Diagnosis of alcohol use disorder from a psychological point of view

La diagnosi del disturbo da uso di alcol dal punto di vista psicologico

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SUMMARY. Alcohol use disorder (AUD) is one of the most common psychiatric disease in the general population, characterized by having a pattern of excessive drinking despite the negative effects of alcohol on the individual's work, medical, legal, educational, and/or social life. Currently, the bio-psycho-social model describes properly AUD as a multidimensional phenomenon including biological, psychological, and socio-cultural variables affecting the nature, maintenance, and expression of the disorder. The AUD diagnostic process is crucial since the treatment success depends heavily on the accuracy and the adequacy of the diagnosis. The diagnosis is based on a comprehensive assessment of the patient's characteristics and uses interviews and psychometric instruments for collecting information. This paper will provide insights into the most important psychological dimensions of AUD and on the best psychometric instruments for proposing AUD diagnosis.

KEY WORDS: alcohol use disorder, AUD, psychological alcohol dimensions, diagnosis, clinical interview, screening, assessment.

RIASSUNTO. Il disturbo da uso di alcol (DUA) è uno dei disturbi psichiatrici più comuni nella popolazione generale. Il DUA è caratterizzato da un pattern di bere eccessivo, che si mantiene nonostante gli effetti negativi che l'alcol ha sul funzionamento lavorativo, sulla salute, sulle problematiche legali, sull'educazione e sulla vita sociale. Attualmente, il modello bio-psico-sociale è quello che spiega meglio il DUA. Infatti, molte ricerche hanno fornito evidenze su come il DUA sia una patologia multidimensionale. Variabili biologiche, psicologiche e socio-culturali entrano in gioco nell'eziologia, nella natura, nel mantenimento e nel cambiamento nel tempo del disturbo. La fase diagnostica è un momento importante del processo di cura, perché il successo del trattamento dipende in larga misura dall'esattezza e dall'adeguatezza della diagnosi. La diagnosi clinica si basa su una valutazione globale del funzionamento del paziente e utilizza il colloquio e gli strumenti psicometrici come mezzo di raccolta di informazioni. Questo articolo fornirà una panoramica delle dimensioni psicologiche più importanti da valutare e sui migliori strumenti psicometrici da usare per una diagnosi adeguata.

PAROLE CHIAVE: disturbo da uso di alcol, DUA, dimensioni psicologiche collegate all'alcol, diagnosi, colloquio clinico, screening, valutazione.

INTRODUCTION

The American Medical Association defines the alcohol use disorder (AUD) a chronic and relapsing disease[1]. The bio-psycho-social approach to alcoholism is now generally considered the most appropriate to explain AUD. AUD complexity is characterized by a multifactorial pathogenesis with various clinical manifestations (mental and behavioral disorders, internal medicine diseases, neurological or psychiatric problems)[2]. The model includes the presence of a team of professionals (physicians, psychologists and psychiatrists) that integrate their work to develop diagnosis and treatment schedules. The AUD diagnostic process is crucial since the treatment success depends heavily on the accuracy and the adequacy of the diagnosis[3]. The diagnosis involves specific models, methods, and techniques aimed at developing hypotheses about the psychological feature of the person asking for help. The psychological diagnosis shows: 1) functional and dysfunctional aspects of the AUD person, and 2) these aspects are evaluable and quantifiable; 3) the AUD person is influenced strongly by the location (hospital, prison, home, specialized services for the treatment of AUD) where the diagnosis is made. The diagnosis is based on a comprehensive assessment of the patient's symptoms and uses interviews and psychometric instruments as a tool for the collection of information. In clinical practice, the various services dealing with alcohol dependence differ greatly from each other in the type of the proposed assessment. This variability depends on the service nature, purpose and characteristics, on the available resources (spaces and operators), but also on the poor AUD knowledge available on what are the most functional tools to make a diagnosis[4-6]. The knowledge of the

AUD clinical characteristics are extremely important in order to determine what psychometric instruments to use in the AUD diagnosis.

