

## Comparison between day-care ward and inpatient ward in terms of treatment effectiveness based on the analysis of psychopathologic symptoms, subjective quality of life and number of rehospitalisations after discharge

Tomasz Adamowski, Tomasz Hadryś, Andrzej Kiejna

### Summary

**Aim.** The aim was to assess effectiveness of treatment in day-care and inpatient wards within the Wrocław branch of the international multicenter EU-funded EDEN study.

**Material and methods.** The authors analyzed the number of rehospitalisations after discharge from index hospitalisation as well as psychopathologic symptoms and subjective quality of life. Out of 1089 patients admitted to the mental hospital in Wrocław, 238 were randomly assigned to either day-care ward (n=115) or inpatient ward (n=123).

**Results.** The absolute superiority of treatment in the inpatient ward over the day-care setting in terms of its effectiveness was not confirmed using the BPRS, MANSA scores and index of rehospitalisation.

day-care ward / effectiveness / psychopathology / subjective quality of life / rehospitalisation

### INTRODUCTION

The analysis presented here relates to an article of the Wrocław research team involved in the multi-centre EDEN project funded by the European Union regarding the study of psychopathological symptoms and subjective quality of life during psychiatric care, both in day and residential care [1]. The authors carried out analysis of the psychopathological symptoms and subjective quality of life for a period of one year af-

ter discharge from care. The analysis presented here supplements the results presented in a previous article in assessing the effectiveness of day and residential care. Previous analysis had not shown any unambiguous advantage of residential care compared to day care. The fundamental goal of the research was to compare the effectiveness of treatment of various types of psychiatric treatment on the basis of the analysis of psychopathological symptoms, subjective quality of life and the number of re-admissions into care. The questions of interest in this study are:

1. Are there differences in the acuteness of psychopathological symptoms after discharge according to the form of care?
2. Are there differences in the subjective quality of life after discharge according to the form of care?
3. Are there differences in the number of re-admissions according to the form of care?

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**Tomasz Adamowski, Tomasz Hadryś, Andrzej Kiejna:** Department of Psychiatry, Medical University of Wrocław, Poland. Correspondence address: Tomasz Adamowski, Department of Psychiatry, Wrocław Medical University, 10 Pasteura Str., 50-367 Wrocław, Poland. E-mail: adamowsk@psych.am.wroc.pl

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## MATERIAL AND METHODS

Among 1089 patients admitted into psychiatric care in Wrocław, the 238 who satisfied the criteria for inclusion into the study were assigned at random to one of two types of care: 115 day care patients and 123 residential care patients. For the purposes of this study, the patients were studied at three points in time: on the day of discharge (t4), three months after discharge (t5) and one year after discharge (t6).

The criteria for choosing the patients for the study were as follows:

Criteria eliminating individuals from the study:

- age below 18 or above 65,
- admittance into psychiatric care without the agreement of the patient (according to the legal regulations in force in a country taking part in the study),
- a degree of psychiatric disturbance on the day of admittance that indicated the requirement of or possible need for one-to-one care or limitation of the patient's freedom,
- acute intoxication,
- the presence of a somatic disease which required residential treatment,
- direct transferral from another hospital,
- homelessness,
- a journey time of more than one hour from the patient's home to the centre,
- the need to transport a patient to and from a ward, e.g. due to impaired mobility.

If none of the above reasons to exclude an individual from the study existed, the patient had to satisfy the following criteria to take part in the study:

- the presence of a psychiatric disease with symptoms that are severe enough to cause moderate impairment of a patient's functioning in more than one field of daily life, to cause a threat to the maintenance of the patient's state of finance or housing, or the patient could be a threat to him/herself or any other,
- first aid care would not be sufficient to prevent further deterioration in the state of the patient,
- there were no other forms of treatment available to the patient except for the ones covered by the study.

