient himself/herself to request a CIAS assessment ( $N = 15$ , 11.5 %) as well as on the basis of a specific Diagnostic Therapeutic Assistance Pathway (PDTA) ( $N = 15$ , 11.5 %), whereas it is more frequently requested by the caregiver ( $N = 40$ , 30.7 %) or by other mental health professionals ( $N = 39$ , 30 %), such as the psychologist, the rehabilitation technician or the nurse, but also by the general practitioner. In contrast, the greatest obstacles to CIAS assessment are the lack of adequately trained staff and organizational problems for almost all psychiatrists ( $N = 129$ , 99.2 %), as shown in



**Fig. 1.** The geographic distribution of the survey participants.

The regions of origin of the psychiatrists participating in the survey are shown with relative percentages out of 152 total participants colored as follows: regions with <5 % participants in light red, regions with participants in the range 5–10 % in red and regions with >10 % participants in dark red. The least represented regions are indicated in grey. The actual percentages for these regions are masked due to the small numbers. Overall, participants from the least represented regions accounted for 12.5 %.



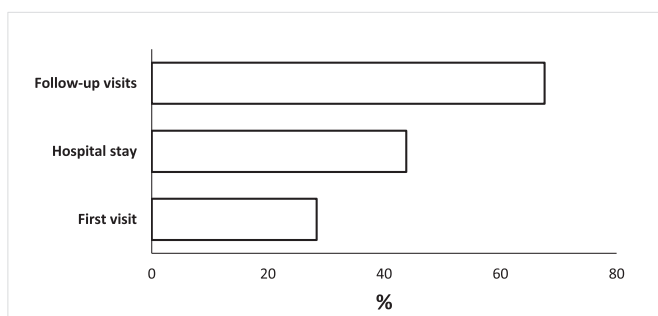
**Fig. 2.** A schematic representation of CIAS assessment. CIAS: Cognitive Impairment Associated with Schizophrenia.

**Table 1**  
The terminology most used by Italian psychiatrists to refer to CIAS.

| Terminology           | N  | %    |
|-----------------------|----|------|
| Cognitive impairment  | 56 | 36.8 |
| Cognitive symptoms    | 45 | 29.6 |
| Cognitive deficits    | 42 | 27.6 |
| Cognitive disorders   | 40 | 26.3 |
| Cognitive dysfunction | 30 | 19.7 |
| Cognitive decline     | 23 | 15.1 |
| Cognitive alteration  | 21 | 13.8 |

The terminology used by the Italian psychiatrists in daily clinical practice to refer to CIAS. Absolute values and percentages refer to total respondents (N = 152). More than one answer was allowed resulting into non-mutually exclusive response options.

CIAS: Cognitive Impairment Associated with Schizophrenia.



**Fig. 3.** CIAS evaluation setting in the Italian clinical practice. The principal moments of cognitive impairment assessment in patients with schizophrenia by the Italian psychiatrists. CIAS: Cognitive Impairment Associated with Schizophrenia.

**Table 2.** Although to a lesser extent, limited financial resources (N = 35, 26.9 %) also represent a barrier. Even if the patient's clinical characteristics may favor CIAS assessment, presentation of clinical symptoms can also make it challenging for 6.9 % of the psychiatrists (N = 9) and sometimes the patient himself/herself could influence the possibility of a cognitive evaluation (N = 29, 22.3 %). Other key factors are the reduced awareness of the relevant role of cognitive impairment in schizophrenia (N = 15, 11.5 %) and the lack of effective therapies (N = 5, 3.9 %). Only

