Italian validation of Arizona Sexual Experience Scale (ASEX) on patients suffering from psychotic spectrum disorders

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Summary. Introduction. Many forms of mental disorders, especially psychotic disorders are characterized also by a worsening of sexual functioning. The main aim of this study was to validate in the Italian context the Arizona Sexual Experience Scale (ASEX), a very useful international tool to assess sexual dysfunction in people suffering from mental illness. **Methods.** Seventy-three patients suffering from psychotic spectrum disorders were recruited. We administered the Italian version of ASEX, adequately translated by two expert bilinguals. After 15 days we administered once again the test for test-retest reliability. **Results.** Validation of ASEX revealed Cronbach's coefficients >0.70 in both single items as in the total score. In addition, the test-retest reliability revealed Pearson's coefficients >0.50 in the various domains. Confirmatory factor analysis revealed good fit indexes for the two factors model of ASEX (SRMR=0.54; CFI=0.974; RMSEA=0.135). **Discussion.** This study represents the first validation in the Italian psychiatric context of a very useful specific tool for the sexual assessment in people suffering from mental illness. Our analysis after the ASEX administration revealed good psychometric characteristics in terms of confirmatory factor analysis, internal consistency, and test-retest reliability. **Conclusions.** On the basis of our results and consideration, we strongly suggest the use of ASEX in clinical context to assess the sexual function of patients with severe mental disorders.

Key words. ASEX, assessment, psychosis, sexuality.

Validazione Italiana dell'Arizona Sexual Experience Scale (ASEX) in pazienti che soffrono di disturbi dello spettro psicotico.

Riassunto. Scopo. Molte forme di disturbi mentali, in particolare i disturbi psicotici, sono caratterizzate da un peggioramento del funzionamento sessuale. L'obiettivo principale di questo studio è stato quello di validare nel contesto italiano l'Arizona Sexual Experience Scale (ASEX), uno strumento internazionale molto utile per valutare le disfunzioni sessuali nelle persone che soffrono di malattie mentali. **Metodi.** Sono stati reclutati 73 pazienti affetti da disturbi dello spettro psicotico. Abbiamo quindi somministrato loro la versione italiana dell'ASEX, adeguatamente tradotta da due esperti bilingui. Dopo 15 giorni abbiamo somministrato nuovamente il test per valutare l'attendibilità test-retest. **Risultati.** La validazione dell'ASEX ha rivelato i coefficienti di Cronbach >0,70 in entrambi i singoli fattori come nel punteggio totale. Inoltre, l'attendibilità test-retest ha rivelato coefficienti di Pearson >0,50 nei vari domini. L'analisi fattoriale ha rivelato buoni indici di adattamento per il modello a due fattori di ASEX (SRMR=0,54; CFI=0,974; RMSEA=0,135). **Discussione.** Questo studio rappresenta la prima validazione nel contesto psichiatrico italiano di uno strumento specifico molto utile per la valutazione delle disfunzioni sessuali nelle persone affette da malattie mentali. La nostra analisi dopo la somministrazione di ASEX ha rivelato buone caratteristiche psicometriche in termini di analisi fattoriale, coerenza interna e affidabilità test-retest. **Conclusioni.** Sulla base di queste considerazioni, si suggerisce l'utilizzo dell'ASEX nei contesti clinici per valutare la funzione sessuale nei pazienti con gravi disturbi mentali.

Parole chiave. ASEX, psicosi, sessualità, valutazione.

Introduction

Many forms of mental disorders are characterized by a worsening of sexual functioning, with psychosis ranking among the top positions[1-5]. Most of the recent evidence highlights how not only the well-known antipsychotic side effects (i.e., hyperprolactinemia, sedation, etc.) but also the psychotic disorders have a negative impact on sexual health[6]. Impairments in sexual function have been shown to significantly correlate with a longer duration of untreated psychosis and with heavier psychotic symptomatology, without presenting any association with prolactin or testosterone blood levels[7-9].

