Systematic literature review: outcome measures for child and adolescent mental health services

Jennifer Hunter, Irene Higginson and Elena Garralda

Abstract

Background Outcome measurement is an important component of health care service evaluation. The aim of this paper is to review child and adolescent mental health outcome measures and identify outcome measurement tools for use in routine clinical practice.

Method A systematic literature review was undertaken, using Medline and Psych Info and supplemented by correspondence with relevant institutions and authorities in the field. The review identifies potential specific outcome measurement tools. These tools are evaluated using the scientific criteria of validity and reliability, responsiveness to change, and appropriateness of each tool's format for use in routine clinical practice.

Results Three broad categories of outcome are identified: population outcomes, specific outcome and performance indicators. Nineteen specific outcome measurement tools are short-listed and compared in detail. No single tool is suitable for use as a comprehensive outcome measurement tool in routine clinical practice.

Conclusions A combination of some of the tools short-listed will cover all the necessary outcome items. However, the increase in assessment time will reduce clinical usefulness. Further research is needed to modify or create appropriate outcome measurement tools for use in routine clinical practice.

Keywords: child and adolescent psychiatry, mental health, outcomes, audit.

Introduction

Outcomes measure the result of a health care intervention.\(^1\) It is the change in a patient's current and future health status that can be attributed to antecedent health care. If a broad definition of health is used, such as the World Health Organization definition of total physical, mental and social well-being, then improvements in social and psychological functioning are included.

The need to measure health care has been brought about by many changes over the past 20 years. The increasing costs of care have heightened the importance of assessing efficacy and cost effectiveness. A shift in the aims of medical interventions, from mostly curative to emphasizing the importance of improving quality of life and preventing illness, means that quality of care and quality of life must now be considered when assessing health outcomes. Interest in the development and use of outcomes has recently intensified owing to pressure from the British Government and local health commissioning agencies for health services research and audit, to ensure that the services purchased are effective and good value for money.\(^3\)\(^4\) This has led to the establishment of a national outcomes clearing house,\(^1\) and the testing of outcomes in clinical audit and purchasing.\(^2\)\(^5\)\(^6\) In this paper we consider the development of outcome measures for one area of care – child and adolescent mental health.

Epidemiology of child and adolescent mental health problems

Psychiatric disorders or handicapping abnormalities of emotions, behaviour or relationships are present in a substantial proportion (10–20 per cent) of children and adolescents in the general population. However, the majority of children are not under the care of psychiatric services.\(^7\)\(^8\) Those referred tend to be the

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more severely affected children in families of multiple psychosocial and family stress (e.g. unemployment and low socioeconomic status, marital and mental health problems in parents, low extended family support). 9

Co-morbidity is common in child and adolescent psychiatry. Mixed conduct emotional disorders are common in the general population and it is not uncommon for children or adolescents with hyperkinetic or depressive disorders to have co-morbid conduct and/or anxiety disorder. 7,10

Services
Child mental health services operate from a range of settings. The more common services include child psychiatric units in hospital out-patient departments, community child guidance services, and community child and family consultation services. There are also a small number of day units and in-patient units (often supra-district or regional). 11

Child psychiatric services are usually based on the work of multi-disciplinary teams with a range of professionals including child psychiatrists, psychologists, psychotherapists, social workers, specialist nurses and play therapists. Treatments at clinics range from psychological to physical. Because of the close link between child psychiatric problems and difficulties in areas such as education and social environment, consultation with other relevant professionals is often a feature of treatment. 11-13

Measuring outcome
Measurement of outcome for children referred to child psychiatric units needs to include improvement in child symptomatology. However, a meaningful assessment must also take into account the complex interactions between the patient and family, and medical, educational and social factors which may have contributed to the referral.

Measurement tools which assess the mental health of children and adolescents have been available for many years. These have been used to identify cases and measure change in research trials. Evaluations of these tools for their use in research studies have been published. 14-19 However, no review has considered whether and which of the tools would be suitable for use as outcome measures in routine clinical practice. This paper aims to review child and adolescent mental health outcomes and determine which tools might be suitable for use in routine clinical practice.