EVALUATION OF THE AUD CLINICAL CHARACTERISTICS

The choice of the clinical features in the AUD diagnostic evaluation is a very delicate and complex process. In particular, some aspects that should be finely investigated for fostering treatment schedules are:

1. The motivation for change in people who have problems related to alcohol and/or other substances has a very important role. Scientific evidences have found that the level of motivation for change improves the treatment outcome[7,8] facilitating the quit drinking.
2. The desire to drink (craving) is frequently connected to relapse and to the lack of adherence to treatment[9]. The desire to drink seems related specifically to the amount of alcohol drunk: the stronger the desire, the higher will be the alcohol consumption[10,11]. It has been shown that the combination between appropriate pharmacological interventions and psychological treatments may greatly reduce the drinking desire and the lack of adherence to treatment[12-14].
3. AUD is frequently associated with other psychiatric disorders as the bipolar disorders and the cluster B personality disorders[15]. Such psychiatric problems if not properly identified and treated might greatly impair the AUD treatment[16,17].
4. It has been widely documented the presence of cognitive difficulties related to alcohol abuse[18-22]. Main impairments regard the executive functioning (58%), the acquisition of new information (32%) with a minor frequency of general cognitive deterioration (4%)[23]. At neuro-anatomical and physiological levels, alcohol abuse seems particularly linked to impairments of the frontal lobe and the hippocampus, basically reversible with increasing abstinence[24,25]. Longitudinal studies, through the use of f-MRI, show an increase in the volume of gray matter[26] and hippocampal structures[27]. It has been shown an improvement in the cerebral general structure[21,28] following a period of abstinence of at least one month, in particular, the frontal and temporal structures[29]. Data on cognition suggest the importance of monitoring memory and learning functioning to adapt the psychological treatment of the clinical characteristics of the AUD person[30].
5. AUD has also a negative impact on the quality of life of patient friends and family[31]. Although AUD is a chronic and relapsing disease, treatment should target to improve the patient quality of life. The World Health Organization (WHO) defines health not only as the absence of disease but also as a state of physical, mental and social well-being[32]. The construct of "quality of life" is a good indicator to assess and quantify the improvement due to abstinence from alcohol and therefore a measure of treatment efficacy[33,34].

INTAKE INTERVIEW

Intake interviews are the most common type of interview in clinical psychology. The intake interview is important in clinical psychology because it is the first interaction that occurs between the client and the clinician. The clinician may explain to the client what to expect during the interview, including the time duration[35]. In AUD the purpose of the intake interview often includes establishing and diagnosing any problems the patient may have. Its purpose is establishing and diagnosing AUD and correlated problems of the patients to create and to personalize a treatment schedule[35]. The understanding of the reasons leading the AUD patient to seek for help is crucial during the interview[36] (Figure 1) shows the clinical characteristics to evaluate during the interviews to determine a diagnosis of AUD including the severity of alcohol use, obsessive-compulsive nature of drinking, craving, poly-dependence, comorbidity with other psychopathological disorders as well as data about family situation, occupation and socio-relational adaptation (Table 1). The ability of the psychologist to carry out the intake interview is crucial to disclose subtle patients' information for diagnosing AUD by using empathic statements such as paraphrases, feeling validation, and non-directive reflections of feelings aimed at creating a therapeutic alliance. The motivational interview should offer a model of how the intake interview should be conducted[8]. Motivational style, in fact, provides clinical tools for preventing interruptions in the communication between patient and psychologist to easily build, even in people with low levels of motivation, a protected relational context where the patient may feel understood and welcomed[37]. The interactive style proved to be more capable of activating a problematic drinking change than the directive style[38]. Similar conclusions were reached by Rollnick et al.[39] who considered the "confrontation" as an interactive counterproductive style.

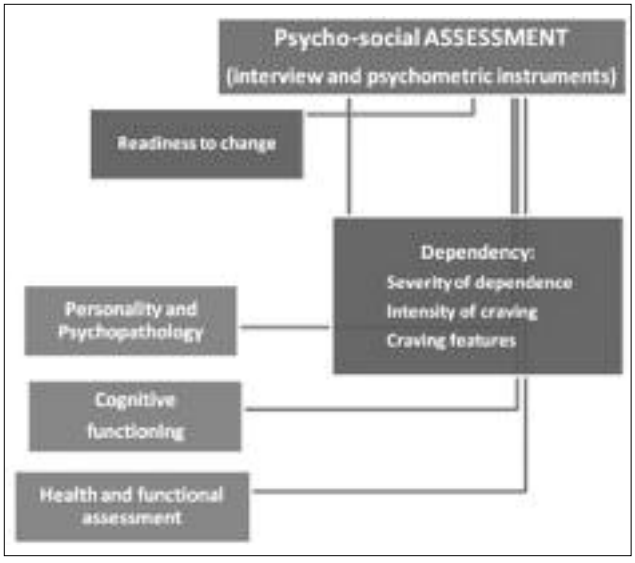

Figure 1. AUD clinical characteristics for developing treatment schedules.

Table 1. Diagnostic dimensions to be investigated during the interview.

