

Juan José Mancheño^a.
Sergio Navas-León^b.
Fermin Fernández-Calderón^{c,d}.
Marisa Gutiérrez^a.
Manuel Sánchez-García^{c,d}.
Carmen Díaz-Batanero^{c,d}.
Enrique Moraleda-Barreno^{c,d}.
Juan Ramírez-López^c.
José Andrés Lorca^{c,d}.
Óscar M. Lozano Rojas^{c,d}.

Coordinated treatment between addiction and mental health services vs. uncoordinated treatment for patients with dual diagnosis: higher dropout rates but lower impairment of functional disability

a. Community Mental Health Units. Juan Ramón Jiménez Hospital, Spain
b. Department of Psychology. University of Loyola, Spain
c. Department of Clinical and Experimental Psychology. University of Huelva, Spain.
d. Research Center on Natural Resources, Health and Environment. University of Huelva.
e. Provincial Drug Addiction Services, Huelva, Spain.

ABSTRACT

Background. Dual pathology is often found in addiction and mental health centers. Although there are integrated services for these patients, most countries have developed joint action protocols between addiction and mental health centers. The objective is to analyze the progress of patients diagnosed with dual pathology, comparing the therapeutic outcomes of those who exclusively attend either addiction or mental health centers with those patients who follow a program in which the two services are coordinated. It is hypothesized that patients assisted in coordinate manner will present a better evolution on psychopathological symptomatology, drug use and functional impairment.

Methods. The sample was 182 dual pathology patients treated in addictions centers (n=62), mental health centers (n=51) and treated in a coordinated manner (n=62). The instruments administered was WHODAS 2.0, BSI-18 and SDSS.

Results. In general, no statistically significant differences were found between baseline and follow up in WHODAS and BSI-18. More cocaine use was found in three groups but was statistically significant in patients attended by addictions center and mental health centers. High percentages of abandonment were found in patients attending coordinate services. In terms of reliable change, among those receiving the coordinated treatment, the-

re were more patients who showed improvements in the WHODAS 2.0 dimensions.

Conclusions. The inconvenience caused by going to different treatment networks may partially explain these results related with abandonment. However, patients who remain in treatment in coordinated services, show lower functionality deterioration than patients in other modalities.

Keywords. Dual pathology treatment; cocaine; outcomes; disability assessment; mental health centers.

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TRATAMIENTO COORDINADO ENTRE CENTROS DE ADICCIONES Y SALUD MENTAL VS. TRATAMIENTO NO COORDINADO PARA PACIENTES CON PATOLOGÍA DUAL: MAYOR ABANDONO, PERO MENOR DETERIORO DE LA DISCAPACIDAD FUNCIONAL

RESUMEN

Introducción. Los pacientes con patología dual son generalmente tratados en centros de salud mental y adicciones. Aunque hay servicios integrados para estos pacientes, lo más común es desarrollar protocolos de actuación conjunta entre estos centros. El objetivo de este estudio es analizar el progreso terapéutico de pacientes diagnosticados de patología dual, comparando los resultados de pacientes atendidos en los centros de adicciones exclusivamente, de salud mental o bien atendidos de manera coordinada entre ambos servicios. La hipótesis es que los pacientes atendidos de manera coordinada presentarán una mejor evolución en términos de

Corresponding author:

Óscar M. Lozano (orcid: 0000-0003-2722-6563)

Universidad de Huelva. Dpto. Psicología clínica, experimental y social. Campus de 'El Carmen'. Avda. Fuerzas Armadas, s/n. 21071. Huelva. España

Tfno: +34 959 21 92 00

Email: oscar.lozano@dpsi.uhu.es

la sintomatología psicopatológica, consumo de drogas y discapacidad funcional.

Método. La muestra está formada por 182 pacientes atendidos en centros de adicción ($n = 62$), de salud mental ($n = 51$) y tratados a través del protocolo de actuación conjunta ($n = 62$). Los instrumentos administrados fueron la WHODAS 2.0, BSI-18 y la SDSS.

