



Rate and predictors of disengagement in an early psychosis program with time limited intensification of treatment

Philippe Golay^{a,b,*}, Julie Romain^a, Caroline Reiff^a, Alessandra Solida^a, Philipp S. Baumann^a, Philippe Conus^a

^a Service of General Psychiatry, Treatment and Early Intervention in Psychosis Program (TIPP-Lausanne), Lausanne University Hospital and University of Lausanne, Switzerland

^b Service of Community Psychiatry, Department of Psychiatry, Lausanne University Hospital and University of Lausanne, Switzerland

ARTICLE INFO

Keywords:

Schizophrenia
Early psychosis
Disengagement
Drop out
First episode

ABSTRACT

Background: Service disengagement is a frequent problem in early intervention in psychosis. The goal of this study was to evaluate the rate and variables associated with service disengagement in a three year specialized program that allows treatment intensification on a case to case basis.

Methods: 328 early psychosis patients were assessed at baseline on a large set of socio-demographic and clinical variables and were followed-up over 36 months. Patients who left the program for reasons related to engagement with care were compared to patients who completed the program.

Results: Rates of disengagement were low (6.3%). Patients with lower socio-economic status, who committed offences during the program or with a diagnosis of Schizophreniform/brief psychotic disorder were more likely to disengage from the program.

Conclusions: The engagement strategies implemented in the context of our early intervention programs have allowed to keep disengagements to a relatively low level. In this context, only 3 variables emerged to guide adaptation of the intervention in order to improve this already good engagement rate.

1. Introduction

Early intervention for psychotic disorders is now widely seen as a standard approach in modern psychiatry. Early identification of psychosis, reduction of the duration of untreated psychosis (DUP) and reinforcement of treatment adherence are some of its most distinctive features (Conus et al., 2010, Golay et al., 2016). Despite these advances, service disengagement in the context of early psychosis remains a high stake issue (Conus et al., 2010, Lau et al., 2019, Schimmelmann et al., 2006). This underscores the importance of identifying factors that may predict increased risk of disengagement, in order to develop prevention and adaptive therapeutic strategies.

In this perspective, one of the first early psychosis studies in this field conducted on a large (n = 786) representative cohort from the Early Psychosis Prevention and Intervention Centre (EPPIC) in Australia showed that 23.3% of patients disengaged from service (Conus et al., 2010). Disengagement consisted of patients actively refusing any contact with the treatment facility or that were not traceable despite

extensive efforts (phone calls, home visits & letters to patients and their families) to re-engage by the case managers (CM) and the mobile crisis intervention team. Past forensic history, lower severity of illness at baseline, living without family at discharge and persistence of substance use disorder during treatment were significant predictors of disengagement. In another study (n = 232), longer DUP, lower level of psychotic symptoms, lower level of insight and higher substance abuse during treatment predicted disengagement after 12 months (Turner et al., 2007). More recently, complete disengagement was also reported to be around 7.6% in young people with FEP aged between 15 and 24, who presented to the Early Psychosis Prevention and Intervention Centre (EPPIC) service between January 1, 2011 and September 1, 2014 (Brown et al., 2019). Not being in employment, education or training, not having a family history of psychosis and cannabis use were identified as predictors of disengagement. A rate of about 20% was also recently observed in the Early intervention Service for Psychosis Service (EASY) in Hong-Kong covering patients with age ranging between 15 and 64 (Lau et al., 2019). In this study, early-stage poor medication adherence,

* Corresponding author. Department of psychiatry, Lausanne University Hospital, Consultations de Chauderon, Place Chauderon 18, 1003, Lausanne, Switzerland.
E-mail address: Philippe.Golay@chuv.ch (P. Golay).

<https://doi.org/10.1016/j.jpsychires.2020.08.036>

Received 11 March 2020; Received in revised form 17 August 2020; Accepted 22 August 2020

Available online 1 September 2020

0022-3956/© 2020 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

history of substance use and suicidal attempts were variables associated with disengagement. Younger patients also tended to disengage earlier. Studies that focused on younger individuals provided additional insights: lower severity of illness at baseline, living without family during treatment and persistence of substance use during treatment contributed significantly to predicting service disengagement of first-admitted adolescents with psychosis (Schimmelmann et al., 2006). Interestingly, substance use and insight at baseline were not related to service disengagement. In sum, studies on service disengagement within early intervention programs have revealed several variables that may help to identify patients at increased risk for disengagement from care. Considering these factors may differ depending on the context, the goal of this study was first to evaluate the rate of disengagement in our three year specialized program and secondly to identify variables associated with service disengagement.

