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Can the Health of the Nation Outcome Scales for Children and Adolescents predict the necessity of inpatient stay during assertive community treatment?

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ABSTRACT

Understanding the trajectories of youths within Child and Adolescents Mental Health Service (CAMHS) is of primary importance. Our objective is to assess the usefulness of the Health of the Nation Outcome Scales for Children and Adolescents (HoNOSCA) to predict inpatient (IP) stay for youths followed by assertive community treatment (ACT) teams. 82 youths followed exclusively by ACT and 42 who needed IP were assessed with the HoNOSCA at admission to the program. The HoNOSCA allowed the computing of three scores: a total score, an externalizing symptoms (Ext) score and an emotional problems (Emo) score. Logistic regressions revealed that the three HoNOSCA scores at admission of ACT predicted later need for hospitalization. Using ROC curve analyses, we set up cut off scores with appropriate sensitivity and specificity for the HoNOSCA Total and Ext to optimally predict the need for hospitalization. This study revealed that the HoNOSCA may be a useful tool to predict the need for later IP during ACT. Such knowledge is important to set up the best therapeutic strategies.

1. Introduction

In Switzerland, child and adolescent mental health services (CAMHS) provide several treatment options for young people needing mental health care, including assertive community treatments (ACT) and inpatient (IP) stay. To provide appropriate care to youths in crisis and to help them recover an equilibrium, these services need to consider their developmental fragilities (i.e., heightened risk to present psychopathologies, indeed, about 20% of youths suffer from psychiatric disorders; Gau et al., 2005) and their social environment (Graap et al., 2014).

More specifically, in the context of CAMHS, ACT is usually used as an alternative to standard care for "difficult to reach" people suffering from severe mental illness (Killaspy et al., 2006). One of the main advantages of ACT is that it allows a better apprehension of the patients' psychosocial context. Because the treatment takes place in the living environment of the patients and because it usually involves their relatives, ACT creates an environment of trust and confidence, and helps patients stay socially integrated (Urben et al., 2013). ACT has been shown to be efficient in reducing symptoms, as well as frequency and duration of subsequent IP care (Sheidow et al., 2004; Rowland et al., 2005; Schley et al., 2008; Urben et al., 2013). Nevertheless, IP stay is sometimes still necessary for some youths and has been shown to be effective, on the one hand, in reducing the impact of their disorders on their quality of life, and on the other hand, in limiting their probability of suffering from a long-term disability (Mathai and Bourne, 2009).

In the context of CAMHS and evidence-based practice, the assessment of treatment effectiveness requires an appropriate evaluation of the clinical outcome which should guide the effort to provide the best treatment strategies for youths with severe psychiatric disorders. The key characteristics of such evaluation are (a) to be short, simple and useful to the clinician; (b) to have an appropriate coverage of clinical and social problems; (c) to be sensitive to clinical changes; and (d) to be reliable (Gowers et al., 2000). All these requirements are fulfilled by the Health of the Nation Outcome Scales for Children and Adolescents (HoNOSCA; Gowers et al., 1999). In particular, the HoNOSCA targets the assessment of health and social functioning of youths with severe

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psychiatric disorders (Gowers et al., 2000), is an effective instrument measuring clinical outcome, used worldwide (Bilenberg, 2003; Hall et al., 2013), and might be used for all psychiatric disorders (Gowers et al., 1999).

1.1. The current study

The current study aims to determine which youths followed by ACT will later need an IP stay. In other words, we aim to examine if a quick assessment at admission of ACT using the HoNOSCA is able to predict which youths will need an IP stay during ACT.

2. Method

2.1. Patients

All the patients followed by the ACT teams in the Vaud canton in Switzerland between 2010 and 2013 participated in the study. The final sample is composed of 124 adolescents from which two groups were formed: The first group was composed of 82 patients (66.1%) who were exclusively followed by ACT teams; the second group consisted of 42 patients (33.9%) who were hospitalized during ACT (double treatment). The mean duration of the treatment was 177.76 days ($SD=122.77$) for the ACT only group, and 230.70 days ($SD=142.81$) for the youths who needed an IP stay during ACT. This duration did not differ significantly. The total sample is composed of 73 boys and 51 girls. The sex ratio did not differ between groups, either. Youths only followed by ACT had an average age of 15.96 years ($SD=1.64$) and those necessitating both treatments had an average age of 15.94 years ($SD=1.40$). Sociodemographic variables, such as parental status, type of parental custody, type of housing structure, school withdrawal, or involvement of child protection services, didn't differ between groups, all χ^2 $ps > 0.05$. According to an assessment by a senior child and adolescent psychiatrist, all youths suffered from severe mental disorders such as anxiety ($n=29$), depression ($n=34$), conduct disorders ($n=19$), psychosis ($n=13$) or personality disorders ($n=9$). There was no difference in the prevalence of these diagnoses between both groups, $\chi^2(4)=1.80$, $p=.77$, which indicates that patients may require IP treatment regardless of their psychopathologies.