Resultados. No se encontraron diferencias estadísticamente significativas entre la evaluación basal y el seguimiento ni en la WHODAS 2.0 ni en el BSI-18. Se encontró un incremento del consumo de cocaína en los tres grupos, aunque fue estadísticamente significativa en los pacientes de adicciones y de salud mental. Hubo una mayor tasa de abandono del tratamiento en los pacientes atendidos de manera coordinada. En términos de cambio fiable, entre los pacientes atendidos de manera coordinada hubo más pacientes que mejoraron en la WHODAS 2.0.

Conclusiones. Los hándicaps de asistir a dos redes asistenciales pueden estar explicando el mayor abandono de los pacientes que siguen el protocolo de actuación conjunta. Sin embargo, los pacientes que se mantienen en esta modalidad terapéutica muestran un menor deterioro de la funcionalidad en comparación con las otras dos modalidades.

Palabras clave. Patología dual; cocaína; resultados del tratamiento; capacidad funcional; centros de salud mental.

INTRODUCTION

Various epidemiological studies have demonstrated the high prevalence of dual pathology among the general population¹⁻³, with the presence of both disorders accounting for 7.4% of public health problems worldwide⁴. The therapeutic approach to this problem is complex⁵⁻⁷, with numerous authors currently pointing out that integrated care for these patients is the most appropriate therapeutic strategy⁸⁻¹⁰. However, some authors note that there are structural and organizational barriers¹¹⁻¹² that make it difficult to effectively integrate treatment into current health systems¹³.

Alternatively, patients with dual pathology are mainly treated using addiction and mental health services in parallel¹⁴, although this form of treatment is not exempt from criticism. These two types of healthcare resource differ markedly in philosophical, administrative, and organizational terms¹⁵, and this, in general, has a negative impact on the circumstances of these patients. For example, McGovern *et al.*¹⁶ evaluated 256 healthcare resources for these patients and estimated that only 18% of addiction services and 9%

of mental health centers had the necessary resources to provide specialized care for these patients.

In order to improve the care of dual pathology patients in both healthcare institutions, coordination protocols have been promoted between addiction centers and mental health services. According to some authors, this type of intervention is realistic and pragmatic, given the limited resources of most healthcare centers¹⁷. However, in practice, the monitoring of these protocols is relatively poor. In particular, at an organizational level, limitations have been found in relation to the coordination between the centers. For example, in the United Kingdom approximately only half of the addiction and mental health services have applied these protocols¹⁸. Charzynska *et al.*¹⁹ found that in seven European countries there was only infrequent follow-up of these protocols among the professionals of the different services, with such monitoring being applied in only 31.5% of the centers studied. Moreover, from the perspective of the patients, Staiger *et al.*²⁰ demonstrated, through a qualitative study, how patients identify barriers that negatively impact their treatment.

Given these issues, it is unsurprising that there is low therapeutic adherence among the patients who receive a coordinated intervention. For example, Roncero *et al.*²¹ conducted a study to evaluate the therapeutic adherence of patients referred from psychiatric services to addiction centers. These authors found that 33.4% of the patients did not request an appointment at the centers, and 20.83% of those who did so failed to attend. In addition, among those who attended, 47.37% withdrew from treatment within 12 months.

This scenario of a coordinated action protocol between addiction and mental health services means that patients with dual pathology must be responsible for a therapeutic process that can be complex due to the need to attend different healthcare networks, whilst this is also a system that does not always function properly. Thus, even though patients must be responsible for their treatment²², it is hardly surprising that these patients have a higher probability of relapse and a low therapeutic adherence^{23,24}.

To our knowledge, there are no observational studies that have compared, in dual pathology patients, the clinical impact of attending addiction centers, mental health services, and receiving treatment in a coordinated manner. Therefore, the general objective of the present work is to analyze the progress of patients diagnosed with dual pathology during a period of six months, comparing the therapeutic outcomes of those who exclusively attend either addiction or mental health centers with those patients who follow a program in which the two services are coordinated. More specifically, the therapeutic adherence of patients will be

analyzed, along with the development of psychopathological symptomatology, drug use, and functional disability in those patients who remain in treatment.