2. Material and methods

A patient was considered as disengaged if they actively refused any contact with the treatment team despite active and repetitive attempts by case managers, or when contact was impossible despite attempts, throughout the entire intended treatment period.

2.1. Participants

TIPP (Treatment and early intervention in Psychosis Program) is a specialized early psychosis program at the Department of Psychiatry in Lausanne University Hospital, Switzerland (Baumann et al., 2013). Inclusion criteria are age between 18 and 35, living in catchment area (population about 350,000) and meeting criteria for psychosis, as defined by the ‘psychosis threshold’ subscale of the Comprehensive Assessment of At Risk Mental States scale (Yung et al., 2005). Patients with psychosis related to intoxication/organic brain disease, IQ < 70 or who have been taking antipsychotic medication for more than six months are referred to other programs. Patients can be referred through several ways. General practitioners, families, private psychiatrists, psychiatric institutions and other services from Lausanne University Hospital (e.g emergencies, psychiatric hospital) can contact the TIPP team and an initial assessment by phone is conducted. The admission of patients is then discussed by the multidisciplinary team to ensure the inclusion criteria is met. The TIPP rationale is based on both case management (CM) interventions and assertive community treatment (ACT) principles, undertaken in an outpatient setting. Globally, patients are seen at least 100 times over the three years of treatment, by case manager alone or with the psychiatrist. A strategy is defined with the patient defining who should be contacted in case of disengagement.

All patients treated at TIPP were fully assessed at baseline and every 6 months prospectively in order to monitor outcome and adapt treatment. Over the three years of TIPP, CM are available for up to twice a week for every patient. If needed, additional support and treatment from an Intensive Case Management (ICM) team is given at any moment during the treatment period. Case managers from TIPP remain however involved in order to warrant continuity of care. This flexible approach is offered in case of need in order to promote engagement of patients who are treatment refractory or who need prolonged community assessment before they can be referred to the TIPP outpatient clinic. It is also proposed when time limited intensification of treatment and close monitoring is needed more than twice per week or as an alternative to hospital admission when a relapse occurs. ICM interventions are available on a home-based basis, with up to 2 daily contacts. The Ethics Committee of Lausanne University granted access to the clinical data for research purposes, and consequently all patients who received treatment within this program were included in this study.

2.2. Clinical assessments

Detailed evaluation of past medical history, demographic characteristics, exposure to adverse life events as well as symptoms and functioning was performed by case managers (CM) and a psychologist through interviews and a structured questionnaire.

Functional characteristics at baseline were assessed with the Modified Vocational Status Index and Modified Location Code Index Independent living (MVSI & MLCI; Tohen et al., 2000). Premorbid functional level was evaluated with the Premorbid Adjustment Scale (PAS; Cannon-Spoor et al., 1982). Academic, social, childhood and early-adolescence sub-scores were computed (MacBeth and Gumley, 2008). Past history of trauma (sexual, emotional or physical abuse before age 16) was evaluated by CM over the entire program (Alameda et al., 2016a). Past diagnosis of substance abuse/dependence was rated according to DSM-IV. Substance abuse (SUD) during treatment was rated as “no SUD”, “decreased or remitted” and “persistent or started” on the basis of the case managers rating Scale (CMRS; Drake et al., 1990). None (1) and mild use (2) were aggregated into a unique “no SUD” category (1). The baseline rating was compared to the maximum rating recorded during the last 18 months of the program to determine decreased (Baseline > Follow-up) or persistent use (Baseline ≤ Follow-up). The Global Assessment of Functioning (GAF) and Social and Occupational Functioning Assessment Scale (SOFAS; American Psychiatric Association, 1994) were used to assess the functional level at baseline. While GAF includes the intensity of symptoms, SOFAS only focus on social and occupational level. The lowest SOFAS and GAF scores before presentation were also estimated. Insight into illness was evaluated as complete, partial or absent (Conus et al., 2007). Severity of illness at baseline was assessed with the Clinical global impression scale (CGI; Guy, 1976). Reasons for leaving the program were recorded. Patients leaving for other reasons than disengagement were not included in the analysis.