2.2. Ethical considerations

This study is a part of a larger observational study assessing the quality of ACT care teams for different age spans (i.e., adults and adolescents) in the Vaud state in Switzerland. Within this context, when proposed to be followed by ACT teams, youths and their guardians were informed that routine assessments by questionnaires would be carried out and that this would eventually lead to a scientific publication (i.e., informed consent was thus obtained). The procedure was approved by the local Ethics Committee.

2.3. Assertive community treatment (ACT)

The staff is composed of psychiatrists, social workers and nurses who assume the role of case managers. ACT is intended for adolescents aged from 13 to 18 years suffering from severe psychiatric disorders. The model of care is based on assertive, flexible, time-limited treatments, with frequent meetings taking place in the environment of the youths, and with direct involvement of their family (for a detailed description, see Baier et al., 2013). ACT teams provide different types of treatment such as: (a) *early intervention*, which promotes a specialized psychiatric monitoring (e.g., by setting up medications, or sustaining school and professional integration) to reduce the duration of untreated disorder and to avoid its aggravation; (b) *transition case management* aiming at facilitating the transition to home after a hospitalization and at avoiding a relapse; (c) *care provided to hardly accessible patients or in refusal of care*, which has the purpose of (re)establishing a therapeutic alliance between adolescents at high psychopathological risk and a caregivers network; (d) *psychiatric assessment in the community* is proposed to patients directly in the structures they are in (e.g., social care institutions, schools, juvenile prisons) and aims at assessing the care they need and at supporting the expertise of the care network; (e) *support in socio-educational institutions* is offered to socio-educational staff in the form of supervisions or therapeutic follow-up of the patient.

2.4. Inpatient (IP)

The IP treatment refers to an acute treatment of youths (aged 12-18 years) with psychiatric disorders. The adolescent psychiatric inpatient unit (APIU), where patients of our study were hospitalized, is open 24 h a day, year round and encompasses 10 beds. The staff includes child psychiatrists, nurses, psychologists, and special educational needs teachers. The decisions for IP admission are made according to either (a) the deterioration of the clinical state despite ACT treatment, (b) a great impact of the disorders on development and/or functioning (e.g., school leaving) and/or (c) the increase of family burden, which makes family members no longer available for supporting the care. Patients are admitted to the unit either on a voluntary (46.7%) or on a compulsory (53.3%) basis (i.e., when they represent a danger to themselves or to others). It should be noted that the HoNOSCA scores (at admission in ACT) did not differ depending on the mode of admission. As APIU serves mainly as a crisis resolution unit, the criteria used for discharge are based on the resolution of the acute symptomatology for which the patients were admitted. During the youths' stay, a number of therapeutic activities are proposed: regular individual and family therapy sessions, workshops on story-telling, music therapy, media review, art, and an emotion-centered workshop. Additionally, twice a week, the patients also take part in activities with an educational and cultural focus in the city of Lausanne. Furthermore, classrooms integrated with the unit enable the adolescents to do their regular schoolwork during their stay.

2.5. Measures

Patients were assessed on admission of ACT. The assessment of the physical, personal and social problems related to mental illness was carried out by trained psychiatrists, psychologists, social workers or nurses using the French version of the Health of the Nation Outcome Scales for Children and Adolescents (HoNOSCA; Holzer et al., 2006). The HoNOSCA was reported to have good psychometric properties (Gowers et al., 1999; Pirkis et al., 2005), to have good discriminant validity between diagnoses and to be useful to assess clinical outcomes in both IP and ACT contexts (Swadi and Bobier, 2005; Lesinskiene et al., 2007; Urben et al., 2013; Urben et al., 2015). The HoNOSCA is composed of 15 items scored on a 5-point severity scale ranging from *no problems* (0) to *severe problems* (4). For each patient, trained specialists rate the most severe problem that occurred in different fields, such as "Problems with disruptive, antisocial or aggressive behaviour", "Problems with emotional or related symptoms", or "Problems with self-care and independence." In this study, only the 13 first items were taken into account, as they encompass a large panel of psychosocial difficulties. The last 2 items focus on the available information and knowledge about pathology and care system, but because their inter-rater reliability is subject to debate (Pirkis