Intake interview	• Patient's primary reason for seeking help • Patient goals and needs • Awareness of addiction and readiness to change
Relationship with substance	• When and why the patient starts drinking (Applied Behavior Analysis) • Severity of dependence (how much and when the patient drinks and what happens when the patient stops drinking alcohol) • Craving features (obsessive-compulsive aspects) • Intensity of craving (how much strong is the desire to drink and how frequently occurs)
Mental health and cognitive function	• Psychological and psychopathological profiles (strengths and weaknesses in psychological functioning) • Cognitive profile (time and space orientation, planning and abstraction ability, attention and memory abilities, understanding ability) • Self-perception of personal resources and problematic areas
Family	• Psychological and psychopathological profiles (strengths and weaknesses in family functioning) • Awareness of alcohol abuse • Helpfulness
Work and social network	• Medical and work history • Quality and quantity of social relations

PSYCHOMETRIC TOOLS FOR AUD DIAGNOSIS AND ASSESSMENT

Many psychometric tools for the diagnosis of AUD have been described and proposed, however, only a few have been actually validated in Italy[40]. The AUD diagnosis for the development of a treatment plan may be reached by collecting information on physical, psychological and social features of the patient[40]. Treatment monitoring is an important step of the care process, requiring indicators, traced from both interviews and psychometric tools, called also measure of "success" (outcome). Table 2 shows the psychometric instruments and questionnaires and dimensions investigated by each test and relative degrees of "recommendation and evidence"[41] (Table 3). In particular, psychometric tools should be administered after at least 7 days of abstinence to minimize bias due to withdrawal side effects.

They include in particular the following tools.

Motivation to Change-Alcohol

Most of the motivation for change assessment tools refer to the concept of readiness to change as shown by Prochaska and DiClemente in their model of the stages of change[42]. The Motivation to Change-Alcohol questionnaire (MAC2-A), validated in Italy, was designed to evaluate the motivation to change in adult subjects with AUD who require or are referred for assessment and treatment[43,44]. MAC2-A (Precontemplation, Contemplation, Determination, Action, Maintenance and Exit) also describing the motivation according to a three-factor model (Availability to change, Inner fracture and Self-efficacy). MAC2-A has been validated in Italy by a study analyzing 419 subjects recruited at 23 Italian sites. MAC2-A consists of 36 statements – 18 of these items measure stages of change, 12 items measure "discrepancy" and "self-efficacy" and 6 items evaluate "help-seeking". Each item is rated to a 0-6 Likert scale from "not at all true" to "completely true". At the end of the questionnaire there are six questions (Inner fracture, Self-efficacy, availability to change, stabilization, importance attributed to the change and the desire/temptation to alcohol). MAC2-A uses a 100-point visual analog scale (VAS) response format and each item is assessed on a 0-100 scale from "not at all" to "extremely". All data are correlated with the self-declared abstinence days. MAC2-A also evaluates the help seeking, separately from the readiness to change, because the aspects of motivation for change and motivation to therapy might not always have similar development trends[45,46]. The questionnaire allows to evaluate not only the motivation but also many other indices, for example, the "effective" perceived by the patient to make changes in order to plan treatment[43,44] (Evidence B, Recommendation 1 of Table 3).

Severity of Alcohol Dependence Questionnaire

The Severity of Alcohol Dependence Questionnaire (SADQ)[47] is a short, self-administered, questionnaire designed by the WHO to measure the severity of dependence on alcohol based on the premise formulated by Edwards and Gross[48]. It is composed of 20 items that measure the withdrawal symptoms both physical and psychological. The subject is asked to recall a month when he drank a lot, and starting from the memory of that, are posed some questions exploring: physical symptoms such as tremors, sweating, or stomach pain; moods; feelings of relief resulting from the consumption of alcohol; alcohol consumption; the rapid recovery of the addiction. Each item is scored on a 4-point scale ranging from 0 (never or almost never) to 3 (nearly always). The maximum possible score is 60. A score of over 30 indicates severe alcohol dependence. SADQ predicts the probability of reaching the goal of controlled drinking and severity of withdrawal symptoms[49-52] (Evidence A, Recommendation 1 of Table 3).

Addiction Severity Index

The Addiction Severity Index (ASI) is a semi-structured instrument used in face-to-face interview conducted by a counsellor for assessing the frequency of use of drugs and alcohol and the severity of the problems from its use. ASI may be used in the initial phase of the treatment and subsequently at follow-up[53]. ASI has been utilized extensively for treatment planning and outcome evaluation[54]. The original questionnaire was subjected to validation, updated and expanded until the publication of the fifth edition in 1990[55-57]. In 1993 the European

Table 2. Aspect investigated by each test and relative degree of "recommendation and evidence".

