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Editorial

Brain health and value diversity: A new implementation field for values-based practice?

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Brain health has recently emerged as an overarching concept encompassing cognitive, sensory, social-emotional, behavioral, and motor aspects of brain functioning, enabling individuals to achieve their potential for both health and wellbeing over their life course, independent of the presence or absence of disease.[1] It is contingent on a continuous, complex interplay between interconnected determinants related to physical health, healthy environments, safety and security, learning and social connection, and access to quality services. Even though responsibility for optimizing brain health can be taken at an individual level, brain health is heavily influenced by determinants far beyond the control of individuals and their families. For instance, protection from abuse and maltreatment or equitable access to health services depends on interacting social, financial, and political factors that can often only be minimally influenced by individual or small group initiatives.[2,3] In addition, the voice of many people, including the very young, the very old, the sick, the disadvantaged, and those who live in poverty, may not be sufficiently influential, even though the decision-making process crucially affects the brain health and quality of life for these individuals. The breadth of determinants of brain health makes brain health a terrain that is justifiably shaped by a plethora of stakeholders with highly diverse values and hence potentially conflicting interests and albeit different degrees of power. Consequently, decision-making in such contexts embodies a thorny process that may render the negligence of the values, viewpoints, and perspectives of those directly involved in a given decision, particularly when the individual capacity to advocate for oneself and the willingness of society and governments to act on behalf of their citizens, are low.

Values-based practice (VBP) is a toolkit for balancing interests, wishes, and values in contexts characterized by diverse values, which may be valuable in decision-making related to brain health.[4] The implementation of this toolkit in different healthcare fields (e.g., occupational therapy, orthopedics, primary care, psychiatry, psychology, radiotherapy) has been proposed, and training materials for healthcare professionals have been developed.[5] VBP aims to include the differences in values, viewpoints, and perspectives of those directly concerned with a given decision so that communication and shared decision-making are facilitated. Based on the legacy of the Popperian open society,[5] VBP treats values in the same way that democracy treats ideas and human voices. Hence, this decision-making toolkit is neither restricted to ethical codes nor prioritizes one value over others. It also does not endorse certain values while excluding others, provided the values in play are compatible with legal, regulatory, and bioethical frameworks. The emphasis of VBP is on good processes rather than predetermined 'correct' outcomes.[6,7] Respect for differences between stakeholders results in the creation of a culture of mutual responsibility and in building up a positive relationship between all those concerned, so that everyone feels a sense of ownership of the decision made.[4,6] Of note, according to VBP, the perspective of the health service user or of the individuals or community seeking to protect their brain health is the ideal starting point for any decision. This approach minimizes the negligence of the views, needs, values, competencies, resources, and aspirations of those trying to optimize their brain health in contexts where powerful socioeconomic and further interests may be at stake.

The 'good process' of VBP is safeguarded by ten principles.[4] Four of them pertain to clinical skills and practice – awareness raising regarding the involvement of values in a given decision-making process; use of a clear reasoning strategy to explore value diversity; knowledge about the values and facts that may be relevant to different contexts; and good communication skills. Two further principles underscore the importance of person-centered and multidisciplinary health service delivery. Other principles focus on the fact that all decisions are based on both values and facts, where the former become noticeable particularly when they are diverse or conflicting, especially in environments where variable choices are at the disposal of service users. The last principle of VBP is based on partnership in decision-making, including service users and providers.

In conclusion, VBP may become a valuable tool for making balanced decisions in the broad terrain of brain health. Its protective focus on the perspectives of service users and its democratic character may pave the way towards achieving equity in and optimization of brain health.

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Άρθρο σύνταξης

Υγεία του εγκεφάλου και διαφορετικότητα αξιών: Ένα νέο πεδίο εφαρμογής για την πρακτική που βασίζεται σε αξίες;

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Η υγεία του εγκεφάλου αναδείχθηκε πρόσφατα ως μία έννοια που περιλαμβάνει νοητικές, αισθητηριακές, κοινωνικο-συναισθηματικές, συμπεριφορικές και κινητικές πτυχές της λειτουργίας του εγκεφάλου και η οποία εξασφαλίζει την αυτοπραγμάτωση και την ευεξία στη διάρκεια της ζωής ανεξάρτητα από την παρουσία ή την απουσία κάποιας νόσου.[1] Εξαρτάται από μια συνεχή και πολύπλοκη αλληλεπίδραση μεταξύ ποικίλων παραγόντων που σχετίζονται με τη σωματική υγεία, τη διαβίωση σε υγιή περιβάλλοντα, την ασφάλεια, τη μάθηση, τη γόνιμη κοινωνική αλληλεπίδραση και την πρόσβαση σε ποιοτικές υπηρεσίες υγείας και πρόνοιας. Η υγεία του εγκεφάλου επηρεάζεται σε μεγάλο βαθμό από παράγοντες πολύ πέρα από την ευθύνη ή τον έλεγχο του ατόμου ή της οικογένειάς του. Για παράδειγμα, η προστασία από την κακομεταχείριση ή η απρόσκοπτη πρόσβαση σε υπηρεσίες υγείας εξαρτώνται από αλληλεπιδρώντες κοινωνικούς, οικονομικούς και πολιτικούς παράγοντες που συχνά ελάχιστα επηρεάζονται από ατομικές ή μικρές ομαδικές πρωτοβουλίες.[2,3] Επιπλέον, η φωνή πολλών ανθρώπων, συμπεριλαμβανομένων των πολύ νέων, των πολύ ηλικιωμένων, των ασθενών, των ατόμων με αναπηρίες καθώς και των απόρων, μπορεί να έχει ελάχιστη επιρροή, παρόλο που η διαδικασία λήψης αποφάσεων αφορά καθοριστικά στην υγεία του δικού τους εγκεφάλου και τη δική τους ποιότητα ζωής. Λόγω του εύρους των παραγόντων που την επηρεάζουν, η υγεία του εγκεφάλου συνιστά ένα πεδίο στο οποίο δρουν πολύ διαφορετικά και δυνητικά αντικρουόμενα συμφέροντα με πολύ διαφορετικούς βαθμούς ισχύος. Κατά συνέπεια, η λήψη αποφάσεων σε ένα τέτοιο πεδίο είναι μια ακανθώδης διαδικασία που μπορεί να οδηγήσει στην παραγνώριση των αξιών, των απόψεων και των προοπτικών ατόμων και κοινοτήτων που επηρεάζονται άμεσα από μια δεδομένη απόφαση, ιδιαίτερα όταν η ικανότητά τους να υπερασπίζονται τα συμφέροντά τους είναι περιορισμένη και το κράτος δικαίου δεν λειτουργεί.

Η πρακτική που βασίζεται σε αξίες (values-based practice, VBP) είναι μια εργαλειοθήκη για την εξισορρόπηση διαφορετικών συμφερόντων, επιθυμιών και αξιών, η οποία μπορεί να είναι πολύτιμη στη λήψη αποφάσεων σχετικά με την υγεία του εγκεφάλου.[4] Η εφαρμογή αυτής της εργαλειοθήκης έχει ήδη προταθεί σε διάφορους τομείς της υγειονομικής περίθαλψης (π.χ. εργοθεραπεία, ορθοπεδική, πρωτοβάθμια περίθαλψη, ψυχιατρική, ψυχολογία, ακτινοθεραπεία), ενώ έχει δημιουργηθεί εκπαιδευτικό υλικό για επαγγελματίες υγείας διαφορετικών κατηγοριών.[5] Η VBP αποσκοπεί στη συμπερίληψη των αξιών, των απόψεων και των προοπτικών όλων των άμεσα εμπλεκομένων σε μια δεδομένη απόφαση, έτσι ώστε να διευκολύνεται η επικοινωνία και η από κοινού λήψη αποφάσεων. Με βάση την κληρονομιά της ανοιχτής κοινωνίας του Karl Popper,[5] η VBP αντιμετωπίζει τις αξίες με τον ίδιο τρόπο που η δημοκρατία αντιμετωπίζει τις διαφορετικές ιδέες και απόψεις. Συνεπώς, η εργαλειοθήκη αυτή δεν περιορίζεται σε ηθικούς κώδικες, ούτε δίνει προτεραιότητα σε μια αξία έναντι άλλων. Επίσης, δεν υποστηρίζει κάποιες αξίες ούτε αποκλείει κάποιες άλλες, αρκεί οι αξίες να είναι συμβατές με το εκάστοτε νομικό πλαίσιο και τα βιοηθικά προτάγματα. Στη VBP έμφαση δίνεται στην ορθή διαδικασία λήψης της απόφασης και όχι σε προκαθορισμένα «σωστά» αποτελέσματα.[6,7] Ο σεβασμός των διαφορών μεταξύ των εμπλεκομένων έχει ως αποτέλεσμα τη δημιουργία μιας κουλτούρας αμοιβαίας ευθύνης και τη δημιουργία γόνιμων σχέσεων μεταξύ τους, ούτως ώστε όλοι να αισθάνονται ότι η απόφαση που λαμβάνεται σε κάποιον βαθμό τους εκφράζει.[4,6] Αξίζει να σημειωθεί πως σύμφωνα με τη VBP, η οπτική γωνία του χρήστη υπηρεσιών υγείας ή των ατόμων που επιδιώκουν να προστατεύσουν την υγεία του εγκεφάλου τους είναι το ιδανικό σημείο εκκίνησης για οποιαδήποτε απόφαση. Αυτή η προσέγγιση ελαχιστοποιεί την παραγνώριση των απόψεων, των αναγκών, των αξιών, των ικανοτήτων και των φιλοδοξιών όσων προσπαθούν να βελτιστοποιήσουν την υγεία του εγκεφάλου τους σε περιβάλλοντα στα οποία διακυβεύονται ισχυρά κοινωνικοοικονομικά και άλλα συμφέροντα.

Η «καλή διαδικασία» της VBP προστατεύεται από δέκα αρχές.[4] Τέσσερεις από αυτές αφορούν σε κλινικές δεξιότητες και στην καθημερινή πρακτική: Ευαισθητοποίηση σχετικά με τον ρόλο των αξιών στην εκάστοτε διαδικασία λήψης αποφάσεων, χρήση μιας ξεκάθαρης συλλογιστικής στρατηγικής για τη διερεύνηση της διαφορετικότητας των αξιών, γνώση σχετικά με τις αξίες και τα επιστημονικά δεδομένα που μπορούν να επιδρούν στη λήψη μιας απόφασης σε διαφορετικές συνθήκες, και καλές επικοινωνιακές δεξιότητες. Δύο άλλες αρχές υπογραμμίζουν τη σημασία της ανθρωποκεντρικής και πολυεπιστημονικής παροχής υπηρεσιών υγείας. Άλλες αρχές επικεντρώνονται στο γεγονός ότι όλες οι αποφάσεις βασίζονται τόσο σε αξίες όσο και σε επιστημονικά δεδομένα. Η επίδραση των πρώτων γίνεται ιδιαίτερα αντιληπτή όταν είναι διαφορετικές ή αντικρουόμενες, ειδικά σε περιβάλλοντα όπου περισσότερες από μία επιλογές είναι στη διάθεση των χρηστών των υπηρεσιών υγείας. Η τελευταία αρχή της VBP επικε-

ντρώνεται στη συνεργατική λήψη αποφάσεων, που συμπεριλαμβάνει τόσο τους ωφελούμενους των υπηρεσιών υγείας όσο και τους παρόχους αυτών των υπηρεσιών.

Συμπερασματικά, η VBP δύναται να αποτελέσει πολύτιμο εργαλείο στη λήψη ισορροπημένων αποφάσεων στο ευρύ πεδίο της υγείας του εγκεφάλου. Η προστατευτική της εστίαση στην οπτική και τις αξίες των χρηστών των υπηρεσιών υγείας και ο δημοκρατικός χαρακτήρας της μπορούν να ανοίξουν νέους δρόμους προς την επίτευξη της βελτιστοποίηση της υγείας του εγκεφάλου και τη δικαιοσύνη και την ισότητα στα μέσα και στις στρατηγικές για την επίτευξη της τόσο στον δυτικό όσο και στον αναπτυσσόμενο κόσμο.

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Research article

The relationship between bullying and symptom presentation in first-episode psychosis

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ABSTRACT

Multiple recent studies have indicated that adverse psycho-traumatic experiences are particularly significant, if not the most significant, among the environmental factors that participate in the etiology of schizophrenic spectrum disorders. The prevalence of bullying in the adolescent population has increased dramatically compared to earlier reports. This may be related to the recent development of communication technology and the use of social media, which have expanded how bullying can be practiced. The present study aims to investigate the association between bullying victimization and psychotic symptoms in First-Episode Psychosis (FEP) patients, hypothesizing that patients who have a bullying history may have increased psychotic symptoms and a more unfavorable early trajectory after treatment as usual compared to patients who do not have a bullying history. Research data were collected from a sample of men and women of the Greek general population aged between 16 and 45 (N=225) who experienced a FEP in the context of the Athens First-Episode Psychosis (FEP) Study. The assessment of bullying was performed using the Retrospective Bullying Questionnaire (RBQ). Assessment of positive and negative psychotic symptoms and general psychopathology were performed using the corresponding subscales of the Positive and Negative Syndrome Scale (PANSS) at baseline and after 4 weeks of treatment as usual. Clinical remission was assessed based on the baseline and follow-up values of the PANSS and Andreasen's symptomatic criteria. Methodologically, Pearson's chi-square test was used to compare the history of bullying between men and women, while linear and logistic regression models were used to check the correlations between history of bullying and symptom severity at baseline and 4-week follow-up, as well as the correlation between history of bullying and remission. The prevalence of bullying history in our sample of patients with a FEP was 51.4% (114/225). Bullying was recorded in our study participants with equal frequency in women and men. According to the analysis results, the patients who had experienced bullying did not present at baseline with significantly increased psychotic symptoms compared to the patients who did not have a history of bullying. In addition, bullying was not associated with reduced remission according to Andreasen's criteria. However, the patients who had experienced bullying were found to have significantly increased negative symptoms (B=1.66; SE=0.70; p=0.018) and increased PANSS total score (B=4.81; SE=2.34; p=0.041) at 4-week follow-up. Our results highlight the persistence of negative and overall symptoms as an impact of bullying on the development of the FEP and align with studies that support the consideration of a history of bullying during both the diagnostic and therapeutic processes.

KEYWORDS: Childhood trauma, adversities, bullying, First-Episode Psychosis, Clinical High Risk, early psychosis, symptoms.

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Introduction

Epidemiological research over the last decades has provided well-documented evidence on the association of childhood adversities with schizophrenia spectrum disorders (SSD), highlighting the importance of the identification of Clinical High-Risk (CHR) individuals with a history of one or more childhood adversities.[1] It has been proposed that childhood adversities, such as physical, sexual, and emotional abuse, emotional and physical neglect, parental deprivation, and peer victimization, represent potential environmental contributors to both the onset[2] and the trajectory[3,4] of SSD. Additionally, the prevalence of bullying in the adolescent population might have increased by up to 50% or more[5] compared to the rates reported one or two decades ago. Recent advances in communication technology and the use of social media have expanded the means of bullying,[6,7] and experts have linked peer victimization in schools to mental health problems characterized by educational difficulties and poor social outcomes.[8]

Multiple studies[9–18] have shown an association between bullying victimization and subclinical psychotic symptoms, while Wolke et al,[19] have argued that health professionals should routinely ask during consultations with children about their bullying experiences, as the estimated risk of developing psychotic experiences in bullied adolescents could substantially increase. Nevertheless, it is acknowledged that Sourander et al[σ] and Luukkonen et al[21] reported no significant association between bullying victimization and the emergence of psychotic disorders in adulthood.

Trotta et al[22] explored the association between bullying victimization and First-Episode Psychosis (FEP) in comparison to a control group, indicating that FEP patients were approximately twice as likely to report bullying victimization. In addition, Mackie et al[15] argued that bullying victimization may increase the likelihood of persistent psychotic-like experiences compared to other risk factors, including cannabis use, depressive symptoms, and anxiety. Finally, according to the recent study by Wheeler et al,[23] bullying experiences should be taken seriously during the diagnostic process in early psychosis services, and their impact should be integrated into the treatment plan.

A significant number of hypotheses have been developed attempting to conceptualize how childhood adversities, such as bullying victimization, could impact affect, memory, and cognition to explain the occurrence and evolution of specific psychotic symptoms.[24,25] Suggested mechanisms include hallucinations as a variation of post-traumatic intrusions, which may mediate the role of dissociation between abuse and hallucinations; delusions as a result of childhood adversities via negative beliefs about self and others; and attachment insecurity. The traumatic neurodevelopmental model[26] proposes a pathway linking childhood adversities to both positive and negative symptoms through hyperarousal and disorganization of the biological stress system. In addition, another model suggests that poor attachment, social defeat, and depression may substantially contribute to the development of negative symptoms.[27–30]

To date, a small number of empirical studies of varying methodological approaches have supported the above-mentioned conceptualization that psychotic symptoms do arise from certain childhood adversities, and these symptoms are more severe among patients with a history of childhood adversity.[30,31]

Recent studies[4,32,33] revealed evidence for poor treatment response in patients with early psychosis and a history of childhood adversity, bullying included. However, childhood adversity is highly understudied regarding treatment outcomes in psychotic disorders.[32]

This is the first study in Greece aiming to investigate the association between bullying victimization and psychotic symptoms in a large cohort of FEP patients and explore the potential persistence of the symptoms following 4 weeks of treatment with antipsychotics. In particular, we hypothesized that (a) the severity of psychotic symptoms, assessed by the PANSS clinical interview at baseline, is higher among FEP patients reporting a history of bullying compared to FEP patients who have not experienced bullying, and (b) the early course of the illness is worse among FEP patients reporting a history of bullying, as the severity of psychotic symptoms typically persists after the initiation of antipsychotic treatment when assessed at the 4-week follow-up.

Material and Method

Participants

The Athens FEP Research Study[34–36] is an observational cohort study designed to explore the potential interaction between environmental and genetic factors that affect the development, early course, and severity of psychosis. The psychiatric departments of five hospitals in Athens (Eginitio University Hospital, 414 Military Hospital, Attikon University Hospital, Sismanoglion General Hospital, and Sotiria General Hospital) participated in the study. The clinical population of the study

consisted of patients aged 16–45 diagnosed with FEP. The patients presenting in a psychiatric setting for the first time due to a full-blown psychotic episode were drug-naive or they were exposed to antipsychotic medication for some time less than 2 weeks. Exclusion criteria were organic causes of psychotic symptoms (medical illness or acute intoxication), IQ≤70, developmental deficits, sub-threshold manifestations reflecting an at-risk phenotype,[37] and kinship with patients already enrolled in the study. The sample was collected between March 2015 and March 2020. All participants were screened using the Diagnostic Interview for Psychosis (DIP), a standardized semi-structured interview that generates diagnoses according to different diagnostic algorithms based on the Operational Criteria Checklist for Psychotic Illness (OPCRIT).[38]

Of the 279 identified individuals eligible for the study, 225 were included in the final dataset. Interviews at baseline, 1-month, and 1-year were conducted by clinically qualified clinicians who were formally trained by authorized trainers to apply the assessment instruments. At 1-month and 1-year follow-up, expert consensus meetings were held involving the principal investigators and the research associate assigned to each case to determine ICD-10,[39] DSM-IV-TR,[40] and DSM-5[41] diagnoses. The clinical, environmental, and other psychometric measurement tools were compatible with those used in the European Network of National Schizophrenia Networks studying Gene-Environment Interactions (EU-GEI).[42] The study protocol has been approved by the Research Ethics Committees of the five participating hospitals, and the patients provided signed informed consent before entering the study.

Assessments

Assessment of the psychotic symptoms

At baseline, information regarding sample demographic characteristics was gathered. The positive and negative psychotic symptoms, as well as general symptoms and the total score, were assessed at baseline and 4-week follow-up, using the Positive and Negative Syndrome Scale (PANSS).[43,44] The inter-rater reliability of the investigators was evaluated through the intra-class correlation coefficient (ICC) and was found to be 0.640 for eight successful raters.[35]

Clinical remission assessment (Remission) was based on PANSS scores at admission (baseline) and 4-week follow-up and treatment as usual, using the symptom severity specification of the Andreasen criteria[45] as a distinct threshold of improvement without the time criterion. Patients who did not meet these criteria were considered non-remitters following antipsychotic treatment.[36]

Bullying assessment

The severity of bullying by peers (emotional, psychological, or physical violence) before 17 years of age was assessed using the short version of the Retrospective Bullying Questionnaire (RBQ).[46,47] RBQ is one of the measurement tools provided to the FEP Athens Study by the European Network of National Schizophrenia Networks to perform compatible assessments studying Gene-Environment Interactions (EU-GEI).[48,49] RBQ was translated to Greek and was characterized by satisfactory test-retest reliability in all items.[50] RBQ measures the severity of bullying experiences as follows: 0="none"; 1="some (no physical injuries)"; 2="moderate (minor injuries or transient emotional reactions)"; 3="marked (severe and frequent physical or psychological harm)". For subsequent analyses, bullying severity was dichotomized, considering "none" as 0 and "some", "moderate", and "marked" as 1 (cut-off point ≥1).[49]

Statistical analysis

Pearson's chi-square (x^2) test was used to compare bullying severity between males and females. Linear regression analyses were performed to investigate the association between bullying and symptom severity at baseline and 4-week follow-up, reporting the corresponding regression coefficients (β) and their standard errors (SE). Separate regression models were tested at baseline and follow-up, including PANSS-derived subscale scores as the outcome variables (i.e., positive symptoms, negative symptoms, and general psychopathology). The analyses were adjusted for age, sex, and education level. Linear regression analyses were performed using logarithmic transformations. To investigate the association between bullying and remission, a logistic regression analysis was performed, and odds ratios with their 95% confidence intervals (95% CI) were obtained adjusting for age, sex, and education level. All statistical analyses were conducted using SPSS 24.0.

Results

As part of the Athens FEP Research Study, we assessed a total of 225 subjects diagnosed with FEP. Detailed sociodemographic information, including gender, age, education level, employment, birth rank, number of siblings, and living-with-others history, as well as clinical characteristics, are presented in table 1. Our FEP sample consisted of 151 males (67.1%) and 74 females (32.9%). There was no difference between males and

Table 1. Sociodemographic information for individuals enrolled in the Athens FEP Research Study.

		N	%
Gender	Male	151	67.1
	Female	74	32.9
Age of onset mean (SD)		25.4 (7.5)	
Education (Years) mean (SD)		13.7 (2.5)	
Presence of bullying (binary outcome)		114	51.4
Employment (Now)	Unemployed	67	29.8
	Military service	22	9.8
	Student	65	28.9
	Part time job	14	6.2
	Full time job	43	19.1
	Self-employed	9	4
	Other	5	2.2
Birth Rank	1st	101	46.1
	2nd	73	33.3
	3rd	31	14.2
	4th	9	4.1
	5th	2	0.9
	6th	1	0.5
	7th	1	0.5
	Twins	1	0.5
History of long-term relationship (>12 months)		104	47.7
Having children		16	7.2
Having lived with other people (except parents)		144	65.8

females in the proportion of subjects who reported bullying experiences (51.4% of males and 51.4% of females, p=0.999). The mean age of onset was 25.4 years (SD=7.5 years) and the mean education was 13.7 years (SD=2.5 years). The proportion of FEP subjects who reported bullying experiences in our sample was 51.4% (114/225). Considering the sample size and the normality assessment results of our dataset, the distribution of the values of the quantitative variables was assumed to be normal.

We examined with linear regression models the association between PANSS subscale scores at baseline (positive symptoms, negative symptoms, general psychopathology symptoms, total PANSS score) as the dependent variables and bullying severity as the independent variable. Gender, age, and education level were entered as covariates. No significant correlation was observed between bullying severity and PANSS subscale scores at baseline (table 2).

When symptom severity was tested at follow-up, the FEP subjects who reported bullying were characterised by significantly elevated negative symptoms compared to those without bullying history (β=1.66; SE=0.70; p=0.018). In addition, FEP subjects who reported bullying had significantly higher values in PANSS total score (β=4.81; SE=2.34; p=0.041). The results are shown in table 3.

Finally, a multivariate logistic regression analysis was performed with remission status as the dependent variable, bullying as the independent variable, and age, gender, and education level as covariates. No significant association was found between clinical remission, according to the Andreasen symptomatic criteria, and bullying severity, controlling for age, gender, and education level (OR=0.94; 95% CI 0.53–1.68; p=0.847).

Discussion

Our results indicate that almost half of our FEP sample (51.4%) has experienced bullying. Males and females reported bullying with equal frequency. In accordance with our observation, Trotta et al[22] have shown that 48% of patients with FEP in their European sample who ultimately received a diagnosis of schizophrenia reported bullying. Moreover, in the study of Trotta et al and our study, there was no difference in the prevalence of bullying among patients concerning gender. Braun et al[5] reported bullying in patients with early psychosis at a rate of 62%, with a predominance among males. In both aforementioned reports, bullying rates were higher in the clinically affected population than in the general population control sample. Reviewing the epidemiological studies in the Greek population, we found rates of serious and continuous bullying of 8.5%, with males reaching rates of 23.9% in experience of violence during the last year and females 8.3%.[51] In addition, the rate of online bullying in Greece is 27%, with increasing trends and a greater risk of victimization among girls.[7] Until recently, reports in the literature considered males to be more exposed to multiple social factors associated with bullying and therefore more likely to be bullied.[8,52] However, the findings of Trotta et al [22] suggest that the association of bullying with psychosis may be higher in females. The explanation given was that females tend to internalize the effects of abuse in contrast to males, who often externalize their experiences. The internalization of problems has been found by Fisher et al[16] to be a mediating factor in the development of psychotic symptoms.

Our first hypothesis was not confirmed. From our data analysis of the assessment of psychotic symptoms at

Table 2. Results of multivariate linear regression with baseline PANSS scores as the outcome.

		βa	SEb	P
PANSS positive symptoms baseline	No bullying			
	Yes	–0.25	0.95	0.793
PANSS negative symptoms baseline	No bullying			
	Yes	0.01	1.25	0.995
PANSS general symptoms baseline	No bullying			
	Yes	–3.16	1.87	0.092
PANSS total symptoms baseline	No bullying			
	Yes	–3.36	3.23	0.299

a. Dependence coefficient controlling for gender, age, and education level
b. Standard errors

Table 3. Results of multivariate linear regression with follow-up PANSS scores as the outcome.