## Tools of analysis

### BPRS

In order to assess the acuteness of psychopathological symptoms at each point in time, the extended version of the Brief Psychiatric Rating Scale (BPRS 4.0) was used. Many studies regarding the assessment of pharmacological and psychiatric care have been carried out with the aid of this tool (Hedlund and Vieweg, 1980). The BPRS was initially created as an 18-point scale for rapid assessment of the dynamics of psychopathological symptoms among psychiatric patients with various diagnoses (Overall and Klett, 1972). It was later extended to a 24-point scale (Lukoff et al., 1986; Ventura et al., 1993). Each symptom is assessed on a scale from one (absent) to 7 (extremely acute). There is also the possibility of leaving any of these components unassessed, e.g. due to a lack of information. The individual components may be summed to obtain a total score or a score for separate subscales. Analysis has shown that interviews using various versions of the BPRS give a high concordance coefficient, both for the total score and for particular components, regardless of whether the original English version or the Italian version (see Ventura et al., 1993; Roncone et al., 1999) is used. The degree of concordance for the total score and individual components was estimated using the intra-class correlation (ICC) based on a series of interviews carried out by different researchers. The ICC was estimated to be 0.79 for the total score (substantial [La]) and from 0.58 to 0.94 for individual components [2]. Scores according to Ventura's extended version of BPRS (2000) were used to assess the differences in the acuteness of psychopathological symptoms between different centres in Wrocław

### MANSA

The Manchester Short Assessment of Quality of Life (MANSA) was used to assess subjective quality of life at time points t4-t6. MANSA was adapted from the shortened, modified version of the Lancashire Quality of Life Profile (LQLP) and is predominantly based on the 7-point Likert scale of the subjective assessment of the quality of life, together with various spheres of life (employment, family relations, hobbies, etc.). Its

psychometric properties have been described as satisfactory [3]. The MANSA questionnaire was translated into Polish in order to carry out the analysis of patients in Wrocław.

### Assessment of treatment

The authors used static measures of effectiveness for the analysis of psychopathological symptoms and subjective assessment of the quality of life derived for each patient on the basis of observing the appropriate scores at each given point in time. The following are used as static measures:

- the scores observed on the day of discharge (t4), 3 months after discharge (t5) and 12 months after discharge (t6). Each component of these scores is observed for each of the patients and describes the state of the patient at a given moment.

When a particular component was not known for a discharged patient, the analysis was carried out using the method of multiple imputations (using the observed data to predict the most likely score). This method has received positive opinions from European reviewers [4].

In addition, the number of rehospitalisations of patients was observed for a period of three months leading up to both of the time points t5 and t6.

### Statistical analysis

The statistical analysis of the effectiveness of treatment in day care and residential centres was based on analysis of variance (ANOVA), as well as models of analysis of covariance (ANCOVA) with covariates such as: length of treatment and the logarithm of this time. Results are presented for the following models: uncorrected scores, scores corrected according to the scores obtained on admission and corrected according to the length of hospitalisation. All the statistical analysis was carried out us-

ing the SAS statistical package with the aid of the MIXED procedure in the Statistical Institute at Dresden University of Technology [5, 6].

## RESULTS

Demographic characteristics of the patients.

The majority of patients were female in both types of centre (76% - residential treatment, 60% - day care). 58% of the patients in residential care (r) and 40% in day care (d) were married. 48% (r) and 66% (d) of the patients received welfare benefits. The mean length of treatment was 58 days for residential care and 150 days for day care. Affective disorders were most commonly observed among residential patients (57%), followed by schizophrenic disorders (28%). On the other hand, 53% of day care patients had schizophrenic disorders and 19% had affective disorders. In addition, patients suffering from their first episode were more likely to receive residential treatment (17% compared with 4%). Clinical and socio-demographic data are presented in Table 1.