In this regard, interesting studies have stated that sexual problems in psychotic people are frequently neglected by therapists, with this causing important negative repercussions on the couple[10]. Therefore, since sexual health is a key aspect of their quality of

life, it is fundamental for psychiatrists and clinical psychologists to carefully assess and treat possible sexual dysfunctions in patients with psychotic disorders[10].

For this reason, in the last years, many researchers have developed and validated specific tests to detect sexual dysfunction in psychiatric populations, with results showing good psychometric properties in terms of convergent validity, sensitivity, and internal reliability[11].

The Arizona Sexual Experience Scale (ASEX) is a well-validated and handy self-report test, that was originally applied in patients receiving anti-depressive drugs[12]. ASEX is composed of five items, assessing sex drive, arousal, vaginal lubrification/penile erection, ability to reach the orgasm, and orgasm satisfaction. Sexual dysfunction is defined as: (1) a total ASEX score of ≥19; (2) any item with a score of ≥5; or (3) any three items with a score of ≥4[12,13].

Besides being validated in a general population, its applicability was also demonstrated in other clinical samples, such as neurological and renal diseases[14-16]. In this regard, an interesting study investigated the psychometric characteristics of ASEX in a clinical population composed of 246 patients with schizophrenia or schizoaffective disorder, showing high psychometric properties[17].

Nevertheless, despite being a fast, handy, and reliable tool for assessing sexual function, ASEX has only been translated in Thai[14], French[18] and Arabic[13].

For this reason, the scope of the present article is to validate the Italian version of ASEX, by means of confirmatory factor analysis (CFA), on a clinical sample of 73 psychotic patients.

Materials and methods

SAMPLE RECRUITMENT

A study population composed of 73 subjects suffering from schizophrenia, schizoaffective disorder, and psychosis not otherwise specified (diagnosis was made according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition [DSM-5] criteria), aged 18-65, was recruited from Psychiatric Units of the "Azienda Sanitaria Locale Avezzano-Sulmona-L'Aquila" and "Fondazione Policlinico Tor Vergata".

Exclusion criteria were: mental retardation or cognitive deterioration, carefully assessed by psychiatrists and clinical psychologists according to DSM-5 criteria, diabetes mellitus, metabolic syndrome, cardiovascular diseases, neurological pathologies, current neoplastic diseases.

The study protocol was approved by our ethics committee for investigations involving human subjects, in line with the Declaration of Helsinki. All subjects signed an informed consent regarding the handling of personal data.

MAIN OUTCOME MEASURES

We administered a protocol composed of a socio-demographic questionnaire including information as age, geographic distribution, partnership status, education, religious and sexual orientation, and the Italian translation of the ASEX[19-23].

TRANSLATION

We performed a forward and backward translation procedure of the original version of the ASEX. The translation and the adaptation were carried out from English to Italian by two proficient bilingual translators. Each item was then carefully evaluated by a team of psychiatrists, clinical psychologists, and sexologists.

STATISTICAL ANALYSIS

Continuous variables were represented statistically as mean and standard deviations. Categorical variables were represented as absolute and percentage frequencies. The internal consistency was assessed by the overall Cronbach's α coefficient following the 5 items of the ASEX. Moreover, factorial analysis was employed to test the eigenvalues and the variance. The test-retest reliability was performed by the Pearson's coefficient, calculated with two administrations, first at the baseline and then after 15 days. Moreover, a correlation among the factors of ASEX was carried out. To perform the statistical analysis, the Statistical Package for Social Science (SPSS) version 26 for Windows and STATA version 16 were used to run the Confirmatory Factor Analysis (CFA) and the correlation between the variables.

CFA was conducted the Maximum Likelihood as appropriate estimator: a one-factor model with five items and two factors model with 3+2 items. Model fit was assessed by means of the following fit indexes[24]: the Root Mean Square Error of Approximation (RMSEA) evaluating the fitting of the model to the general population (the RMSEA value indicates a good adaptation the more its value approaches "0", Browne and Cudek[25] suggest that values ranging from 0.05 and 0.08 are indicative of an adequate fit); the Comparative Fit Index (CFI) display scores between 0 and 1 (a value over 0.95 is considered excellent and a value between 0.90 and 0.95 considerate a good index) and the (Standardized) Root Mean Square Residual (SRMR) indicates the difference between the residuals of the sample covariance matrix and the hypothesized model, an acceptable value is considered less than 0.08.