		βa	SEb	P
PANSS positive (follow-up)	No bullying			
	Yes	1.03	0.75	0.172
PANSS negative (follow-up)	No bullying			
	Yes	1.66	0.70	0.018
PANSS general symptoms (follow-up)	No bullying			
	Yes	1.91	1.19	0.109
PANSS total symptoms (follow-up)	No bullying			
	Yes	4.81	2.34	0.041

a. Dependence coefficient controlling for gender, age, education level, and corresponding PANSS baseline score
b. Standard errors

baseline, it was found that FEP patients with a bullying history do not have significantly higher scores compared to those without a bullying history. However, it is interesting to note that at the 4-week follow-up assessment, FEP patients reporting bullying have significantly higher scores in the negative symptoms subscale of PANSS as well as in the total PANSS score. In the statistical analysis of the data from the clinical assessment with PANSS after 4 weeks of treatment with antipsychotics, taking into account clinical severity at baseline, the association of bullying with an increased PANSS score at follow-up could be an indicator of reduced therapeutic effect in these patients. FEP patients with a bullying history are likely to be characterized by reduced clinical improvement, even though we did not find a significant association between bullying and remission according to the Andreasen symptomatic criteria.[45] Our results are consistent with previous studies linking poor treatment response to maltreatment, including victimization by peers.[32,33] Lecomte et al[53] pointed out the tendency shown by patients with a history of childhood adversity toward reduced and insufficient engagement with mental health services. In addition, Lysaker et al[54] have reported that psychotic patients with a history of childhood adversity often show poor therapeutic relationships. Pruessner et al[4] argued that the effects of adversities may not be distinguished at the onset of FEP and reduced clinical improvement could reflect the negative impact of traumatic experiences.

It is argued that the observation of less improvement of negative symptoms among FEP patients with a bullying history might be explained by the attachment theory[27,28] and social defeat model[29] Specifically, peers are essential attachment figures for the social development of the child and/or adolescent, and peer victimisation is likely to cause the individual to “learn” to be helpless and pessimistic about the outcome of his/her relationships. Berry et al[55] argued that early trauma is associated with dysfunctional interpretations of interpersonal contexts and the development of attachment insecurity, including worry about relationships, difficul-

ty trusting others, and social withdrawal. Presumably, worry, mistrust, a real or perceived absence of control, and avoidance behaviors could expand over the therapeutic relationship, tending to reduce the patient's therapeutic engagement and thus the therapeutic outcome. Our results indicate significantly less improvement of negative symptoms after 4 weeks of treatment as usual, and this could be interpreted beyond the attachment theoretical context by epidemiological evidence[56] that links 'attachment' trauma to negative symptoms.

Considering biological theories, cumulative stress derived from bullying victimization may deregulate the hypothalamic-pituitary-adrenal (HPA) axis[26] and sensitize the dopamine system. Dopamine system sensitization is responsible for aberrant salience of stimuli, including misconceptions related to social relationships, and might lead de novo to stress and a vicious cycle. Cao et al[57] have demonstrated that social defeat could increase hyperpolarisation-activated cation current in the ventral tegmental area (VTA) in dopamine neurons, which influences behavioral susceptibility and resilience to chronic defeat stress.

Our research work involves patients with FEP who were recruited in five different hospitals providing psychiatric services in Athens without any catchment area restriction and have been treated using a pragmatic approach according to the general psychiatric practice guidelines. Thus, the participants reflect a real-world cohort of individuals with FEP, which underpins the external validity of the presented findings. In addition, most of the participants were drug-naive or had received low doses of antipsychotic medication for less than 2 weeks before their recruitment. This is essential for minimizing possible confounding factors resulting from the chronicity of the disease and long-term medication use.[35]

Nonetheless, the results should be interpreted with caution due to certain limitations. Several earlier studies[58] have shown some bias in retrospective childhood adversity reports, mostly regarding recalling childhood adversity memories and providing information affected by current psychotic symptoms. Particularly about bullying, it has been suggested that the design of data collection should include both peer and self-reports.[59] Varese et al,[2] however, have demonstrated that the effect of childhood adversity on psychosis remains significant regardless of study design, and Fisher et al[60] argued that information about the history of childhood adversity obtained by patients with psychosis is reasonably reliable over time and thus should not be considered affected by current symptoms. Prospective cohort studies with assessments of bullying victimization and longitudinal associations with the potential development of psychotic illness later in life would be ideal to avoid recall bias, but they are unlikely to be feasible.[22] As our sample includes FEP patients aged 16–45, we cannot rule out that victimization experiences occurred to adolescents and young adults after the onset of subclinical or clinical prodromal signs of psychosis, and those predisposed to psychosis may have attracted bullying by appearing odd and threatening to peers. However, Kelleher et al[17] found that bullying victimization is still significant in psychosis-like experiences, even when a bidirectional relationship is taken into consideration.

Finally, our FEP sample might be heterogeneous,[61] with several patients having suffered one or even more childhood adversities apart from bullying victimization. As the analyses were limited to the effects of bullying on symptom severity and clinical improvement, other types of childhood adversities might have confounded the relationship between bullying and psychosis.

Conclusion

This is the first study carried out in Greece to provide information about the impact of bullying on the development of psychotic symptoms during the first psychotic episode (FEP). More than half of patients with FEP reported a history of bullying, with an equal proportion between men and women. Patients with a history of bullying did not show a trend for increased symptoms at baseline but were characterized by reduced improvement in negative symptoms and overall psychopathology after 4 weeks of treatment as usual. Our results are consistent with the findings of previous studies indicating the role of bullying in the development of FEP and the necessity of considering it during both the diagnostic and therapeutic processes. We also support the view that bullying experiences might be interpreted based on the social defeat model and attachment theory. Nonetheless, they are indicative and not conclusive; therefore, caution is needed to avoid lapsing into over-interpretation. Additional validation of our research findings in longitudinal studies, taking into account factors such as the impact on functioning, the relationship of bullying to other childhood adversities, and the application of psychotherapeutic interventions, may provide substantial information that will improve the treatment plan and eventually the therapeutic outcomes in patients with FEP.

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Ερευνητική εργασία

Η σχέση του εκφοβισμού με τη συμπτωματολογία στο πρώτο ψυχωσικό επεισόδιο

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ΠΕΡΙΛΗΨΗ

Σύμφωνα με τις πρόσφατες μελέτες από το σύνολο των περιβαλλοντικών παραγόντων, οι οποίοι συμμετέχουν στην αιτιοπαθολογία των διαταραχών του ψυχωσικού φάσματος, ιδιαίτερα σημαντικός, αν όχι ο σημαντικότερος, καταδεικνύεται να είναι η ύπαρξη αντίξοων ψυχοτραυματικών εμπειριών στη ζωή των ασθενών. Η συχνότητα της εμπειρίας εκφοβισμού εφήβων από συνομηλίκους έχει αυξηθεί δραματικά, συγκριτικά με παλαιότερες αναφορές, και ίσως σε αυτό έχει επιδράσει η ανάπτυξη της τεχνολογίας, της πληροφορικής και του διαδικτύου, που έχουν διευρύνει τα μέσα με τα οποία μπορεί να ασκηθεί ο εκφοβισμός. Σκοπός της παρούσας ερευνητικής εργασίας είναι ο έλεγχος της υπόθεσης, σύμφωνα με την οποία στο πρώτο ψυχωσικό επεισόδιο οι ασθενείς με ιστορικό εκφοβισμού έχουν αυξημένα ψυχωσικά συμπτώματα και δυσμενέστερη αρχική πορεία μετά από τη συνήθη θεραπευτική αντιμετώπιση, συγκριτικά με τους ασθενείς που δεν έχουν ιστορικό εκφοβισμού. Τα δεδομένα για την έρευνα συλλέχθηκαν από δείγμα ανδρών και γυναικών του ελληνικού γενικού πληθυσμού ηλικίας από 16 έως 45 ετών, οι οποίοι εμφάνισαν πρώτο ψυχωσικό επεισόδιο (N=225) στα πλαίσια της μελέτης “Athens First-Episode Psychosis (FEP) Study”. Για την εκτίμηση του εκφοβισμού χρησιμοποιήθηκε το Αναδρομικό Ερωτηματολόγιο Εκφοβισμού (Retrospective Bullying Questionnaire, RBQ). Η εκτίμηση των θετικών και αρνητικών ψυχωσικών συμπτωμάτων και της γενικής ψυχοπαθολογίας έγινε με τις αντίστοιχες υποκλίμακες της PANSS κατά την είσοδο των ασθενών στη μελέτη (PANSS baseline) και μετά από 4 εβδομάδες συνήθους θεραπευτικής αντιμετώπισης (PANSS follow-up). Η ύφεση των συμπτωμάτων αξιολογήθηκε με βάση τις τιμές της PANSS κατά την είσοδο (PANSS baseline), τις τιμές κατά την επανεξέταση μετά από 4 εβδομάδες (PANSS follow-up) και τα συμπτωματικά κριτήρια Andreasen. Μεθοδολογικά, για τη λήψη πληροφοριών σχετικά με τη σύγκριση των ποσοστών ανδρών και γυναικών με ιστορικό εκφοβισμού χρησιμοποιήθηκε το test χ2 του Pearson και για τον έλεγχο των συσχετίσεων του εκφοβισμού με τα συμπτώματα χρησιμοποιήθηκαν μοντέλα γραμμικής και λογιστικής παλινδρόμησης. Το ποσοστό του εκφοβισμού στο δείγμα ασθενών μας με πρώτο ψυχωσικό επεισόδιο ήταν 51,4% (114/225). Ο εκφοβισμός καταγράφηκε στους συμμετέχοντες στη μελέτη μας με την ίδια συχνότητα σε γυναίκες και άνδρες. Τα αποτελέσματα των αναλύσεων έδειξαν ότι κατά την είσοδο στη μελέτη οι ασθενείς που είχαν βιώσει εκφοβισμό δεν είχαν σημαντικά αυξημένα ψυχωτικά συμπτώματα σε σχέση με τους ασθενείς που δεν είχαν ιστορικό εκφοβισμού. Επιπλέον, δεν βρέθηκε συσχέτιση του εκφοβισμού με μειωμένο δείκτη ύφεσης (remission) σύμφωνα με τα κριτήρια Andreasen. Ωστόσο, βρέθηκε ότι οι ασθενείς με εκφοβισμό έχουν σημαντικά αυξημένα αρνητικά συμπτώματα (B=1,66, SE=0,70, p=0,018) και αυξημένο συνολικό αποτέλεσμα της PANSS μετά από 4 εβδομάδες συνήθους θεραπευτικής αντιμετώπισης (B=4,81, SE=2,34, p=0,041). Τα αποτελέσματά μας επισημαίνουν την επιμονή των αρνητικών και συνολικών συμπτωμάτων ως επίπτωση του εκφοβισμού στην εξέλιξη του πρώτου ψυχωσικού επεισοδίου και συμφωνούν με τις εργασίες που υποστηρίζουν ότι το ιστορικό εκφοβισμού θα πρέπει να λαμβάνεται υπόψη κατά τη διάρκεια τόσο της διαγνωστικής όσο και της θεραπευτικής διαδικασίας.

ΛΕΞΕΙΣ ΕΥΡΕΤΗΡΙΟΥ: Αντίξοες ψυχοτραυματικές εμπειρίες, εκφοβισμός, πρώτο ψυχωσικό επεισόδιο, λίαν υψηλός Κίνδυνος για ψύχωση, πρώιμη ψύχωση, συμπτώματα.

Συγγραφέας επικοινωνίας: Ιωάννης Κωστελέτος, Α΄ Ψυχιατρική Κλινική, Ιατρική Σχολή του Εθνικού και Καποδιστριακού Πανεπιστημίου Αθηνών, Αιγινήτειο Νοσοκομείο, Λεωφ. Βασιλίσσης Σοφίας 72–74, 115 28 Αθήνα, Διεύθυνση e-mail: jiankost@gmail.com

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Research article

Psychiatric Hospital of Leros: A portrayal of the current situation

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ABSTRACT

The purpose of this study was to describe the demographic and clinical features of the inpatients currently residing at the Psychiatric Hospital of Leros. The present systematic documentation and presentation aimed to demonstrate the standard of living and healthcare conditions provided today, after the implementation of the Greek Psychiatric reform program, adhering to the principles of deinstitutionalization and community psychiatry, following the current international guidelines. In addition, we discussed the current relationship between the psychiatric departments of the hospital and the other departments and clinics in terms of providing healthcare services to chronic psychiatric inpatients in full compliance with the biopsychosocial model and its application to the unique case of Leros. The implemented patient profiles incorporated both subjective and objective factors, such as compliance with rules and treatment, self-injury, and harm to others. Furthermore, we quantified and categorized the level of care required for each patient in terms of personnel-reported activities. This parameter was assessed through the Greek version of Katz's Index of Independence in Activities of Daily Living. Simultaneously, the fundamental actions provided to inpatients by the social care and support services of the hospital were also depicted and categorized, in terms of connection to State social services, communication with the patient's families, and cooperation between the families and the hospital for the patient's healthcare needs. Furthermore, we analyzed and presented all statistically significant correlations found in our patients' characteristics. Briefly, the main results of our study show that the mean age of the 212 patients was 62.4 years old (with a standard deviation of ±13.6 years and the longest hospitalization of 62 consecutive years) including patients from the institution's asylum period. Since 1989, the year when the psychiatric reform began in our hospital, 87 new patients were admitted, 85.1% of whom were from the southern Aegean, thus following the principle of nativeness. Intellectual disabilities and psychotic spectrum disorders were the most common disorders among the total number of hospitalized patients, accounting for 40% in each category. Regarding the 87 patients hospitalized after 1989, psychotic spectrum disorders were diagnosed in the vast majority (58 patients, 66.7%) followed by organic mental disorders (10 patients, 11.5%). The rest were diagnosed with other disorders. Somatic comorbidity and the need for care and services, especially for patients with intellectual disabilities, demonstrate how the Institution now mainly offers psychogeriatric healthcare services. In conclusion, the purpose of this study was to highlight the Psychiatric Hospital of Leros as it stands today, in stark contrast to the long-established, stereotypical depiction of asylums in the scientific and public communities.

KEYWORDS: Psychiatric reform, Leros, psychiatry, deinstitutionalization.

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Introduction

The State Psychiatric Hospital of Leros has been engraved in collective memory as "Europe's Guilty Secret." The scathing title of John Merritt's article in the British newspaper "Observer" in September of 1989[1] marked a pivotal moment in the history of the Institution and Psychiatric Reform in Greece. The story of the Institution officially begins in 1957 with a royal decree for the establishment of the Mental Patients' "Colony of Leros" where a systematic transfer of patients with mental disorders from other psychiatric hospitals in the country begins. In 1965, the institution was renamed the "Psychiatric Hospital of Leros".[2]

The Hospital was formed through the merger of the Psychiatric and General Hospitals on the island in 1976. The year 1989 marks the beginning of Psychiatric Reform, not only for the Psychiatric Hospital but for the entire country. Another crucial point was the merger of the Leros branch of the Homeland Institution for Social Welfare and Care (PIKPA acronym in Greek) with the Psychiatric Hospital in 1993.[3]

The Psychiatric Reform and the consequent deinstitutionalization drastically changed the character of the Institution. Educational groups from Greece and Europe helped in the "deinstitutionalization" of the patients, their training, and the management of their new lives outside the asylum. Many patients continued to reside in the Institution, but the focus of their subsequent care was functionality and the modern principles of community psychiatry. As a result, Leros now has a double-digit number of community mental health structures, despite only having a population of 7,000 permanent residents.

The purpose of this study is to provide a realistic, contemporary, and comprehensive depiction of the current reality of Leros' patients. This study represents a systematic and thorough recording and analysis of the clinical and epidemiological data, as well as the precise healthcare service data received by all the patients of the Psychiatric Hospital of Leros, thirty years after the start of the Greek Psychiatric Reform.

Material and Method

The study's methodology included both qualitative and quantitative data, which were obtained through the hospital's information system and the electronic medical record available for each patient. In the four psychiatric sectors of the Institution of Leros, a total of 26 distinct structures of various types are included, where patients are placed based on their level of functionality and psychiatric diagnosis.

The patient's region or country of origin (for foreign countries) was initially recorded from the demographic data. This parameter reflects compliance with the principle of locality, the right of each patient to be hospitalized close to their place of origin, which is central in social psychiatry. Subsequently, the year of admission to a psychosocial rehabilitation structure of the hospital, whether the patient was in the PIKPA. Institution before the merger and the patient's age were recorded.

In terms of epidemiological data, records were created for the total number of years of hospitalization in the Institution, the patients' diagnoses - psychiatric and non-psychiatric, visits and referrals to the hospital, and the frequency of hospitalizations.

Geographical regions instead of the country's administrative divisions were selected, to demonstrate the shift from past practices to present-day hospitalization based on locality and the principles of community psychiatry. Special emphasis was placed on the changes before and after 1989, the year of the start of Psychiatric Reform for the Institution. The locality also indirectly affects a patient's contact with their relatives, as the shorter the distance, the more frequent the visits from family members.

The psychiatric diagnoses at admission of the patients were grouped according to the tenth revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10).[4] Physical comorbidity, as recorded in each patient's electronic medical record, was reported for the last four years (2018–2022). A similar time limit was applied for recording the usage of other available healthcare services and the frequency of hospitalizations a patient may have had in any clinic of the hospital, regardless of the cause.

Another category investigated was that of the "difficult patient." The definition of these patients is the subject of research and is influenced by the care framework and personal, interpersonal, and social factors.[5,6] The psychiatric history, psychological adaptation to the accommodation, and coexistence with other patients and staff, combined with physical illnesses and the need for assistance and/or support, also influence whether a patient is designated "difficult". For our study, we selected five parameters that help describe the management of the "difficult patient".[7–11] Non-compliance with medication regimen and/or living rules, self-destructiveness, and hetero-destructiveness were recorded if they occurred at least once in the last three months of the data collection period. Similarly, the parameters of "physician's opinion" and "nursing staff's opinion" were created. These two parameters

were created with the rationale that patients of Leros' Psychiatric Hospital have unique experiences, and it is not appropriate to compare them based on bibliographical definitions of "difficult patients" without considering their own experiences. We thus believe that the opinions of the medical and nursing staff help signify an overall "difficult patient" component that more accurately fits our patients.

Furthermore, a detailed record of the patient's self-care abilities was made. Katz's Index of Independence in Activities of Daily Living was used, a version standardized for the Greek population.[12] This scale assesses patients' functional independence or dependence by evaluating their ability to perform activities such as bathing, dressing, toileting, transferring, continence, and feeding. Each activity is scored based on whether there is self-care or complete dependence on others. The sum of the scores represents the overall score for each patient.[13]

The last group of parameters relates to the services provided by the Social Services Office of the Hospital to the patients. It includes the issuance of documents and the issuance of a social security registration number with the assistance of the Social Service. Additionally, the patients under guardianship were recorded, regardless of whether it was plenary or limited.[14] Moreover, patients who were entitled to a pension or benefit were also recorded. These components were created and evaluated with the assistance of Social Service personnel and were based on the standards of social work for patients with mental illnesses.

The last component that was recorded represents one of the darkest moments in the history of the Institution. It documented whether there was successful contact between patients and their family environment within the framework of the Psychiatric Reform, as prior to the reform, the rule was to have no contact with a patient's environment. For patients where successful contact was achieved, the presence or absence of collaboration between the family members and the Social Service and treating physicians of the hospital for the various needs of the patients was also documented.

Data collection was conducted from October 20, 2022, following the approval of the Scientific and Administrative Boards of the Hospital, until December 20, 2022.

Statistical analysis was performed using IBM SPSS Statistics (Version 26).[15]

Results

The total number of patients is N=212. Table 1 presents the distribution of patients across the 4 psychiatric sectors by gender, both in absolute numbers and percentages. The first (1st) psychiatric sector consists of structures that previously exclusively housed female patients, which is why there is a significant representation of females. In contrast, the fourth (4th) psychiatric sector had the most male patients from the pre-deinstitutionalization era structures. The second (2nd) sector is the former Homeland Institution for Social Welfare and Care (PIKPA), where there is an equal distribution of patients by sex.

The age range of the hospitalized patients was 21 to 104 years (mean=62.4 years, standard deviation=13.6 years). The age at admission ranged from 5 to 86 years (mean=32 years, standard deviation=15.2 years). The admission dates spanned from 1960 to 2022. Similarly, the duration of hospitalization ranged from less than one year to a maximum of 62 consecutive years.

The geographical distribution of patient origins is presented in table 2, based on the regions of the country. Since the start of the Psychiatric Reform in 1989, there have been 137 admissions involving the current chronic patients of the psychiatric hospital. Among these, 50 admissions came from the merger of P.I.K.P.A. with the hospital. Of the remaining 87 admissions, only 13 patients did not originate from the Southern Aegean region.

Table 1. Patient distribution in the psychiatric sectors by gender.

			Psychiatric sector				
			1st	2nd	3rd	4th	
Gender	Male	N	10	26	36	47	119
		%	8.4%	21.8%	30.3%	39.5%	100.0%
	Female	N	28	25	19	21	93
		%	30.1%	26.9%	20.4%	22.6%	100.0%
Total		N	38	51	55	68	212
		%	17.9%	24.1%	25.9%	32.1%	100.0%

Table 2. Patient descent per Greek region or abroad.

	N	(%)
South Aegean	85	40.1
Attica	31	14.6
Central Macedonia	23	10.8
Western Greece	12	5.7
Peloponnese	11	5.2
Thessaly	8	3.8
Cental Greece	7	3.3
Eastern Macedonia and Thrace	6	2.8
North Aegean	6	2.8
Crete	6	2.8
Abroad	5	2.4
Ionian Islands	5	2.4
Epirus	4	1.9
Western Macedonia	3	1.4
Total	212	100.0

The admission diagnoses of the patients were grouped according to the tenth revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) and are demonstrated in table 3.

Intellectual disability was the most common diagnosis at admission. Among the 84 patients with intellectual disability, 34 were hospitalized in the PIKPA before the merger. The 87 admissions after the start of the Reform differed in terms of distribution across diagnostic categories. The majority of them, 66.7%, suffered from psychotic spectrum disorders (F20-F29, 58 out of 87), followed by organic disorders with 11.5% (F00-F09, 10 out of 87). The remaining patients were distributed across other psychiatric diagnostic categories as indicated in table 3.

Physical comorbidity was recorded using the ICD-10 codes but was limited to the last four years. Based on the data from the last four years, 50% of the patients had experienced a physical comorbidity that required treatment. The average number of referrals in the last four years corresponded to 13.5 referrals per patient. In terms of patient care and hospital services integration, 108 out of 212 patients (50.9%) were hospitalized at least once in a hospital clinic in the last four years. For patients hospitalized in the hospital clinics, on average, there were 2.4 hospitalizations per patient.

The category of "difficult patient," as defined in the material and methods, was analyzed into five parameters, as shown in figure 1. The figure illustrates the distribution of patients for each parameter in both absolute numbers and percentages for patients who meet the criteria for each parameter.

The degree of care and self-care were categorized based on the results of the Katz Scale. Out of the total number of patients, 85 (40%) had a score indicating full functionality (Grade A) in the service and care parameters previously presented. Patients with a score of 3–5, totaling 42 (20%), had moderate impairment and required partial assistance in their activities (Grade B). Finally, 85 (40%) patients had a score of 2 or less, indicating no self-care ability and the requirement of continuous care (Grade C).

The social service provisions, as defined earlier, were divided into six axes:

1. The issuance of new documents for patients was successful in 188 out of 212 patients.
2. The issuance of the AMKA (Greek social security number) was possible for only 204 patients.

Table 3. Categories of, psychiatric and not, patient diagnoses (based on ICD-10).

Diagnosis (ICD-10)	N	(%)
Intellectual disabilities (F70-F79)	84	39.6
Schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders (F20-F29)	83	39.2
Mental disorders due to known physiological conditions (F00-F09)	14	6.6
Cerebral palsy and other paralytic syndromes (G80-G83)	10	4.7
Pervasive and specific developmental disorders (F80-F89)	6	2.8
Mood (affective) disorders (F30-F39)	5	2.4
Other congenital malformations (Q80-Q89)	3	1.4
Pervasive and specific developmental disorders (F60-F69)	2	0.9
Chromosomal abnormalities, not elsewhere classified (Q90-Q99)	2	0.9
Mental and behavioral disorders due to psychoactive substance use (F10-F19)	1	0.5
Episodic and paroxysmal disorders (G40-G47)	1	0.5
Other disorders of the nervous system (G90-G99)	1	0.5
Total	212	100

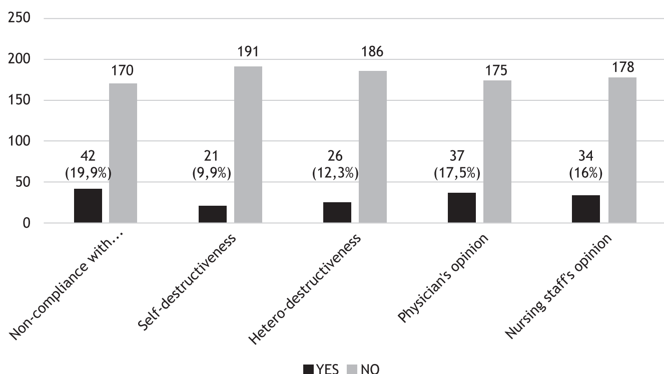

Figure 1. Patient distribution per "difficulte patient" category.

Self-destructiveness: occurrences of self-harm mainly by patients with neurodevelopmental disorders. Hetero-destructiveness: occurrences of outbursts of anger with physical violence targeting other patients for the achievement of some secondary benefit by the patient.

3. A total of 71 patients were under legal guardianship.
4. 131 patients were beneficiaries to a pension, regardless of the type of pension.
5. The familiar environment of the patients was identified in 176 out of 212 patients.
6. Collaboration and communication between the institution and the familiar environment existed only in 141 (80% of patients with a known environment).