2.3. Statistical analysis

A series of Cox proportional hazard models were used to model the impact of socio-demographic, premorbid and clinical variables on disengagement. Time between the beginning of the program and disengagement was used. Patients who completed the program were considered right censored after 36 months. The proportionality of the hazard function over time assumption was checked prior to each Cox regression analysis. In order to evaluate the robustness of our findings, logistic regression with service disengagement as the dependent variable was also performed and yielded the same pattern of results except for socio-economic status which was not significant with logistic regression. In order to highlight the most important variables independently of each other, a synthetic multivariate Cox regression model was estimated with all significant predictors as independent variables.

3. Results

Out of 336 patients, 62 (18.5%) left the program (Fig. 1) before the end of the three year period. Among them, 21 (6.3%) fulfilled the definition of “disengagement”, while 41 patients (12.2%) left the program for other reasons. (1) One patient was killed in an accident, one patient died of an overdose, one patient was murdered and two patients committed suicide; (2) For eight patients, the treatment had to be provided exclusively by the ACT team but these patients remained in care; (3) 18 patients (5.4%) moved to another location and (4) 10 patients (3.0%) were chose to be treated by a private psychiatrist outside of our service. Regarding timing of disengagement, 1 patient disengaged after two months, 7 after 6 months, 2 after 12 months, 1 after 18 months, 2 after 24 months, 4 after 30 months, and 4 just before the end of the program (36 months). Because of the treatment interruption, some baseline variables were incomplete for a small number of patients. The

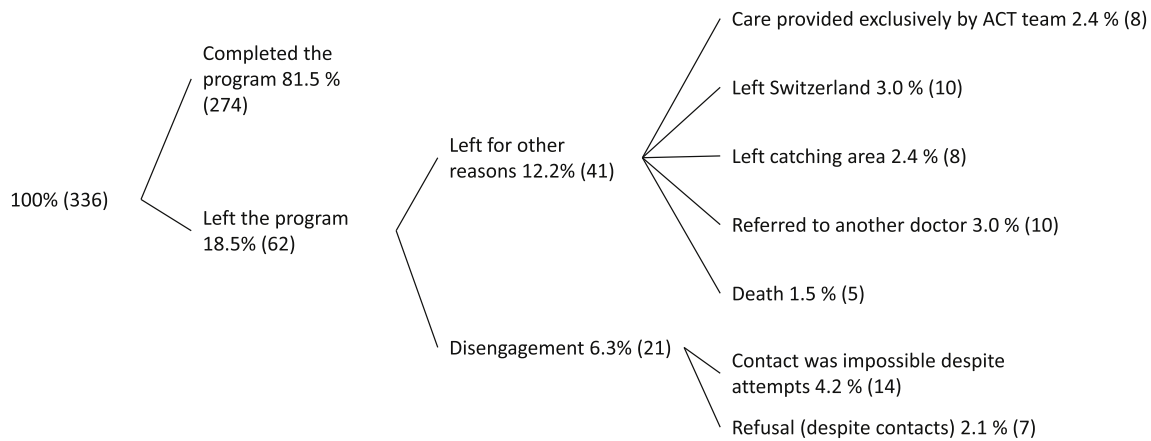


Fig. 1. Reasons for leaving the program before the end of the three-years follow-up.

274 characteristics of patients who completed the program were compared those of the 21 patients who disengaged (Table 1).

Patients with lower socio-economic status were more at risk to disengage (Hazard Ratio = 0.181, $p = .016$). While history of offense was not related to service disengagement, offences committed during the program were associated with higher risk of disengage (Hazard Ratio = 8.202, $p = .035$). Schizophreniform/brief psychotic disorder was also a predictor of the risk of disengagement (Hazard Ratio = 4.955, $p = .004$). Results of the multivariate Cox regression model revealed that when taken altogether, only offences committed during the program (Hazard Ratio = 11.467, $p = .024$) and Schizophreniform/brief psychotic disorder (Hazard Ratio = 15.386, $p = .033$) significantly predicted disengagement.

4. Discussion

The aims of this study were to evaluate the rates of disengagement in our three year specialized program and to identify variables associated with service disengagement when time limited intensification of treatment was available. Rate of disengagement from our program is low compared to other programs.