**Table 1.** Socio-demographic and clinical characteristics of the Wrocław study group

|   | Wrocław         |                         |
|---|-----------------|-------------------------|
|   | day<br>N=49-115 | residential<br>N=21-123 |
| Sex - female: <u>N</u> (%)                          | 69 (60)         | 94 (76)*                |
| Age - <u>M</u> ( <u>SD</u> )                        | 42 (11)         | 42 (11)                 |
| Marital State - married: <u>N</u> (%)               | 46 (40)         | 71 (58)*                |
| Life situation – Living alone: <u>N</u> (%)         | 20 (18)         | 10 (8)*                 |
| Occupation  |                 |                         |
| - employed: <u>N</u> (%)                            | 16 (14)         | 17 (14)                 |
| - unemployed: <u>N</u> (%)                          | 23 (20)         | 19 (16)                 |
| - student: <u>N</u> (%)                             | 2 (2)           | 5 (4)                   |
| - retired or on disability allowance: <u>N</u> (%)  | 62 (54)         | 69 (57)                 |
| - other: <u>N</u> (%)                               | 11 (10)         | 11 (9)                  |
| Obtain welfare benefits: <u>N</u> (%)               | 75 (66)         | 57 (48)*                |
| First episode of psychiatric disorder: <u>N</u> (%) | 5 (4)           | 20 (17)*                |

*continuation of the table on the next page*

|  |          |           |
|--|----------|-----------|
| Number of previous episodes of the present disorder:               |          |           |
| - 1-3: <u>N</u> (%)  | 28 (34)  | 40 (47)   |
| - above 3: <u>N</u> (%)  | 55 (66)  | 45 (53)   |
| Number of previous hospitalisations in residential care            |          |           |
| - none: <u>N</u> (%)   | 34 (31)  | 28 (30)   |
| - 1-3: <u>N</u> (%)  | 51 (47)  | 41 (44)   |
| - above 3: <u>N</u> (%)  | 24 (22)  | 25 (27)   |
| Length of stay (days) - <u>M</u> ( <u>SD</u> )                     | 150 (81) | 58 (43)** |
| Transfers <sup>1</sup> - between day and residential: <u>N</u> (%) | 9 (8)    | 1 (1)*    |
| Main clinical diagnosis on day of discharge (ICD-10)               |          |           |
| - F00-F09: <u>N</u> (%)  | 8 (7)    | 1 (1)**   |
| - F10-F19: <u>N</u> (%)  | 1 (1)    | -         |
| - F20-F29: <u>N</u> (%)  | 60 (53)  | 35 (28)   |
| - F30-F39: <u>N</u> (%)  | 22 (19)  | 70 (57)   |
| - F31: <u>N</u> (%)  | 4 (4)    | 8 (7)     |
| - F33: <u>N</u> (%)  | 13 (11)  | 37 (30)   |
| - F40-F49: <u>N</u> (%)  | 21 (18)  | 13 (11)   |
| - F50-F59: <u>N</u> (%)  | -        | -         |
| - F60-F69: <u>N</u> (%)  | 2 (2)    | 4 (3)     |
| - F70-F79: <u>N</u> (%)  | -        | -         |
| - F90-F98: <u>N</u> (%)  | -        | -         |

M - mean, SD - standard deviation, N - number

1 eg. Readmission to the initial ward within two days.

\* p < .05; \*\* p < .01

## Psychopathology

Acuteness of psychopathological symptoms at particular moments of time - Comparison of modes of treatment (Tab. 2)

On discharge, day care patients had higher mean scores for psychopathological symptoms than residential care patients on average (p=0.003). The observations carried out three months after discharge did not show any significant difference between these mean scores. This conclusion is independent of the model used (uncorrected, corrected according to score on admission and corrected according to length of

treatment). The observations carried out a year after treatment showed that residential care patients had higher mean scores (p=0.03). Using the model in which scores were corrected according the length of treatment, we come to the same conclusion (p=0.04).

## Quality of life (Tab. 3)

Based on the assessment of the quality of life on discharge, as well as three months and a year after discharge, no significant difference was found in the effectiveness of treatment according to the mode of treatment [5].