In figure 2, the percentage distribution of each Social Service provision is bimodally color-coded on each vertical axis. The significant heterogeneity of the sample in terms of both demographic and epidemiological characteristics made the extensive analysis uncertain, as there was no normal distribution in all the data. Moving on, some statistically significant correlations were found, both in quantitative and qualitative variables.

The relationship between the diagnosis category according to ICD-10 and the degree of service provided by the Katz Scale was examined. Grouping the diagnoses into F70-F79 (Intellectual Disabilities), F20-F29 (Schizophrenia, schizotypal, and delusional disorders), and other categories, a service requirement pattern in the two most common disorders was demonstrated. As shown in figure 3, most patients with diagnoses in the F70-F79 range required continuous care, in contrast to patients with F20-F29 diagnoses who remained self-sufficient. The chi-square analysis showed a p-value of <0.05.

The chi-square test did not yield statistically significant results for the correlation between most parameters of the “difficult patient” and diagnostic categories. In terms of Perspectives, the medical perspective was not statistically significant ($p=0.879$). However, the nursing perspective was statistically significant in the chi-square test, with a value of 7.37 and $p=0.02$ (<0.05).

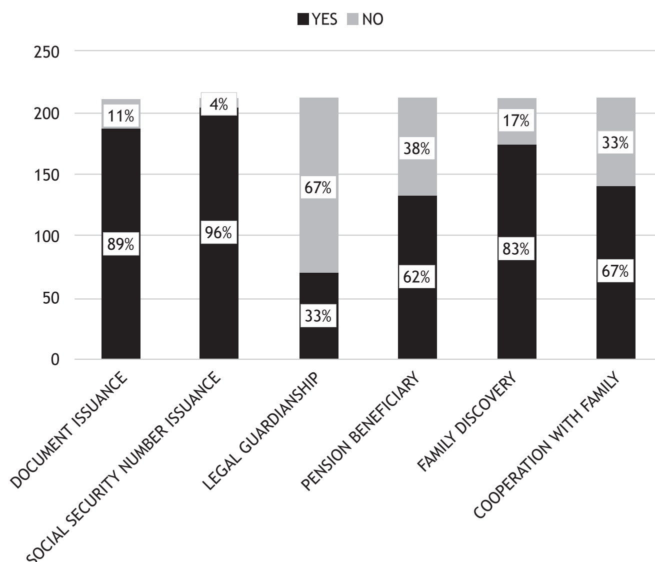

Figure 2. Social service provisions (axes).

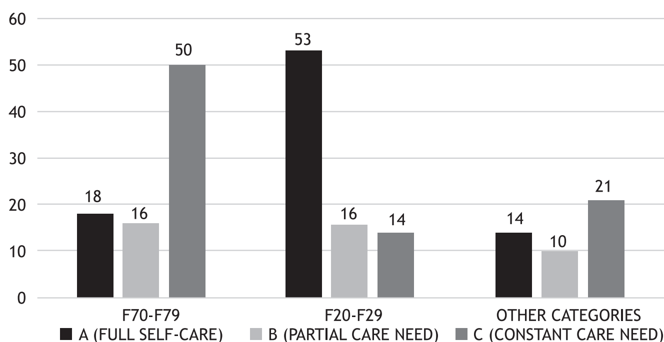

Figure 3. Degree of care distribution per disease category.

One-way ANOVA analysis on the degree of service requirement and the current age of the patients revealed a statistically significant difference ($p<0.05$). Post hoc analysis indicated that the comparison was statistically significant between the fully self-sufficient patients and those requiring continuous care ($p<0.05$).

Discussion

The results demonstrate the current position in Greece of the Psychiatric Hospital of Leros as a psychiatric institution. The Institution continues to care for 212 patients in long-stay units, regardless of their type. However, the average age of around 62 years among the patients indicates the aging population of those receiving care. This aging is reflected in both physical comorbidity and frequent hospitalizations in other clinics within the hospital. Continuous and uninterrupted care was required for 40% of the patients, unable to provide self-care at any level.

The main psychiatric diagnoses leading to admission were psychotic disorders and intellectual disability, ac-

counting for 80% of the cumulative diagnoses. However, since 1989, the year of the Psychiatric Reform, new admissions have varied in terms of psychiatric diagnoses. Two-thirds of new admissions fall within the psychotic spectrum, while the second largest category consists of patients with organic mental disorders, particularly various forms of dementia. This difference reflects the different approaches now taken towards patients with neurodevelopmental disorders, as well as the provisions provided in childhood in terms of societal integration.

Another noteworthy point is whether patients are local or not. 40% of the patients were admitted to the Institution because they resided in the South Aegean and not solely to relieve the other psychiatric units in the country. Unfortunately, even to this day, 60% of the hospitalized patients are not local to the South Aegean region, indicating that the Institution still does not fully conform to the modern principles of Community Psychiatry. The patients we care for, from the hospital's history, continue to be living proof of the consequences of the old policy of mass transfers of psychiatric patients to the "asylum of souls" in Leros.

The aging of the hospitalized population has transformed the psychiatric structures of the Psychiatric Hospital into informal psychogeriatric units in terms of medical and nursing practice. The patients at the Institution were largely not considered "difficult patients," but a certain percentage exhibited self- or hetero-destructiveness due to their psychiatric or neurodevelopmental disorders. Before deinstitutionalization, patients were considered "difficult" by default, in a dehumanizing approach to individuals with mental illnesses. However, our results showed a statistically significant correlation between diagnoses and the "nursing perspective," but not the" medical perspective." The nursing staff is called upon to spend long periods with the patients and assist them with all their needs. This intense interaction certainly changes the subjective perception of the patient's "difficulty" property.

The data from the Social Services of the Hospital reflects the interdisciplinary approach followed. The indicators of social service are just one example of the longstanding and multidimensional effort at the Hospital for social work, reintegration into society, and patient empowerment. Specifically, this approach is supported by a team of psychologists from the Social Cooperative Limited Liability Company of the Mental Health Sector of the Dodecanese, as well as other hospital services provided to hospitalized patients.

It is necessary to clarify that patient stays in Psychosocial Rehabilitation Structures usually last for a minimum period of one month, or else patients are admitted to the Acute Department. The main aim of these structures now is to provide care for patients who cannot reside in the community, rather than simply long-term hospitalization and institutionalization.

The limitations of the study are related to the dynamics of the population. Compliance, self-care abilities, or collaboration with the institution and the family environment are fluid and can change in a very short period. Similarly, the number of patients is also variable. The heterogeneity of the sample and the limited availability of data from previous years significantly restricted further research.

In conclusion, the Psychiatric Hospital of Leros, as a regional psychiatric institution, reflects the current image of Greek Psychiatry, both in its positive aspects, with improvements in infrastructure and patient care provisions, as well as its negative aspects. The most significant example for Leros, with its unique history, is the aging of patients and the accompanying aging of staff, with all the implications and difficulties that this entails. At the same time, the institution is called upon to provide mental and physical health services to the refugee and migrant populations, further intensifying existing shortcomings.

Psychiatric reform continues to be applied, as multifaceted as it is and will remain a crucial issue in the future.[16–19] The current state of the Leros State Psychiatric Hospital provides satisfactory evidence that after all these years, it is no longer Europe's or Greece's dark secret, but rather a mental health institution comparable to other modern European institutions.

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Ερευνητική εργασία

Κρατικό Θεραπευτήριο Λέρου: Μια αποτύπωση της σημερινής πραγματικότητας

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ΠΕΡΙΛΗΨΗ

Η παρούσα μελέτη αφορά στην παρουσίαση των βασικών δημογραφικών και κλινικών χαρακτηριστικών των σημερινών ασθενών, που διαβιούν στις Δομές Ψυχοκοινωνικής Αποκατάστασης του Κρατικού Θεραπευτηρίου Λέρου. Σκοπός της καταγραφής και παρουσίασης είναι η ανάδειξη των συνθηκών βελτίωσης και των δράσεων της Πολιτείας μέσω των προγραμμάτων της αποασυλοποίησης και της κοινοτικής ψυχιατρικής, με βάση τις σύγχρονες κατευθυντήριες οδηγίες. Επιπρόσθετα, προβάλλεται η σημερινή διασύνδεση των Ψυχιατρικών Δομών του Θεραπευτηρίου με τα Τμήματα και τις Κλινικές του Γενικού Νοσοκομείου, ως προς την παροχή υπηρεσιών υγείας στους χρόνιους ασθενείς του Θεραπευτηρίου με βάση το βιοψυχοκοινωνικό πρότυπο και την εφαρμογή του στην ιδιαίτερη περίπτωση της Λέρου. Η πληρέστερη παρουσίαση του προφίλ των ασθενών περιλαμβάνει τόσο υποκειμενικά κριτήρια, όπως την άποψη του προσωπικού για τη συνεργασία του ασθενούς, όσο και αντικειμενικούς παράγοντες, όπως τη συμμόρφωση στην αγωγή και την παρουσία αυτο- ή ετερο-καταστροφικότητας. Παράλληλα, ποσοτικοποιείται και ομαδοποιείται ο βαθμός φροντίδας που απαιτείται για κάθε ασθενή, με βάση τη δυνατότητα αυτοεξυπηρέτησης. Αυτό επιτυγχάνεται με τη χρήση της πρότυπης σταθμισμένης κλίμακας του Katz για τις βασικές δραστηριότητες της καθημερινής ζωής. Επίσης, παρουσιάζονται οι βασικές δράσεις και παροχές προς τους ασθενείς, σε επίπεδο κοινωνικών υπηρεσιών και διασύνδεσης με την κοινωνία, η ύπαρξη ή μη σταθερής επαφής με συγγενικά πρόσωπα και συνεργασίας με αυτά, για ζητήματα που αφορούν στην υγεία και περίθαλψη των ασθενών. Επιγραμματικά, οι σημερινοί ασθενείς, συνολικά 212, έχουν μέση ηλικία τα 62,4 έτη (τυπική απόκλιση ±13,6 έτη). Η μεγαλύτερη συνεχής νοσηλεία στο ίδρυμα είναι 62 συναπτά έτη. Από την έναρξη της Ψυχιατρικής Μεταρρύθμισης το 1989 υπήρξαν 87 εισαγωγές από την κοινότητα, με τόπο καταγωγής στο 85,1% το Νότιο Αιγαίο, ακολουθώντας σε μεγάλο βαθμό την αρχή της εντοπιότητας των ασθενών. Η νοητική υστέρηση και διαταραχές του ψυχωτικού φάσματος αποτελούν τις πιο συχνές διαγνώσεις εισαγωγής, συνολικά με ποσοστό περίπου 40% για κάθε διαταραχή. Σχετικά με τους 87 ασθενείς που νοσηλεύτηκαν μετά το 1989, οι διαταραχές ψυχωτικού φάσματος ήταν διαγνωσμένες στη μεγάλη πλειοψηφία (58 ασθενείς, 66,7%) ακολουθούμενες από τις οργανικές ψυχικές διαταραχές (10 ασθενείς, 11,5%). Οι λοιποί ασθενείς έπασχαν από άλλες διαταραχές. Η σωματική συννοσηρότητα, η ανάγκη φροντίδας και εξυπηρέτησης, ιδίως στους ασθενείς με νοητική υστέρηση, δείχνουν το πώς έχει αλλάξει ο χαρακτήρας του Ιδρύματος και πλέον σε μεγάλο βαθμό παρέχει ψυχογηριατρική περίθαλψη. Συμπερασματικά, σκοπός της παρούσας έρευνας είναι η ανάδειξη του σημερινού Κρατικού Θεραπευτηρίου Λέρου, η εικόνα του οποίου διαφέρει από αυτή που έχει αποκρυσταλλωθεί στερεοτυπικά από το παρελθόν, τόσο στην ερευνητική κοινότητα όσο και στον γενικό πληθυσμό.

ΛΕΞΕΙΣ ΕΥΡΕΤΗΡΙΟΥ: Ψυχιατρική μεταρρύθμιση, Λέρος, ψυχιατρική, αποασυλοποίηση.

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Research article

Validation of the Greek version of the Accommodation and Enabling Scale for Eating Disorders (AESED)

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ABSTRACT

Eating disorders-related research has shown that families, to alleviate family conflict and stress, accommodate the symptoms of individuals with eating disorders. It has been argued that by tolerating or alleviating symptoms, the latter may gradually be reinforced or even fully accepted, as the family becomes increasingly "trapped" in specific eating patterns, weight control behaviors, and body shape worries. The Accommodation and Enabling Scale for Eating Disorders was created in 2009, aiming to assess the family adaptability of individuals with eating disorders. The purpose of the present research was to test the psychometric properties of the Greek version of the scale in a sample of parents of individuals with eating disorders. The translation procedure was carried out based on the forward-backward method, while the study was conducted at the Eating Disorders Clinic of the First Psychiatric Clinic of Aiginiteion Hospital. Convenience sampling methods were used for the sample's recruitment. Respondents reported on their basic demographic characteristics and completed the General Health Questionnaire-28, and the Accommodation and Enabling Scale for Eating Disorders. The final study's sample consisted of 125 parents of individuals with eating disorders (69.6% women), with a mean age of 55.2 years. Factor analysis revealed a five-factor model, similar to that of the original version of the scale, with the model explaining 63.3% of the total variance. Internal consistency was judged to be high, with Cronbach's coefficient being 0.93 for the scale's total score, while Cronbach's α for the five subscales ranged from 0.78 to 0.90. Convergent validity was tested with Spearman's coefficient rho, which revealed a statistically significant correlation of the weighted scale with the General Health Questionnaire (rho=0.33, p<0.5). The results showed that the Greek version of the Accommodation and Enabling Scale for Eating Disorders is a valid and reliable tool for assessing the adaptability of families of people suffering from eating disorders. Application of the tool to larger samples will validate its psychometric properties on a larger scale.

KEYWORDS: Eating disorders, validation, reliability, caregivers, Accommodation and Enabling Scale for Eating Disorders.

Introduction

The onset of an eating disorder (ED) in a young person's life has an impact on both the individual and the family. The burden of the disorder on the family is multifactorial,[1] as parents often need to cope with not only the patient's refusal to get treatment, and various medical complications caused by malnutrition, but also social stigmatization as well as the sufferer's gradual marginalization.[2] In addition, several studies has shown that caregivers' mental state is negatively affected.[3]

Lately, the number of published studies on family distress and the negative experience of relatives caring for ED patients has risen.[4–7] According to these studies car-

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egivers of ED patients demonstrate poor quality of life, depression, anxiety, loss of behavioral or emotional control, and low psychological well-being.[8–11] Furthermore, family members suffer from significant emotional strain and often demonstrate intense and distressing patterns of interpersonal interaction.[12–15]

To alleviate familial stress and conflict, family members may accommodate ED symptomatology, such as food restriction, and weight and shape control, by organizing domestic life around the disorder.[6,13,14] For example, caregivers may modify leisure activities regarding the time and place of meals to meet the patient's needs. In the long run, these decisions have been shown to adversely affect both caregivers and ED patients,[7,16,17] as they can result in intense emotional responses ranging from guilt and self-blame to anger and disgust.[6] Consequently, the high levels of negatively expressed emotion intensify conflict within the family thus obstructing treatment progress.[18]

It is known from previous research that ED patients tend to demonstrate obsessive-compulsive behaviors, such as rituals regarding food intake, perfectionism, and rigidity.[19] It has been suggested that the caregiver's coping strategies concerning those obsessive-compulsive behaviors can play an integral part in ED treatment.[6,20] Based on this hypothesis, Sepulveda, Kyriacou, and Treasure developed in 2009 the Accommodation and Enabling Scale for Eating Disorders (AESED). The scale was based on the Family Accommodation Scale which was developed to measure the behaviors of families with patients suffering from obsessive compulsive disorder. The original scale involved measuring obsession, reassuring, participating in rituals, avoiding referring to obsession triggers, and modifying familial routines to fulfill the patient's needs.[21] AESED was also translated and validated in the Spanish language.[22] The study aimed to determine the reliability and validity of the Greek version of AESED in a sample of ED patients' parents.

Material and Method

Translation procedure

The research team obtained permission from the AESED developers to validate the Greek version of the scale. The instrument was translated into the Greek language according to the backward-forward translation method, as suggested by the World Health Organization.[23] Originally the scale was translated independently from English to Greek by two professional translators. The two Greek versions were checked by a panel of mental health experts in ED research and treatment to achieve a consensus on the Greek version of AESED. No major cultural adjustment was deemed necessary. Consequently, a third translator performed a backward translation into the English language. The two versions were compared by the same panel of experts to resolve any discrepancies. The final Greek version of the scale was used in an unpublished pilot study of 10 family-members who participated in a psychoeducation group on ED. No further adjustments of the Greek version to AESED were necessary, as the participants found the scale comprehensive and easy to complete.

Participants and procedures

The study's participants were recruited from the Eating Disorders Unit of the First Psychiatric Department of the National and Kapodistrian University of Athens using the convenience sampling technique. For participants to be eligible for inclusion, they had to be parents of female ED patients between 17 and 30 years of age. They had to be able to read and write in Greek, and should not demonstrate a decline in cognitive functions due to a general medical condition, psychotropic medication, or alcohol addiction. All measurements were administered during the first session of a family intervention psychoeducational program run by the Eating Disorder Unit.

Measures

Sociodemographic characteristics

Participants completed a questionnaire on demographic data, which included age, gender, educational level, employment status, marital status, number of children, and medical history.

Accommodation and Enabling Scale for Eating Disorders (AESED)[24]

The scale measures accommodating and enabling behaviors of families or caregivers of ED patients. It includes 33 items and five dimensions, that investigate the frequency that the respondent demonstrates specific behaviors. The five dimensions are (a) Avoidance and modifying Routine, (b) Reassurance seeking, (c) Meal ritual, (d) Control of family, and (e) Turning a blind eye. Responses are given on a 5-point Likert-type scale (0=never, 4=nearly always). The total score ranges from 0 to 132, with the highest scores indicating higher accommodation of ED symptoms. The AESED has shown high internal reliability, with Cronbach's coefficient ranging from 0.77 to 0.92.[24,25]

General Health Questionnaire (GHQ-28)[26]

The scale is used to detect signs of psychopathology. It includes 28 items investigating 4 different dimensions of

health; somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression. The validation of this questionnaire in the Greek population has satisfactory internal consistency, with a Cronbach's α value of 0.93.[26]

Statistical analysis

Descriptive analyses were used to calculate frequencies (%), means, and standard deviations (SD). The Kaiser-Meyer-Olkin (KMO) statistic and Barlett's Sphericity Test were used to examine the sample's adequacy. Exploratory Factor Analysis was performed with Principal Component Analysis (PCA) to identify items' factors. PCA was performed using the Varimax rotation. The Kaiser-Meyer-Olkin statistic and Barlett's Sphericity Test were used to investigate the sample's adequacy. The cut-off point for factor loadings was 0.40, while the appropriate number of factors was determined by eigenvalues greater than 1. Internal consistency was determined by the calculation of Cronbach's coefficient a. Values equal to or greater than 0.70 were considered acceptable. The correlation of the AESED and GHQ-28 scales was explored with Spearman's coefficient rho. Differences between married and separated participants in their AESED scores were explored via the Mann-Whitney test. All reported p-values were two-tailed. Statistical significance was set at $p<0.05$ and analyses were conducted using the SPSS statistical software (version 24.0).

Ethical considerations

The study design was reviewed and approved by the Research and Ethics Committee of the Eginition Hospital (398/ 05-07-2021). Eligible candidates could participate only after providing their signed consent, maintaining the right to withdraw their participation at any time, with no consequences on the provided psychiatric care. Participants did not receive any type of remuneration. The collected data were anonymous and their safety was secured according to the current legislation.

Results

Participant characteristics

The sample consisted of 125 participants (69.6% women) with a mean age of 53.1 years (SD=6.0 years). The basic sociodemographic characteristics of the sample are presented in table 1. The mean total GHQ-28 score was 55.2 (SD=13.9), while for each subscale the mean scores and standard deviation were 14.3±4.5 for somatic symptoms, 16.1±4.7 for anxiety and insomnia, 14.9±3.7 for social dysfunction, and 10.1±4.3 for severe depression.

Table 1. Sample's basic sociodemographic characteristics.

Variable	N (%)
Gender	
Men	38 (30.4)
Women	87 (69.6)
Family status	
Married	103 (82.4)
Divorced	22 (17.6)
Health problem	53 (42.4)
Under medication	52 (42.3)
	Mean (SD)
Age	53.1 (6.0)
Years of education	15.2 (2.9)

Correlation between demographic characteristics and AESED

The Mann-Whitney U test was used to check for the relation between the demographic characteristic categories and the total score of the AESED, as well as its subscales. The results found no significant relationship between any of the variables except marital status. Analysis showed that married parents scored higher in the "Meal ritual" and "Turning a blind eye" subscales with a p-value of 0.037 and 0.002 respectively.

Exploratory Factor Analysis (EFA)

KMO coefficient and Barlett's Sphericity Test (x^2) were calculated for the examination of the adequacy and suitability of the collected data. KMO value was 0.93, while x^2=2093.2 was statistically significant ($p<.001$). All loadings were above 0.4 and the factors explained 63% of the total variance. All items demonstrated loadings above 0.4, thus no item needed to be excluded. Similar to the initial version of the scale, AESED items were grouped into five factors. The results of EFA are presented in table 2. According to the structure of the English version of the instrument, items "the exercise routine of the relative with an ED?" and "your relative's checking their body shape or weight?" were included in the "Reassurance Seeking" factor, while for the present study, these were included in the "Meal Context Ritual" factor.

Internal consistency

The Cronbach's α value was 0.93. Table 3 presents the descriptive statistics of each item, and the α value if items of the scale were deleted.

Table 2. Factor analysis results after Varimax rotation.

Item	Subscale				
	Meal Context Ritual	Avoidance & Modifying Routine	Reassure Seeking	Control of Family	Blind Eye
1. Control choice of food that you buy				.78	
2. Control what family members do and for how long in the kitchen				.63	
3. Control cooking practice and ingredients used				.79	
4. Control what other family members eat				.70	
5. Repeated questioning about whether she will get fat?			.84		
6. Repeated questioning whether it is safe or acceptable to eat certain foods?			.76		
7. Repeated seeking of reassurance about whether she looks fat in certain clothes?			.87		
8. Repeated conversations about ingredients and amounts in food prepare			.58		
9. Repeated conversations about negative thoughts and feelings?			.69		
10. Repeated conversations about self-harm?			.68		
11. Accommodating to what crockery is used?	.66				
12. Accommodating to how the crockery is cleaned?	.78				
13. Accommodating to what time food is eaten?	.62				
14. Accommodating to what place food is eaten in?	.77				
15. Accommodating to how the kitchen is cleaned?	.77				
16. Accommodating to how food is stored?	.74				
17. Accommodation of the exercise routine of the relative with an eating disorder?	.57				
18. Accommodation of routines of checking their body shape or weight?	.55				
19. Accommodating to how the house is cleaned and tidied?	.74				
20. Ignore food disappearing					.68
21. Ignore if money is taken					.56
22. Ignore kitchen left in a mess					.81
23. Ignore bathroom left in a mess					.85
24. To what extent would you say that the relative with an ED control family life and activities?		.57			
25. How often did you participate in behaviours related to your relative's compulsions?		.54			
26. How often did you assist your relative in avoiding things that might make him/her anxious?		.41			
27. Have you avoided doing things, going places or being with people because of your relative's disorder?		.82			
28. Have you modified your family routine because of your relative's symptoms?		.84			
29. Have you modified your work schedule because of your relative's needs?		.81			
30. Have you modified your leisure activities because of your relative's needs?		.88			
31. Has helping your relative in the previously mentioned ways caused you distress?		.69			
32. Has your relative become distressed when you have not provided assistance?		.54			
33. Has your relative become angry/abusive when you have not provided assistance?		.54			
% Variance explained	16.3	15.5	11.8	1.6	8.9
Eigenvalue	10.9	3.3	2.5	2.2	1.8
% Total Variance Explained					63.3
Cronbach's α					0.93

Table 3. Descriptive Statistics of the AESED instrument.

Item	Mean (SD)	Cronbach's Alpha if Item Deleted	Subscale's Cronbach's Alpha
Meal Context Ritual			.90
1. Control choice of food that you buy	2.5 (1.3)	.89	
2. Control what family members do and for how long in the kitchen	1.6 (1.4)	.88	
3. Control cooking practice and ingredients used	2.5 (1.3)	.89	
4. Control what other family members eat	1.7 (1.5)	.88	
5. Repeated questioning about whether she will get fat?	1.8 (1.4)	.88	
6. Repeated questioning whether it is safe or acceptable to eat certain foods?	1.7 (1.3)	.88	
7. Repeated seeking of reassurance about whether she looks fat in certain clothes?	1.8 (1.4)	.90	
8. Repeated conversations about ingredients and amounts in food prepare	2.1 (1.3)	.90	
9. Repeated conversations about negative thoughts and feelings?	2.1 (1.2)	.89	
Avoidance & Modifying Routine			.90
10. Repeated conversations about self-harm?	0.9 (1.2)	.90	
11. Accommodating to what crockery is used?	0.9 (1.3)	.89	
12. Accommodating to how the crockery is cleaned?	1.0 (1.4)	.90	
13. Accommodating to what time food is eaten?	1.5 (1.4)	.89	
14. Accommodating to what place food is eaten in?	1.5 (1.4)	.88	
15. Accommodating to how the kitchen is cleaned?	1.2 (1.4)	.89	
16. Accommodating to how food is stored?	1.3 (1.4)	.88	
17. Accommodation of the exercise routine of the relative with an eating disorder?	1.7 (1.4)	.89	
18. Accommodation of routines of checking their body shape or weight?	1.8 (1.4)	.90	
19. Accommodating to how the house is cleaned and tidied?	1.5 (1.4)	.89	
Blind Eye			.78
20. Ignore food disappearing	1.2 (1.4)	.75	
21. Ignore if money is taken	0.5 (1)	.79	
22. Ignore kitchen left in a mess	1.5 (1.4)	.68	
23. Ignore bathroom left in a mess	1.4 (1.4)	.65	
Reassure Seeking			.88
24. To what extent would you say that the relative with an ED controls family life and activities?	6.1 (2.6)	.83	
25. How often did you participate in behaviours related to your relative's compulsions?	1.7 (1.4)	.84	
26. How often did you assist your relative in avoiding things that might make him/her anxious?	2.3 (1.4)	.85	
27. Have you avoided doing things, going places or being with people because of your relative's disorder?	1.5 (1.3)	.87	
28. Have you modified your family routine because of your relative's symptoms?	1.8 (1.2)	.86	
29. Have you modified your work schedule because of your relative's needs?	1.5 (1.3)	.87	
Control of Family			.83
30. Have you modified your leisure activities because of your relative's needs?	1.9 (1.4)	.78	
31. Has helping your relative in the previously mentioned ways caused you distress?	1.8 (1.3)	.81	
32. Has your relative become distressed when you have not provided assistance?	1.9 (1.3)	.77	
33. Has your relative become angry/abusive when you have not provided assistance?	1.9 (1.4)	.77	

Correlation with GHQ-28

The correlation of the AESED total score and its subscales with the GHQ-28 total score and its subscales was examined with Spearman's coefficient rho. The correlation between the total scores of the two instruments was statistically significant (p<0.5). The correlations between the subscales of the two instruments as well as their total scores are shown in table 4.