Globally, our results suggest that, in our cohort, patients with Schizophreniform/brief psychotic disorder and illegal behaviour during treatment are more at risk of disengagement. Low socio-economic status only predicted disengagement in the univariate model. A more global adverse social situation may be associated with more situational and financial barriers discouraging patients to engage in three years care (Kessler et al., 2001). While cancelled out by the impact of illegal behaviour and diagnostic, we believe specific attention should still be paid to patients with lower socio-economic status when they enter an early intervention program, due to their potential increased risk to disengage from treatment.

Results about past forensic issues were partially in line with the EPPIC study where previous illicit acts were also related to risk of disengagement. Unfortunately, data on offences were missing for several patients who disengaged and some degree of caution is therefore warranted when interpreting this finding. However, in a study based on our cohort, about 27% of the patients displayed at some point a violent behaviour that involved a person (Moulin et al., 2018, Moulin et al., 2019). These acts can have devastating impact both on victims and the patients themselves. This factor may also render socio-professional reinsertion of these patients much more difficult resulting in disengagement because of the poor perceived usefulness of the program. It is also possible that patients who had interactions with the legal system have developed a generic reluctance to engage with institutions in general; it is therefore important to help them make the difference between legal sanctions and treatment.

The fact that patients with Schizophreniform/brief psychotic disorder were more likely to disengage was not mentioned in previous studies and needs to be replicated. We can hypothesize that these patients may see their condition as less serious than other patients and therefore did not see the point in staying in treatment. It may worth noting that being married, having a diagnosis of major depression with psychotic features, persistent drug abuse and familial psychiatric history yielded large yet non significant effect sizes. These factors should be considered when examining whether this study aligns with previous or future findings. To our knowledge, Psychotic depression and being married were not mentioned in previous studies but not having a family history of psychosis and cannabis use were indeed identified as predictors of disengagement (Brown et al., 2019). Many risk factors for disengagement that were mentioned in previous studies were nevertheless not replicated in our sample; this may be due to the very low level of disengagement and to the therefore limited sample size of this patients sub-group. Some data were missing for patients who disengaged from the program. Although this is a limitation making the statistical identification of risk factors less powerful and reliable, it was nevertheless deemed necessary to include all patients, regardless of complete data availability, so as not to underestimate the disengagement rate. It is worth noting that a small proportion of patients also requested to be treated by a private psychiatrist outside our program; while not technically disengaged, they show that our program is not adapted to all patients, an element we need to explore in more depth.

This low level of disengagement may also highlight the soundness of the rationale of an adaptive early intervention framework. Indeed, strategies implemented to improve engagement in treatment include case management (CM) interventions and assertive community treatment (ACT) which are essential ingredients of most early intervention programs (Marshall et al., 2004). During the last 30 years, the CM framework has progressively developed (Ziguras and Stuart, 2000). Case-managers' roles are to engage patients into treatment, facilitate linkage with treatment resources, conduct clinical assessment, provide crisis intervention, plan treatment in collaboration with psychiatrists and collaborate with families (Baumann et al., 2017, Lamb, 1980, Marion-Veyron et al., 2013). ACT distinguishes itself from generic case management models by smaller caseloads, 7/7 and 24/24 availability, and community based intervention available up to several times per day (Morandi and Bonsack, 2011). The question whether ACT should be offered to all patients or only to a selected number of patients who specifically need such an intensity of treatment remains open (Alameda et al., 2016b). Indeed, cohorts are very heterogeneous regarding the severity of patient's illness and their willingness to engage in treatments. Cost effectiveness is also an issue given that low caseload and round the clock coverage are expensive. To circumvent this issue one distinctive feature of our specialized intervention program is time-limited

Table 1
Sociodemographic and clinical data according to disengagement during the three-year follow-up (N = 295).