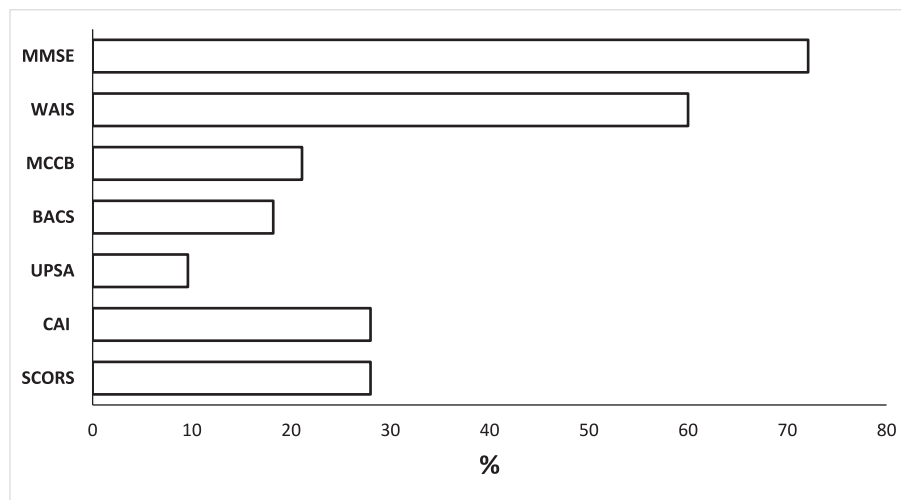
for a minority of respondents there are no impediments to CIAS assessment (N = 3, 2.3 %). Further factors, although rarer, are the lack of time and the absence of cognitive assessment in treatment protocols.

### 3.5. CIAS burden and treatment

For 90.1 % (N = 137) of all respondents (N = 152), reduced autonomy in daily functioning is the main consequence of cognitive impairment in patients with schizophrenia, followed by increased burden on parents and caregivers (N = 119, 78.2 %), increased demand for residential care (N = 109, 71.7 %), and social support (N = 98, 64.4 %), as shown in Table 3. A worsening of schizophrenia symptoms was also reported by 37.5 % of psychiatrists (N = 57) along with reduced adherence to treatment (N = 53, 34.8 %) and increased frequency of hospitalization (N = 55, 36.1 %). Second and third generation antipsychotics are widely used in 94.7 % (N = 144) of the centers (Fig. 5). Psychoeducation and CR are also adopted treatment options in 59.8 % (N = 91) and 46.7 % (N = 68) of the centers respectively. Community service support is required in 46.7 % (N = 71) of the centers. Other rehabilitative interventions such as physical exercise, active and receptive arts engagement, social skills training, and job placement support are adopted to reduce the impact of cognitive impairment in 51 % of centers (N = 77). Interestingly, nutritional monitoring also plays a role in reducing cognitive decline and improving the long-term well-being and quality of life of the patient with schizophrenia.

## 4. Discussion

Cognitive impairment is a key feature of schizophrenia. Cognitive assessment may contribute to early diagnosis of schizophrenia and early intervention (Strassnig et al., 2018; Bora and Murray, 2014; Fusar-Poli et al., 2016; Schultze-Lutter et al., 2015; Sommer et al., 2016). In patients with an established diagnosis, interventions targeting CIAS can undoubtedly contribute to the patient's recovery in a long-term perspective (Vita and Barlati, 2018; Vita and Barlati, 2019). Given its relevance in schizophrenia as a major contributor to poor functional outcomes, we carried out a study to investigate the perception, assessment, and treatment of it in Italy in daily clinical practice among mental health specialists through a nationwide survey. A total of 152 psychiatrists highly specialized in schizophrenia took part in the survey. Most of them consider the assessment of CIAS very important and a priority.



**Fig. 4.** Assessment tools used for CIAS evaluation. The most used tools for the assessment of Cognitive Impairment Associated with Schizophrenia (CIAS) in daily practice. Tests and test batteries (MMSE, WAIS, MCCB, BACS, UPSA) and interview-based assessment tools (CAI, SCORS). The percentages on the x-axis refer to the centers that perform neuropsychological testing for CIAS assessment (N = 104) adopting the methodologies reported on the y-axis and are not mutually exclusive.

**Table 2**  
The promoting factors and barriers to CIAS evaluation.

|   | N   | %    |
|---|-----|------|
| <b>Factors that promote CIAS evaluation</b>         |     |      |
| Clinical characteristics of the patient             | 110 | 84.6 |
| Impairment in performing daily activities           | 75  | 57.6 |
| Disability support claiming                         | 55  | 42.3 |
| Caregiver's request                                 | 40  | 30.7 |
| Mental health professionals' request                | 39  | 30.0 |
| Patient's request                                   | 15  | 11.5 |
| Specific PDTA                                       | 15  | 11.5 |
| <b>Barriers to CIAS evaluation</b>                  |     |      |
| Organizational barriers and lack of a trained staff | 129 | 99.2 |
| Limited financial resources                         | 35  | 26.9 |
| Patient's unwillingness                             | 29  | 22.3 |
| Limited awareness about CIAS                        | 15  | 11.5 |
| Clinical characteristics of the patient             | 9   | 6.9  |
| Lack of effective treatments                        | 5   | 3.9  |

The factors that promote or hinder CIAS assessment in daily clinical practice. Absolute values and percentages refer to respondents performing the CIAS assessment (N = 130). More than one answer was allowed resulting into non-mutually exclusive response options.