Discussion

The present study aimed to validate the Greek version of AESED. The study verified the validity and reliability of the Greek version of the AESED questionnaire, which can be used to evaluate the accommodating and enabling behaviors of ED patients' parents.

Following the original version of the scale, the analyses of its psychometric properties proposed a final set of 33 items, including five factors. Factor analysis, with a Cronbach's alpha value higher than the acceptable limit of 0.7, revealed that the AESED instrument is adequately reliable. Results were in agreement with the English and Spanish versions of the scale. The analysis of the components revealed that Item 17 ("Accommodation of the exercise routine of the relative with an eating disorder?") and Item 18 ("Accommodation of routines of checking their body shape or weight?") fell under the subscale of "Meal ritual". When compared to other validations, no changes regarding the item-factor classification were reported in the Spanish version. Regarding factor loadings, the present study found that all items demonstrated loadings greater than 0.40. Even though item 10 ("Your relative with an ED involves a family member in repeated conversations about self-harm?") of the Spanish version presented a factorial loading below 0.4, researchers decided to maintain it.

Strong positive correlations were found between the AESED and the GHQ-28 subscales. Although the two scales focus on different aspects of mental health, the general psychopathology of the participants can be used as an indication of how well they deal with their child's ED thus providing an indirect indication of the AESED's convergent validity. More precisely, the factor "Avoidance and modifying routine" had a positive correlation with all the GHQ-28 subscales. These results are in agreement with the relevant literature, which has shown that caregivers' burden is connected to poor mental health.[27] On the contrary, no strong positive correlation was found between the "Turning a blind eye" subscale and GHQ-28 subscales. This could be explained by the fact that this subscale mostly addressed behaviors related to family members suffering from Bulimia Nervosa while most of the families in the study had members suffering from Anorexia Nervosa.

As for correlations between demographics and AESED questionnaire scores, some points are worth mentioning. Firstly, the results showed that married caregivers had a higher score in the "Meal ritual" and "Turning a blind eye" factors than divorced caregivers. This could be explained by the fact that to maintain a family atmosphere without tensions and arguments, married parents tend to accommodate ED symptomatology and choose to ignore behaviors that disrupt family life, thus reinforcing ED in the long run. It can be hypothesized that some married parents choose these accommodating and enabling behaviors because they believe that the rest of the family (children) will not be affected. The results of the study indicate that evaluating a relative's perspective and behaviors regarding ED can play an important part in designing family-based interventions.[16,24]

It is worth mentioning that AESED is the first relevant scale validated in the Greek language, and will facilitate research on family reactions to the manifestation of ED and the effectiveness of family intervention for ED. However, the study has certain limitations. Firstly, the sample was recruited solely from one treatment fa-

Table 4. Spearman's rho correlation coefficients between AESED and GHQ-28 total scores and subscales.

	Somatic Symptoms	Anxiety and Insomnia	Social Dysfunction	Severe Depression	Total GHQ-28 score
Meal Context Ritual	.20	.31**	.17	.03	.24*
Avoidance & Modifying Routine	.34**	.36**	.38**	.24*	.42***
Blind Eye	.05	.14	.14	.12	.13
Reassure Seeking	.22	.17	.19	.11	.15
Control of Family	.21	.30*	.24*	.20	.23
Total AESED score	.27*	.40**	.30*	.14	.33*

*p<.05; **p<.01; ***p<.001

cility using the convenience sampling technique, making it questionable concerning its representativeness. Representativeness could also be characterized as troubling due to the gender distribution given that the vast majority of the participants (almost 70%) were women. In addition, the study used a small sample size, and thereby the results should be treated with caution. Due to the small size of the sample, an exploratory factor analysis was performed. A larger sample size would enable a confirmatory factor analysis. Further research is needed in a larger and more diverse sample of caregivers, to draw more reliable conclusions on the reliability of the scale in Greek populations. Finally, since there is no other scale in Greek measuring the caregivers' behaviors regarding ED symptomatology, convergent validity was tested by comparing AESED with a scale that measures the general health of the participants (GHQ-28). The use of the caregivers' health status as a measurement of convergent validity should be treated with caution.

To conclude, the Greek version of the AESED can prove to be a valuable addition to ED research. Further research with larger sample sizes could test the scale's reliability more extensively. In addition, the AESED could become a useful tool for the assessment of therapeutic interventions. Therefore, longitudinal studies could facilitate the identification of patient-parent factors that may cause changes in symptoms over time.[24]

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi: 10.22365/jpsych.2023.019

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Ερευνητική εργασία

Μελέτη επικύρωσης της Κλίμακας Προσαρμοστικότητας και Διαχείρισης των φροντιστών για τις Διαταραχές Πρόσληψης Τροφής

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ΠΕΡΙΛΗΨΗ

Η έρευνα που σχετίζεται με τις διαταραχές πρόσληψης τροφής έχει δείξει ότι συχνά οι οικογένειες, προκειμένου να μετριάσουν τις οικογενειακές συγκρούσεις και το άγχος, «εξυπηρετούν» τα συμπτώματα των ατόμων με διατροφική διαταραχή. Έχει υποστηριχτεί ότι με την ανοχή ή τη διευκόλυνση των συμπτωμάτων, ενδεχομένως σταδιακά να ενισχυθούν ή ακόμη και να γίνουν αποδεκτά, καθώς το οικογενειακό πλαίσιο παγιδεύεται όλο και περισσότερο στις συμπεριφορές διατροφής, ελέγχου βάρους, και σχήματος του σώματος. Η Κλίμακα Προσαρμοστικότητας και Ικανότητας Διαχείρισης για τις Διαταραχές Πρόσληψης Τροφής (Accommodation and Enabling Scale for Eating Disorders) δημιουργήθηκε το 2009 με στόχο την αξιολόγηση της προσαρμοστικότητας της οικογένειας ατόμων με διαταραχές πρόσληψης τροφής. Σκοπός της παρούσας έρευνας ήταν ο έλεγχος των ψυχομετρικών ιδιοτήτων της ελληνικής έκδοσης της εν λόγω κλίμακας σε δείγμα γονέων ατόμων με διατροφικές διαταραχές. Η μετάφραση του εργαλείου πραγματοποιήθηκε βάσει της forward-backward μεθόδου, ενώ η μελέτη διεξήχθη στο Ιατρείο Διατροφικών Διαταραχών της Α΄ Ψυχιατρικής Κλινικής του Αιγινήτειου Νοσοκομείου. Η συγκέντρωση του δείγματος έγινε με τη μέθοδο ευκολίας. Από τους συμμετέχοντες συγκεντρώθηκαν βασικά δημογραφικά δεδομένα, ενώ διαμοιράστηκε προς συμπλήρωση το Ερωτηματολόγιο Γενικής Υγείας (General Health Questionnaire-28) και η Κλίμακα Προσαρμοστικότητας και Ικανότητας διαχείρισης για τις Διαταραχές Πρόσληψης Τροφής (Accommodation and Enabling Scale for Eating Disorders). Στη μελέτη συμμετείχαν 125 γονείς ατόμων με διατροφικές διαταραχές, με το 69.6% να αποτελείται από γυναίκες, και μέση ηλικία δείγματος τα 55.2 έτη. Η παραγοντική ανάλυση ανέδειξε ένα μοντέλο πέντε παραγόντων, όμοιο με αυτό της αρχικής έκδοσης της κλίμακας, με το μοντέλο να εξηγεί το 63.3% της συνολικής διακύμανσης. Η εσωτερική συνοχή κρίθηκε ως υψηλή, με τον συντελεστή α του Cronbach να είναι 0.93 συνολικά για το εργαλείο, και για τις πέντε υποκλίμακες να κυμαίνεται από 0.78 ως 0.90. Ο έλεγχος της συγκλίνουσας εγκυρότητας με τον συντελεστή rho του Spearman ανάδειξε τη στατιστικά σημαντική συσχέτιση της υπό στάθμιση κλίμακας με το Ερωτηματολόγιο Γενικής Υγείας (rho=0.33, p<0.5). Τα αποτελέσματα έδειξαν ότι η ελληνική έκδοση της Κλίμακας Προσαρμοστικότητας και Ικανότητας διαχείρισης για τις Διαταραχές Πρόσληψης Τροφής αποτελεί ένα έγκυρο και αξιόπιστο εργαλείο για την αξιολόγηση της προσαρμοστικότητας της οικογένειας ατόμων που πάσχουν από διαταραχές πρόσληψης τροφής. Εφαρμογή του εργαλείου σε μεγαλύτερα δείγματα θα επικυρώσουν τις ψυχομετρικές τους ιδιότητες σε μεγαλύτερη κλίμακα.

ΛΕΞΕΙΣ ΕΥΡΕΤΗΡΙΟΥ: Διαταραχές πρόσληψης τροφής, στάθμιση, αξιοπιστία, φροντιστές, Κλίμακα Προσαρμοστικότητας και Ικανότητας Διαχείρισης για τις Διαταραχές Πρόσληψης Τροφής.

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Research article

Perceptions and attitudes of people with severe mental disorders towards smoking in Greece

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ABSTRACT

Despite its significant decline in the general population, smoking remains endemic and highly prevalent among people with mental disorders. The impact of smoking-attributable morbidity on life expectancy is significant since, in comparison to the general population, people with severe mental disorders have a 15–20-year reduction in life expectancy. A cross-sectional study was conducted among 1015 people with mental disorders through personal interviews. The questionnaire was designed to examine these patients' knowledge, perceptions, and attitudes towards smoking. Individuals were recruited from the mental health residential community services, the outpatient department, and the inpatient facilities of the Psychiatric Hospital of Attica. Statistical analysis was performed using SPSS 26.0. In the sample analyzed, the current smoking prevalence stood at 68.4% (n=643), while 12.3% reported being former smokers. A staggering 86.3% smoked their first cigarette within 30 minutes of waking up, indicating a high level of dependence. Most of the former smokers (83.6%) reported that their main reason for quitting smoking was to improve their health, and the overwhelming majority (97.4%) had done so using no smoking cessation aid. Although slightly over half of the participants (53.7%) believed that health professionals adequately inform smokers about the harmful health effects of tobacco products, the information provided by health professionals on smoking cessation programs and tobacco harm reduction alternatives was considered sufficient by a mere 11.2%. Multiple logistic regression analysis demonstrated that outpatients tended to have a greater likelihood of being current smokers as compared to inpatients (OR=1.45), while users of mental health residential community services showed a significantly lower likelihood of being current smokers in comparison to inpatients (OR=0.49). Additionally, it was found that women had a lower likelihood of being current smokers compared to men (OR=0.51), while divorced/ widowed participants had a greater likelihood of being current smokers compared to single ones (OR=1.93). Finally, multiple regression analysis indicated that participants with psychotic disorders displayed a 2.39 times greater likelihood of being current smokers compared to those with mood disorders (OR=2.39). Understanding the knowledge, beliefs, and attitudes of people with mental disorders towards tobacco is an essential first step to confronting this neglected epidemic.

KEYWORDS: Smoking cessation, mental disorder, smoking, mental health, schizophrenia, mood disorders.

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Introduction

Although smoking's prevalence is reduced among the general population, it remains endemic among people with mental disorders, with its prevalence in this group being two- to three-fold higher.[1] It is a hidden, neglected epidemic with profound consequences for both physical and mental health, as well as a heavy financial burden on this vulnerable population.[2,3] Cook et al[4] studied the proportion of self-reported smokers among those with and without mental disorders between 2004 and 2011. The study revealed that the proportion of smokers without mental disorders declined from approximately 20% to slightly over 15% while remaining constant at about 28–29% in those with probable mental disorders. Compared to the general population, life expectancy for people with severe mental disorders is also 15–20 years shorter possibly due to increased mortality from cardiovascular diseases, strokes, and respiratory cancer.[1,5,6] Tobacco use is a major preventable cause of cardiovascular and respiratory diseases, cancer, and low quality of life.[7–9] According to the Institute for Health Metrics and Evaluation,[8] tobacco remained the leading risk factor for increased mortality and morbidity in Greece from 2009 to 2019.

There are many hypotheses about the high prevalence of smoking and the possible relationship between smoking and mental disorders. The self-medication hypothesis regards tobacco use as a means of relieving schizophrenia symptoms, negative ones in particular, as well as antipsychotic-induced extrapyramidal side effects.[9–12] Yet the findings of several studies are inconsistent with the widespread self-medication hypothesis.[13,14] To evaluate said hypothesis, the consequences of smoking cessation and reinitiation in smokers with schizophrenia were studied. When compared to those showing no change in smoking behavior, patients who started smoking during follow-up displayed a substantial increase in self-reported symptoms, specifically positive ones, whereas smoking cessation was neither linked with changes in symptoms nor quality of life.[14] Furthermore, during smoking cessation, there were no significant changes in cognitive performance.[13] Smoking has been reported as a possible indicator for the development of serious mental illness (including psychosis) and related health problems, especially in young people.[15] Additionally, it is considered both a predisposing and a risk factor for the development of depressive symptoms; indicatively, depression can occur twice as often in smokers as in non-smokers.[16] Lastly, it is also regarded as a risk factor for the onset of schizophrenia.[16,17] In fact, many studies show a shared genetic basis contributing to the comorbidity between smoking and schizophrenia.[18,19]

However widely recognized the importance of treating smoking in people with mental disorders, limited evidence exists on the use of smoking cessation services by people with a history of mental illness, as this history is rarely recorded in smoking cessation services. There is also a lack of data regarding the quality of life of smokers with mental disorders, as well as the research, development, and implementation of effective anti-smoking interventions for people using mental health services.[20] In Greece, by Ministerial Decision No. 88202/2009, psychiatric institutions were exempted from the implementation of the smoke-free law. More specifically, "patients were allowed to smoke with the written consent of the attending psychiatrist for therapeutic purposes". However, one year later, the Ministerial Decision was revoked, and now smoking has been universally banned. Nevertheless, to the best of our knowledge, the smoking ban has never been implemented in inpatient and outpatient mental health services in Greece.

To examine the perceptions and attitudes of people with mental health disorders towards smoking and nicotine products, we conducted a cross-sectional study to address the gaps in current research, also considering the fact that, in Greece, smoking remains a public health issue among people with mental disorders.

Material and Method

Participants and procedures

The study population included adult mental health service users from the Psychiatric Hospital of Attica. Both inpatients and outpatients residing at mental health residential community services or living at home were eligible to participate. Data collection was conducted in eight Psychiatric Wards, thirty mental health residential community services, and the outpatient department and day care units of the Psychiatric Hospital of Attica.

The inclusion criteria were an age of between 18–75 years, a diagnosis of a mental disorder, a mental disorder in remission, the ability to read and understand Greek, and legal competency. The exclusion criteria concerned cognitive deficits inhibiting the understanding of the questionnaire. The initial number of prospective participants was 1526; however, 218 of them did not meet the criteria, while 293 refused to participate (77.59% response rate). A total of 1015 patients were included in this study: 318 hospitalized in the psychiatric wards of the Psychiatric Hospital of Attica, 320 users of mental health residential community services, and 377

living at home and receiving services from the outpatient department of the Psychiatric Hospital of Attica.

The participants were classified according to, firstly, the type of mental care being received at the time of study recruitment (inpatients, users of mental health residential community services, and outpatients living at home) and, secondly, their psychiatric diagnosis. The diagnosis was documented using the participants' medical records and confirmed by the treating psychiatrists. Their smoking status was recorded as current smokers, former smokers, and never smokers.

Written informed consent was obtained from all individuals included in the study. All procedures performed in studies involving human participants were by the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.[21] The study protocol was approved by the Ethics Committee, the Scientific Committee, and the Management Board of the Psychiatric Hospital of Attica and by the Research Ethics Committee of the University of West Attica.

Measures

The survey was performed through a personal interview with each participant, and a researcher-constructed questionnaire was administered. The questionnaire recorded the following: socio-demographic data, psychiatric diagnosis, smoking status, onset of smoking age, tobacco product use, intention to quit smoking, attempts to quit smoking, smoking abstinence duration and smoking cessation intervention (for former smokers), perceptions about health damage from tobacco products, passive smoking, referral to smoking cessation programs by health professionals, and whether smoking bans in public places or the financial crisis have reduced tobacco product use. The questionnaire was assessed by experts for content validity.

Initially, the questionnaire was designed to be self-administered; however, after performing a pilot study, it was decided to administer it through a personal interview, which was perceived as more confidence-inspiring by the study participants. In the pilot study, the method of cognitive interviewing was utilized to validate the questionnaire, using 30 psychiatric patients who did not participate in the final study sample.[22]

Statistical analysis

Variables were first tested for normality using the Kolmogorov-Smirnov criterion. Quantitative variables were expressed as mean (Standard Deviation) or median (interquartile range). Qualitative variables were expressed as absolute and relative frequencies. For the comparison of proportions, chi-square, and Fisher's exact tests were used. If the normality assumption was satisfied for the comparison of means between three or more groups, analysis of variance (ANOVA) was used. The Kruskal-Wallis test was used for the comparison of continuous variables between three or more groups when the distribution was not normal. The Bonferroni correction was used to control for type I errors. Logistic regression analysis in a stepwise method (p for entry 0.05, p for removal 0.10) was used to find independent factors associated with being a current smoker. Adjusted odds ratios (OR) with 95% confidence intervals (95% CI) were computed from the results of the logistic regression analyses. All reported p values are two-tailed. Statistical significance was set at $p<0.05$ and analyses were conducted using SPSS statistical software (version 26.0).

Results

Most of the participants (66.2%) were diagnosed with schizophrenia, schizotypal, and delusional disorders (F20-F29); 26.4% of the participants were diagnosed with mood (affective) disorders (F30-F39); 6.3% with neurotic, stress-related, and somatoform disorders (F40-F48); finally, 1.1% had other diagnoses (F10-F19, F60-F69, F91). Statistical analysis was performed between the two groups (F20-F29) and (F30-F39), with under-represented groups excluded from the analyzed sample.

The socio-demographic characteristics and psychiatric conditions of the study sample are presented in table 1. The mean participants' age was 50.7 years, 59.3% being males. Participant recruitment was well balanced between outpatients (33.9%), users of mental health residential community services (33.7%), and inpatients (32.3%). Most of the participants (71.5%) were diagnosed with psychotic disorders (F20-F29), with the remaining (28.5%) diagnosed with mood disorders (F30-F39).

The participants' smoking status and behavior are presented in table 2. Current smoking was reported by 68.4% (n=643), while 12.3% reported being former smokers. The mean age of cigarette smoking initiation among current smokers was 17.7 years. Approximately 60% consumed more than 20 cigarettes a day, and almost 80% had been smoking for over 20 years. Most of them (60.2%) used boxed cigarettes. The vast majority (86.3%) smoked their first cigarette within 30 minutes of waking up, indicating a high level of dependence. However, only 64.5% self-re-

Table 1. Participants' sociodemographic characteristics and diagnoses (n=940).

		N	%
Sex	Male	557	59.3
	Female	383	40.7
Age, mean (SD)		50.7 (12.8)	
Education	Classes of Primary school	29	3.1
	Primary Education	157	16.7
	Lower Secondary Education	165	17.6
	Upper Secondary Education	316	33.6
	Post-secondary non-Tertiary Education	88	9.4
	Bachelor's degree or equivalent tertiary education level	172	18.3
	Master's degree or Doctoral degree	13	1.4
Marital status	Single	609	64.8
	Married	125	13.3
	Separated	26	2.8
	Divorced	160	17.0
	Widowed	20	2.1
Do you have children?	No	687	73.2
	Yes	252	26.8
If so, how many children do you have? Median (IQR)		2 (1–2)	
Do you live	Alone	224	23.9
	With family members	374	39.8
	With roommates	19	2.0
	In mental health residential community services	322	34.3
Are you employed?	No	778	82.8
	Yes	162	17.2
What is your personal monthly income?	0–400 euros	556	59.1
	401–600 euros	169	18.0
	601–800 euros	106	11.3
	801–1000 euros	80	8.5
	More than 1001 euros	29	3.1
Groups	Inpatients	304	32.3
	Outpatients	319	33.9
	Users of mental health residential community services	317	33.7
Diagnosis	Mood (affective) disorders (F30-F39)	268	28.5
	Schizophrenia schizotypal and delusional disorders (F20-F29)	672	71.5

ported that they were highly addicted to smoking (high/very high). The majority of former smokers (83.6%) reported that their main reason for quitting smoking was to improve their health, and a notable 97.4% had done so using no smoking cessation aid.

The participants' risk perceptions about smoking are presented in table 3. Illicit cigarettes and illicit roll-your-own (RYO) cigarettes were perceived to be associated with higher health risks. Over 90% of the participants reported that smoking was linked to high, very high, or extremely high health risks. A similar proportion regarded passive smoking as equally harmful and the banning of smoking in public places as beneficial to public health. Although slightly over half of the participants (53.7%) believed that health professionals adequately inform smokers about the harmful health effects of tobacco products, only 11.2% believed that health professionals adequately inform smokers about smoking cessation programs, tobacco harm reduction alternatives, and related products.

Findings according to participants' diagnoses

Smoking rates varied significantly by diagnosis, recorded significantly lower in participants with mood disorders as compared to participants with psychotic disorders [$x^2(2)=18.03$; $p<.001$]. Additionally, smokers

Table 2. Smoking attitudes of participants toward tobacco and related products.

		N	%
Smoking status	No	181	19.3
	Yes	643	68.4
	Former smoker	116	12.3
At what age did you start smoking?	mean (SD)	17.7 (6.0)	
How many cigarettes do you smoke each day?	Up to 10	54	8.4
	11–20	177	27.5
	21–40	282	43.9
	more than 40	130	20.2
How long have you been smoking?	Up to 5	12	1.9
	5–10	22	3.4
	10–20	103	16.0
	more than 20	506	78.7
How soon after you wake up do you smoke your first cigarette?	Within 30 minutes	555	86.3
	Later	88	13.7
Do you find it difficult to refrain from smoking in places where it is forbidden?	No	255	39.7
	Yes	388	60.3
How Strong is Your Nicotine Addiction?	Very Low	7	1.1
	Low	49	7.6
	Moderate	172	26.7
	High	281	43.7
	Very high	134	20.8
What type of tobacco product do you use? (Multiple answers)	Boxed cigarettes	387	60.2
	Hand Rolled cigarettes	133	20.7
	Hand Rolled cigarettes (Illicit tobacco)	33	5.1
	Cigarillos	85	13.2
	Boxed cigarettes (smuggled)	135	21.0
Are you planning to quit smoking in the future?	No, I do not intend to quit smoking	280	43.5
	Yes, I intend to quit smoking within a month	17	2.6
	Yes, I intend to quit smoking within the next 6 months	99	15.4
	Yes, I intend to quit smoking this year	60	9.3
	Yes, but not this year	187	29.1
Have you tried to quit smoking in the past?	No	314	48.9
	Yes	328	51.1
If so, what is the longest time you have quit smoking?	2 to 3 weeks	31	9.5
	1 month to 3 months	94	28.7
	4 months to 9 months	76	23.2
	10 months to 12 months	7	2.1
	more than 1 year	120	36.6
Reason to quit smoking	Health effects	425	66.1
	Financial cost	218	33.9
What was the reason to quit smoking? Multiple answers	Health	97	83.6
	Financial cost	31	26.7
	Other reasons	9	7.8
Other reasons	Social Reasons	5	0.5
	Children	4	0.4
Did you use any of the following smoking cessation methods? Multiple answers	Nicotine Replacement Therapy (Patch. Gum, etc.)	2	1.7
	Alternative therapies (Acupuncture, etc.)	0	0.0
	Medication	0	0.0
	Support of health professional or smoking cessation clinic	0	0.0
	Alone	113	97.4
	Other	7	6.0
Other methods	E–cigarette	6	0.6
	Heated Tobacco Product	1	0.1

Table 3. Participants' risk perceptions about tobacco.

		N	%
Rate the health risk caused by the following tobacco products. (score from 1 to 5), mean (SD)-median (IQR)	Boxed cigarettes	2.7 (1)	3 (2–3)
	Roll-your-own (RYO) cigarettes	3.3 (0.9)	3 (3–4)
	Illicit roll-your-own (RYO) cigarettes	4.7 (0.6)	5 (5–5)
	Cigarillos	3.2 (0.9)	3 (3–4)
	Illicit cigarettes (smuggled)	4.6 (0.7)	5 (4–5)
Rate the health risk from smoking	Minimal risk	7	0.7
	Moderate risk	75	8.0
	High risk	311	33.1
	Very high risk	237	25.2
	Extremely high risk	310	33.0
Do you think that passive/ secondhand smoking is harmful to health?	No	80	8.5
	Yes	860	91.5
Do you think that smoking bans in public places benefit public health?	No	114	12.1
	Yes	826	87.9
Do you think that health professionals inform patients about the harmful health effects of tobacco and related products?	No	435	46.3
	Yes	505	53.7
Do you think health professionals inform smokers about smoking cessation programs and alternatives to reduce harm from tobacco and related products?	No	835	88.8
	Yes	105	11.2
Do you think that smoking is a chronic disease and you should consult a health professional for smoking cessation?	No	186	19.8
	Yes	754	80.2
Do you think that banning smoking in public places has reduced smoking?	No	425	45.2
	Yes	515	54.8
Do you think that the economic crisis has led to a reduction in smoking?	No	552	58.7
	Yes	388	41.3

with psychotic disorders smoked significantly fewer cigarillos [$x^2(1)=9.97; p=.002$] and considered financial burden a motive to quit smoking [$x^2(1)=12.09; p=.001$] (Supplementary material table S1).