| | Completed | Disengaged | Hazard ratio (HR) | 95% CI of HR | | p-value |
|---|----------------|-----------------|-------------------|--------------|---------|---------|
| | N = 274 | N = 21 | | LCI | UCI | |
| Gender, female, % (N) | 35.0 (96) | 33.3 (7) | 0.936 | 0.378 | 2.319 | .887 |
| Age in year, M (SD) | 24.53 (4.69) | 24.43 (4.55) | 0.970 | 0.860 | 1.904 | .931 |
| Duration of untreated psychosis, Mdn (IQR) ^a | 97.50 (543.25) | 103.00 (276.00) | 0.854 | 0.526 | 1.384 | .521 |
| Age of onset in year, M (SD) | 22.95 (5.10) | 23.38 (5.09) | 1.017 | 0.935 | 1.105 | .699 |
| Socio-economical level, % (N) | | | 0.181 | 0.045 | 0.724 | .016 |
| Low | 20.4 (56) | 33.3 (6) | | | | |
| Intermediate | 45.3 (124) | 44.4 (8) | | | | |
| High | 34.3 (94) | 22.2 (4) | | | | |
| Education in year, M (SD) | 10.10 (2.58) | 9.50 (3.41) | 1.241 | 0.911 | 1.690 | .170 |
| Marital status, % (N) | | | | | | |
| Single | 85.8 (230) | 71.4 (15) | Ref. cat. | – | – | – |
| Married | 7.8 (21) | 19.0 (4) | 2.704 | 0.897 | 8.148 | .077 |
| Divorced | 3.7 (10) | 9.5 (2) | 2.825 | 0.646 | 12.356 | .168 |
| Cohabitation | 2.6 (7) | 0.0 (0) | 0.000 | 0.000 | – | .984 |
| Professional activity, % (N) | | | | | | |
| Unemployed/Disability annuity | 69.7 (189) | 52.6 (10) | Ref. cat. | – | – | – |
| Full or part time job | 13.7 (37) | 21.1 (4) | 1.976 | 0.620 | 6.300 | .250 |
| Student/Traineeship | 14.4 (39) | 26.3 (5) | 2.295 | 0.784 | 6.715 | .129 |
| On Sickness leave | 2.2 (6) | 0.0 (0) | 0.000 | 0.000 | – | .979 |
| Lifestyle, % (N) | | | | | | |
| Independent household | 21.3 (57) | 21.1 (4) | Ref. cat. | – | – | – |
| With friends | 22.5 (60) | 31.6 (6) | 1.377 | 0.389 | 4.880 | .620 |
| Family\ | 46.4 (124) | 31.6 (6) | 0.692 | 0.195 | 2.454 | .569 |
| Pension/care home | 3.0 (8) | 10.5 (2) | 3.389 | 0.621 | 18.512 | .159 |
| Unsettled (hotel, shelter homeless) | 6.7 (18) | 5.3 (1) | 0.807 | 0.090 | 7.217 | .848 |
| Contacts with parents, % (N) | 95.3 (261) | 95.2 (20) | 1.012 | 0.136 | 7.543 | .990 |
| Good relationship with parents, % (N) | 91.2 (238) | 85.0 (17) | 0.570 | 0.167 | 1.944 | .369 |
| Good relationship with siblings, % (N) | 92.6 (238) | 94.7 (18) | 1.412 | 0.189 | 10.580 | .737 |
| Premorbid Adj. (PAS) M (SD) | | | | | | |
| Childhood | 0.30 (0.18) | 0.29 (0.13) | 0.702 | 0.011 | 46.318 | .868 |
| Early adolescence | 0.32 (0.18) | 0.28 (0.13) | 0.260 | 0.003 | 22.431 | .554 |
| Social | 0.29 (0.22) | 0.19 (0.12) | 0.072 | 0.001 | 8.213 | .276 |
| Academic | 0.35 (0.20) | 0.44 (0.20) | 7.390 | 0.254 | 215.049 | .245 |
| Total | 0.31 (0.17) | 0.27 (0.12) | 0.212 | 0.001 | 34.342 | .550 |
| Past suicide attempt, % (N) | 14.6 (39) | 9.1 (1) | 0.585 | 0.075 | 4.568 | .609 |
| History of trauma ^b , % (N) | 32.1 (88) | 9.1 (1) | 0.219 | 0.028 | 1.707 | .147 |
| Migration in adversity, % (N) | 28.8 (79) | 23.8 (5) | 0.776 | 0.284 | 2.119 | .621 |
| Forensic history, % (N) | 15.0 (36) | 9.1 (1) | 0.574 | 0.073 | 4.484 | .597 |
| Offences during program, % (N) | 10.0 (17) | 50.0 (2) | 8.202 | 1.155 | 58.234 | .035 |
| Psychiatric history, % (N) | 61.9 (167) | 45.5 (5) | 0.522 | 0.159 | 1.710 | .283 |
| Familial psychiatric history, % (N) | 58.3 (147) | 36.4 (4) | 0.416 | 0.122 | 1.421 | .162 |
| Familial schizophrenia history, % (N) | 19.7 (48) | 0.0 (0) | 0.036 | 0.000 | 23.190 | .313 |
| Lifetime substance abuse (DSM), % (N) | | | | | | |
| Alcohol | 22.6 (60) | 15.4 (2) | 0.622 | 0.138 | 2.807 | .537 |
| Cannabis | 35.6 (94) | 38.5 (5) | 1.102 | 0.360 | 3.368 | .865 |
| Other substances | 11.0 (30) | 7.7 (1) | 0.688 | 0.089 | 5.292 | .719 |
| Substance abuse during treatment ^c (CMRS), % (N) | | | | | | |