Dimension	Test and Questionnaires	Recommendation and evidence	Advantage of the test/questionnaire
C.1 Motivation assessment			
	MAC2-A (Spiller et al. 2006; 2009)	B1	Provides many useful indexes to set treatment plans
C.2 Addiction			
C.2.1 Severity of dependence	Substance Dependence Severity Scale (SDSS) (Miele et al., 2001)	B2	
	Severity of Alcohol Dependence Questionnaire (SADQ) (Stockwell et al, 1979)	A1	Research showing that SADQ predicts the severity of abstinence
	Alcohol Dependence Scale (ADS) (Skinner and Allen, 1982)	A2 (nv)*	
	Leeds Dependence Questionnaire (LDQ) (Raistrick et al., 1994)	A2 (nv)*	
	Addiction Severity Index (ASI) (McLellan et al. 1980) EuropASI (Blanken, 1995)	A1 A1	To Identify problem areas related to drinking
	Criteria of severity of dependence (DSM-5)	A1	Easy to administer
C.2.2 Intensity of craving	Penn Alcohol Craving Scale-PACS (Flannery, 1999)	B2	
	Visual Analogue Scale (VAS)	B1	Easy to administer
C.2.3 Obsessive/ compulsive characteristics of drinking	Obsessive Compulsive Drinking Scale (OCDS) (Anton et al. 1995; 1996)	A1	Reveal obsessive-compulsive characteristics of thoughts connected to drinking
C.3 Alcohol and comorbid psychopathological disorders: psychopathology and personality			
C.3.1 General instruments of mental health	Self-Report System Inventory (SCL-90) (Derogatis et al. 1970)	A1	Easy-to-use screening instrument for assessesing psychological distress
	Brief Psychiatric Rating Scale (BPRS) (Overall, 1962).	B2 (nv)*	
	Clinical Global Impression (CGI) (Guy, 1976; 2000; Forkmann, 2011)	B2 (nv)*	
	Minnesota Multiphasic Personality Inventory (MMPI) (Butcher, 1995)	A1	
	Millon Clinical Multiaxial Inventory–III (Millon, 2009)	A1	The most widely available measure of personality disorders. Quick administration and correction
	Temperament and Character Inventory-TCI (Cloninger, 1994)	A1	Provides important information to set treatment plans
C.3.2 Specific tools for mental health			
Depression	Beck Depression Inventory (BDI) (Beck, 1961, 1974, 1988)	A1	Research evidence Indicates its validity
	Zung Self-rating Depression Scale (SDS) (Zung, 1965; 1971; 1974)	B2	
	Hamilton Depression Rating Scale (HDRS) (Hamilton, 1960)	A2	
Anxiety	Self Rating Anxiety Scale (SAS) (Zung, 1971)	B2	
	State-Trait Anxiety Inventory (STAI) (Spielberger & Gorsuch, 1966; Spielberger, 1972, 1976, 1979, 1983)	A1	Research evidence indicates its validity

(*Continued*) - Table 2

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Dimension	Test and Questionnaires	Recommendation and evidence	Advantage of the test/questionnaire
	Hamilton Anxiety Scale (HAM-A) (Hamilton, 1959; Bruss, 1994)	A1	
C.4 Cognitive assessment			
	Mini-Mental State Examination (MMSE) (Versione italiana in Magni, 1996)	A1	Easy to administer
	Vocabolario WAIS-R (Orsini e Laicardi, 1998)	A1	Easy to administer
C.5 Health and operating measures			
	Addiction Severity Index (ASI) (Raistrick et al., 1994) Europ ASI (Blanken, 1995)	A1 A1	
	Global Assessment of Functioning (GAF) (Endicott et al., 1976)	A1	Identifies problem areas related to drinking
	Short-Form Health Survey (SF-36) (Ware, 1992).	A1	Easy to administer
	WHO Quality of Life –WHOQOL (WHOQOL Group, 1993; 1994a; 1994b; 1998a; 1998b)	A1	
* The test has not been validated in Italy (nv)			

version was developed, called the European Addiction Severity Index (EuropASI). The ASI is also designed to address seven potential problem areas in substance-abusing patients: medical status, employment and support, drug use, alcohol use, legal status, family/social status, and psychiatric status. The questionnaire requires relatively long time of administration and could be difficult to use in those contexts in which the availability of time for the patient is limited or when the clinical setting is not appropriate or when the active participation required to the patient is insufficient. However, it remains highly recommended for the important information provided. In Italy the version of the questionnaire is edited by Consoli and Bennardo[58], however, the EuropASI is the mostly carried out[59] (Evidence A, Recommendation 1 of Table 3).