Concerning risk perceptions and beliefs as per diagnosis group, more smokers with psychotic disorders than patients with mood disorders believed that boxed cigarettes ($Z=-3.99; p<.001$), illicit roll-your-own tobacco ($Z=-2.84; p=.005$), cigarillos ($Z=-3.11; p=.002$) and smuggled cigarettes ($Z=-4.12; p<.001$) caused less harm. Also, smokers with psychotic disorders thought that they had significantly less health risk from smoking [$x^2(3)=22.38; p<.001$] (Supplementary material, table S2).

Findings according to received mental care at the time of study recruitment

Compared to inpatients and outpatients, users of mental health residential community services smoked at a significantly lower rate [$x^2(4)=29.64; p<.001$]. Other findings according to received mental care are presented in Supplementary material, table S3. The health benefits of smoking cessation are considered by the majority of outpatients as the most important motivation to quit smoking in comparison to inpatients and users of mental health residential community services [$x^2(2)=72.29; p<.001$]. Regarding former smokers, the proportion of participants who quit smoking due to its financial cost was significantly higher among users of mental health residential community services and outpatients [$x^2(2)=10.77; p=.005$] (Supplementary material table S4).

When multiple logistic regression analysis was conducted in a stepwise method for being a current smoker (table 4), it was found that, compared to inpatients, outpatients tended to have a greater likelihood of being current smokers (OR=1.45; 95% CI: 0.99–2.12; p=0.058); again, compared to inpatients, users of mental health residential community services had a significantly lower likelihood of being current smokers (OR=0.49; 95% CI: 0.34–0.70; p<0.001). Moreover, it was found that women had a lower likelihood of being current smokers compared to men (OR=0.51; 95% CI: 0.38–0.70; p<0.001) and divorced/ widowed participants had a greater likelihood of being current smokers compared to singles (OR=1.93; 95% CI: 1.32–2.82; p=0.001). Furthermore,

Table 4. Results from multiple logistic regression analysis in a stepwise method with dependent variable being a current smoker.

		OR (95% CI)*	Wald test	p
Group	Inpatients (reference)			
	Outpatients	1.45 (0.99–2.12)	3.59	0.058
	Users of mental health residential community services	0.49 (0.34–0.70)	15.35	<0.001
Sex	Men(reference)			
	Women	0.51 (0.38–0.70)	18.27	<0.001
Family status	Single(reference)			
	Married	1.33 (0.84–2.12)	1.50	0.221
	Divorced/ Widowed	1.93 (1.32–2.82)	11.36	0.001
Diagnosis	Mood (affective) disorders(F30-F39) (reference)			
	Schizophrenia, schizotypal and delusional disorders (F20-F29)	2.39 (1.69–3.36)	24.72	<0.001

*Odds Ratio (95% Confidence Interval)

multiple analyses showed that patients with psychotic disorders had a 2.39 times greater likelihood of being current smokers compared to those with mood disorders (OR=2.39; 95% CI: 1.69–3.36; p<0.001).

Discussion

This study verifies the high smoking rate and heavy nicotine dependence in patients with mental health disorders, particularly those with schizophrenia.[23,24] In essence, the smoking rate reported herein is more than 2-fold higher than that of the general population in Greece.[25] Studies have revealed that motivation to quit smoking among smokers with mental illness is similar to that of the general population.[26,27] Having studied the smoking behavior and motivation to quit smoking by assessing "the stages of change" in smokers with psychosis compared to general population smokers, Etter et al[24] concluded that the allocation of these stages was similar in both samples. However, the findings of our study have shown different motivations between the groups. Patients with mood disorders are motivated by health effects to a greater extent than patients with schizophrenia. One possible explanation could be that people with schizophrenia are less aware of the smoking-associated health risks than people without mental health disorders.[28] This explanation is consistent with our findings that, compared to the other groups, smokers with schizophrenia believed that boxed cigarettes, cigarillos and smuggled cigarettes cause less harm. Moreover, compared to patients with mood disorders, people with schizophrenia also believed that illicit RYO cigarettes cause less harm. This finding is in agreement with a study by Spring et al[29] who assessed the reinforcing value of conventional cigarette smoking versus pleasant activities among heavy smokers with schizophrenia or depression and heavy smokers without mental health disorders. According to their findings, all participants perceived the negative health effects of smoking equally. However, in the same study, when compared with smokers without mental health disorders, smokers with schizophrenia or depression perceived more smoking-related benefits and found smoking more attractive than alternative rewards.

The National Drug Strategy Household Survey[30] in Australia showed that the cost of smoking was the main factor prompting smokers to attempt to quit or cut back, while other studies mention cost and health concerns as important factors associated with the motivation to quit.[31,32] Similarly, according to our findings, the financial burden was the key reason for users of mental health residential community services who had quit smoking, exhibiting a significant difference in comparison to the other groups. In fact, during the interview, many participants commented that they would like to save money to afford recreation and leisure activities or leave the mental health facility and move into their own homes.

In addition, according to our findings, outpatients were less likely to face difficulties in complying with smoke-free legislation than inpatients and users of mental health residential community services. One possible explanation is that they live in a community where they must conform to a complete ban on smoking in enclosed public places.

Our findings suggest that, compared to outpatients, users of mental health residential community services quit smoking for much longer periods, which may be attributed to the staff's motivating and supportive interventions positively affecting the residents' attempts.[33]

Several studies have reported that smokers with mental disorders are rarely referred to smoking cessation

services by healthcare professionals.[34,35] Our study also showed that a meager 11.2 % of the participants believe that health professionals adequately inform smokers about smoking cessation programs, tobacco harm reduction alternatives, and related products. This could have resulted from the many misconceptions among mental health professionals about the willingness and ability of smokers with mental disorders to quit.[1,9,36]

The main limitation of this study is that its data were collected only from the Psychiatric Hospital of Attica and may not represent the entire population of patients with severe mental disorders. Individuals with mental health disorders receiving care from the psychiatric wards of general hospitals, community mental health centers, or private practice psychiatrists may have different knowledge, beliefs, and attitudes toward tobacco and related products. Despite current sectorization, the Psychiatric Hospital of Attica provides primary, secondary, and tertiary care services for people living in various districts of Greece, not limited to Attica, with various socio-demographic characteristics, regardless of their economic, social, or professional status. The second limitation concerns the fact that the findings are based on self-reported smoking status, meaning there is a possibility of recall bias among former smokers.

The consistently high prevalence of smoking among patients with severe mental disorders reflects not only that smoking is a highly addictive behavior, particularly for such patients, but that there is also a significant failure of public health and clinical services to address the specific needs of this vulnerable population. It is time for these challenges to be met by consistently implementing smoke-free legislation, training mental healthcare professionals in smoking cessation counseling, and implementing tailor-made health promotion interventions specifically targeting people with mental disorders.[1,9,31]

It has been shown that pharmacological treatments (varenicline, bupropion, and nicotine replacement therapy) as well as smoking cessation counseling or combination strategies are effective in smokers with mental illness.[9,31,37–39]

Several studies suggest that harm reduction options such as e-cigarettes (either disposable or rechargeable) help smokers with mental illness who are unwilling or unable to quit.[40–42] The use of e-cigarettes as an alternative to smoking is a common practice in mental health facilities in England[43] and Australia.[44] Furthermore, e-cigarettes seem an option appealing to smokers with mental disorders wishing to quit or cut down[45] since they reduce smoking and carbon monoxide without increasing nicotine dependence.[46,47] In addition, tobacco smoke contains polycyclic aromatic hydrocarbons inducing P450 CYP1A2 activity; as a result, it increases the clearance of various psychiatric medications, thus requiring higher therapeutic doses. Nevertheless, polycyclic aromatic hydrocarbons are either absent or only appear in trace amounts in non-smoked nicotine products, so e-cigarette users usually need to reduce their medication dose after quitting regular cigarette smoking.[42,47] Increased attention to and systematic monitoring of levels of psychotropic medications is required after the transition from smoking to e-cigarettes.[48,49]

In conclusion, understanding the knowledge, beliefs, and attitudes of people with severe mental disorders towards tobacco is an essential first step to confronting this neglected epidemic, which perpetuates both health and socio-economic inequalities.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.22365/jpsych.2023.022

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Ερευνητική εργασία

Πεποιθήσεις και στάσεις ατόμων με σοβαρές ψυχικές διαταραχές προς το κάπνισμα στην Ελλάδα

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ΠΕΡΙΛΗΨΗ

Το κάπνισμα ενδημεί στα άτομα με ψυχικές διαταραχές και ο επιπολασμός του παραμένει υψηλός παρά τη σημαντική μείωση στον γενικό πληθυσμό τα τελευταία χρόνια. Σκοπός της παρούσας συγχρονικής μελέτης είναι η διερεύνηση των γνώσεων, στάσεων και αντιλήψεων των ατόμων με ψυχική διαταραχή προς το κάπνισμα. Σχεδιάστηκε ερωτηματολόγιο για τον σκοπό της μελέτης και χορηγήθηκε σε 1015 άτομα με ψυχικές διαταραχές με προσωπική συνέντευξη στα Εξωτερικά Ιατρεία, σε Δομές Ψυχοκοινωνικής Αποκατάστασης και σε Ψυχιατρικά Τμήματα Εισαγωγών του Ψυχιατρικού Νοσοκομείου Αττικής. Η στατιστική ανάλυση πραγματοποιήθηκε με το SPSS 26.0. Ο επιπολασμός καπνίσματος στο αναλυθέν δείγμα ήταν 68,4% (n=643), ενώ 12,3 ήταν πρώην καπνιστές. Η πλειοψηφία (86,3%) κάπνιζαν το πρώτο τους τσιγάρο μέσα σε 30 λεπτά από το ξύπνημα, υποδηλώνοντας υψηλό επίπεδο εξάρτησης. Ο κίνδυνος για την υγεία ήταν το κύριο κίνητρο διακοπής καπνίσματος για την πλειοψηφία των πρώην καπνιστών (83,6%) και σχεδόν όλοι (97,4%) είχαν διακόψει το κάπνισμα χωρίς βοήθεια. Περίπου οι μισοί από τους συμμετέχοντες (53,7%) θεωρούν ότι οι επαγγελματίες υγείας ενημερώνουν επαρκώς τους καπνιστές για τις βλαβερές επιπτώσεις των προϊόντων καπνού στην υγεία, αλλά μόνο το 11,2% πίστευε ότι οι επαγγελματίες υγείας ενημερώνουν τους καπνιστές σχετικά με προγράμματα διακοπής του καπνίσματος και εναλλακτικές για τη μείωση της βλάβης από το κάπνισμα. Η ανάλυση πολλαπλής λογιστικής παλινδρόμησης κατέδειξε ότι οι εξωτερικοί ασθενείς έτειναν να έχουν μεγαλύτερη πιθανότητα να είναι καπνιστές σε σύγκριση με τους νοσηλευόμενους (OR=1,45), ενώ οι ένοικοι Δομών Ψυχοκοινωνικής Αποκατάστασης είχαν σημαντικά χαμηλότερη πιθανότητα να είναι καπνιστές σε σύγκριση με τους νοσηλευόμενους (OR=0,49). Επιπρόσθετα, διαπιστώθηκε ότι οι γυναίκες είχαν μικρότερη πιθανότητα να είναι καπνίστριες σε σύγκριση με τους άνδρες (OR=0,51) και οι διαζευγμένοι/χήροι συμμετέχοντες είχαν μεγαλύτερη πιθανότητα να είναι καπνιστές σε σύγκριση με τους άγαμους (OR=1,93). Πολλαπλή ανάλυση παλινδρόμησης κατέδειξε ότι οι συμμετέχοντες με ψυχωτικές διαταραχές είχαν 2,39 φορές μεγαλύτερη πιθανότητα να είναι καπνιστές σε σύγκριση με εκείνους με διαταραχές διάθεσης (OR=2,39). Η κατανόηση των γνώσεων, των πεποιθήσεων και των στάσεων των ατόμων με ψυχικές διαταραχές προς τα καπνικά και συναφή προϊόντα είναι ένα ουσιαστικό πρώτο βήμα για την αντιμετώπιση αυτής της παραμελημένης επιδημίας.

ΛΕΞΕΙΣ ΕΥΡΕΤΗΡΙΟΥ: Διακοπή καπνίσματος, ψυχική διαταραχή, κάπνισμα, ψυχική υγεία, σχιζοφρένεια, συναισθηματικές διαταραχές.

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Research article

Efficacy of a conservative physical treatment regimen on psychological status and quality of life in Greek patients with chronic low back pain

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ABSTRACT

Chronic Low Back Pain (CLBP) is a very common health problem that has a great negative impact on the quality of life and the psychological well-being of backache patients. Literature findings have shown that a conventional physiotherapeutic approach is a beneficial choice for CLBP management. This study aimed to examine the short-term effects of conservative physical treatment on depression, anxiety, somatic symptom disorders (SSD), quality of life, pain, and disability in Greek individuals suffering from CLBP. Seventy-five CLBP patients were recruited using random systematic sampling. All subjects received an ultrasound, low-level laser, massage, transcutaneous electrical nerve stimulation (TENS), and an exercise program (sum of 10 sessions, 5 times per week). The intervention was assessed by comparing pre and post-outcome measurements based on the Hospital Anxiety and Depression Scale (HADS), Somatic Symptom Scale-8 (SSS-8), EuroQol 5-dimension 5-level (EQ-5D-5L), Roland-Morris Disability Questionnaire (RMDQ) and Pain Numerical Rating Scale (PNRS) instruments. The mean age of the sample was 60.8 years (±14.4) and nearly one out of four (25.3%) was obese. After the end of the treatment, there were improvements in EQ-5D-5L indices and decreases in HADS, SSS-8, RMDQ, and PNRS scores, which were found to be statistically significant. Greater effect size was found in PNRS (d=0.75), followed by EQ-5D-5L index value scale (d=0.42), SSS-8 (d=0.38), EQ-5D-5L VAS (d=0.36), RMDQ (d=0.29), HADS-A (d=0.16) and HADS-D (d=0.14). Men and women had similar changes in all under-study scales after the treatment, while besides the pain scale, the pre-intervention scores as well as the degree of change in all scores were similar across all Body Mass Index (BMI) levels. In conclusion, convectional physical treatment was found to be an effective option in improving considerably the psychological status and quality of life, while also decreasing functional disability and pain in CLBP patients in the short run.

KEYWORDS: Chronic low back pain, physical modalities, disability, exercise, quality of life, somatic symptom disorders, pain, anxiety, depression.

Introduction

As reported by the Global Burden of Diseases Study 2019 (GBD 2019), pain in the lumbar region was the foremost cause of disability for all ages, showing a rise of 47 % since 1990 and resulting in 64 million disability-adjusted life – years.[1,2] In consistent with the findings of GBD 2019, low back pain (LBP) in Greece was among the five leading reasons for years lived with disability from 2000 to 2016.[3] The great majority of LBP instances (85%) have no known or recognizable pathoanatomical cause, with them being denominated as non-specific, while in the case that the pain lasts longer than twelve weeks, they are defined as chronic LBP (CLBP).[4] Unpleasant pain sensation and limitation in activities of daily living (ADLs) were associated with pain perception

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and psycho-social discomforts of patients with CLBP, which in turn lead to impaired health-related quality of life (HRQoL), psychological states like anxiety, depression, and somatic symptoms disorders (SSD), severe disability, increased healthcare utilization and socioeconomic costs due to work absenteeism, loss of labor and decreased productivity.[3–8] Therefore, chronic low back pain calls for concerted research efforts, founded on the concept of a "biopsychosocial pain syndrome", and particular attention from health policymakers to address its burden as a public health problem.[4,9]

Consistent with clinical practice guidelines and recent systematic reviews, non-pharmacological treatment options are essential parts of CLBP management, including a variety of interventions like physical therapy modalities, exercise programs, and cognitive-behavioral therapy to eliminate the negative impacts mentioned above.[10–12] Specifically, previous studies have shown that single and mainly combined use of transcutaneous electrical nerve stimulation (TENS), therapeutic ultrasound (US), massage, low-level laser, and exercise are effective not only in improving health and psychological status but also in alleviating pain severity and functional disability.[11–18] However, the clinical effect of the aforementioned intervention has not been documented beyond a reasonable doubt. In particular, a systematic review of eighty-three randomized controlled trials identified ambiguous evidence to support the effectiveness of conventional physical treatment for patients with CLBP, concluding that additional trials should be carried out to better comprehend and evaluate its efficacy.[19] Additionally, studies concerning the efficacy of a conventional physiotherapeutic approach in patients with CLBP, implementing physical modalities and exercise, are scanty and lacking in the Greek population.[20] A Greek prospective study of 80 inpatients with LBP, following conservative treatment, demonstrated a substantial improvement in HRQoL even one month later from discharge.[20] In summary, no study to date has examined the short-term effects of a similar approach on psychological status (anxiety, depression, and SSD), pain intensity, and functional disability in Greek individuals with CLBP.

Consequently, the current study aimed to investigate the short-term efficacy of a conservative physical treatment regimen on pain, disability, anxiety, depression, SSD, and HRQoL in CLBP patients for the first time. We hypothesized that subjects undergoing a conservative intervention would demonstrate significant improvement in health and psychological status, pain, and functional disability.

Material and Method

Study design and participants

Given that the available subject pool was limited and placebo control was not ethically desirable, it was conducted a one-group pretest-posttest study design at the outpatient physical therapy unit of TYPET (Greek acronym of the Mutual Health Fund of National Bank of Greece Personnel) in Athens, in which the same dependent variables were assessed in a single group of patients with CLBP before (pretest) and after (posttest) intervention was administered.[21–23] It was calculated that with the sample size of 75 participants, the study will have >95% power to detect significant differences at an effect size of 0.5 or more and a significance level of 0.05. Between 1 April 2021 and 31 December 2021, a total of 150 individuals, who had been referred to the above unit for the management of CLBP by their attending orthopedic doctor, met all the inclusion criteria. Of those 75 participants, aged 26–94 years old, were enrolled in the study with a selection; every second subject was asked to fill in a questionnaire (a random systematic sampling) (figure1).

The conventional intervention was administered to the lumbosacral part by a physical therapist (one-on-one), including massage, ultrasound, TENS, low-level laser, and an exercise program (a sum of 10 sessions including all components of the intervention, 5 times per week). Massage (with deep stroking, wringing, friction, pulling, and rolling techniques) and continuous ultrasound (frequency: 1 MHz, intensity: 1.5 W/cm^2) lasted 15 minutes and 5 minutes, respectively.[18,24–26] Additionally, TENS was applied with four cutaneous electrodes for 20 minutes.[26] Exercise program consisted of a strengthening part of the back and frontal abdominal muscles performed for 20 minutes with a set of 10 repetitions on each exercise (pelvic tilt, abdominal hollowing, knee to chest, oblique crunch, supine plank, bird and dog, cat and camel, lower abdominal and back extension exercises), as well as a stretching part of the hip flexors, hamstrings and lumbar extensors performed for 30 seconds on each muscle group.[13,25,27] Last but not least, the continuous low-level laser was applied with a contact method at four points over both sides of the spinal column for 80 seconds (830 nm, 120 m, 0–50000 Hz).[18,27–29] During the treatment, patients could select to sit in a chair or lie down on a bed in a prone position to control positional intolerance.

The exclusion criteria were subjects with previous spinal surgery or cancer, fibromyalgia syndrome, psoriatic arthritis, rheumatoid arthritis, spinal fracture, cauda equina syndrome, spondylolisthesis, scoliosis less than or at most equal to 20° and ankylosing spondylitis (red flags). All participants were fully informed

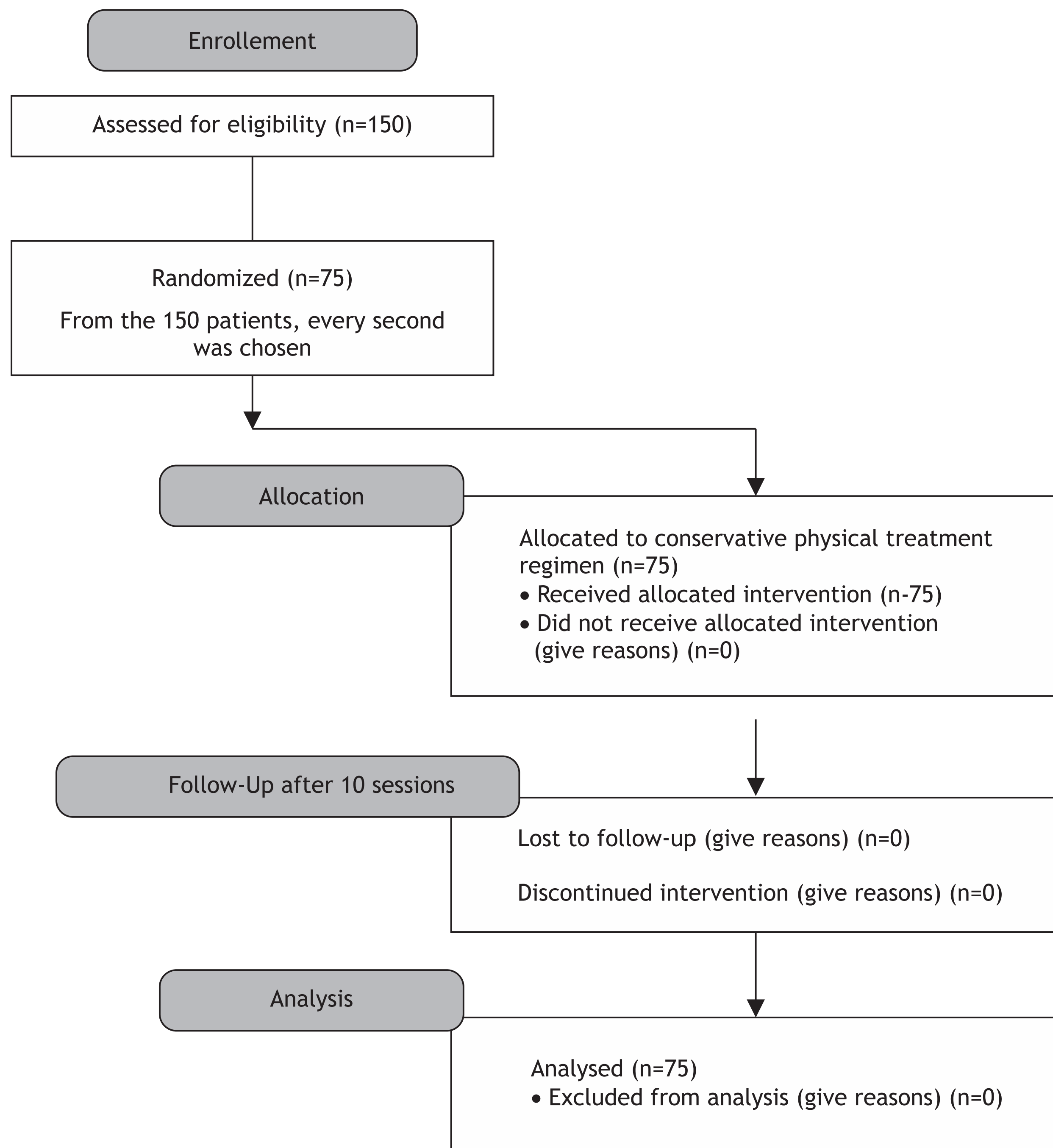

Figure 1. The flow diagram of the study.

about the confidentiality and anonymity of the paper-and-pencil questionnaire and signed a written consent. This research was authorized by the medical ethics board of primary healthcare services of TYPET (AP.Π.005294/19-10-2020) and the School of Medicine of National and Kapodistrian University of Athens. This survey was carried out according to the principles of the Declaration of Helsinki, bearing in mind the Consolidated Standards of Reporting Trials (CONSORT) statement for reporting randomized trials.[30,31]

Measures

All subjects were evaluated at the beginning (before the intervention) and right after the end of the conservative physical treatment regimen (10th session). The administered questionnaire incorporated demographic information, such as age, height, body weight, gender, educational background, marital and employment status, and physical activity (e.g "How often did you work out more than 30 min a day per week, during the last

year?"), as well as patient-reported outcome (PRO) measures for pain, anxiety, depression, somatic symptom burden, disability, and HRQoL. In particular:

Body Mass Index (BMI) was calculated as the body weight in kilograms divided by the square of the height in meters, classifying three subcategories; normal weight (18.5–24.9 kg/m^2), overweight (25.5–29.9 kg/m^2) and obese (≥30 k/m^2).[25]

The Pain Numerical Rating Scale (PNRS) is a degree of physical discomfort severity (present, best, and worst level of pain during the last 24 hours, whose average represents the patient's overall pain intensity), varying from 0 to 10 (no pain to worst pain you can imagine).[32]

The Somatic Symptom Scale-8 (SSS-8) is a measure to evaluate the degree of SSD during the last seven days, using a five-point Likert scale. Sum points are between 0 to 32, with greater scores indicating a greater burden of SSD.[33]

The Hospital Anxiety and Depression Scale (HADS) is a questionnaire aimed to estimate the severity of depression and anxiety (seven items for each subscale) within the last week in clinical research, using a four-point Likert scale. Total scores vary from 0 to 21, with greater values denoting higher degrees of depression and anxiety.[34]

The EuroQol-5D 5-level edition (EQ-5D-5L) is a standardized questionnaire measuring health profiles. It consists of a descriptive system of 5 subdimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression), which evaluates and defines a single health status (3125 levels) varying from 11111 (highest health level) to 55555 (lowest health level) and a vertical 0–100 scale with higher scores indicating better overall health.[35,36]

The Roland - Morris Disability Questionnaire (RMDQ) comprises 24 items assessing functional status in patients with LBP over the past 24 hours. Total points range from 0 to 24, with greater scores corresponding to higher levels of disability due to LBP.[37]

All PRO measures have previously been cross-culturally validated within the Greek population and have been recommended for utilization across patients with CLBP.[38–41]

Statistical analysis

Quantitative variables were summarized in mean (Standard Deviation) and in median (interquartile range), while Qualitative variables were summarized in absolute and relative frequencies. The Kolmogorov-Smirnov criterion was used to evaluate the normality assumption. Non -Non-parametric Wilcoxon signed tests were used for pre-post intervention comparisons of all under-study-scales because the data were not normally distributed. Repeated measurements analysis of variance (ANOVA) was used to assess the variations watched closely in all under-study scales and their association with gender and BMI over the follow-up period. Bonferroni correction was adopted in case of multiple testing to control for type I errors. Repeated measurement analysis was conducted after logarithmic transformations of the scales. Cohen's d was adopted to assess the clinical significance of the intervention effects, whose values of 0. 20, 0. 50 and 0. 80 are suggestive of small, medium, and large effect sizes, accordingly.[42] All reported p-values are two-tailed. Statistical analyses were completed using SPSS statistical software (version 22.0) and a minimum level of significance was set at $p<0.05$.