(continued on next page)

Table 1 (continued)

| | Completed | Disengaged | Hazard ratio (HR) | 95% CI of HR | | p-value |
|--------------------------------|---------------|---------------|-------------------|--------------|--------|---------|
| | N = 274 | N = 21 | | LCI | UCI | |
| No substance abuse | 59.5 (157) | 44.4 (4) | Ref. cat. | – | – | – |
| Decreased | 17.4 (46) | 11.1 (1) | 0.856 | 0.096 | 7.661 | .890 |
| Persistent | 23.1 (61) | 44.4 (4) | 2.487 | 0.622 | 9.946 | .198 |
| Insight at presentation, % (N) | | | 0.571 | 0.227 | 1.434 | .233 |
| Absent | 33.0 (88) | 40.0 (4) | | | | |
| Partial | 44.9 (120) | 60.0 (6) | | | | |
| Complete | 22.1 (59) | 0.0 (0) | | | | |
| GAF, M (SD) | | | | | | |
| Baseline | 41.42 (17.05) | 41.89 (19.34) | 1.002 | 0.964 | 1.041 | .926 |
| Worst during psychosis | 28.65 (10.94) | 27.60 (6.33) | 0.991 | 0.936 | 1.049 | .763 |
| SOFAS, M (SD) | | | | | | |
| Baseline | 42.75 (16.22) | 45.67 (15.20) | 1.011 | 0.972 | 1.052 | .592 |
| Worst during psychosis | 30.76 (10.81) | 33.00 (5.98) | 1.020 | 0.961 | 1.082 | .521 |
| CGI, M (SD) | | | | | | |
| Baseline | 4.61 (1.39) | 4.10 (2.13) | 0.790 | 0.528 | 1.182 | .252 |
| Higher during psychosis | 5.73 (0.79) | 5.60 (0.84) | 0.825 | 0.380 | 1.790 | .626 |
| Diagnostic, % (N) | | | | | | |
| Schizophrenia | 60.9 (167) | 33.3 (7) | Ref. cat. | – | – | – |
| Schizophreniform/brief | 9.9 (27) | 28.6 (6) | 4.955 | 1.664 | 14.750 | .004 |
| Schizo-affective | 11.3 (31) | 4.8 (1) | 0.775 | 0.095 | 6.301 | .812 |
| Major depression ^d | 3.3 (9) | 9.5 (2) | 4.650 | 0.966 | 22.386 | .055 |
| Bipolar disorder | 6.6 (18) | 9.5 (2) | 2.633 | 0.547 | 12.676 | .227 |
| Other | 8.0 (22) | 14.3 (3) | 3.234 | 0.836 | 12.509 | .089 |

Note. Mdn = Median. IQR = Interquartile range. Ref. cat. = Reference category. ^a = Raw data are presented, however the test statistics were based on log 10 (+constant) transformed data because of extreme positive skewness; ^b physical, emotional or sexual abuse; ^c comparison between baseline and maximum value between 18 and 36 months ^d with psychotic features.

intensification of treatment. The TIPP program uses assertive outreach (AO) principles for all patients and an intensive case management (ICM) subprogram in selected situations for a subgroup of patients (Alameda, Golay, 2016b; Baumann et al., 2013, Bonsack et al., 2005). It is currently unknown whether findings from the AO context do apply in our mixed AO/ICM setting. Our data and the observation of a low rate of disengagement suggest that a mixed AO/ICM setting is effective in preventing disengagement of early psychosis patients; this is important considering that many centres who have limited resources may apply this approach. In a previous publication from our team (Alameda, Golay, 2016b), the observation that patients who were offered ICM presented many of the risk factors for disengagement observed in other studies (such as poorer academic premorbid functioning, lower level of insight, previous history of alcohol and cannabis use and poorer adherence to medication during the early phase of treatment (Conus et al., 2010; Lau et al., 2019; Schimmelmann et al., 2006; Turner et al., 2007)) suggests that this approach prevents from disengagement. It is possible that case managers and psychiatrist in our program have taken previous finding into account and have adapted their intervention in order to decrease disengagement risk. Based on our findings, further development of early intervention services in order to decrease dropout rates could include deeper integration of forensic psychiatry experts because offences committed during the programs could be seen as red flags for later disengagement. We also recommend to systematically discuss the perceived adequateness of the treatment with patients with other diagnostics than schizophrenia or with less serious conditions in order to increase chances that they continually see the point in staying in treatment and that intensification or de-intensification of could promptly be made in order to tailor the intervention.