Results

SAMPLE

The sample recruited was composed of 73 subjects [females: 29 (39.7%); males: 44 (60.3%)], with a mean age of 42.82±12.06 years. Education levels are distributed as follows: secondary education (54; 74%), master's degree (19; 26%) (table 1).

Table 1. Demographic and clinical characteristics (n=73).

Age	42.82±12.06
Males	44 (60.3%)
Females	29 (39.7%)
Secondary education	54; 74%
University degree	19; 26%
Diagnosis	
Schizophrenia	25 (34.2%)
Schizoaffective disorder	6 (8.2%)
Psychosis not otherwise specified	42 (57.6%)

RELIABILITY

The analysis of internal consistency showed an overall Cronbach's α coefficient of 0.85, for one-factor dimension referred to all five items of ASEX, 0.90 (item 1, 2, 3) and 0.86 (item 4 and 5) respectively for the two factors dimension.

TEST-RETEST RELIABILITY

Test-retest reliability regarded a subsample of 46 subjects who compiled ASEX two times. The first time at T0 and the second time at T1 after 15 days. The association between these two administrations are demonstrated by Pearson's coefficient as follow: Sexual Drive (r=0.586; p<0.0001), Arousal (r=0.624; p<0.0001), Penile Erection/Vaginal Lubrication (r=0.523; p<0.0001), Ability to reach orgasm (r=0.642; p<0.0001), Satisfaction from orgasm (r=0.700; p<0.0001), Total ASEX (r=0.725; p<0.0001) (table 2).

CONFIRMATORY FACTOR ANALYSIS

We tested a theory-driven model by means of a CFA in both ways one-factor model with five items and two factors model with 3+2 items (table 3). In CFA we considered a sample of 53 subjects who have completed all five items of ASEX, due to an absence of sexual activity in the last week.

For the first model with one factor and dimension fit indices were: SRMR=0.136, CFI=0.744, RMSEA=0.381 (table 4).

Table 2. Test-retest reliability.

Items and Total score	Pearson's r coefficient	p-value
Sexual drive	0.586	0.0001
Arousal	0.624	0.0001
Penile erection/vaginal lubrication	0.523	0.0001
Ability to reach orgasm	0.642	0.0001
Satisfaction from orgasm	0.700	0.0001
Total ASEX	0.725	0.0001

For the second model with two factors and dimensions fit indices were: SRMR=0.054, CFI=0.974, RMSEA=0.135 (table 4). These two factors were defined as "Desire/Arousal" and "Orgasm".

According to these goodness-fit indices, good adequacy of the second tested model was shown, according to the norms, as suggested by the field literature [26,27].

Discussion

Sexual dysfunction is a dramatic issue in people with psychosis[6]. For this reason, it is key to have available efficient tools that could help clinicians to avoid patients' poor pharmacological compliance and high degrees of distress that frequently follow impaired sexual health.

The present is the first study providing an Italian translation and validation of the ASEX in a clinical population of 73 patients suffering from psychotic disorders.

After the analyses, the Italian ASEX revealed good psychometric properties. A theory-driven model tested by means of CFA showed excellent fit indices for two latent first-order factors (SRMR=0.54; CFI=0.974; RMSEA=0.135). The first factor comprises items 1, 2, and 3. As these describe the preparatory and primary phases of sexual intercourse, this construct may be defined as "Desire/Arousal". On the other hand, the second factor includes items 4 and 5. These last two items describe instead the final climax of sexual intercourse and, thus, the second construct can be named as "Orgasm".