Results

The sample consisted of 75 participants (response rate=100%), 48 females and 27 males, with an average age of 60.8 years (SD=14.4 years). Their features are presented in table 1. Nearly one out of four (25.3%) was obese. Married were 60% of the participants and 32% were employed. Moreover, university alumni were 32.4% of the sample and 24.3% were MSc/PhD holders. 49.3% of the sample was working out more than two times a week, during the last year, for more than 30 minutes (table 1).

Table 1. Sample characteristics.

	N (%)
Gender	
Men	27 (36.0)
Women	48 (64.0)
Age (years), mean (SD)	60.8 (14.4)
BMI (kg/m^2), mean (SD)	27.3 (6.0)
BMI	
Normal	29 (38.7)
Overweight	27 (36.0)
Obese	19 (25.3)
Married	45 (60.0)
Educational level	
At most college	32 (43.2)
University	24 (32.4)
Postgraduate studies	18 (24.3)
Employed	24 (32.0)
During the last year, how often did you work out more than 30 min a day?	
None	12 (16.0)
1–2 times per month	14 (18.7)
Once a week	12 (16.0)
More than once a week	37 (49.3)

SD: Standard Deviation; BMI: Body Mass Index

SSS-8 score diminished significantly after the intervention, indicating improvement in patients' somatic symptom burden (table 2). Also, considerably less anxiety and depression levels had patients after the intervention. Pain levels decreased importantly after the intervention and patients' health condition improved significantly according to both 0 to 100 health status scale and EQ-5D-5L index value score. Synchronically, the disability index decreased substantially after the intervention, suggesting significant improvement in patients feeling disabled. The greater effect size was found in the pain scale (d=0.75), followed by the EQ-5D-5L index value scale (d=0.42).

Men and women had similar changes in all under-study scales after the treatment (table 3). Additionally, before the intervention, men and women had similar scores in all under-study scores except for the SSS-8 score, which was significantly higher in women. After the intervention, men and women had similar scores in all under-study scores. Also, substantial decrease in the SSS-8 score, in RMDQ, and the pain scale had both men and women, after the intervention. On the contrary, depression scores diminished significantly after the intervention only in men, whereas EQ-5D-5L index value and EQ-5D-5L VAS were improved solely in women after the intervention.

The degree of change in pain scale differed importantly across the BMI levels. More specifically, the decrease was greater in the obese participants (table 4). However, before the intervention, pain was significantly different among the three BMI levels and more specifically, the obese participants had substantially greater pain compared to the participants with normal BMI (p=0.009). In the rest of the scales, i.e., besides the pain scale, the pre-intervention scores and the degree of change in all scores were similar across all BMI levels. Furthermore, after the treatment, no significant differences were observed in any of the under-study scales among the BMI levels. SSS-8 score and RMDQ decreased considerably in normal and overweight participants, anxiety score only in overweight participants, and pain score in normal and obese participants. EQ-5D-5L VAS was improved solely in overweight participants, whereas EQ-5D-5L index value was increased only in obese participants.

Discussion

To the best of our knowledge, this was the first single group pretest-posttest study in primary care examining the efficacy of a conservative physical treatment regimen on pain, disability, anxiety, SSD, and HRQoL in Greek patients with CLBP. Overall, the findings demonstrated that somatic symptom burden, anxiety and depression levels, pain severity, and functional disability were statistically significantly alleviated, and in addition, HRQoL was importantly improved after the conventional physiotherapeutic approach.

Although physical therapy modalities (massage, ultrasound, TENS, low-level laser, exercise program) are frequently used widespread in the treatment of CLBP, their effects are debatable, as Middelkoop et al,[19] Khadilkar et al,[43] Yousefi-Nooraie et al,[44] Saragiotto et al,[45] Ebadi et al,[46] Hayden et al,[47] and Furlan et al[48] reported in their systematic reviews. However, our results strengthen the findings of previous studies in patients with CLBP, emphasizing that a combination of different physical modalities has yielded beneficial effects in the short run.[49,50] In a pooled meta-analysis, Jauregui et al[51] highlighted that TENS was a beneficial choice in alleviating pain intensity in CLBP. Similarly, an Indian randomized controlled study of thirty patients with CLBP detected more satisfactory results in pain severity after adding ultrasound to exer-

Table 2. Participants' scores pre and post intervention.

	Pre		Post				
	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Effect size d	Z	P+
SSS-8 score	9.33 (4)	9 (6–12)	7.81 (4.11)	7 (4–11)	0.38	–3.22	0.001
HADS-Depression score	6.12 (3.17)	6 (4–8)	5.68 (3.25)	6 (3–7)	0.14	–2.07	0.038
HADS-Anxiety score	5.53 (3.6)	5 (3–7)	4.95 (3.62)	5 (2–7)	0.16	–2.14	0.032
RMDQ	7.67 (4.42)	7 (4–10)	6.35 (4.66)	6 (3–9)	0.29	–3.24	0.001
PNRS (0-10 scale)	4.67 (2.03)	5 (3–6)	3.2 (1.9)	3 (2–5)	0.75	–5.00	<0.001
EQ-5D-5L VAS	70.49 (14.64)	70 (60–80)	75.76 (14.32)	80 (70–85)	0.36	-4.12	<0.001
EQ-5D-5L index value	0.67 (0.15)	0.69 (0.59–0.76)	0.74 (0.15)	0.75 (0.68–0.83)	0.42	-4.17	<0.001

+Wilcoxon signed test; SSS-8: Somatic Symptom Scale-8; HADS: Hospital Anxiety and Depression Scale; RMDQ: Rolland-Morris Disability Questionnaire; PNRS: Pain Numerical Rating Scale; EQ-5D-5L VAS: EuroQol-5D 5 level Visual Analog Scale

Table 3. Changes in all under study scales associated by gender.

		Pre		Post					
	Gender	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	F $(df_1, df_2)^{++}$	P^{++}	F $(df_1, df_2)^{‡}$	$P^{‡}$
SSS-8 score	Men	8.96 (3.82)	8 (6–12)	7.78 (4.65)	6 (4–12)	12.79 (1,73)	0.024	0.92 (1,73)	0.915
	Women	9.54 (4.12)	9 (7–12)	7.83 (3.82)	7 (4.5–10.5)		0.005		
	$F(df_1, df_2)^{+}$	0.43 (1,73)							
	P^{+}	0.041		0.055					
HADS-Depression score	Men	6.26 (3.49)	6 (3–8)	5.52 (3.45)	5 (3–7)	6.90 (1,72)	0.025	1.04 (1,72)	0.312
	Women	6.04 (3.01)	6 (4–8)	5.77 (3.17)	6 (3–7)		0.187		
	$F(df_1, df_2)^{+}$	0.03 (1,72)							
	P^{+}	0.859		0.646					
HADS-Anxiety score	Men	5.41 (3.65)	5 (3–7)	4.59 (3.87)	4 (2–7)	5.67 (1,72)	0.054	0.56 (1,72)	0.457
	Women	5.6 (3.61)	5.5 (3–7)	5.15 (3.5)	5 (2–8)		0.181		
	$F(df_1,df_2)^{+}$	0.36 (1,72)							
	P^{+}	0.793		0.426					
RMDQ	Men	7.48 (4.26)	7 (5–10)	6.48 (4.89)	6 (3–9)	12.62 (1,72)	0.047	0.11 (1,72)	0.738
	Women	7.77 (4.55)	7.5 (4–11)	6.28 (4.58)	6 (3–8)		0.002		
	$F(df_1,df_2)^{+}$	0.01 (1,72)							
	P^{+}	0.806		0.974					
PNRS	Men	4.63 (1.67)	5 (3–6)	3.3 (1.81)	3 (2–5)	27.68 (1,73)	0.003	0.06 (1,73)	0.801
	Women	4.69 (2.22)	5 (3–6)	3.15 (1.96)	3 (2–5)		<0.001		
	$F(df_1, df_2)^{+}$	0.28 (1,73)							
	P^{+}	0.718		0.597					
EQ-5D-5L VAS	Men	71.48 (15.31)	70 (65–80)	75.78 (14.61)	75 (70–85)	8.95 (1,72)	0.087	0,05 (1,72)	0.824
	Women	69.94 (14.38)	70 (60–80)	75.74 (14.3)	80 (68–85)		0.010		
	$F(df_1, df_2)^{+}$	0.01 (1,72)							
	P^{+}	0.880		0.970					
EQ-5D-5L index value	Men	0.68 (0.12)	0.69 (0.58–0.76)	0.72 (0.15)	0.74 (0.65–0.82)	8.56 (1,72)	0.328	1.83 (1,72)	0.180
	Women	0.67 (0.16)	0.69 (0.59–0.76)	0.75 (0.15)	0.77 (0.68–0.86)		0.001		
	$F(df_1, df_2)^{+}$	0.04 (1,72)							
	P^{+}	0.650		0.416					

$^{+}F(df_1, df_2)$ and p-value for group effect, $^{++}F(df_1, df_2)$ and p-value for time effect, $^{‡}F(df_1, df_2)$ and p-value for differences in the degree of change among the groups (repeated measurements ANOVA); SD: Standard Deviation; IQR: Interquartile Range; SSS-8: Somatic Symptom Scale-8; HADS: Hospital Anxiety and Depression Scale; RMDQ: Rolland-Morris Disability Questionnaire; PNRS: Pain Numerical Rating Scale; EQ-5D-5L VAS: EuroQol-5D 5 level Visual Analog Scale.

Table 4. Changes in all under study scales associated by BMI levels.

	BMI	Pre		Post		$F(df_1, df_2)^{++}$	P^{++}	$F(df_1, df_2)^{‡}$	$P^{‡}$
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)				
SSS8 score	Normal	8.69 (3.27)	8 (6–11)	7.03 (3.46)	6 (4–9)	12.59 (1,72)	0.022	0.07 (2,72)	0.935
	Overweight	8.93 (3.88)	8 (6–12)	7.44 (4.15)	6 (4–11)		0.019		
	Obese	10.89 (4.88)	9 (7–13)	9.53 (4.64)	10 (5–13)		0.127		
	$F(df_1, df_2)^{+}$	2.17 (2,72)							
	P^{+}	0.182		0.239					
Depression score	Normal	5.55 (3.17)	5 (4–7)	5.48 (3.46)	6 (3–7)	6.54 (1,71)	0.388	0.48 (2,71)	0.622
	Overweight	6 (3.04)	6 (4–8)	5.37 (2.71)	6 (4–7)		0.127		
	Obese	7.16 (3.27)	7 (5–9)	6.44 (3.7)	6 (4–10)		0.058		
	$F(df_1, df_2)^{+}$	0.79 (2,71)							
	P^{+}	0.244		0.733					
Anxiety score	Normal	5.52 (3.99)	6 (2–7)	4.45 (3.19)	4 (2–7)	3.65 (1,71)	0.102	1.48 (2,71)	0.234
	Overweight	5.52 (3.53)	5 (3–7)	4.41 (3.28)	5 (2–6)		0.024		
	Obese	5.58 (3.25)	6 (4–7)	6.56 (4.4)	6 (3–10)		0.764		
	$F(df_1, df_2)^{+}$	0.54 (2,71)							
	P^{+}	0.856		0.335					
Roland-Morris Disability Index	Normal	7.83 (4.94)	7 (4–11)	5.69 (4.46)	5 (2–8)	12.00 (1,71)	0.002	0.80 (2,71)	0.453
	Overweight	7.63 (3.92)	8 (5–10)	6.56 (4.37)	6 (3–10)		0.024		
	Obese	7.47 (4.49)	7 (5–9)	7.11 (5.47)	6 (4–8)		0.387		
	$F(df_1, df_2)^{+}$	0.13 (2,71)							
	P^{+}	0.961		0.689					
PNRS	Normal	3.97 (2.15)	4 (3–5)	2.79 (1.95)	3 (2–4)	38.64 (1,72)	0.002	4.27 (2,72)	0.018
	Overweight	4.67 (1.8)	5 (3–6)	3.89 (1.95)	4 (3–5)		0.059		
	Obese	5.74 (1.76)	6 (5–6)	2.84 (1.5)	3 (2–4)		<0.001		
	$F(df_1, df_2)^{+}$	2.95 (2,72)							
	P^{+}	0.011		0.103					
EQ-5D-5L VAS	Normal	72.55 (14.73)	75 (60–85)	76.93 (14.07)	80 (70–85)	10.08 (1,71)	0.112	0.13 (2,71)	0.876
	Overweight	72 (12.87)	70 (60–85)	77.78 (12.51)	80 (70–85)		0.050		
	Obese	65.21 (16.27)	69 (50–80)	70.83 (16.74)	75 (70–80)		0.061		
	$F(df_1, df_2)^{+}$	2.19 (2,71)							
	P^{+}	0.160		0.200					

Continues

Table 4. Continued.

	BMI	Pre		Post					
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	F $(df_1, df_2)^{++}$	P^{++}	F $(df_1, df_2)^{‡}$	$P^{‡}$
EQ-5D-5L index value	Normal	0.7 (0.17)	0.69 (0.67–0.78)	0.74 (0.19)	0.76 (0.68–0.87)	13.81 (1,71)	0.162	1.22 (2,71)	0.302
	Overweight	0.68 (0.11)	0.71 (0.57–0.77)	0.73 (0.12)	0.75 (0.66–0.81)		0.091		
	Obese	0.63 (0.14)	0.66 (0.5–0.74)	0.74 (0.14)	0.73 (0.71–0.83)		0.004		
	F $(df_1, df_2)^{+}$	0.20 (2,71)							
	P+	0.444		0.981					

$^{+}F(df_1, df_2)$ and p-value for group effect $^{++}F(df_1, df_2)$ and p-value for time effect $^{‡}F(df1, df_2)$ and p-value for differences in the degree of change among the groups (repeated measurements ANOVA); SD: Standard Deviation; IQR: Interquartile Range; BMI: Body Mass Index; SSS-8: Somatic Symptom Scale-8; HADS: Hospital Anxiety and Depression Scale; RMDQ: Rolland-Morris Disability Questionnaire; PNRS: Pain Numerical Rating Scale; EQ-5D-5L VAS: EuroQol-5D 5 level Visual Analog Scale

cise as a treatment choice for CLBP than exercise alone.[52] Additionally, two recent randomized controlled trials extended this body of knowledge in the treatment of CLBP, denoting that conventional physical therapy modalities accompanied with exercise showed statistically significant improvements in pain, depression, and functional disability in a sample of seventy and sixty individuals with CLBP, respectively.[49,50]

In the current study, it was observed a statistically substantial decrease in somatic symptom burden after treatment with medium effect sizes for both sexes, normal and overweight participants, which is inconsistent with the results of longitudinal research among eighty-four inpatient orthopedic patients with CLBP.[53] Specifically, it was claimed that German inpatients with CLBP, following a regular rehabilitation program (medication, group and individual physiotherapy lasting 3–4 weeks), benefited on SSD scores (using Somatization subscale of Symptom Check-List-90) at the post-treatment measurement with medium to large effect sizes.[53] Our partially differing outcomes compared to the findings cited previously might be attributed to methodological differences due to dissimilar population characteristics, sampling methods, study sizes, interventions, and self-reported questionnaires for somatic symptom burden.[53]

It is generally recognized that a conventional physiotherapeutic approach in CLBP patients, using physical modalities, massage, and exercise, has favorable effects on psychological measures of depression and anxiety in the short run.[13,27,53] Namely, a Turkish single-blind randomized controlled trial of sixty individuals with CLBP found that the application of therapeutic ultrasound with exercise was an effective choice in reducing depressive symptoms (3 times per week for 6 weeks).[13] More recently, an Indian randomized controlled study of 330 subjects with CLBP revealed that exercise and laser therapy (three times a week for four weeks) seemed effective in decreasing depression scores.[27] Additionally, longitudinal data from Germany (a sample of 84 CLBP inpatients) yielded statistically substantial enhancements for depression and anxiety scores after treatment, supported with medium to large effect sizes.[53] Apart from differences in the methodological design, the present study extends this body of knowledge, revealing substantial but less pronounced enhancements (small size effects) in anxiety (solely in men) and depression (overweight participants).

Furthermore, it is well-established that conservative physical treatment has demonstrated positive pain reductions in individuals with CLBP,[13,15,18,24,25,27,54–59] which we were able to replicate in the current study with medium to large effect sizes. In particular, Sahin et al[15] in

their randomized controlled trial, divided 104 subjects with CLBP into two groups; the physical therapy (received TENS, ultrasound, hot pack, exercise, medication) and the control (received medication and exercise). After the completion of the treatment (a total of 10 sessions, 5 times per week), they reported that pain levels, using a visual analog scale (VAS), were substantially lower to a greater extent in the physical therapy group. Similarly, in a recent pilot study of thirty-nine female CLBP patients, Minobes-Molina et al[54] mentioned that both treatments, including traditional trunk or specific stabilization exercise plus physical modalities, showed beneficial effects on alleviating pain in the 10th session. An equivalent tendency was also found in a study of thirty female patients with subacute and chronic LBP (with comparable methodological characteristics to ours), denoting that routine physical therapy seemed to be a beneficial choice for easing pain levels.[24] Contrary to our outcomes, in a trial carried out by Szulk et al,[29] the implementation of standard physiotherapy in twenty subjects with CLBP showed no significant differences in terms of perceived pain severity, using VAS. This discrepancy may reflect the dissimilarities in study size and self-reported questionnaire; our larger study sample and the use of PNRS may exhibit a significant effect size between assessments, resulting in more definitive conclusions about the treatment's efficacy.[54]

Parallel to the literature, in the present study it was observed a substantial decline in functional disability after treatment with medium effect sizes for both sexes, overweight and normal patients in respect of BMI distribution in the study sample.[15,24,25,56,57,59,60] In trials by Köroğlu et al[26] and Sahin et al,[60] the application of an exercise program plus physical therapy modalities was seen to significantly diminish functional disability after intervention in forty and seventy-five CLBP patients, respectively. Similarly, trials on the effectiveness of conservative physical treatment, have shown a statistically substantial improvement in disability scale at the end of the 10th session, while higher levels of BMI before intervention negatively affected the post-treatment disability scores, which is in consistent with our outcomes.[59,61]

Finally, our results strengthen the findings of previous studies among individuals with CLBP, reporting that the contribution of the convectional physiotherapeutic approach demonstrates substantial improvements in HRQoL.[20,25,57,58] In a prospective study of eighty Greek inpatients with LBP, following conservative treatment, there was observed statistically significant improvement in HRQoL in the short run and one month later, using the SF-36 questionnaire.[20] Additionally, Onat et al[57] and Yilmaz Yelvar et al[58] noted in their randomized controlled trials (forty-four and twenty-two subjects, respectively) that a convectional intervention was an effective approach in the treatment of CLBP, improving quality of life. Namely, Yilmaz Yelvar et al[58] reported that effect sizes from a pre-post comparison in the control group were medium for HRQoL (using Nottingham Health Profile), which is consistent with our finding. Last but not least, an equivalent study of Dilekçi et al[25] revealed similar positive results in EQ-5D-3L index value and EQ-5D-3L VAS variables after treatment.

The current study has a few limitations. First, the generalization of the outcomes to CLBP patients in different clinical settings or Greek regions should be faced cautiously, as a result of conducting the study at a single primary healthcare unit in Athens and the lack of a representative sample of the Greek population. Second, the one-group pretest-posttest design of this study and the absence of a follow-up process did not permit clarification of the long-terms effects of conservative treatment on SSD, anxiety and depression, pain, disability, and HRQoL. Further prospective cohort studies are needed to better comprehend those outcomes. Third, the over-representation of women, albeit random systematic sampling, may affect the conclusions drawn from the study, which restricts the representativeness and generalizability of the results.

Conclusion

In summary, our findings provide important evidence, consistent with the literature, that a conservative physical treatment regimen has favorable short-term effects on psychological measures of anxiety, depression, and SSDs and, in addition, pain levels, functional disability, and HRQoL in individuals with CLBP. Future large and long-term prospective researches are needed to assess and clarify the long-term effects of the treatment in the clinical management of CLBP.

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Ερευνητική εργασία

Η αποτελεσματικότητα ενός συντηρητικού προγράμματος φυσικοθεραπείας στην ψυχολογική κατάσταση και στην ποιότητα υγείας Ελλήνων ασθενών με χρόνια οσφυαλγία

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ΠΕΡΙΛΗΨΗ

Η χρόνια οσφυαλγία αποτελεί ένα πολύ σύνηθες πρόβλημα υγείας, έχοντας σοβαρή επίπτωση στην ποιότητα ζωής και στην ψυχολογική κατάσταση των ασθενών αυτών. Τα ευρήματα από τη βιβλιογραφία έχουν δείξει ότι μια συντηρητική φυσικοθεραπευτική προσέγγιση είναι μια ευεργετική επιλογή στη διαχείριση της χρόνιας οσφυαλγίας. Ο σκοπός αυτής της μελέτης ήταν να εξεταστούν οι βραχυπρόθεσμες επιδράσεις ενός συμβατικού προγράμματος φυσικοθεραπείας στην κατάθλιψη, στο άγχος, στις διαταραχές των σωματικών συμπτωμάτων (SSD), στην ποιότητα ζωής, στον πόνο και στην ανικανότητα Ελλήνων ασθενών με χρόνια οσφυαλγία. Με συστηματική τυχαία δειγματοληψία επιλέχθηκαν 75 ασθενείς με οσφυαλγία. Όλοι οι συμμετέχοντες έλαβαν υπέρηχο, laser χαμηλής έντασης, μάλαξη, διαδερματικό ηλεκτρικό νευρικό ερεθισμό (TENS) και πρόγραμμα ασκήσεων (ένα σύνολο 10 συνεδριών, 5 ημέρες την εβδομάδα). Η παρέμβαση αξιολογήθηκε συγκρίνοντας τις πριν και μετά μετρήσεις των κλιμάκων Νοσοκομειακής Μέτρησης Άγχους και Κατάθλιψης (HADS), Κλίμακας Σωματικών Συμπτωμάτων (SSS-8), EuroQol 5-dimension 5-level (EQ-5D-5L), Roland-Morris Disability Questionnaire (RMDQ) και Pain Numerical Rating Scale (PNRS). Η μέση ηλικία του δείγματος ήταν τα 60,8 έτη (±14,4) και περίπου 1 στους 4 ήταν παχύσαρκοι (25,3%). Με το πέρας της θεραπείας, παρατηρήθηκαν βελτιώσεις στους δείκτες του EQ-5D-5L και μειώσεις των τιμών των HADS, SSS-8, PNRS και RMDQ, οι οποίες βρέθηκαν να είναι στατιστικώς σημαντικές. Μεγαλύτερο μέγεθος επίδρασης (effect size) παρατηρήθηκε στην κλίμακα PNRS (d=0,75), ακολουθούμενο από τον δείκτη EQ-5D-5L index value scale (d=0,42), SSS-8 (d=0,38), EQ-5D-5L VAS (d=0,36), RMDQ (d=0,29), HADS-A (d=0,16) και HADS-D (d=0,14). Οι άνδρες και οι γυναίκες παρουσίαζαν παρόμοιες αλλαγές σε όλες τις υπό εξέταση κλίμακες μετά την παρέμβαση, ενώ εκτός της κλίμακας του πόνου, τα σκορ πριν την παρέμβαση καθώς και ο βαθμός τροποποίησης όλων των υπολοίπων σκορ ήταν παρόμοια ανεξαρτήτως από την κατηγοριοποίηση βάσει του Δείκτη Μάζας Σώματος. Συμπερασματικά, ένα συντηρητικό πρόγραμμα φυσικοθεραπείας φάνηκε να αποτελεί μια ωφέλιμη επιλογή για τη βελτίωση της ψυχολογικής κατάστασης και του επιπέδου ποιότητας της υγείας, όπως επίσης και της ελάττωσης της λειτουργικής ανικανότητας και του πόνου των Ελλήνων ασθενών με χρόνια οσφυαλγία βραχυπρόθεσμα.

ΛΕΞΕΙΣ ΕΥΡΕΤΗΡΙΟΥ: Χρόνια οσφυαλγία, πρόγραμμα φυσικοθεραπείας, κατάθλιψη, άγχος, Διαταραχές Σωματικών Συμπτωμάτων, ποιότητα ζωής.

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Research article

Factor structure and reliability of the Greek version of Attitudes Towards Mentally Ill Offenders (ATMIO) Scale in a general population sample

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ABSTRACT

Mentally ill offenders constitute a group with a unique set of characteristics since they are doubly stigmatized by both their mental illness and the offense they have committed. The coexistence of these two circumstances significantly heightens negative public attitudes towards these people. The group of mentally ill offenders has been shown to elicit more stigmatic attitudes than offenders without a mental health condition. Nevertheless, research on stigma towards mentally ill offenders is rather limited, while the number of psychometric tools used to measure this stigma is even smaller compared to the number of relevant tools assessing mental illness stigma. The purpose of this study was to explore the attitudes towards mentally ill offenders in a Greek sample in terms of demographic characteristics, and at the same time to assess the psychometric properties of a specialized tool on stigma towards this patient group, namely the Attitudes Towards Mentally Ill Offenders (ATMIO) scale in Greek. The study included 1031 participants from the general population who completed an online questionnaire on sociodemographic data as well as the ATMIO scale. The scale's structural validity was tested based on the exploratory factor analysis after Quartimax rotation, and the internal relevance of its factors recorded a Cronbach's alpha value of more than 0.7, both for the whole scale and its factors. It was shown that more negative stereotypes towards mentally ill offenders were correlated with less compassion and less desire for their rehabilitation, with stronger belief and conviction that they represent a danger to the community, with less diminished responsibility, and a lot fewer positive attitudes in general. Women, older people, individuals with a lower education level, and participants with children were found to hold more negative attitudes. The ATMIO scale translated in Greek is the first tool to measure attitudes towards mentally ill offenders in the country and shows satisfactory internal consistency and interpretation of its four-factor structure. It is a comprehensible and easy-to-complete scale, which can become a reliable tool to record attitudes towards mentally ill offenders also in our country.