CIAS: Cognitive Impairment Associated with Schizophrenia; PDTA: Diagnostic Therapeutic Assistance Pathway.

**Table 3**  
The impact of CIAS on patients with schizophrenia.

|  | N   | %    |
|--|-----|------|
| Reduced autonomy in daily functioning      | 137 | 90.1 |
| Increased burden on parents and caregivers | 119 | 78.2 |
| Increased demand for residential care      | 109 | 71.7 |
| Increased demand for social support        | 98  | 64.4 |
| Worsening of schizophrenia symptoms        | 57  | 37.5 |
| Increased hospitalization events           | 55  | 36.1 |
| Reduced adherence to treatment             | 53  | 34.8 |

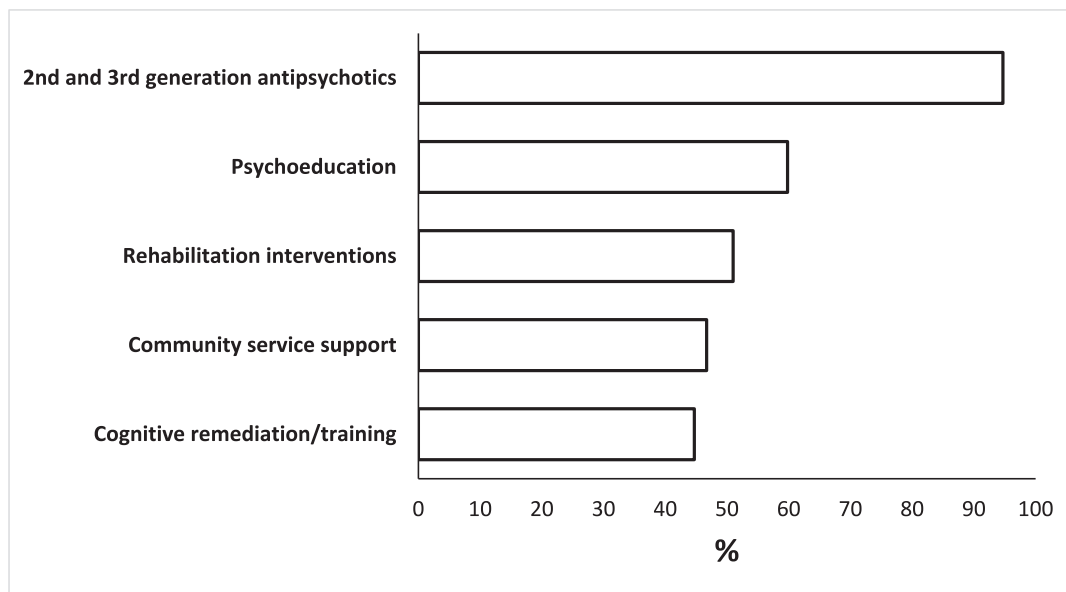
The most common consequences of CIAS on patients with schizophrenia as reported by respondents. Absolute values and percentages refer to the total number of participants (N = 152). More than one answer was allowed resulting into non-mutually exclusive response options.

CIAS: Cognitive Impairment Associated with Schizophrenia.

Despite this, in Italy it is assessed in less than half of the patients, and is confirmed, on average, in 65 % of them. Compared to what is expected based on the literature, where cognitive impairment is reported to be found in >80 % of patients (McCleery and Nuechterlein, 2019), in the Italian context its prevalence appears to be underreported.