5. Conclusion

Our program was successful at keeping many patients in treatment, an important factor for effective early intervention services. The

development of strategies preventing disengagement through intensification of case management for some patients and implementation of a strategy defined with the patient in case of disengagement certainly contributed to decrease dropout rate. In this context, we could only identify a handful of variables that were significantly related to higher risk of disengagement; although it may be impossible to decrease disengagement even more, this study suggests that a diagnosis of Schizophreniform/brief psychotic disorder, having committed offences during treatment and potentially poor socio-economic status, constitute risk factors for drop-out, and that treatment should be adapted on this basis.

Author contribution

PG & PC designed this research. JR acquired the data. PG, JR, AS, PB, CR and PC analysed and interpreted the data. PG and JR drafted the first version of the manuscript. AS, PB & PC critically revised the manuscript for important intellectual content.

Conflict of interest with respect to the study and manuscript

The authors declare no conflict of interest in relation to the subject of the study.

Acknowledgement

This study was supported by the Swiss National Science Foundation (#320030_122419 to P.C.), by the FNS SYNAPSY #320030-158776) and institutional funding. PSB was financially supported by Leenaards Foundation.

References

- Alameda, L., Golay, P., Baumann, P., Ferrari, C., Do, K., Conus, P., 2016a. Age at the time of exposure to trauma modulates the psychopathological profile in patients with early psychosis. *J. Clin. Psychiatr.* 77, e612–e618.
- Alameda, L., Golay, P., Baumann, P., Morandi, S., Ferrari, C., Conus, P., et al., 2016b. Assertive outreach for “difficult to engage” patients: a useful tool for a subgroup of patients in specialized early psychosis intervention programs. *Psychiatr. Res.* 239, 212–219.
- American Psychiatric Association, 1994. *Diagnostic and Statistical Manual of Mental Disorders (DSM)*. American psychiatric association, Washington, DC, pp. 143–147.
- Baumann, P.S., Crespi, S., Marion-Veyron, R., Solida, A., Thonney, J., Favrod, J., et al., 2013. Treatment and early intervention in psychosis program (TIPP-Lausanne): implementation of an early intervention programme for psychosis in Switzerland. *Early intervention in psychiatry* 7, 322–328.
- Baumann, P.S., Elowe, J., Mebdouhi, N., Solida, A., Conus, P., 2017. Case formulation in early psychosis: what are the tools for teamwork? *Can. J. Psychiatr.* 62, 457–464.
- Bonsack, C., Adam, L., Haefliger, T., Besson, J., Conus, P., 2005. Difficult-to-engage patients: a specific target for time-limited assertive outreach in a Swiss setting. *Can. J. Psychiatr.* 50, 845–850.
- Brown, E., Reynolds, S., Geros, H., Sizer, H., Tindall, R., McGorry, P., et al., 2019. The rates and determinants of disengagement and subsequent re-engagement in young people with first-episode psychosis. *Soc. Psychiatr. Psychiatr. Epidemiol.* 1–9.
- Cannon-Spoor, H.E., Potkin, S.G., Wyatt, R.J., 1982. Measurement of premorbid adjustment in chronic schizophrenia. *Schizophr. Bull.* 8, 470.
- Conus, P., Cotton, S., Schimmelmänn, B.G., McGorry, P.D., Lambert, M., 2007. The First-Episode Psychosis Outcome Study: premorbid and baseline characteristics of an epidemiological cohort of 661 first-episode psychosis patients. *Early intervention in Psychiatry* 1, 191–200.
- Conus, P., Lambert, M., Cotton, S., Bonsack, C., McGorry, P.D., Schimmelmänn, B.G., 2010. Rate and predictors of service disengagement in an epidemiological first-episode psychosis cohort. *Schizophr. Res.* 118, 256–263.