KEYWORDS: Mentally ill offenders, stigma, attitudes, attitudes toward mentally ill offenders (ATMIO) scale, reliability.

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Introduction

Mentally ill offenders (MIO) constitute a population group preoccupying the psychiatric system and criminal justice. The particularity of this co-existence of psychiatric and criminal problems in their history makes them doubly stigmatized. Offenders with mental illness have been shown to elicit more negative attitudes.[1] In general, fear of harm seems to play a primary role in shaping the public's negative attitudes towards mentally ill offenders, while a further enhancement of this feeling leads to increasingly negative behaviors and discrimination towards them.[2] In particular, in terms of attitudes towards mental illness, significant variations were observed between mental health diagnoses, with schizophrenia and personality disorders eliciting higher levels of stigmatic attitudes associated with dangerousness, violence, frustration, fear, and unpredictability.[3–5] On the other hand, in terms of the offenses committed, violent behavior was found to negatively affect public perception and serve as an important stigmatizing factor,[6] mainly associated with the development of the stereotypes of dangerousness and dishonesty.[7] The coexistence of both circumstances tends to generate more negative stereotypes towards mentally ill offenders when compared to non-mentally ill offenders,[8] while offenders with mental illness have been shown to elicit significantly more negative attitudes than control groups with neither a criminal history nor a mental illness.[9,10] Mentally ill inmates are even considered to be less predictable, rational, and understandable, but also more dangerous than other inmates without mental illness.[11,12]

The majority of studies on offender mental health stigma have used specialized tools related to mental health stigma,[2,13–16] either as such or in combination with a vignette to specify a criminal offense or a particular mental health history. These are mainly associated with a specific public (police officers, judges, mental health professionals)[13–21] and with students (social work, law, criminology, psychology, sociology),[14,22–26] and far less with the general population. In particular, as regards the attitudes of the general population, the public has been found not only to hold negative attitudes but also to have the desire to maintain distance from mentally ill offenders.[27] Men and younger persons desire greater social distance from individuals –mainly male– with schizophrenia who have a history of felony criminal conduct, than from people with a history of misdemeanor criminal conduct. In addition, research has shown that the general public tends to hold more negative attitudes toward mentally ill offenders when compared to police officers and forensic mental health professionals.[27] Employers also hold negative attitudes towards them and are thus reluctant to hire such individuals.[17,24] Yet, it remains unclear whether stigma that arises from a mental health condition is more dominant or important than stigma related to a criminal history, and to what extent the relationship between the two sources of stigma is interactive or additive.2 Furthermore, researchers point out that these studies focus on one, rather than both sources of stigma, while they comment on the lack of research on the stigmatization of forensic psychiatric groups.[8,28]

There are however few studies in the general population that approach exclusively the stigma on mentally ill offenders through specialized scales.[1,25,29,30] Their use substantially contributes to the differentiation of various stigma forms and allows for an understanding of how stigmatic attributes continue to affect the behavior of individuals with a mental illness and criminal history. Among these scales, the Attitudes Towards Mentally Ill Offenders (ATMIO) scale appears in a large number of attitudes studies[14,17,23,25,31,32] but not in general population studies and was therefore selected for use in this study. The ATMIO scale is a 23-item tool designed to identify both general and specific attitudes about offenders living with mental illness through acceptable psychometric properties.[25,32]

In Greece, mental health stigma has been the subject of several general population studies.[33–37] However, no studies assess the public's stigmatizing attitudes towards mentally ill offenders. The primary purpose of this study was to investigate the attitudes of the general population toward mentally ill offenders in Greece about demographic data, familiarity with mental illness, and the effect of living with a mental disorder. Secondarily, it is designed to present the psychometric properties of the ATMIO scale to depict the dynamic interaction of the dual stigma experienced by mentally ill offenders.

Material and Method

Participants and procedures

The study sample included 1031 subjects from the general population. The survey was conducted online from 1–10 July 2022 through voluntary responses using a non-probability sampling method. The conduct of the study was approved by the Ethics Committee and the Scientific Committee of Eginition Hospital. The questionnaire was anonymous and remained uploaded during the above-mentioned period, while the participants completed the questionnaire on their own time. Participants gave their consent by choosing to complete the questionnaire.

Translation and adaptation

The Attitudes Toward Mental Health Offenders (ATMIO) scale was developed by Brannen et al (2004)[32] and revised by Church et al (2009).[25] Permission was obtained from the authors before using the scale for the Greek sample.

By following the World Health Organization's (WHO)[38] guidelines on the process of translation and cross-cultural adaptation of research instruments, we used forward-translations and back-translations. The process involved three mental health professionals highly proficient in English and familiar with the terminology related to the measurement instrument. In particular, two of them translated the scale into Greek and the third one re-translated the content from the target language back to English. Any discrepancies identified were discussed and this led to the initial form of the scale in Greek. Thereafter, the conceptual value of the Greek version items was tested with the help of ten mental health professionals who completed the pilot questionnaire and provided precious feedback on their understanding of each question. Their comments were taken into account and led to the final version of the Attitudes Towards Mentally Ill Offenders (ATMIO) scale in Greek.

Measures

The first tool was a list of demographic data containing information on gender, age, profession, place of residence, marital and economic status. Participants were also allowed to state whether they had been officially diagnosed with a mental health condition and whether they had a family member, a friend, or even someone in their workplace with a mental health issue.

The second tool was the 23-item Attitudes Toward Mental Health Offenders (ATMIO) scale. Each item is rated on a 6-point Likert scale, where (0) is "Strongly disagree" and (5) is "Strongly agree". Higher scores indicate a less negative attitude, while 13 items are reverse scored. Following a trial use of the scale, we decided to combine the initial statements "Somewhat disagree" and "Somewhat agree" in one answer "No opinion", a modification already applied in previous studies.[23,32] The ATMIO scale assesses four attitudinal dimensions: Negative Stereotypes with 10 items (6, 7, 9, 12, 13, 16-18, 20, 21), Rehabilitation/Compassion with 5 items (2, 3, 8, 14, 23), Community Risk with 5 items (4, 5, 10, 11, 22), and Diminished Responsibility with 3 items (1, 15, 19). Among these items, 13 items are reverse scored: 3-7, 9, 12-13, 16-18 and 20-21. The Cronbach's alpha reliability of the scale was 0.73.[32]

Statistical analysis

Exploratory factor analysis (EFA) was carried out to evaluate construct validity, disclose underlying structures, and reduce the number of variables in the ATMIO questionnaire. Principal component analysis (PCA) was chosen as the extraction method using Quartimax rotation. Kaiser-Meyer-Olkin procedure for measuring sample adequacy was applied. The cut-off point for factor loadings was 0.40 and for eigenvalues, it was 1.00. Confirmatory factor analysis (CFA), with a maximum likelihood estimation method, was conducted to test how well the original ATMIO 4-factor model, as well as the one that emerged from the EFA, fits the data. We used the CFI, the TLI, the RMSEA, and the SRMR as goodness-of-fit indices[39] and these parameters were considered adequate when CFI $\geq.90$, TLI $\geq.90$ RMSEA $\leq.05$ and SRMR<0.08.[40–43] Internal consistency reliability was determined by the calculation of Cronbach's α coefficient. Scales with reliabilities equal to or greater than 0.70 were considered acceptable. Intercorrelations among the four ATMIO factors were examined via Pearson's r. Student's t-tests and Analysis of Variance (ANOVA) were used to evaluate ATMIO's discriminant construct validity and associate its subscales with participants' characteristics. Bonferroni correction was used in the case of multiple testing to control for type I errors. All reported p values are two-tailed. Statistical significance was set at $p<0.05$ and analyses were conducted using SPSS statistical software (version 26.0).

Results

Sample characteristics

The sample consisted of 1031 participants (52.8% males) with a mean age of 42.9 years (SD=14.2 years). Participants' characteristics are presented in table 1. Most participants were living in urban areas, had a high educational level, were married, had children, had a 1000€ average income, and were not working in the public sector. 10% of the participants suffered from a mental illness and 72.8% knew at least one mental health patient, mainly from their circle of friends.

Internal structure

ATMIO-23 items are described analytically in table 2. Higher percentages of the agreement were found in items "You should be constantly on guard with mentally ill offenders", "Mentally ill offenders deserve a second chance" and "Mentally ill offenders need affection and praise just like anybody else", while lower percentages of the agreement were found in items "Physical punishment of mentally ill offenders is occasionally necessary" and "Mentally ill offenders respect only brute force". Via

Table 1. Sample characteristics.

	N (%)
Gender	
Men	544 (52.8)
Women	487 (47.2)
Age (years), mean (SD)	42.9 (14.2)
Residence	
Urban	896 (86.9)
Rural	135 (13.1)
Education	
Primary	28 (2.7)
Middle	203 (19.9)
High	791 (77.4)
Married/Living with partner	686 (67.9)
Children	641 (63.3)
Income	
Above 1000 €/month	187 (18.9)
Average =1000 €/month	518 (52.4)
Below 1000 €/month	284 (28.7)
Employment status	
In public sector	243 (24)
Not in public sector	631 (62.2)
Unemployed	140 (13.8)
Mental illness	98 (10)
Know at least one mental patient	713 (72.8)
within family	287 (41.4)
within friends	480 (68.6)
within close environment	152 (21.7)

CFA we examined the fitting of the original 4-factor structure. Several indices assessing the degree to which the model fits the data were computed. RMSEA, CFI, TLI, and SRMR indexes were not in acceptable ranges, the need for exploratory factor analysis emerged.

The results of exploratory factor analysis, after Quartimax rotation, are presented in table 3. ATMIO items were grouped into 4 factors with eigenvalues greater than 1 as suggested by the scree plot (figure S1). KMO value was 0.89 and Bartlett's criterion was significant, $x^2(253)=5{,}678.3$; $p<.001$. All loadings were above 0.4 and the factors explained 52% of the total variance, as described in table 3. All items had loadings over 0.4, thus no item needed to be excluded by the analysis. Via CFA we examined the fitting of the 4-factor structure that emerged from EFA and the indexes were in acceptable ranges (table S1). The negative Stereotypes scale included 11 items (all 10 items of the original structure plus item 3) and explained 21% of the variance. The rehabilitation/Compassion scale included 8 items (items 2,8,10,11,14,19,22 & 23), in contrast to the original structure by which this scale had 5 items (items 2,3,8, 14 & 23), and explained 17.5% of the variance. Community risk scale included 2 items (4 & 5), while in the original structure, it included additional items 10, 11 & 22, and explained 8.2% of the variance. The diminished Responsibility scale included 2 items (1 & 15), while in the original structure, it included, in addition, item 19, and explained 5.3% of the variance.

Item-total correlations and Cronbach's alphas for each subscale are presented in table S1. All Item-Total correlations were greater than 0.3 and all Cronbach's alphas were greater than 0.7, indicating acceptable reliability of the questionnaire. Moreover, no item needed to be excluded by any of the factors since no item removal increased the alpha coefficient within each subscale. The mean Negative Stereotypes score was 2.79 (SD=0.62) and the mean Rehabilitation/Compassion was 3.39 (SD=0.59). The mean Community risk was 3.74 (SD=0.78) and the mean Diminished Responsibility was 3.24 (SD=0.77). The mean total ATMIO-23 score was 3.18 (SD=0.46).

Intercorrelations among ATMIO subscales are presented in table S2. More negative stereotypes were significantly correlated with less compassion, greater community risk, less diminished responsibility, and less positive attitudes in general towards mentally ill offenders. Also, lower compassion was significantly correlated with greater community risk, less diminished responsibility, and less positive attitudes in general towards mentally ill offenders. Moreover, lower community risk and more diminished responsibility were significantly correlated with more positive attitudes in general towards mentally ill offenders.

Association of ATMIO subscales with participants' demographics

ATMIO-23 scores associated with participants having a mental illness and knowing at least one mental patient are presented in table 4. Patients with mental illness had significantly more negative stereotypes towards mentally ill offenders, but at the same time, they had significantly greater compassion towards them. Knowing at least one mental patient was associated with significantly fewer negative stereotypes, significantly more compassion, and significantly more positive attitudes in general towards mentally ill offenders.

ATMIO subscales' association with participants' characteristics is presented in table 5. Women had significantly lower rehabilitation/compassion, diminished responsibility scores as well as total scores, compared to men, while the Community risk score was signifi-

Table 2. Description of ATMIO-23 items.

Item		Strongly disagree	Disagreee	No opinion	Agree	Strongly agree
		N (%)	N (%)	N (%)	N (%)	N (%)
1	Mentally ill offenders don't fully understand their crimes	32 (3.3)	117 (12)	384 (39.5)	349 (35.9)	91 (9.4)
2	Mentally ill offenders need affection and praise just like anybody else	12 (1.2)	67 (6.8)	265 (26.8)	486 (49.2)	158 (16)
3	Trying to rehabilitate mentally ill offenders is a waste of time and money	152 (15.3)	417 (42)	265 (26.7)	118 (11.9)	41 (4.1)
4	I should be informed if a mentally ill offender is living in my community	16 (1.6)	90 (9)	303 (30.3)	401 (40.1)	191 (19.1)
5	You should be constantly on guard with mentally ill offenders	9 (0.9)	61 (6.1)	236 (23.5)	495 (49.4)	202 (20.1)
6	Mentally ill offenders are always trying to get something out of somebody	42 (4.4)	226 (23.9)	415 (43.9)	199 (21)	64 (6.8)
7	My taxes should not be used to support mentally ill offenders.	139 (14)	382 (38.5)	304 (30.6)	122 (12.3)	45 (4.5)
8	Most mentally ill offenders can be rehabilitated	23 (2.4)	155 (16.5)	387 (41.1)	313 (33.3)	63 (6.7)
9	Mentally ill offenders respect only brute force	115 (12.7)	334 (36.9)	347 (38.3)	83 (9.2)	26 (2.9)
10	If a mentally ill offender does well in prison, he or she should be let out on parole	62 (6.4)	265 (27.5)	390 (40.5)	209 (21.7)	37 (3.8)
11	Only a few of the mentally ill offenders are dangerous	69 (7.3)	264 (28.1)	354 (37.7)	207 (22)	46 (4.9)
12	It doesn't pay to give privileges to mentally ill offenders because they only take advantage of them	58 (6)	270 (27.8)	404 (41.6)	188 (19.4)	51 (5.3)
13	If you give a mentally ill offender an inch, he or she will want to take a mile	31 (3.2)	222 (23.2)	393 (41.1)	250 (26.1)	61 (6.4)
14	Mentally ill offenders deserve a second chance	9 (0.9)	50 (5.1)	281 (28.5)	519 (52.7)	126 (12.8)
15	Mentally ill offenders are not completely responsible for their crimes	52 (5.3)	172 (17.5)	399 (40.7)	308 (31.4)	50 (5.1)
16	For mentally ill offenders, preventing escape is more important than the treatment for their mental illness	71 (7.4)	298 (30.9)	330 (34.2)	191 (19.8)	74 (7.7)
17	If mentally ill offenders had simply used willpower, they wouldn't be in trouble in the first place	55 (5.8)	213 (22.3)	356 (37.2)	272 (28.5)	60 (6.3)
18	Physical punishment of mentally ill offenders is occasionally necessary	235 (24.1)	392 (40.1)	240 (24.6)	87 (8.9)	23 (2.4)
19	Despite their crimes, mentally ill offenders deserve sympathy	29 (3)	127 (13)	397 (40.5)	372 (38)	55 (5.6)
20	Given a chance, most mentally ill offenders would try to escape from prison or a hospital	26 (2.8)	133 (14.3)	359 (38.6)	324 (34.9)	87 (9.4)
21	Most mentally ill offenders should be in prison rather than a hospital	83 (8.7)	335 (35)	372 (38.9)	139 (14.5)	28 (2.9)
22	Mentally ill offenders should have the same rights as any other mentally ill person	23 (2.3)	142 (14.5)	286 (29.2)	429 (43.8)	99 (10.1)
23	Mentally ill offenders deserve to be helped	8 (0.8)	25 (2.5)	172 (17.2)	619 (62)	175 (17.5)

cantly greater in women. Greater age was significantly associated with higher Community risk score (r=0.06; p=0.006) and lower Diminished Responsibility score (r=-0.06; p=0.040). Negative Stereotypes and Total ATMIO-23 scores differed significantly by participants' educational levels. After Bonferroni correction, it was found that primary school graduates had significantly greater Negative Stereotypes scores and significantly greater Total ATMIO-23 scores compared to middle school graduates (p<0.001 and p=0.005 respectively)

Table 3. Exploratory factor analysis results with Quartimax rotation

Item		Negative Stereotypes	Rehabilitation/ Compassion	Community risk	Diminished Responsibility
1	Mentally ill offenders don't fully understand their crimes				0.74
2	Mentally ill offenders need affection and praise just like anybody else		0.54		
3*	Trying to rehabilitate mentally ill offenders is a waste of time and money	0.58			
4*	I should be informed if a mentally ill offender is living in my community			0.71	
5*	You should be constantly on guard with mentally ill offenders			0.71	
6*	Mentally ill offenders are always trying to get something out of somebody	0.66			
7*	My taxes should not be used to support mentally ill offenders.	0.66			
8	Most mentally ill offenders can be rehabilitated		0.69		
9*	Mentally ill offenders respect only brute force	0.71			
10	If a mentally ill offender does well in prison, he or she should be let out on parole		0.65		
11	Only a few of the mentally ill offenders are dangerous		0.54		
12*	It doesn't pay to give privileges to mentally ill offenders because they only take advantage of them	0.68			
13*	If you give a mentally ill offender an inch, he or she will want to take a mile	0.66			
14	Mentally ill offenders deserve a second chance		0.71		
15	Mentally ill offenders are not completely responsible for their crimes				0.42
16*	For mentally ill offenders, preventing escape is more important than the treatment for their mental illness	0.56			
17*	If mentally ill offenders had simply used willpower, they wouldn't be in trouble in the first place	0.49			
18*	Physical punishment of mentally ill offenders is occasionally necessary	0.73			
19	Despite their crimes, mentally ill offenders deserve sympathy		0.68		
20*	Given a chance, most mentally ill offenders would try to escape from prison or a hospital	0.57			
21*	Most mentally ill offenders should be in prison rather than a hospital	0.65			
22	Mentally ill offenders should have the same rights as any other mentally ill person		0.65		
23	Mentally ill offenders deserve to be helped		0.65		
Eigenvalue		5.9	3.3	1.7	1.0
% Variance explained		21.0	17.5	8.2	5.3

*Reverse coded for total score

Table 4. ATMIO-23 scores associated with participants' having a mental illness and knowing at least one mental patient.

	Mental illness				Know at least one mental patient			
	No	Yes			No	Yes		
	Mean (SD)	Mean (SD)	t (df)	P+	Mean (SD)	Mean (SD)	t (df)	P+
Negative Stereotypes	2,76 (0,59)	3,02 (0,8)	−3.96 (978)	<0,001	2,84 (0,56)	2,76 (0,65)	2.03 (972)	0,043
Rehabilitation/ Compassion	3,37 (0,57)	3,6 (0,64)	−3.58 (977)	<0,001	3,3 (0,56)	3,44 (0,59)	−3.22 (971)	0,001
Community risk	3,75 (0,77)	3,7 (0,78)	0.55 (969)	0,584	3,75 (0,71)	3,74 (0,8)	0.23 (965)	0,818
Diminished Responsibility	3,22 (0,76)	3,34 (0,88)	−1.39 (963)	0,165	3,19 (0,76)	3,27 (0,77)	−1.29 (959)	0,199
Total ATMIO–23 score	3,19 (0,46)	3,16 (0,47)	0.56 (980)	0,576	3,12 (0,42)	3,22 (0,48)	−2.90 (974)	0,004

+Student's t–test

and high school graduates (p<0.001 for both scores). Moreover, participants who had children had significantly greater Community risk scores and significantly lower Diminished Responsibility scores. Regarding participants' income, it was found, after Bonferroni correction, that participants with income above average had significantly greater Rehabilitation/Compassion scores compared to participants with income below average (p=0.001). Also, participants with income above average had significantly greater Diminished Responsibility scores compared to those with average income (p=0.013) and those with below-average income (p=0.001). Participants with income below average had significantly lower Total ATMIO-23 scores compared to those with average (p=0.005) or above average (p=0.004) income.

Discussion

This study examined the attitudes of a Greek population sample towards mentally ill offenders and highlighted the psychometric properties of the Greek version of Attitudes Toward Mentally Ill Offenders (ATMIO) scale.

In terms of attitudes, it became clear that participants who reported suffering from a mental illness expressed more negative stereotypes towards mentally ill offenders, however endorsed more compassionate attitudes. A similar contradiction is detected in other studies which have indicated a reverse correlation between attitudes and behaviors.[44] This finding could also be interpreted through the personal stigma of the mentally ill. The social belief linking mental illness with the risk of committing a criminal act seems to be widespread in the views of the mentally ill (perceived stigma). At the same time, the emotional experience of discrimination suffered by those with a mental illness (experienced stigma) could explain the compassion expressed by them. Furthermore, participants who mentioned having a friend, family member, or someone in the workplace with a mental health issue endorsed more positive attitudes, less negative stereotypes, and a more compassionate attitude. This finding confirms similar observations from other studies about positive attitude change resulting from personal contact with a mentally ill person, as well as participant's familiarity in general with mental illness.[45–48]

In terms of demographic characteristics, results suggest that older participants having children and a basic education level were associated with more negative attitudes, and perceived mentally ill offenders as a greater risk to the community without, however, diminished responsibility. Our findings about education level and

Table 5. ATMIO subscales' association with participants' characteristics.

	Negative Stereotypes			Rehabilitation/Compassion			Community risk			Diminished Responsibility			Total ATMIO–23 score		
	Mean (SD)	Test statistic‡ (d.f.)	P	Mean (SD)	Test statistic‡ (d.f.)	P	Mean (SD)	Test statistic‡ (d.f.)	P	Mean (SD)	Test statistic‡ (d.f.)	P	Mean (SD)	Test statistic‡ (d.f.)	P
Gender															
Men	2.81 (0.62)	0.98 (1017)	0.327^{+}	3.48 (0.56)	4.97 (1016)	<0.001^{+}	3.69 (0.78)	−2.10 (1007)	0.036^{+}	3.29 (0.74)	2.47 (1002)	0.014^{+}	3.22 (0.44)	2.54 (1020)	0.011^{+}
Women	2.77 (0.62)			3.3 (0.6)			3.79 (0.77)			3.17 (0.8)			3.15 (0.48)		
Residence															
Urban	2.78 (0.62)	−1.43 (1017)	0.154^{+}	3.38 (0.59)	−1.42 (1016)	0.157^{+}	3.74 (0.78)	0.45 (1007)	0.650^{+}	3.24 (0.77)	0.01 (1002)	0.988^{+}	3.19 (0.46)	0.53 (1020)	0.599^{+}
Rural	2.86 (0.65)			3.46 (0.58)			3.71 (0.74)			3.24 (0.79)			3.17 (0.45)		
Education															
Primary	3.46 (0.65)	19.6 (2,1008)	<0.001^{++}	3.4 (0.65)	1.02 (2,1007)	0.362^{++}	4 (0.73)	2.12 (2,999)	0.121^{++}	3.16 (0.91)	0.22 (2,993)	0.800^{++}	2.85 (0.33)	9.98 (2,1011)	<0.001^{++}
Middle	2.86 (0.61)			3.34 (0.63)			3.78 (0.78)			3.26 (0.81)			3.14 (0.49)		
High	2.75 (0.61)			3.41 (0.57)			3.72 (0.78)			3.23 (0.75)			3.21 (0.45)		
Married/ Living with partner															
No	2.83 (0.68)	−1.57 (998)	0.116^{+}	3.39 (0.6)	0.04 (997)	0.969^{+}	3.7 (0.82)	1.07 (989)	0.287^{+}	3.3 (0.77)	−1.71 (983)	0.087^{+}	3.17 (0.46)	0.67 (1001)	0.504^{+}
Yes	2.77 (0.6)			3.39 (0.58)			3.75 (0.76)			3.21 (0.76)			3.19 (0.46)		
Children															
No	2.8 (0.68)	−0.30 (1001)	0.766^{+}	3.43 (0.58)	−1.34 (1000)	0.182^{+}	3.66 (0.8)	2.42 (992)	0.016^{+}	3.31 (0.74)	−2.20 (988)	0.028^{+}	3.21 (0.45)	−1.12 (1004)	0.262^{+}
Yes	2.78 (0.58)			3.37 (0.59)			3.78 (0.76)			3.2 (0.78)			3.18 (0.47)		
Income															
Above average	2.76 (0.72)	2.77 (2,979)	0.063^{++}	3.51 (0.64)	6.54 (2,978)	0.002^{++}	3.77 (0.76)	1.20 (2,970)	0.301^{++}	3.42 (0.81)	7.25 (2,966)	0.001^{++}	3.25 (0.5)	6.68 (2,982)	0.001^{++}

Continues

Table 5. Continued.