Most of the early studies, as well as current research, underline how people with psychotic disorders undergoing psychopharmacotherapy may suffer from phase-specific impairments in sexual function. Evidence has indeed shown how drugs like risperidone, olanzapine, or haloperidol may deeply impact selectively on patients' desire, arousal, or orgasm phases[28]. Moreover, young people with ultra-high risk

Table 3. Confirmatory factor analysis (CFA) (N=53).

Single factor			
ASEX F1	Coef	p	95%-CI
ASEX01	1.00 (constrained)	n.a.	n.a.
ASEX02	0.90	<0.001	[0.64,1.16]
ASEX03	1.00	<0.001	[0.72,1.28]
ASEX04	0.61	<0.001	[0.26,0.95]
ASEX05	0.66	<0.001	[0.34,0.98]
Colite	1 (0,5)	2 (1,0)	0
Two-factors			
ASEXF1	Coef	p	95%-CI
ASEX01	1.00 (constrained)	n.a.	n.a.
ASEX02	0.89	<0.001	[0.65,1.12]
ASEX03	0.91	<0.001	[0.66,1.16]
ASEXF2			
ASEX04	1.00 (constrained)	n.a.	n.a.
ASEX05	1.16	<0.001	[0.65,1.67]

n.a.= not applicable.

Table 4. Fit indexes for one- and two dimensions of ASEX.

	One-dimension	Two-dimension
Fit statistic	Value	
$c^2_{(10)}$	157.373 (p<0.001)	157.373 (p<0.001)
RMSEA	0.381 [0.28, 0.49]	0.135 [0.01, 0.27]
AIC	769.478	736.587
BIC	799.032	768.112
CFI	0.744	0.974
TLI	0.488	0.935
SRMR	0.136	0.054
CD	0.893	0.991

RMSEA= root mean square error of approximation; AIC= Aikake Information criteria; BIC= Bayesian Information criteria; CFI= comparative fit index; TLI= Tucker-Lewis Index; SRMR= Standardized root mean squared residuals.

for psychosis, i.e. a subset of subjects on whom drugs are not established yet, tend to report dysfunction in the same sexual domains, namely desire (14-20% of the cases), arousal (4-60%) and orgasm (1-56%)[6]. This entails that not only psychopharmacology but also psychosis itself highly weighs on sexual functioning[5].

For this reason, having a tool that is easy to administrate and at the same time is able to discriminate impairments in different phases of sexual function might be vital in the treatment of such patients.

In our study validation the internal consistency, measured by means of Cronbach's alpha, showed higher coefficients for the two-factor model (i.e., α=0.90 and α=0.86) compared to the one-factor model (α=.85), thus confirming our theory-driven hypothesis. In addition, internal consistency was similar to the result already present in literature for patients with renal disease[15], depressive[12] and psychotic disorders[17].

The test-retest reliability demonstrated significant Pearson's correlation indices between each item of the scale after 15 days, showing a high degree of repeatability over time.

Therefore, the psychometric characteristics of the Italian version of ASEX are good and we consider this study as the first in the psychiatric field. On the other hand, ASEX is very useful for psychotic patients and it is likely to be the more adequate tool to assess sexual function in people with severe mental illnesses. It is brief and clear to understand and its administration is very rapid by clinicians. For this reason, ASEX could be inserted into the daily clinical practice. Sexual health for a psychotic patient is fundamental for the quality of life. Possible sexual side effects of

drugs could interfere with adherence to treatment and conditionate the clinical care. Thus, the evaluation of sexual function in psychiatry is very important and ASEX satisfies all criteria to consider and evaluate the sexuality in psychiatric patients into the treatment practices.

Conclusions

In conclusion, the Italian validation of the ASEX showed excellent psychometric properties, ascribing it as a reliable tool for both clinical and research settings. In both two cases, the availability of a short, fast and robust psychometric measure is key in order to improve the evaluation of sexual health among people with mental disorders. Clinical psychologists and psychiatrists are therefore invited to consider the use of this psychometric tool in their clinical and research activities.

Conflict of interests: the authors have no conflict of interests to declare.

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