Visual Analogue Scale

Visual Analogue Scale (VAS) collects information on self-reported craving intensity. It is a straight horizontal line of fixed length, usually 100 mm. The ends are defined as the extreme limits of the parameter to be measured orientated from the left (no symptoms) to the right (strong symptoms). The subject is required to indicate, for each specific substance (heroin, cocaine, alcohol, etc.): 1) the "desire" that she/he had during the previous week of investigation, putting a sign on a line for each substance of abuse; 2) the intensity of the desire to drink; 3) and if he/she has drunk. The VAS is very useful in the rapid assessment of craving for drug abuse[60,61] (Evidence A, Recommendation 1 of Table 3).

Obsessive Compulsive Drinking Scale

The Obsessive Compulsive Drinking Scale (OCDS) was developed to reflect obsessionality and compulsivity related to craving and drinking behaviour[62,63]. The questionnaire consists of 14 questions referred to the two weeks prior to the administration. OCDS consists of questions on the intensity of the desire, on obsessive and compulsive characteristics of drinking, on related thought, urges to drink, and on the ability to resist to drink and on the amount of alcohol drunk on relapses. The scale is sensitive and specific in capturing the obsessive-compulsive characteristics of thoughts connected to drinking, the desire and the ability to resist to these thoughts[64-68].

OCDS represents also an excellent monitoring tool, able to predict relapse and a treatment reliable indicator[63,65,69,70]. It has been translated into many languages including Italian[71] (Evidence A, Recommendation 1 of Table 3).

Symptom Checklist-90

Symptom Checklist-90 (SCL-90) instrument evaluates a broad range of psycho-pathological problems and symptoms[72]. Applying factorial analysis Derogatis[73] proposed nine subscales or dimensions labeled: somatisation, obsessive compulsion, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. Patients are asked to rate the severity of their experiences with 90 symptoms over the past week on a 5-point scale ranging from 0 'not at all' to 4 'extremely'. In the SCL-90 3 indexes are defined: GSI (General Symptomatic Index) is the ratio between the sum of all items and those analyzed; PST (Positive Symptom Total) is the number of items scored positively; PSDI (Positive Symptom Distress Index) is the sum of all the items, and the PST[74]. Approximately 12-15 minutes are necessary for its compilation and it is relatively easy to compile. A high score in a given dimension indicates high expression of the corresponding distress. By using the SCL-90-R[75], it was observed in a sample of alcoholics, symptoms 2-5

Table 3. Treatments' efficacy grading of both evidence and recommendations.

Grading of evidence	**Notes**	**Symbol**
High quality	Further research is very unlikely to change our confidence in the estimate of effect and clinical practice	A
Moderate quality	Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate and clinical practice	B
Low or very low quality	Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate and clinical practice. Any estimate of effect is uncertain	C
Grading of recommendation	**Notes**	**Symbol**
Strong recommendation warranted	Factors influencing the strength of the recommendation included the quality of the evidence, presumed patient-important outcomes, and cost	1
Weaker recommendation	Variability in preferences and values, or more uncertainty: more likely a weak recommendation is warranted. Recommendation is made with less certainty; higher cost or resource consumption	2

Adapted from: European Association for the Study of Liver. EASL clinical practical guidelines: management of alcoholic liver disease. J Hepatol 2012; 57: 399-420.

times more severe than in the general population[76]. In AUD people, SCL-90 is a valid and useful screening tool in measuring patient progress or treatment outcomes[72,77-79]. This scale may predict relapse[80]. In Italy, a first SCL-90 version was provided by Dell'Erba[81] with a few changes, compared to the original version, in the questions and scoring. In 2011, it has been also published another validated version of the test edited by OS Giunti (Evidence A, Recommendation 1 of Table 3).

Minnesota Multiphasic Personality Inventory

Minnesota Multiphasic Personality Inventory (MMPI, now versions 2, MMPI-2) is one of the most widely used standardized psychometric tests of adult personality and psychopathology[82]. It is used both in the psychological and psychiatric field. The current MMPI-2 has 567 true/false questions, 8 validity scales, 10 clinical subscales, 16 supplemental scales, 15 content scales, PSY-5 (Personality Psychopathology Five) scales, 27 subscales related to the components of the content scales, and 28 subscales of Harris-Lingoes[83]. It usually takes between one and two hours to complete depending on reading level. The Italian version of the MMPI-2 was edited by Pancheri and Sirigatti and was issued by OS Giunti in 1995. The MMPI-2 is widely used in the AUD context to detect symptoms associated with neuroticism (hypochondriasis, depression and hysteria), anxiety[84] and personality disorders (dependent disorder, antisocial and borderline)[85]. An important limit of the test is the expenditure of time necessary for its compilation and for the scoring (Evidence A, Recommendation 1 of Table 3).