	Negative Stereotypes			Rehabilitation/Compassion			Community risk			Diminished Responsibility			Total ATMIO–23 score		
	Mean (SD)	Test statistic‡ (d.f.)	P	Mean (SD)	Test statistic‡ (d.f.)	P	Mean (SD)	Test statistic‡ (d.f.)	P	Mean (SD)	Test statistic‡ (d.f.)	P	Mean (SD)	Test statistic‡ (d.f.)	P
Average	2.75 (0.55)			3.41 (0.52)			3.7 (0.77)			3.23 (0.74)			3.22 (0.41)		
Below average	2.86 (0.65)			3.31 (0.65)			3.78 (0.8)			3.15 (0.8)			3.11 (0.5)		
Employement status															
In public sector	2.8 (0.63)	1.21 (2,1001)	0.298++	3.41 (0.59)	0.30 (2,1000)	0.741++	3.72 (0.8)	0.69 (2,992)	0.500++	3.26 (0.8)	0.25 (2,986)	0.781++	3.19 (0.49)	0.27 (2,1004)	0.766++
Not in public sector	2.8 (0.62)			3.39 (0.59)			3.76 (0.77)			3.24 (0.77)			3.18 (0.46)		
Unemployed	2.71 (0.61)			3.36 (0.58)			3.69 (0.79)			3.2 (0.75)			3.21 (0.45)		

+Student's t–test; ++ANOVA; ‡t–value (d.f.) when Student's t–test was conducted and F–value (df1, df2) when ANOVA was conducted.

desired social distance towards mentally ill people are consistent with prior similar research.[27,49]

An interesting finding in our study is related to gender, as women were associated with more negative attitudes than men in terms of Rehabilitation/Compassion towards mentally ill offenders, as well as in terms of Diminished Responsibility and Community risk. Studies focusing exclusively on mental illness show that women hold more positive attitudes towards mental illness than men.[50–53] It is therefore highly probable that this finding illustrates a sense of fear and danger experienced by women towards individuals with both a mental illness and criminal history, which may be influenced by the high number of femicides recorded in our country in the last years.

As regards the scale's psychometric properties, the Greek version employs a differentiated structure. The four structural factors remain in their original form, while the differences recorded were only related to the different placement of the items within the existing factors. In particular, while moving (adding or removing) the items within the four factors, it became obvious that many of the items already present in the initial factor structure were maintained, while a significant differentiation was observed mainly for Community Risk and Rehabilitation/Compassion factors. In this respect, it should be noted that the three items removed from the Community Risk factor, and the one item removed from the Diminished Responsibility factor, were added to the Rehabilitation/Compassion factor. This may reflect more positive attitudes held by the Greek population sample about dangerousness, rights, compassion, and potential rehabilitation of mentally ill offenders. As the existing studies using ATMIO have not modified the initial form of the original scale, this finding cannot undergo such a comparison.

The Greek version of the ATMIO scale exhibited satisfactory reliability with Cronbach's alpha score being 0.85 both for the whole scale and its factors. These values are consistent with other studies' findings.[14,23,25,31]

This study is the first attempt in our country to record the stigma attached to mentally ill offenders among the general population and one of the few studies conducted at an international level. However, this effort is subject to a series of constraints. In the first place, the Greek version of the ATMIO scale is the first translated version of the original one, which means that it is impossible to make a comparison with any other similar effort to translate and adapt the scale to the data of another population with different linguistic features and particularities. Another weak point is related to the possible limited number of participants who do not use

the Internet in their daily lives. Furthermore, the online completion of similar tools excludes the interpersonal contact between interviewer and interviewee which provides the opportunity to share explanations and address any questions that may arise during completion.

In conclusion, the Greek version of the ATMIO scale is a comprehensible and easy-to-complete scale with satisfactory psychometric properties, a consistent four-factor structure, and good internal reliability.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi: 10.22365/jpsych.2023.025

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Ερευνητική εργασία

Παραγοντική δομή και αξιοπιστία της ελληνικής έκδοσης της Κλίμακας Στάσεων Έναντι Ψυχικά Ασθενών Παραβατών (ATMIO) σε δείγμα γενικού πληθυσμού

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ΠΕΡΙΛΗΨΗ

Οι ψυχικά ασθενείς παραβάτες συνιστούν μια ομάδα με ιδιαίτερα χαρακτηριστικά, διπλά στιγματισμένη εξαιτίας της ψυχικής νόσου αλλά και του ποινικού αδικήματος που έχουν διαπράξει. Η συνύπαρξη αυτών των δύο συνθηκών αυξάνει σημαντικά τις αρνητικές στάσεις του κοινού απέναντί τους. Η ομάδα αυτή έχει διαπιστωθεί πως αντιμετωπίζει περισσότερες στιγματιστικές στάσεις από τους παραβάτες που δεν παρουσιάζουν ψυχική διαταραχή. Ωστόσο, η έρευνα για το στίγμα προς τους ψυχικά ασθενείς παραβάτες είναι περιορισμένη και πολύ μικρότερος εμφανίζεται ο αριθμός των ψυχομετρικών εργαλείων που χρησιμοποιούνται για την αποτύπωσή του σε σχέση με τον αριθμό των αντίστοιχων εργαλείων που αφορούν στο στίγμα της ψυχικής νόσου. Σκοπός της παρούσας μελέτης ήταν η διερεύνηση των στάσεων σε δείγμα ελληνικού πληθυσμού προς τους ψυχικά ασθενείς παραβάτες σε σχέση με δημογραφικά χαρακτηριστικά και συγχρόνως η αξιολόγηση των ψυχομετρικών ιδιοτήτων ενός εξειδικευμένου εργαλείου για το στίγμα προς αυτήν την ομάδα ασθενών, της Κλίμακας Στάσεων Έναντι Ψυχικά Ασθενών Παραβατών (Attitudes Toward Mentally Ill Offenders, ATMIO) στην ελληνική γλώσσα. Στη μελέτη συμμετείχαν 1031 άτομα από τον γενικό πληθυσμό που συμπλήρωσαν ηλεκτρονικά ένα ερωτηματολόγιο κοινωνικοδημογραφικών στοιχείων και την κλίμακα ATMIO. Η δομική εγκυρότητα της κλίμακας εξετάστηκε με τη διερευνητική παραγοντική ανάλυση μετά από περιστροφή Quartimax και η εσωτερική συνάφεια των παραγόντων της κατέγραψε Cronbach's alpha μεγαλύτερο από 0,7, τόσο για το σύνολο όσο και για τους επιμέρους παράγοντές της. Διαφάνηκε πως τα πιο αρνητικά στερεότυπα προς τους ψυχικά ασθενείς παραβάτες συσχετίστηκαν με λιγότερη συμπόνοια και επιθυμία για αποκατάστασή τους, πιο υψηλή πεποίθηση και εκτίμηση ότι αποτελούν κοινοτικό κίνδυνο, χαμηλότερη απόδοση σε αυτούς του ελαφρυντικού της μειωμένης υπευθυνότητας και γενικότερα πολύ λιγότερες θετικές στάσεις. Πιο αρνητικά διακείμενοι βρέθηκαν οι γυναίκες, τα μεγαλύτερα σε ηλικία άτομα, όσοι είχαν χαμηλό μορφωτικό επίπεδο και οι συμμετέχοντες με παιδιά. Η μεταφρασμένη στα Ελληνικά κλίμακα ATMIO αποτελεί την πρώτη εφαρμογή ενός εργαλείου μέτρησης των στάσεων προς τους ψυχικά ασθενείς παραβάτες στη χώρα, με ικανοποιητική εσωτερική συνέπεια και ερμηνεία της δομής των τεσσάρων παραγόντων της. Πρόκειται για μια κατανοητή και εύκολα συμπληρούμενη κλίμακα που μπορεί να αποτελέσει ένα αξιόπιστο εργαλείο για χρήση στην αποτύπωση των στάσεων προς τους ψυχικά ασθενείς παραβάτες και στη χώρα μας.

ΛΕΞΕΙΣ ΕΥΡΕΤΗΡΙΟΥ: Ψυχικά ασθενείς παραβάτες, στίγμα, στάσεις, κλίμακα Attitudes Toward Mentally Ill Offenders (ATMIO), αξιοπιστία.

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Case report

Peduncular hallucinosis associated with pontine hemorrhage in an adult patient

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ABSTRACT

Peduncular hallucinosis refers to a rare neurophychiatric disorder presenting with vivid visual hallucinations, disturbances of sleep, and oculomotor dysfunction. It is typically caused by mesencephalic lesions. Nonetheless, a few cases have also been reported, in which the same syndrome was associated with thalamic and pontine lesions. We report the case of a 63-year-old male patient presenting to the Emergency Department of our hospital with irritability, gait difficulty, and diplopia of sudden onset two hours ago. Neurological examination revealed dysarthria, right facial palsy, bilateral gaze palsy, dysmetria of his left extremities, left-sided hemihypaethesia and extensory plantar response on the left. Brain computerized tomography (CT) showed a hemorrhagic lesion on the right lateral side of the pons. During his hospitalization at the Department of Neurology, he developed visual hallucinations, confusion, disorientation, insomnia, and strong emotional response. An extensive laboratory screening was performed and showed no abnormal findings. Suspecting peduncular hallucinosis due to the brainstem lesion, treatment with quetiapine and melatonin was administered to the patient and symptoms resolved completely within days. Subsequently, gradual neurological clinical improvement was also noted and two weeks after his admission, a repeated brain CT and a brain magnetic resonance imaging (MRI) showed partial absorption of the brainstem hemorrhage. The patient underwent rehabilitation for two months, showing further clinical improvement, and treatment with quetiapine and melatonin was discontinued without any further episodes being noted. A repeated brain MRI was performed two months after his admission to our hospital and showed no hemorrhage, but a mixed signal intensity core and a hypointense hemosiderin rim at the location of the absorbed hemorrhagic lesion, compatible with pontine carvenoma. Peduncular hallucinosis is most commonly associated with ischemic lesions of the posterior brain blood circulation, but different lesions have been reported, like vasospasm, brain tumors, encephalitis, hemorrhage associated with vascular malformations, such as a carvenoma, as seen in our case, representing a very rare form of peduncular hallucinosis.

KEYWORDS: Peduncular hallucinosis, hemorrhage, pons, carvenoma, case report.

Introduction

Peduncular hallucinosis refers to a rare neurophychiatric disorder presenting with vivid and dream-like visual hallucinations, disturbances of sleep, and oculomotor dysfunction.[1] The disorder is usually associated with lesions of the midbrain. However, thalamic and pontine lesions have also been related, less frequently, to visual hallucinations and brainstem dysfunction. Moreover, ischemic lesions of the posterior brain blood circulation have been described as the most common cause of peduncular hallucinosis, but different underlying etiologies have also been reported, e.g., vasospasm, brain tumors, encephalitis, subarachnoid hemorrhage, and vascular malformations. Confirming the diagnosis requires the exclusion of other possible causes of delirium in these patients and, once diagnosed, treatment with atypical antipsychotic medications is recommended.[2,3]

The aim of our paper is to report the challenges of diagnosis and treatment that a very rare case of hallucino-

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sis posed in an adult patient after pontine hemorrhage due to a carvenous malformation.

Case Presentation

A 63-year-old man presented to the Emergency Department of our hospital with sudden onset of irritability, gait difficulty, and diplopia of sudden onset two hours ago. Apart from smoking (18 pack years), he reported a free medical history and he was not on medications. Personal or family history of mental illness, alcohol or psychotropic substances abuse was denied. The patient's vital signs were normal. Neurological examination, however, revealed dysarthria, right facial palsy, bilateral horizontal gaze palsy, muscle weakness and dysmetria of his left extremities, left-sided hemihypaethesia and extensory plantar response on the left. Routine blood and urine tests, as well as a chest x-ray, were unremarkable. A computerized tomography (CT) and angiography (CTA) of his brain were performed, which showed a hemorrhagic lesion located dorsally at the tegmental area of the pons (figure 1a), without findings of vascular malformations.

During his hospitalization at the Department of Neurology, within five days of his admission, he developed symptoms resembling acute delirium. He had visual hallucinations of rats and spiders climbing down the wall. Twice, he was also seen interacting with deceased family members, having conversations and handshaking with them. While the latter episodes imply the presence of multimodal hallucinations with an additional auditory and/or tactile component, such details regarding the exact nature of his hallucinations could not be provided by the patient for the particular episodes. During these episodes, the patient was also confused, disorientated and displaying exaggerated emotional responses. In contrast, in between these episodes, the patient was oriented, demonstrating a linear and organized thought process as well as appropriate affect. In addition, he was able to describe the episodes. The patient's hallucinations occurred twice daily, mostly at night. He also complained about insomnia

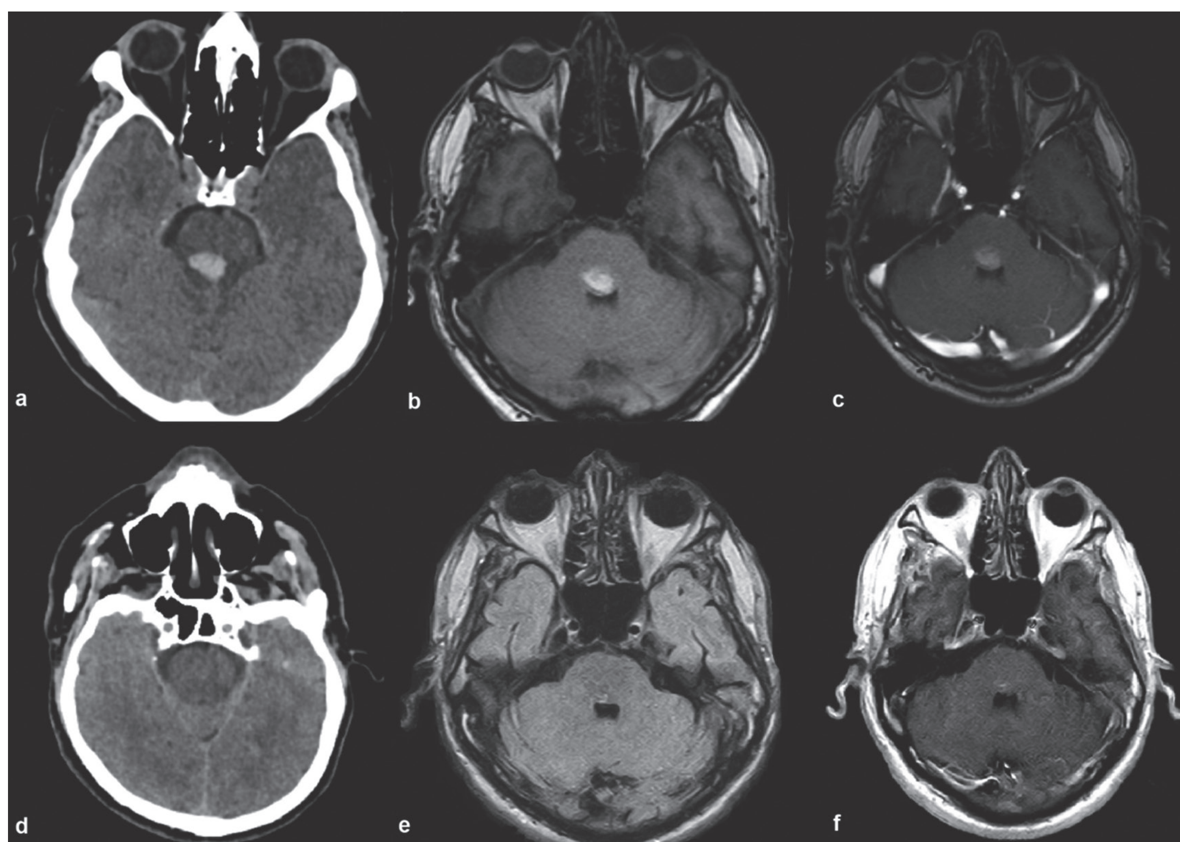

Figure 1. (a) Non contrast axial brain computerized tomography showing a hemorrhagic lesion at the tegmental area of the pons; (b) Axial brain magnetic resonance imaging T2 fluid-attenuated inversion recovery (FLAIR) sequence; and (c) T1 sequence with gadolinium, two weeks after pontine hemorrhage, showing partial absorption of the hemorrhagic lesion, (d) Non contrast axial brain computerized tomography; e. Axial brain magnetic resonance imaging T2 fluid-attenuated inversion recovery (FLAIR) sequence, and f. T1 sequence with gadolinium, two months after pontine hemorrhage, showing absorption of the hemorrhage.

and irritability before night sleep. Oral drops of haloperidol were administered to the patient, to no avail. Electroencephalography and electrocardiography were performed at that time and showed no abnormal findings. An extensive laboratory screening was performed to exclude other possible causes, including a lumbar puncture (2 white cells/cm^3, 0 red blood cells, normal protein and glucose levels, negative culture), as well as blood and urine tests (complete blood count, urine toxicology screen, blood sugar, urea, creatinine, hepatic function, ferritin, vitamin B12, thiamine, folic acid, thyroid-stimulating hormone, free T4, T3, protein and immune electrophoresis, anti-nuclear antibodies, erythrocyte sedimentation rate, C-reactive protein, blood and urine cultures, serology for Treponema pallidum. hepatitis B virus, hepatitis C virus and human immunodeficiency virus), lacking abnormal findings. Taking into account his recent brainstem lesion, peduncular hallucinosis was considered a probable cause of the delirium and the patient was treated with 25 mg of quetiapine twice daily and 4mg of melatonin once daily, orally, at bedtime. Within three days, symptoms resolved completely and the patient returned to his baseline mental state.

The patient gradually improved regarding his dysarthria, muscle weakness, dysmetria (most likely attributed to muscle weakness due to corticospinal tract lesion) and oculomotor dysfunction. Two weeks after his admission, a repeated brain CT and a brain magnetic resonance imaging (MRI) were performed and showed partial absorption of the brainstem hemorrhage (figure 1b and c). The patient was referred to the Department of Rehabilitation of our hospital and after two months (two days before his discharge from our hospital), he was re-evaluated at our department. Neurological examination revealed only mild lateral gaze palsy and a repeated brain CT and MRI, before his discharge (figure 1d, e and f), showed no hemorrhagic lesion but a mixed signal intensity core and a hypointense hemosiderin rim at the location of prior hemorrhage, compatible with pontine carvenoma (figure 2). Thus, neurosurgical consultation was sought; however, resection of the carvenoma was not suggested. Treatment with quetiapine and melatonin was gradually discontinued within the next month, yet recurrence of hallucinosis was not reported.

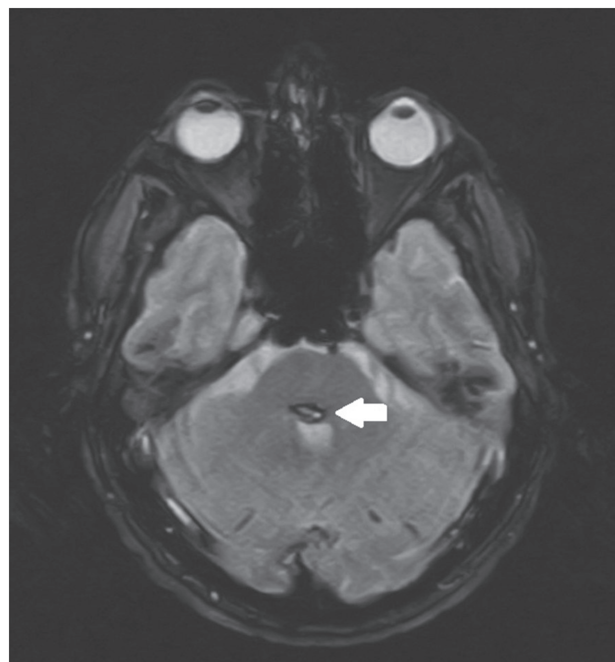

Figure 2. Axial brain magnetic resonance imaging two months after pontine hemorrhage: Susceptibility weighted imaging (SWI) sequence showing a pontine mixed signal intensity core and a hypointense hemosiderin rim (arrow).

Discussion

Peduncular hallucinosis is typically described as complex visual hallucinations with realistic, dynamic scenes, often involving familiar people or places. Patients have difficulty distinguishing their hallucinations from reality during the episodes, although it is not unusual to have insight into the hallucinations, as seen in our case. According to clinical descriptions, these hallucinations are so vivid that most patients will start interacting, either verbally or physically, with people or other parts of the environment perceived during their hallucinations.[3] Hallucinations can occur at any time of the day but are more frequent at night. Between hallucinations, patients have intact memory and are able to describe their hallucinations accurately.[4] Except for vivid and dream-like hallucinations, other frequent associated clinical findings include symptoms and signs of brainstem dysfunction, such as ocular motor impairment, cerebellar dysfunction, as well as sleep and arousal disturbances.[3,5]

The exact pathophysiology of peduncular hallucinosis is unknown. Various possible mechanisms have been proposed, most of them involving dysfunction of the brainstem reticular formation, deregulation of the thalamic of sensory input thresholds due to disruption of excitatory cholinergic (arising from the pontine tegmentum) and inhibitory serotonergic (arising from the dorsal raphe nuclei) brainstem neurotransmission, hence promoting overexcitation of the dorsal lateral geniculate nucleus of the thalamus, which is involved in higher order visual processing, thus resulting in visual hallucinations, and in rare instances, additionally in auditory and/or tactile hallucinations. Furthermore, it is known that the dorsal raphe nucleus is also re-

sponsible for the total sleep cycle (REM and non-REM sleep), which could explain sleep disturbances in these patients (nighttime wakefulness and hypersomnolence during the day) and correlate with the other clinical findings of the disease.[5–7]

Peduncular hallucinosis associated with vascular malformations has been previously described in the literature. We found four case reports, including six patients with peduncular hallucinosis due to aneurysms in the posterior brain blood circulation,[8–11] and only one case due to a pontine carvenoma.[6] In all those cases, hemorrhage was present due to rupture of the vascular malformations, as seen in our patient, had occurred. In contrast to our case, pontine carvenoma had already been previously diagnosed in the case described by Couse et al[6] and symptoms of peduncular hallucinosis developed after brainstem hemorrhage.

Conclusion

To our knowledge, this is the second case report of peduncular hallucinosis associated with pontine hemorrhage due to a brainstem carvenoma. We suggest that clinicians encountering patients with hallucinations, sleep disorders and neurological dysfunction, should consider peduncular hallucinosis as a diagnosis when other possible causes have been excluded.

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Παρουσίαση περίπτωσης

Σκελική ψευδαισθήτωση σχετιζόμενη με αιμορραγία γέφυρας σε ενήλικο ασθενή

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ΠΕΡΙΛΗΨΗ

Η σκελική ψευδαισθήτωση αφορά σε μια σπάνια νευρολογική διαταραχή, η οποία χαρακτηρίζεται από ζωηρές οπτικές ψευδαισθήσεις, που σχετίζονται με διαταραχές του ύπνου και της οφθαλμοκινητικότητας. Σπάνια οφείλεται σε βλάβες εκτός των εγκεφαλικών σκελών, όπως ο θάλαμος και η γέφυρα. Παρουσιάζουμε την περίπτωση ενός ασθενούς 63 ετών, με ιστορικό καπνίσματος, ο οποίος νοσηλεύτηκε στο Νευρολογικό Τμήμα του νοσοκομείου μας, λόγω αιφνίδιας εγκατάστασης διαταραχής όρασης, δυσχέρειας βάδισης και ψυχοκινητικής ανησυχίας, στα πλαίσια ενδοεγκεφαλικής αιμορραγίας στο δεξιό πλάγιο τμήμα της γέφυρας, η οποία αναδείχθηκε σε επείγουσα αξονική τομογραφία. Η νευρολογική του εξέταση ανέδειξε δυσαρθρία, αμφοτερόπλευρη πάρεση πλάγιων συζυγών οφθαλμικών κινήσεων, πτώση γωνίας στόματος δεξιά, υπαισθησία αριστερού ημισώματος, δυσμετρία αριστερών άκρων, καθώς και σημείο Babinski αριστερά. Εντός της νοσηλείας του, παρουσίασε οπτικές ψευδαισθήσεις, σύγχυση, αποπροσανατολισμό, διαταραχή συναισθήματος και συμπεριφοράς, καθώς και διαταραχές ύπνου. Διενεργήθηκε εκτεταμένος εργαστηριακός έλεγχος, χωρίς την ανάδειξη άλλου πιθανού αιτίου οργανικού ψυχοσυνδρόμου και ο ασθενής αντιμετωπίστηκε επιτυχώς με θεραπευτική αγωγή κουετιαπίνης και μελατονίνης, εντός ημερών. Προοδευτικά, παρατηρήθηκε κλινική βελτίωση της νευρολογικής εικόνας, ενώ από τον επαναληπτικό έλεγχο με μαγνητική τομογραφία εγκεφάλου διαπιστώθηκε μερική απορρόφηση της αιμορραγίας. Ο ασθενής συνέχισε την αποκατάστασή του για δύο μήνες και παρουσίασε περαιτέρω κλινική βελτίωση, ενώ προοδευτικά διεκόπη η θεραπευτική αγωγή, χωρίς υποτροπή των συμπτωμάτων. Έπειτα από δύο μήνες, έγινε επανεκτίμηση του ασθενούς και διενεργήθηκε εκ νέου απεικονιστικός έλεγχος με μαγνητική τομογραφία εγκεφάλου, όπου διαπιστώθηκε απορρόφηση της αιμορραγίας και παρουσία δακτυλίου αιμοσιδηρίνης εντός της τοποθεσίας της αιμορραγίας, στα πλαίσια σηραγγώδους αιμαγγειώματος στη γέφυρα. Η ισχαιμία της οπίσθιας κυκλοφορίας αποτελεί την πιο συχνή αιτία σκελικής ψευδαισθήτωσης, αν και έχουν αναφερθεί σπανιότερα αίτια, όπως μάζες εγκεφάλου, αγγειόσπασμος, εγκεφαλίτιδα και αιμορραγία σχετιζόμενη με αγγειακές δυσπλασίες, όπως το σηραγγώδες αγγείωμα, που παρατηρήθηκε στην περίπτωσή μας και αντιπροσωπεύει μία πολύ σπάνια μορφή σκελικής ψευδαισθήτωσης.

ΛΕΞΕΙΣ ΕΥΡΕΤΗΡΙΟΥ: Σκελική ψευδαισθήτωση, αιμορραγία, γέφυρα, σηραγγώδες αιμαγγείωμα, παρουσίαση περιστατικού.

Συγγραφέας επικοινωνίας: Μιχαήλ Παπαντωνίου, Νευρολογικό Τμήμα, Γενικό Νοσοκομείο Αθηνών «Γ. Γεννηματάς», Λεωφόρος Μεσογείων 154, 115 27 Αθήνα, Διεύθυνση e-mail: michael.papant@gmail.com