METHODS

Design

The study adopted a longitudinal observational design, with a baseline evaluation and follow-up at 6 months.

Participants

The sampling frame consisted of patients treated in the Community Mental Health Units (CMHU) and in the Addiction Treatment Centers (ATC) of the province of Huelva²⁵.

To participate in the study, patients had to meet the following inclusion criteria: 1) have a general level of active functioning, as assessed by the Global Assessment of Functioning (GAF) scale, with a score <50; 2) having received at least one diagnosis of substance dependence, according to DSM-IV-TR criteria in the last year; 3) having been diagnosed with at least one other mental disorder with severe mental symptoms other than substance dependence according to DSM-IV-TR criteria in the last year; 4) have a therapeutic indication to attend the coordinated service between the CMHU and ATC centers. The exclusion criteria were: 1) having been diagnosed exclusively with nicotine dependence disorder, according to DSM-IV-TR criteria; 2) presenting criteria of abuse of one or more substances according to DSM-IV-TR, without having a diagnosis of dependence; 3) having been diagnosed with mental retardation or another type of disorder that would hinder completion of the interview; and, 4) not signing the consent form.

Based on these inclusion and exclusion criteria, the CMHU and ATC attendance coordinators prepared a list of 263 candidate patients for participation in the study, and all patients who attended their therapeutic appointments were invited to participate. However, the final sample consisted of 182 patients (69.2% of the census). Of these, 51 patients were treated exclusively in the CMHU, 62 patients in the ATC, and 69 patients were treated in a coordinated manner between the CMHU and the ATC. Of the patients on the list who did not participate in the study, 21.3% did not attend their therapeutic appointment and we were unable to contact them, and 9.5% refused to participate in the study.

Instruments

World Health Organization Disability Assessment Schedule 2.0 -WHODAS 2.0⁻²⁶. This instrument has been incorporated into the DSM-5²⁷ to assess the disability levels of

mental disorders through 36 questions divided into six dimensions: cognition, mobility, self-care, getting along with people, life activities and participation in society. The evaluation system provides a score for each dimension, as well as a general score corresponding to the total when summed across all items. The score ranges from 0 to 100 points. The higher the score, the greater the disability. Since most of the patients in this sample were unemployed, and following the recommendations of the WHODAS 2.0 manual, the 32-item version was used.

In the present sample, an estimated internal consistency was obtained, as shown by a Cronbach's alpha (α) of 0.90 for the total scale. For the dimensions, these α values were between .74 (Personal Care) and .87 (Activities).

*Brief Symptom Inventory-BSI-18*²⁸. This instrument consists of 18 items that are divided into three dimensions: Somatization, Anxiety, and Depression. It is also possible to use a global severity index consisting of the sum of the total scores. The total score ranges from 0 to 72, obtained by the sum of all the items and that of the subdimensions, with a score ranging from 0 to 24. A high score indicates greater psychological distress. Adequate internal consistency coefficients were obtained for the total scale ($\alpha = .95$), as well as for the dimensions of anxiety ($\alpha = 0.90$), somatization ($\alpha = 0.90$) and depression ($\alpha = 0.88$).

Substance Dependence Severity Scale -SDSS⁻²⁹. The Spanish adaptation was used in its DSM-5 version, which has been shown to have adequate psychometric properties as an instrument for assessing clinical change in patients³⁰. This interview is composed of two sections. The first section includes a set of screening questions about the pattern of drug use (of different substances) during the month prior to the interview. The second section is composed of 16 items through which the 11 diagnostic criteria of the DSM-5 are operationalized. Scores on this severity scale range from 0-68, so that a higher score is indicative of greater severity. The severity scale for alcohol use ($\alpha = .78$) and cocaine dependence ($\alpha = .85$) showed adequate internal consistency.

Relapse in consumption. Information regarding consumption during treatment was collected from both the patients' medical history and their self-report.