Method
A literature search was done using Medline and Psych Info. The topics under consideration were: general outcome indicators, child and adolescent mental health outcome indicators, and specific child and adolescent measurement tools. The keywords used were: adolescence, adolescent, adolescent psychiatric assessment, adolescent psychiatry, adolescent psychology, audit, behaviour checklist, behaviour problem checklist, child and adolescent psychiatric assessment, child assessment schedule, child behaviour checklist, child behaviour screening questionnaire, child guidance clinics, child psychiatric assessment, child psychiatry, child psychology, child psychotherapy, children quality of life, children’s global assessment schedule, Conners parent or teacher rating scale, Devereux child behaviour rating scale, diagnostic interview schedule for children, Harter self-esteem, health care interview schedule for children, kiddie SADS, measurement, mental, mental health programme evaluation, modified Harter self-esteem, outcome, pre-school behaviour checklist, preschool behaviour questionnaire, process assessment, psychotherapeutic outcomes, Rutter questionnaire, Rutter scale, short Conners parent or teacher rating scale, treatment effectiveness evaluation, treatment outcomes.

Further material was found in the personal libraries of individual clinicians and by writing to the authors of various tools. In addition, the project listings of the UK Clearing House on Health Outcomes provided information about current outcome projects in paediatric and adolescent mental health.

Each measure identified throughout this search was reviewed according to the scientific criteria of validity and reliability, appropriateness of each measure’s format, responsiveness to change, and whether the measure can be used to evaluate child and adolescent mental health outcomes in routine clinical practice.

Results
A total of 75 papers were reviewed: three papers discussed child and adolescent mental health population indicators; three papers, outcome measurement of child and adolescent mental health services; and 69 papers, specific child and adolescent measurement tools. Three broad categories of outcome were identified: population outcomes, case-specific outcomes, and performance indicators. These are considered below.

Population outcomes
Changes in the health status of a population can be referred to as population outcome indicators. In child and adolescent mental health, the outcome may be social as well as clinical. 20 Population outcome measures could include a reduction in the prevalence
of mental health problems, suicide and para-suicide, delinquency, homelessness and school absenteeism.

**Specific outcomes**

To evaluate the outcome of an individual case, the following areas should be considered: (1) case characteristics; (2) clinical change; (3) compliance and satisfaction (of patient, carer or carers, and referrers); (4) met and unmet needs. Assessing need is particularly relevant to more complex cases with poor clinical improvement, where it is important to know how the child or adolescent is coping with continuing difficulties.

**Influences on outcomes: case characteristics**

To meaningfully rate the success of an intervention, the case characteristics and their relationship to predicted outcome must first be considered. Assessment of case characteristics involves considering the case type (diagnosis), case severity (degree of disability) and case complexity (other related factors that might contribute to the final outcome). Each of these areas has the ability to influence the effectiveness of an intervention. Case type or diagnosis is important, as different conditions have different prognosis. For example, emotional disorders tend to be shorter lived and show a better response to treatment than conduct disorders. Autism is a continuing developmental disorder whereas schizophrenia is likely to fluctuate.

Case severity and degree of associated disability refer to the fact that the same condition may lead to very different degrees of handicap. The degree of handicap from an anxiety disorder with separation anxiety may range from preoccupation about separations with impaired sleep and concentration, through reluctance to separate or reluctance to go to school, to total school refusal.

Case complexity considers associated parental, family, medical, educational and social factors which may have an important influence on the ability of clinics to provide treatment. They would include: (1) parental attitude to treatment and motivation for change; (2) parental health problems and social factors adversely influencing the parents’ ability to provide the necessary safety, care and emotional atmosphere as well as controls for the child’s emotional and behavioural well-being; (3) the presence of handicap from physical and developmental problems in the child; (4) the presence of co-morbidity; (5) the number of other professionals involved with the child and his or her family. Sometimes these factors must become the focus of intervention before symptomatic treatment can take place.

By evaluating the case characteristics the clinician is able to make a prediction about the expected outcome and compare this with the observed outcome. This process is particularly relevant when assessing the outcomes of a heterogeneous group with an array of potential outcomes, as is the case in child and adolescent mental health.