Millon Clinical Multiaxial Inventory

Millon Clinical Multiaxial Inventory - Fourth Edition (MCMI-IV) is the most recent edition of the Millon Clinical Multiaxial Inventory[86]. It represents a new and valid adult psychological assessment tool used alternatively or in addition to psychopathological questionnaires of personality already in use[87]. The previous version of the Millon Clinical Multiaxial Inventory (MCMI-III**)** has more than 700 empirical studies, based on scientific researches and dozens of specialized texts dedicated. Only the Rorschach test and MMPI-2 have more researches published in the last five years[88]. The inventory is composed by: 15 Personality Pattern Scales, 10 Clinical Syndrome Scales, 5 Validity Scales: 3 Modifying Indices; 2 Random Response Indicators, 45 Grossman Personality Facet Scales (based on seth Grossman's theories of personality and psychopathology). Moreover, MCMI-IV offers updated norms that are based on a clinical adult population, a new scale, DSM-5 and ICD-10-CM alignment, updated narrative content and a new and solid therapeutic focus. The brevity of the MCMI-IV allows clinicians to maintain an efficient and productive clinical practice[86]. The MCMI-IV is also used on the population of alcoholics[89-91]. In Italy, we have validated only the MCMI-III (Evidence A, Recommendation 1 of Table 3).

Temperament and Character Inventory

Cloninger proposed a sociobiological model of addiction that integrates the genetic, neurobiological and psychological components [92]. The model finds its practical application in the Temperament and Character Inventory-TCI[93] based on four temperaments (Novelty Seeking [NS], Harm Avoidance [HA], Reward Dependence [RD], and Persistence [PS]) and three characters (Self-directedness [SD], Cooperativeness [CO], and Self-transcendence [ST]) each of which corresponds to a specific pattern of behaviour in response to various environmental stimuli. The temperamental traits are stable and genetically determined, little affected by the sociocultural components of personality. Each of the first three dimensions reflect the activities of the three main brain systems, namely: the Central system of behavioural activation (dopamine), central system of behavioural inhibition (serotonin), central system of behavioural maintenance (noradrenaline). The temperament traits are, according to Cloninger, a powerful tool to distinguish the various person-

ality disorders or to locate vulnerability to a wide spectrum of mental disorders[94]. The character traits are to be placed in relation to educational and socio-environmental influences and are able to strongly predict the presence of personality disorders[92] associated with AUD[95,96]. This test is validated in Italy by Fossati et al.[97,98] (Evidence A, Recommendation 1 of Table 3).

Beck Depression Inventory

Beck Depression Inventory (BDI) is a 21-items, self-report rating inventory that measures characteristic attitudes and symptoms of depression frequently associated with AUD[99]. There is a four-point scale for each item ranging from 0 to 3. The sum of all the individual item scores indicates the severity of depression: higher total scores indicate more severe depressive symptoms. In 1996, the questions in the BDI were revised (BDI-II) to reflect changes made in the DSM-IV. Like the BDI, the BDI-II also contains 21 questions, with each answer being scored on a scale of 0 to 3[100]. The cutoffs used, however, are somewhat different: 0-13: minimal depression; 14-19: mild depression; 20-28: moderate depression; 29-63: severe depression. The BDI-II reflects two components of depression: the affective subscale that contains 8 items (pessimism, past failures, guilty feelings, punishment feelings, self-dislike, self-criticalness, suicidal thoughts or wishes), and worthlessness and the somatic subscale with other 13 items (sadness, loss of pleasure, crying, agitation, loss of interest, indecisiveness, loss of energy, change in sleep patterns, irritability, change in appetite, concentration difficulties, tiredness and/or fatigue, and loss of interest in sex)[100]. The two subscales were moderately correlated at 0.57, suggesting that the physical and psychological aspects of depression are related rather than totally distinct[101-103]. The BDI takes approximately 10 minutes to complete, although clients require a fifth/sixth grade reading level to adequately understand the questions[104]. Although designed as a screening device rather than a diagnostic tool, the BDI is sometimes used by health care providers to reach a quick diagnosis[105]. The BDI is found useful in monitoring the severity of the changes in depression over time[103]. The instrument has been frequently used in treatment programs of psychoactive substances and/or alcohol dependence[106]. The BDI suffers from the same problems as other self-report inventories and the scores can be easily exaggerated or minimized by the person completing them[107] (Evidence A, Recommendation 1 of Table 3).