Treatment retention. A patient was considered as having remained in treatment if he/she continued to attend their appointments. In contrast, if a patient indicated his/her intention to leave the treatment, or if they missed an appointment and failed to contact the therapeutic center again during a period of two months following the planned appointment, the patient was considered to have abandoned treatment.

Procedure

A psychologist with experience in patient evaluation conducted individual interviews with the patients, in which the battery of tests was administered to collect the information. The interviewer received specific training for the administration of these tests.

The interviews were conducted in the ATC and CMHU rooms where patients received treatment. During the interview, the psychologist informed the patient of the objectives of the study, the voluntary nature of their participation, and the fact that their involvement was external to their therapeutic process. In addition, they were told that the information collected, unless expressly authorized by the patients, would not be included in their medical records. Subsequently, the informed consent form was read to them and, if they agreed to participate in the study, the interview began.

This study was approved by the Ethics Commission of the University of Huelva, and by the Ethics Committee of the Juan Ramón Jiménez Hospital, the managing body of the CMHU participating in the study.

Analysis

Preliminary data analysis was initially conducted to detect coding errors. The normality of the severity scores of the dependency, the BSI and its subscales, and the WHODAS 2.0 and its subscales were also tested, verifying that these did not follow a normal distribution.

We conducted correlation analyzes between qualitative variables using Pearson's chi-square test. To test whether there were statistically significant differences between the three groups, the Kruskal-Wallis test was applied, and the effect size was calculated using Cramer's V. The Wilcoxon test was used to detect statistically significant changes between baseline evaluation and follow-up for continuous variables that do not follow a normal distribution. McNemar's test was used to check significant differences in the percentages of change between the baseline and follow-up.

A logistic regression analysis was conducted to identify the explanatory variables for abandonment of treatment within each of the groups.

Further, to estimate reliable change between the baseline evaluation and the follow-up, we used the reliable change index (RCI) proposed by Jacobson & Truax³¹. Following the proposal of McGlinchey et al.³², a reliable clinical change was considered to have occurred when the RCI had a value greater than 1.96 or

less than -1.96. This allowed us to classify patients as having improved, worsened, or remained in the same situation following six months of treatment.

The analyzes were carried out using STATA statistical software.

RESULTS

Baseline comparison of drug consumption, psychopathological symptomatology, and disability.

Table 1 displays a comparison of the three groups of patients in terms of the outcome variables. There were no statistically significant differences in psychological distress or functional disability. However, there was a higher percentage of patients with problems from cocaine and heroin use among those who exclusively attended ATCs, whilst the percentage of patients with problematic cannabis use was more prevalent among those who attended the CMHU.

When consumption was analyzed during the month prior to the interview, no statistically significant differences were observed between the three groups.

Treatment retention and its relationship with psychopathology, severity of dependence, and disability

During the 6-month follow-up period, 77.4%, 58.8% and 52.9% of ATC, CMHU, and coordinated service patients continued to attend their appointments, respectively. The differences in these percentages were statistically significant ($\chi^2 = 8,862$; $df = 2$; $p = .012$), indicating a higher percentage of abandonment of treatment in those patients receiving a coordinated treatment plan.

Multivariate analysis for predicting treatment abandonment revealed that none of the variables discussed above had explanatory power for predicting treatment abandonment.

Statistical comparison between baseline evaluation and follow-up

Table 2 shows the comparison between baseline assessments and follow-up in each group.

Among the patients of the ATCs, no statistically significant changes were observed for psychological distress or functional disability. However, there was a statistically significant increase in the percentage of patients who claimed to have used cocaine, whilst there was a reduction in the percentage of patients who claimed to have used cannabis.