Several factors hinder the possibility of effective assessment and diagnosis of CIAS and may influence the observed results. One of the most important is the use of tools that are not primarily designed for CIAS and are therefore inaccurate, characterized by low sensitivity and often do not provide optimal classification levels. Moreover, lack of adequately trained staff and organizational problems, as stated by almost all participants, together with the costs to be incurred, and the limited economic resources available have also an impact. The patient's clinical characteristics, and the absence of effective therapies together with the lack of a common terminology to refer to the impaired functioning may represent important barriers to CIAS evaluation and identification in patients. In fact, a huge heterogeneity was found concerning the definition of CIAS. The terminology most frequently used when talking about it with patients, their relatives and caregivers is "cognitive impairment" followed by "cognitive symptoms", "cognitive deficits" and "cognitive disorders". All these terms unequivocally identify cognitive impairment as a dysfunction with an independent and clear symptomatology, in addition to the positive and negative symptoms associated with schizophrenia. Although no consensual terminology has been found, the attempt to avoid the use of stigmatic terminology such as "deficit" is noteworthy.

In centers where CIAS assessment is performed, cognitive impairment is assessed in different settings and mostly when the patient is clinically stable, during follow-up visits during the hospitalization. Only in a few centers it is assessed at the first medical contact. This is consistent with the first-line intervention on a patient with schizophrenia aimed primarily at neutralizing the acute phases of the illness, but also because the presence of the major symptoms of the disease clearly hinders the possibility of a proper cognitive assessment. A preliminary clinical assessment of cognitive impairment is performed in almost all sites performing the CIAS evaluation. In more than half of them, formal assessment tools consisting of tests, batteries, and interviews are also used. The use of neuropsychological tests without preliminary clinical assessment is infrequent. They are adopted as the sole instruments for CIAS assessment in only 20 % of the centers where it is carried out, thus highlighting the lack of confidence in their diagnostic efficacy in most cases, as they are considered inadequate, not designed



**Fig. 5.** Therapeutic options for CIAS treatment

The frequently adopted therapeutic strategies to treat the Cognitive Impairment Associated with Schizophrenia (CIAS) (CIAS) are reported. Percentages on the x-axis refer to the total number of participants ( $N = 152$ ).

to evaluate the cognitive function, specifically, of a patient with schizophrenia. MMSE and WAIS are the most frequently used tests. MCCB, BACS and UPSA are used to a lesser extent. More infrequent is the administration of interviews (CAI or SCORS) which are used by half of the centers, without prevalence of one over the other and always in combination with at least one test. Overall, these results suggest a lack of a consensus on the way CIAS is assessed. Different approaches are adopted, and psychiatrists often use tools that, although not specifically designed for the evaluation of cognitive impairment, are the only ones available and commonly used and for which they are trained.

Psychologists, psychiatrists, and psychiatric rehabilitation technicians participate to varying degrees in the evaluation. The psychologist is the main figure involved in the assessments as it is responsible for all assessments in more than half of the centers, followed by psychiatrists and the psychiatric rehabilitation technician.

Among the factors guiding and supporting the CIAS assessment, the patient's clinical characteristics play the most important role, followed by reduced autonomy in daily activities and the need for social support. It is more frequent that the request comes from the patient's caregiver because of an increased burden related to the cognitive impairment, while it is less frequent for it to come from the patient themselves.

While it is definitively clear that the main consequence of CIAS is reflected in daily life, in the reduced ability to live independently, the effect on the severity of the clinical picture, the increased number of hospital admissions and reduced adherence to antipsychotic medication, each reported by one third of the participating psychiatrists, should also be considered as key factors to promote CIAS assessment and treatment to improve the patient's quality of life overall. In line with this, more effort should be made to identify reliable and accurate screening tools and to provide clear guidance in each center on the most effective treatment for CIAS. Currently, second- and third-generation antipsychotics are used by most psychiatrists and in most DSMs (94.7 % of participants), although their effect is controversial and not specifically reported in their label. Interestingly, non-pharmacological therapies such as CR, psychoeducation and other forms of rehabilitation interventions are gaining ground among mental health specialists, since they are used in about half of the sites, with a different level of penetration. Physical activity, and dietary intake control are also among the interventions commonly used by Italian psychiatrists with benefits on patients living with schizophrenia, as also shown by meta-analysis

studies (Firth et al., 2016).