State-Trait Anxiety Inventory

State-Trait Anxiety Inventory (STAI)[108] is a self-report assessment device which includes separate measures of state and trait anxiety. According to the author, state anxiety reflects a transitory emotional state characterized by subjective, consciously perceived feelings of tension and apprehension, and by raised autonomic nervous system activity. It is floating over time and can vary in intensity. In contrast, trait anxiety denotes relatively stable individual differences in anxiety proneness and refers to a general tendency to respond with anxiety to perceived threats in the environment[109]. Both the STAI Y-1 (State Anxiety) and STAI Y-2 Form (Trait Anxiety) comprise 20 items each and are scored on 4-point forced-choice Likert-type response scales rated from 1 (not at all) to 4 (very much so). Scores range from 20 to 80, with higher scores suggesting greater levels of anxiety[110]. In the Italian standardization of the test three samples were used (adult workers, students of high schools and military recruits). The test takes 15 minutes to be filled. The instrument has been frequently used in the treatment programs of the psychoactive substances and/or alcohol dependence[111-114] (Evidence A, Recommendation 1 of Table 3).

Mini-Mental State Examination

At the clinical level, the early detection of a global cognitive malfunction is very important. AUD subjects in these conditions may not benefit from standard treatment and have, therefore, needs of specific treatment[23,115]. In this regard, it is recommended to use some tools that allow a rough but still important screening of cognitive disorders. The Mini-Mental State Examination (MMSE)[116] allows quickly to identify a mental impairment or a cognitive impairment. It is commonly used in medicine to screen for dementia but also to estimate the severity and progression of cognitive impairments. MMSE takes between 5 and 10 minutes and examines functions including spatial and temporal orientation, memory, language, attention, and constructive ability. It has been used on many clinical populations including people with AUD[115-117] (Evidence A, Recommendation 1 of Table 3). If the performance at the MMSE or one of its subtests are deficient, we recommend in AUD people a careful diagnosis using tests that assess memory, visual-spatial skills and visual-constructive, attention and executive functions[23]. Such careful diagnosis should serve to understand if the impaired performance on MMSE is due to impairments of specific functions most sensitive to the negative effect of alcohol or to a general cognitive impairment.

Wechsler Adult Intelligence Scale

The sub-test vocabulary scale of the Wechsler Adult Intelligence Scale (WAIS-R)[118] is composed of 39 words that the subject must define orally. For each response is given a score of 2, 1 or 0 points, depending on the relevance of the definition. The performance of this sub-test results to be correlated to the IQ and often used as a measure of pre-disease intellectual functioning[119] also in the population of alcoholics[120,121]. In the 2013, it has been published by OS Organization (OS Giunti) the Italian translation of Wechsler Adult Intelligence Scale-Fourth Edition (WAIS-IV) and the last version of vocabulary subtest is commonly used[122] (Evidence A, Recommendation 1 of Table 3).

Global Assessment of Functioning and World Health Organization's Disability Assessment Schedule

The Global Assessment of Functioning (GAF)[123] is a numeric scale used by mental health clinicians and physicians to subjectively rate the social, occupational, and psychological functioning of an individual. The scale was entered in DSM-IV-TR and uses a scale from 100 (extremely high func-

tioning) to 1 (severely impaired). The DSM-5 replaced the GAF with the WHODAS (World Health Organization's Disability Assessment Schedule), an interview more detailed and objective than GAF scale[124]. The main advantage of the GAF would be its brevity. Moreover, the last one has been extensively used in the treatment programs of the psychoactive substances and/or alcohol dependence[125] (Evidence A, Recommendation 1 of Table 3).

Short-Form Health Survey

The Short-Form Health Survey (SF-36) came out from the Medical Outcome Study (MOS) and is used to indicate the health status of particular populations, to plan treatment and to measure the impact of clinical and social interventions[126,127]. The SF-36 consists of eight scales that investigate vitality, physical functioning, bodily pain, general health perceptions, and physical role functioning, emotional role functioning, social role functioning and mental health. Each scale is directly transformed into a 0-100 scale on the assumption that each question carries equal weight. There is a validated version in Italy[128]. The test is easy to administer and its compilation may take from 5 to 15 minutes. A shorter version of the 12-question test (SF-12) has been published with equal reliability and validity of the longer version[129]. SF-36, compared to SF-12, has been found very useful as outcome measures and often used in the studies on AUD[130-132] (Evidence A, Recommendation 1 of Table 3).