## Rehospitalisation

No rehospitalisation was observed within three months of discharge. However, the analysis carried out a year after discharge indicated that 6 patients who had received day care and 3 patients who had received residential care had been readmitted into residential care. In addition, 2 patients who had received day care were readmitted into day care. No residential care patient was later readmitted into day care.

## DISCUSSION

This study is a basis for discussing the effectiveness of various forms of psychiatric treatment, in particular comparing day and residential care. Some previous studies have indicated that day-care is just as effective, if not more effective, than traditional residential treatment [7]. It should be noted that Koniecznyńska et al. carried out a similar study which, based on results taken a year after discharge, indicated that day treatment was more effective for a range of symptoms (autism, affective pallor, feelings of guilt, stress, suspiciousness and strange thoughts) in

**Table 2.** Effectiveness of treatment at chosen points in time – psychopathological symptoms<sup>1</sup>

| Centre | N      | On day of discharge (t4)    | 3 months after discharge (t5) | 3 months after discharge – corrected according to value on day of admission | 3 months after discharge – corrected according to length of treatment <sup>2</sup> | 12 months after discharge (t6) | 12 months after discharge – corrected according to value on day of admission | 12 months after discharge – corrected according to length of treatment <sup>2</sup> |
|--------|--------|-----------------------------|-------------------------------|---|--|--------------------------------|--|---|
| day    | 82-102 | 1.53 (0.037)                | 1.64 (0.038)                  | 1.64 (0.037)  | 1.64 (0.040)   | 1.57 (0.042)                   | 1.56 (0.041)   | 1.57 (0.044)  |
| res.   | 80-105 | 1.38 (0.037)                | 1.66 (0.039)                  | 1.63 (0.038)  | 1.66 (0.039)   | 1.67 (0.038)                   | 1.65 (0.037)   | 1.67 (0.038)  |
|        |        |                             |                               |   |  |                                |  |   |
|        |        | 0.15 (0.050)-0.05 ... 0.245 | -02 (0.050) -12 ... 0.080     | 0.00 (0.048) -09 ... 0.097  | -01 (0.051) -11 ... 0.085  | -11 (0.050) -20 ... -008       | -09 (0.048) -18 ... 0.009  | -10 (0.051) -20 ... -002  |
|        |        | EE                          |                               |   |  |                                |  |   |
|        |        | 95% CI                      |                               |   |  |                                |  |   |
|        |        | 0.003                       | 0.718                         | 0.964   | 0.773  | 0.034                          | 0.077  | 0.045   |
|        |        | p-value for EE              |                               |   |  |                                |  |   |

<sup>1</sup> The scale for each component of the BPRS scale is from 1 (“absent”) to 7 (“extremely acute”).

<sup>2</sup> Covariates: length of treatment; logarithm of the length of treatment

<sup>3</sup> Mean for a given group of patients: corrected means are given for the appropriate models res. – residential care; EE: estimated difference in the effectiveness of the two treatments; CI: confidence interval

**Table 3.** Effectiveness of treatment at chosen points in time – quality of life<sup>1</sup>

| Centre | N      | On day of discharge (t4)  | 3 months after discharge (t5) | 3 months after discharge – corrected according to value on day of admission | 3 months after discharge – corrected according to length of treatment <sup>2</sup> | 12 months after discharge (t6) | 12 months after discharge – corrected according to value on day of admission | 12 months after discharge – corrected according to length of treatment <sup>2</sup> |
|--------|--------|---------------------------|-------------------------------|---|--|--------------------------------|--|---|
| day    | 80-100 | 4.16 (0.097)              | 4.15 (0.100)                  | 4.25 (0.094)  | 4.19 (0.106)   | 4.27 (0.104)                   | 4.37 (0.098)   | 4.31 (0.113)  |
| res.   | 79-104 | 4.30 (0.104)              | 4.24 (0.095)                  | 4.32 (0.089)  | 4.24 (0.095)   | 4.32 (0.097)                   | 4.40 (0.092)   | 4.32 (0.097)  |
|        |        |                           |                               |   |  |                                |  |   |
|        |        | -14 (0.124) -39 ... 0.100 | -09 (0.124) -33 ... 0.155     | -08 (0.114) -30 ... 0.149   | -05 (0.128) -30 ... 0.197  | -04 (0.124) -29 ... 0.201      | -03 (0.114) -26 ... 0.193  | -01 (0.128) -26 ... 0.243   |
|        |        | EE                        |                               |   |  |                                |  |   |
|        |        | 95% CI                    |                               |   |  |                                |  |   |
|        |        | 0.247                     | 0.475                         | 0.509   | 0.676  | 0.733                          | 0.785  | 0.957   |
|        |        | p-value for EE            |                               |   |  |                                |  |   |