In patients treated at the CMHU, there were no statistically significant changes in psychological distress or func-

Table 1	Description of baseline scores				
	ATC (n=62)	CMHU (n=51)	Coordinated (n=69)	Chi-square	p
Psychological symptoms (BSI)					
Somatization (M, (SD))	7.31 (6.77)	6.32 (5.51)	6.13 (6.56)	1.362	.506
Anxiety (M, (SD))	7.95 (7.30)	7.72 (6.41)	7.56 (6.47)	0.067	.967
Depression (M, (SD))	9.31 (6.43)	8.92 (6.13)	8.97 (6.91)	0.209	.901
Total score (M, (SD))	24.57 (18.99)	22.96 (15.54)	22.66 (17.29)	0.293	.864
Severity of dependence (SDSS)					
% patients with alcohol problems	35.5	43.1	43.5	1.045	.593
% patients using alcohol in the last month	53.2	41.2	44.9	1.773	.412
Severity of alcohol dependence (M, (SD))	7.05 (9.73)	5.18 (9.77)	7.83 (11.53)	2.676	.262
% patients with cocaine problems	61.3	25.5	46.4	14.484	.001
% patients using cocaine in the last month	22.6	21.6	26.1	0.389	.823
Severity of cocaine dependence (M, (SD))	4.57 (9.83)	6.92 (10.17)	4.66 (9.30)	0.252	.882
% patients with cannabis problems	22.6	72.5	43.5	28.336	.000
% patients using cannabis in the last month	29	33.3	17.4	4.396	.111
Severity of cannabis dependence (M, (SD))	6.71 (12.79)	6.32 (9.58)	6.06 (9.32)	1.710	.425
% patients with heroin problems	38.7	7.8	23.2	14.603	.001
% patients using heroin in the last month	3.2	0	1.4	1.823	.402
Severity of heroin dependence (M, (SD))	2.91 (7.58)	5.50 (6.40)	1.56 (6.25)	1.346	.510
Disability Assessment (WHODAS 2.0)					
Cognition (M, (SD))	32.18 (25)	40.20 (27.09)	35.68 (27.95)	2.335	.311
Mobility (M, (SD))	19.46 (25.71)	25.75 (25.59)	22.06 (26.79)	2.690	.261

	ATC (n=62)	CMHU (n=51)	Coordinated (n=69)	Chi-square	p
Self-care (M, (SD))	13.87 (21.98)	17.60 (24.79)	13.64 (19.35)	0.482	.786
Getting along (M, (SD))	25.54 (27.07)	29.50 (27.72)	26.30 (27.67)	0.793	.673
Life activities (M, (SD))	28.52 (31.35)	30.0 (29.97)	35.76 (34.87)	1.109	.574
Participation (M, (SD))	30.60 (22.40)	36.58 (25.65)	37.37 (24.47)	2.678	.262
Total score (M, (SD))	25.67 (19.32)	30.74 (19.43)	28.31 (20.63)	2.048	.359

tional disability. As in the case of ATC patients, there was an increased percentage of patients who claimed to have used cocaine during treatment.

Finally, among those patients that received coordinated treatment, a statistically significant increase in the scores on the anxiety scale of the BSI was observed, with a moderate effect size. There were no statistically significant changes in drug use or functional disability.

Development of the patients according to the RCI

The reliable change index for psychological distress and functional disability revealed that the majority of patients showed similar scores to those obtained on the baseline evaluation. Among those patients who showed changes, it is generally observed that for the CMHU patients, the percentage of these who showed an improvement in their symptoms of psychological distress is greater than those who showed a worsening (with the exception of the anxiety dimension). However, for those patients treated in ATCs and the coordinated program, a greater percentage of patients showed an improvement, but only in the somatization dimension.

In terms of functional disability, it can also be observed that most patients did not show reliable change. However, there were higher percentages of ATC and CMHU patients who showed a deterioration in functioning for the dimensions assessed (with the exception of self-care) over the course of the six-month follow-up period. Among those receiving the coordinated treatment program, there were more patients who showed improvements in the WHODAS 2.0 dimensions than those who showed a worsening, with the exception of the self-care dimension.

When the three treatment methods were compared, the observed differences did not reach statistical significance.