Outcome evaluation and follow-up

Outcome is defined as the effect on an individual's health status attributable to an intervention. The primary aim of any health care service is to have a positive impact on the health and wellbeing of its clients. For this reason, the systematic measurement of treatment outcomes is an important part of

Table 4. Psycho-diagnosis and outcome measures.

Dimensions's assessment	Assessment (baseline) after 7 days of abstinence	Diagnosis and treatment plan	Treatment		
			Start	End	Follow-up
Addiction					
	History of alcohol consumption				
	SADQ			SADQ	
	OCDS		OCDS	OCDS	OCDS
	VAS		VAS	VAS	VAS
	ASI			ASI	
Motivation					
	MAC2-A			MAC2-A	MAC2-A
Cognitive functioning					
	MMSE*			MMSE	MMSE
	Vocabulary (WAIS)				
Psychopathology and personality					
	SCL90-R		SCL90-R	SCL90-R	SCL90-R
	MMPI			MMPI	
	MCMI-IV			MCMI-IV	
	TCI			TCI	
Psychosocial functioning					
	GAF			GAF	GAF
	ASI			ASI	
	SF-36		SF-36	SF-36	SF-36

* Only if the MMSE score at the baseline is pathological, repeat the MMSE at follow-up

the care process[133]. Outcome evaluation of alcoholics' requires combined analyses of drinking associated behaviours during the treatment, adherence to therapeutic programs and secondary non-drinking outcomes[134]. Outcome measures are, however, indicators defining and quantifying the outcome efficacy. Crucial issues are the identification of the treatment outcome variables[134]. The abstinence is not necessarily always the only goal of a treatment programs, nevertheless it remains the more used indicator of treatment outcome[135-141]. Abstinence from alcohol could be an important measure of success, but only if it is associated with improvements in other aspects of the patient's life (psychopathology, quality of life, social and cognitive functioning)[138,142,143]. In turn, the overall improvement is possible, only when: 1) the diagnostic phase is organized in order to build a comprehensive framework of the patient psycho-social features; 2) the treatment provides an adequate response to the patient's discomforts. After treatment, it is necessary that treatment outcomes are monitored through follow-up meetings. More than half of patients in the treatment for substance use disorders relapse within the first year. However, patients undergoing detoxification remain highly at-risk for relapsing also after years from the intervention[144-147]. Frequent follow-ups are essential to support patient during the recovery period. The term "follow-up" is used for defining interventions after the end of the primary treatment.

It is found that after intensive initial treatment episodes, a period of less intensive treatment is necessary in an effort to extend and reinforce the period of abstinence[148,149]. Is not clear which could be the optimal length and intensity of the continuing care but it has been hypothesized that a longer treatment is associated with greater positive effects on quit drinking[150], while the intensity of the treatment is not significantly associated with a positive outcome[151]. Indeed, it is important that during the follow-up time, the clinical interviews should be associated with the administration of tests to control the clinical condition of the AUD patient. The phases which characterize the process of diagnosis and treatment (assessment, diagnosis, treatment plan, treatment and follow-up) are summarized in Table 4, with an indication of the psychometric tools used considering the administration intervals.

CONCLUSIONS

The diagnostic process has as its goal to gather important information for developing a reliable diagnosis but also for scheduling appropriate treatments. At the present time, no standardized approaches of AUD diagnosis are ordinarily available[152-157]. However, in order to facilitate the acquisition of a realistic and comprehensive picture of the patient's clinical condition it is very important that a wide range of clinical dimensions is investigated (history of addictive disorder, readiness to change, physical condition, mental and psychiatric state, presence of trauma, suicidal thoughts, family history). Clinical interviews and psychometric instruments are used by professionals to primary collect information. This review has focused on diagnostic tools with Italian validation, a well-known scientific relevance and on simple administration. For this reason, we have included for each described tool, information about the scientific evidence and grade of recommendations (based on Table 3)[41]. In conclusion, it may be quite useful to highlight the guideline recommendations proposed by the National Institute for Health and Clinical Excellence[40]. showing that in the care process, it should be given priority in potentiating the relationships, based on mutual trust, not only between the patient and the professional but also between the professional and the patient family. Furthermore, it should be stressed that in AUD the assessment should finely investigate the severity of the addiction and an eventual psychopathological comorbidity in order to promptly program an appropriate therapeutic intervention.

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