- Drake, R.E., Osher, F.C., Noordsy, D.L., Hurlbut, S.C., Teague, G.B., Beaudett, M.S., 1990. Diagnosis of alcohol use disorders in schizophrenia. *Schizophr. Bull.* 16, 57–67.
- Golay, P., Alameda, L., Baumann, P., Elowe, J., Progin, P., Polari, A., et al., 2016. Duration of untreated psychosis: impact of the definition of treatment onset on its predictive value over three years of treatment. *J. Psychiatr. Res.* 77, 15–21.
- Guy, W., 1976. *ECDEU Assessment Manual for Psychopharmacology*: US Department of Health, Education, and Welfare, Public Health Service, Alcohol, Drug Abuse, and Mental Health Administration, National Institute of Mental Health, Psychopharmacology Research Branch, Division of Extramural Research Programs.
- Kessler, R.C., Berglund, P.A., Bruce, M.L., Koch, J.R., Laska, E.M., Leaf, P.J., et al., 2001. The Prevalence and Correlates of Untreated Serious Mental Illness, vol.36, p. 987.
- Lamb, H.R., 1980. Therapist-case managers: more than brokers of services. *Psychiatr. Serv.* 31, 762–764.
- Lau, K.W., Chan, S.K., Hui, C.L., Lee, E.H., Chang, W.C., Chong, C.S., et al., 2019. Rates and predictors of disengagement of patients with first-episode psychosis from the early intervention service for psychosis service (EASY) covering 15 to 64 years of age in Hong Kong. *Early intervention in psychiatry* 13, 398–404.
- MacBeth, A., Gumley, A., 2008. Premorbid adjustment, symptom development and quality of life in first episode psychosis: a systematic review and critical reappraisal. *Acta Psychiatr. Scand.* 117, 85–99.
- Marion-Veyron, R., Mebdouhi, N., Baumann, P.S., Thonney, J., Crespi, S., Conus, P., 2013. Les premiers épisodes psychotiques: de l'importance du case management. *L'évolution psychiatrique* 78, 41–51.
- Marshall, M., Lockwood, A., Lewis, S., Fiander, M., 2004. Essential elements of an early intervention service for psychosis: the opinions of expert clinicians. *BMC Psychiatr.* 4, 17.
- Morandi, S., Bonsack, C., 2011. Engager dans les soins des personnes souffrant de schizophrénie par un suivi intensif dans le milieu (SIM). *Schweiz. Arch. Neurol. Psychiatr.* 162, 278–283.
- Moulin, V., Golay, P., Palix, J., Baumann, P., Gholamrezaee, M., Azzola, A., et al., 2018. Impulsivity in early psychosis: a complex link with violent behaviour and a target for intervention. *Eur. Psychiatr.* 49, 30–36.
- Moulin, V., Palix, J., Golay, P., Dumais, A., Gholamrezaee, M.M., Azzola, A., et al., 2019. Violent behaviour in early psychosis patients: can we identify clinical risk profiles? *Early intervention in psychiatry* 13, 517–524.
- Schimmelmänn, B.G., Conus, P., Schacht, M., McGorry, P., Lambert, M., 2006. Predictors of service disengagement in first-admitted adolescents with psychosis. *J. Am. Acad. Child Adolesc. Psychiatry* 45, 990–999.
- Tohen, M., Hennen, J., Zarate Jr., C.M., Baldessarini, R.J., Strakowski, S.M., Stoll, A.L., et al., 2000. Two-year syndromal and functional recovery in 219 cases of first-episode major affective disorder with psychotic features. *Am. J. Psychiatr.* 157, 220–228.
- Turner, M., Smith-Hamel, C., Mulder, R., 2007. Prediction of twelve-month service disengagement from an early intervention in psychosis service. *Early Intervention in Psychiatry* 1, 276–281.
- Yung, A.R., Yuen, H.P., McGorry, P.D., Phillips, L.J., Kelly, D., Dell'Olio, M., et al., 2005. Mapping the onset of psychosis: the comprehensive assessment of at-risk mental States. *Aust. N. Z. J. Psychiatr.* 39, 964–971.
- Ziguras, S.J., Stuart, G.W., 2000. A meta-analysis of the effectiveness of mental health case management over 20 years. *Psychiatr. Serv.* 51, 1410–1421.