Table 2	Statistical pre-post comparison											
	ATC (n=41)				CMHU (n=25)				Coordinated (n=32)			
	Mean (SD) baseline	Mean (SD) follow-up	Z/ Chi-square	Effect size ¹	Mean (SD) baseline	Mean (SD) follow-up	Z/ Chi-square	Effect size ¹	Mean (SD) baseline	Mean (SD) follow-up	Z/ Chi-square	Effect size ¹
Psychological symptoms (BSI)												
Somatization	7.0 (6.56)	7.02 (6.19)	0.320	0.05	7.0 (6.28)	7.64 (5.40)	0.457	0.09	4.78 (5.51)	6.28 (5.92)	1.685	0.30
Anxiety	7.76 (7.30)	8.46 (7.31)	1.404	0.22	8.04 (6.39)	8.72 (6.62)	0.489	0.10	6.69 (6.24)	8.84 (7.10)	2.570*	0.45
Depression	9.24 (6.47)	9.90 (6.91)	0.820	0.13	8.88 (6.51)	8.96 (7.44)	0.216	0.04	8.22 (6.68)	8.53 (6.99)	0.031	0.01
Total score	24.0 (19.10)	25.39 (18.89)	1.313	0.21	23.92 (16.45)	25.32 (17.93)	0.081	0.02	19.69 (15.21)	23.66 (17.07)	1.875	0.33
Drug use in last month												
% patients using alcohol in the last month	47.5	36	0.40	0.09	36	36	0.0	0	43,8	50	0,40	0,09
% patients using cocaine in the last month	25	62.5	13.24**	0.57	8	36	5.44*	0.36	21.9	31.3	1.0	0.16
% patients using cannabis in the last month	35	15	8.0**	0.44	32	24	2.00	0.22	15.6	12.5	0.33	0.09
% patients using heroin in the last month	2.5	0	1.0	0.16	0	0	-	-	0	0	-	-
Disability Assessment (WHODAS 2.0)												
Cognition	32.25 (26.58)	36.88 (28.75)	1.480	0.23	41.67 (24.35)	44.17 (24.21)	0.594	0.12	36.94 (28.42)	37.58 (27.11)	0.245	0.04
Mobility	23.75 (28.80)	25.0 (29.59)	0.065	0.01	33.75 (28.47)	32.0 (31.16)	0.294	0.06	20.97 (23.97)	27.82 (31.03)	1.429	0.25
Self-care	15.75 (25.71)	16.50 (24.97)	0.208	0.03	24.80 (29.74)	25.20 (28.30)	0.285	0.06	13.55 (18.17)	20.32 (27.14)	1.950	0.34
Getting along	28.33 (29.28)	29.79 (33.59)	0.544	0.08	32.0 (29.04)	33.67 (29.61)	0.261	0.05	28.33 (30.37)	26.67 (27.72)	0.202	0.04
Life activities	33.59 (35.06)	36.41 (39.30)	0.477	0.07	31.67 (25.99)	42.50 (31.38)	1.501	0.30	34.84 (31.82)	33.87 (36.39)	0.170	0.03
Participation	32.48 (23.84)	38.35 (28.12)	1.637	0.26	36.67 (23.57)	46.0 (25.75)	1.560	0.31	37.93 (23.79)	37.93 (26.87)	0.204	0.04
Total score	27.92 (21.99)	33.04 (25.93)	1.721	0.27	32.99 (19.07)	37.52 (20.96)	1.056	0.21	28.18 (19.76)	28.53 (20.05)	0.349	0.06

¹Effect size estimated as "r" or "Cramer's V" * p < .05; ** p < .01

DISCUSSION

The present study focused on comparing the progress of dual pathology patients treated in addiction centers, mental health units, and those who received coordinated care between these services. It was expected that patients who received the coordinated treatment would

show more favorable progress than those who exclusively attended each of the services, as reported by other authors^{33,34}. However, the results of this study do not fully support this hypothesis. In general, no statistically significant changes were detected in any of the groups in terms of psychopathological severity or level of autonomy. Contrary to our expectations, an increase in cocaine

Table 3 Percentage of reliable change (pre-post)