<sup>1</sup> The scale for each component of the MANSA scale is from 1 (“cannot be worse”) to 7 (“cannot be better”).

<sup>2</sup> Covariates: length of treatment; logarithm of the length of treatment

res. – residential; EE: estimated difference in the effectiveness of the two treatments; CI: confidence interval

patients suffering from schizophrenia [8]. In the Wrocław study, despite the greater acuteness of psychopathological symptoms among day care patients on discharge, three months after treatment no difference was found in the effectiveness of treatment according to mode of care based on the acuteness of psychopathological symptoms, quality of life and rate of rehospitalisation. Residential care patients showed on average more acute psychopathological symptoms one year after discharge. However, there was no difference in the quality of life according to mode of treatment based on results obtained at the same times. There were differences in the rate of rehospitalisation. Day care patients were more likely than residential care patients to be readmitted into residential care (6 vs. 3) or day care (2 vs. 0). Taking this into account, it may be concluded that the effectiveness of treatment, measured according to the acuteness of psychopathological symptoms after discharge, is not lower in day care than in residential care. In fact, a year after discharge residential care patients had on average more acute psychopathological symptoms. However, our results are ambiguous, since day care patients were more likely to be readmitted into care, including admissions into residential care. It should though be noted, that a greater proportion of day care patients than residential care patients had been previously treated. Also, a larger proportion of day care patients suffered from schizophrenic disorders, whereas residential care patients more commonly suffered from affective disorders. It is possible that these rehospitalisations, which were not associated with acute psychopathological symptoms, were the results of difficulties in day to day life associated with a long-term psychiatric disorder (schizophrenia). This would agree with our data on the length of treatment. The mean length of day care treatment was almost three times as long as the mean length of residential treatment. It should also be stressed that up to now, in Poland psychiatric day care has played the role of rehabilitative care [9]. One should note that based on the quality of life, the effectiveness of treatment did not differ according to mode of treatment at any of the time points considered.

Due to the lack of any significant advantage of residential care in comparison to day care found

in the German centres of the EDEN project, German researchers stated that around 30% of the patients requiring intensive psychiatric care can be treated using day care [10]. The British research team thought that the proportion of such patients could be even higher – up to 40%. Also, their results indicated that day care could lead to a lower rate of rehospitalisation. These results were not confirmed by the results of the research in Wrocław [11, 12]. Most probably, this results from the different organisational structure and goals of day care in Western countries (intensive care), particularly in the United Kingdom, in comparison to the system of long-term rehabilitative care in Poland. The authors of the main EDEN report cite such an argument, stating that there is a lack of uniform criteria in the study countries for stating whether an individual centre specialises in treating acute disorders. This means that making unambiguous inferences from the data is very difficult [4]. Hence, measures should be taken to make the structure and functioning of psychiatric care centres more uniform, based on the best solutions found in European systems.

## CONCLUSION

The Wrocław centre of the EDEN project did not find any significant advantage in residential care compared to day care, based on analysis using the BPRS and MANSA scales, as well as the rate of rehospitalisation. The results of the study indicate the need to discuss possible changes in the role of day care centres in Poland towards more intensive care. It is also necessary to compare the costs of both forms of treatment.

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