Overall, our data support that CIAS is a well-recognized aspect of schizophrenia among psychiatrists and mental health professionals, in Italy, with a non-negligible clinical attention. Despite a generalized awareness of the benefits that cognitive impairment assessment and treatment can bring to the patient to achieve a good quality of life and to reduce the internalized stigma (Chan et al., 2019; Schwarzbald et al., 2021; Amore et al., 2020; Barlati et al., 2022; Yanos et al., 2020), there are systemic factors that need to be overcome to raise awareness and address CIAS. Organizational barriers, insufficient healthcare financing, inadequate linguistic and cultural validation, as well as poor patient involvement and access to healthcare, often prevent optimal intervention in daily clinical practice with implications on the cognitive performance of the patient's rehabilitation process and on social and caregiving burden. The structured training of specialists, the standardization of the assessment approaches and tools used, the sharing of best practices, can undoubtedly be key actions to be undertaken to bridge the gap between the recognized importance of CIAS as unmet medical need and its implementation in daily practice in line with a patient-centered perspective.

#### 4.1. Limitations

Although the psychiatrists who participated in the survey are highly experienced mental health professionals, the sample used for this survey represents only a fraction of all psychiatrists working in Italy. Likewise, they only represent local clinical practice even though participants are representative of several Mental Health Departments spread across the country. Another important limitation is a possible bias due to CIAS assessment, burden and treatment reporting referred to facilities that have greater access to financial and structural resources compared to others that lack diagnostic tools, expertise, and infrastructure to take into consideration the cognitive impairment of a patient with schizophrenia and an adequate rehabilitation program that includes cognitive remediation.

## 5. Conclusions

Cognitive impairment is one of the main features of schizophrenia with a significant impact on functional outcome. To date, its systematic

assessment and management in daily clinical practice is hampered by a number of factors, consisting mainly of financial and structural/organizational barriers. The unavailability of targeted therapeutic interventions also strongly impacts and discourages the possibility of taking action to address it. Here we presented the results of a national survey on CIAS awareness among Italian psychiatrists to map and describe the perception and perspective of cognitive impairment in the Italian real-world scenario. Among Italian specialists, the assessment of cognitive function is considered important and is performed in most of the sites represented by the participants. However, the lack of a unifying terminology to refer to cognitive impairment, the use of non-specific assessment instruments that are often incapable of capturing the specificities of CIAS, the financial and organizational barriers to adequately train specialists and healthcare personnel and to perform the assessment during routine patient management, hinder the possibility of performing a widespread assessment of CIAS in patients with schizophrenia in daily clinical practice. Overall, this study highlights that cognitive impairment should be systematically assessed in research and clinical practice settings, given the acknowledgement of its key role by the Italian psychiatrists and by the whole scientific community. The adoption of shared assessment protocols specifically designed for CIAS should be promoted, paving the way for further advances in the field of assessment, recognition, and treatment of cognitive functions in patients with schizophrenia. The results presented in this study can undoubtedly support and guide further efforts towards the recognition of CIAS as an effective therapeutic target with the ultimate goal of improving the quality of patient care and promoting patients' recovery from a patient-centric perspective.

#### CRedit authorship contribution statement

**Antonio Vita:** Writing – review & editing, Conceptualization. **Stefano Barlati:** Writing – review & editing, Conceptualization. **Roberto Cavallaro:** Writing – review & editing, Conceptualization. **Riccardo Cipelli:** Writing – review & editing, Supervision. **Giulio Corrivetti:** Writing – review & editing, Conceptualization. **Dario Delmonte:** Writing – review & editing, Supervision, Conceptualization. **Eleonora Lusito:** Writing – original draft, Visualization, Project administration, Methodology, Formal analysis, Conceptualization. **Elisabetta Maia:** Writing – review & editing. **Maria Michela Marino:** Writing – review & editing. **Giuseppe Nicolò:** Writing – review & editing, Conceptualization. **Paola Rocca:** Writing – review & editing, Conceptualization. **Silvana Galderisi:** Writing – review & editing, Conceptualization.

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#### Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

In the last two years, Prof. Vita has received, directly or indirectly, support for clinical studies or trials, conferences, consultancies, congress presentations, advisory boards from: Alkermes, Angelini Pharma, Boehringer Ingelheim, Janssen-Cilag, Lundbeck, Otsuka, Roche, Rovi, and Teva.

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Riccardo Cipelli and Eleonora Lusito have disclosed that they are employees of IQVIA Solutions SRL.

The remaining authors declare that they have no competing interests.

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#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.scog.2025.100352>.

#### Data availability

Data can be made available on request on a case-by-case basis and depending on legal/privacy regulations.

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