	ATC			CMHU			Coordinated			Chi Square	d.f.	p
	Improved	Same	Worse	Improved	Same	Worse	Improved	Same	Worse			
Psychological symptoms (BSI)												
Somatization	25	57.5	17.5	24	64	12	15.6	68.8	15.6	1.474	4	.831
Anxiety	12.5	67.5	20	8	80	12	9.4	68.8	21.9	1.533	4	.821
Depression	17.5	57.5	25	20	64	16	21.9	50	28.1	1.687	4	.811
Total score	10	67.5	22.5	16	68	16	6.3	81.8	12.5	2.906	4	.574
Disability Assessment (WHODAS 2.0)												
Cognition	15	62.5	22.5	16.7	58.3	25	22.6	48.4	29	1.508	4	.825
Mobility	18.4	60.5	21.1	12	68.0	20.0	12.5	59.4	28.1	1.301	4	.861
Self-care	15.0	70.0	15	28.0	52.0	20.0	3.1	65.6	31.2	9.045	4	.060
Getting along	17.5	60.0	22.5	20.0	56.0	24.0	19.4	71.0	9.7	2.653	4	.617
Life activities	12.8	71.8	15.4	16.7	54.2	29.2	16.1	77.4	6.5	5.708	4	.222
Participation	12.8	56.4	30.8	16.0	52.0	32.0	24.1	55.2	20.7	2.126	4	.713
Total score	10.5	60.5	28.9	17.4	52.2	30.4	17.9	71.4	10.7	4.419	4	.352

consumption was observed in the three groups. However, this increase was statistically significant only for patients who exclusively attended mental health centers or addiction services, and not for those who used the coordinated services. Likewise, reliable change analysis revealed that there was a large proportion of patients whose functionality did not change. It should be noted, however, that the group of who received the coordinated care had the lowest percentage of patients who did not show deterioration in the dimensions of getting along, life activities, and participation.

Various studies have analyzed the impact of coordinated care on patients with dual pathology. However, it is difficult to compare results between studies, due to the different instruments used and the treatments applied in each case. With this in mind, studies by authors such as Rosenheck et al.³⁵ and King et al.³⁶ found improvements in the psychopathological state of patients who received a program of coordinated care between mental health and addiction services. In contrast, Mangrum et al.³⁷ analyzed the hospitalizations of patients who were treated using the integrated care method compared with those who received coordinated treatment. After a one-year follow up, these authors found an increase in hospitalizations in the latter group. Thus, the specialized literature shows disparate results that are not necessarily contradictory. The diverse range of therapies and treatments that are followed by patients in each study^{22,38} are likely to have a strong impact on the results found in each case.

Another finding that should be highlighted in the present study is that related to treatment retention. It was observed that a large number of patients abandoned treatment before the end of the 6-month follow-up period, this percentage being higher in patients that received coordinated care. The lack of therapeutic adherence in this group has also been found in other studies^{20,24,36,39}, with some authors focusing on analyzing the underlying factors⁴⁰⁻⁴². In the present study, we suggest that the physical distances between the different services could explain why the patients abandon treatment when receiving coordinated care, as other authors have already pointed out⁴³. Moreover, although the mental health and addiction services of this study are public centers, they are managed by different institutions. Therefore, bureaucratic aspects related to services could also hinder the implementation of effective coordinated care^{44,45}. However, the fact that professionals consider it necessary to have specialized training in order to treat these patients due to the complexity of their diagnosis and treatment⁴⁶⁻⁴⁸, must not be ignored.

Although the present study provides results that are of interest for the planning of healthcare services for patients with dual pathology, it is also necessary to take into account various limitations. Firstly, this study had a follow-up period of 6 months. However, some authors suggest that the recommended follow-up period should exceed one year⁴⁹. This relatively brief time period could explain why in the majority of patients no significant changes were observed in the variables studied, although this period of time was sufficient to

observe a high rate of therapeutic abandonment. Secondly, in the present study the majority of the participants were male, so this gender imbalance should be considered when generalizing the results. However, this gender distribution is representative of that found in public addiction centers in Spain⁵⁰ and other studies developed in our context⁵¹.

In spite of these limitations, the present study appears to indicate that the lack of effective integration of mental health and addiction services can lead to patients abandoning treatment that is coordinated between these services, which could have negative consequences for both public health and the environment.

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