**Specific outcome measures**

The three main categories of specific outcome measures are shown in Fig. 1. The majority of outcome measurement tools found focus on aspects of clinical change. However, with such a heterogeneous group of clients where outcomes are extremely variable, measuring compliance, satisfaction, and met and unmet need is important.

To be useful to clinicians in their routine clinical practice, measurement tools need to be easy and quick to complete. It is important that information is collected from the relevant sources. Ideally, the tool should obtain information from the parent or parents, child or adolescent, and teacher or teachers. Children and adolescents are able to respond to direct questions about their mental state, and the parent’s report is not interchangeable with the child’s or adolescent’s report. Teachers’ views are also important, as they can provide valuable information about the behaviour of the child or adolescent at school and social adjustment.

A total of 46 specific outcome measurement tools were identified and a short-list of 19 are reviewed. These tools were chosen according to their

<table>
<thead>
<tr>
<th>(1) Clinical change</th>
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<tbody>
<tr>
<td>Symptom change</td>
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<tr>
<td>Levels of functioning for handicap</td>
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<tr>
<td>Well-being and/or self-esteem</td>
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<td>Health-related quality of life</td>
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<td>Social situation and quality of parenting</td>
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<th>(2) Compliance and satisfaction by</th>
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<tr>
<td>Patient</td>
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<td>Carers</td>
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<td>Referrers</td>
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<th>(3) Met and un-met needs in terms of</th>
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<tr>
<td>Parenting</td>
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<tr>
<td>Education</td>
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<tr>
<td>Social experiences</td>
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</table>

**FIGURE 1** Specific outcome measures.
content, validity, reliability, format and time taken to complete. All but two tools – 'A proposed core data set for child and adolescent psychology and psychiatric services' (Association of Child Psychology and Psychiatry; ACPP) and the ‘Health of the Nation Outcome Scale for Children and Adolescents' (HoNOSCA) based on Wing et al. – have adequate reliability and validity for the purposes developed. The validity and reliability of ACPP and HoNOSCA have not yet been tested. Table 1 (symptom questionnaires), Table 2 (symptom interview schedules) and Table 3 (broader outcome measures) summarize their content.

Apart from the ACPP and HoNOSCA (Table 3), none of the tools were designed to be used in routine clinical practice. Many of the tools are only concerned with recognizing and diagnosing a problem. Others have been used to study the effectiveness of a specific intervention.

Performance indicators
If it is not possible to directly assess outcome, then assessing performance indicators can provide information on probable outcomes. This can be done by looking at a service’s structure (e.g. buildings, equipment, staffing), processes (e.g. admission and re-admission rates, length of hospital stay, number of consultations, therapies used, quality of case notes, efficiency of referral processing, waiting times) and output (e.g. discharge rates, number of referrals).

Discussion
Population outcome indicators
There are difficulties with using the proposed population outcome indicators. Many of the indicators are likely to have inadequate specificity or sensitivity. For example, delinquency, school absenteeism and homelessness are not necessarily caused by a mental health problem, and not all mental health problems lead to suicide and parasuicide. A child and adolescent mental health unit sees only a small portion of the total population morbidity. Therefore, it is unlikely that population outcome indicators will accurately reflect the performance of a child and adolescent mental health unit.

However, from a public health perspective, it would be useful to explore population outcome indicators, and more research is needed. How much child and adolescent mental health interventions can influence these indicators is also an important question.

Specific outcome measures
Only two outcome measurement tools, the ACPP and HoNOSCA, come close to covering all the important areas. The advantage of the ACPP and HoNOSCA is their ability to compare the outcomes of a heterogeneous group. The main disadvantage is that neither tool has been subjected to formal testing of its validity, reliability and sensitivity to change. Until these are known, more comprehensive, objective data should be collected, through the use of supplementary tools.

The 'Children’s Global Assessment Scale' (addressing case severity or handicap) together with symptomatic or behavioural questionnaires such as the longer, more comprehensive, ‘Child Behaviour Checklist’ in combination with measures of self-esteem such as the ‘Modified Harter’s Self-Esteem Questionnaire’ and the ‘Children’s Quality of Life’, could be used for a comprehensive assessment of changes in clinical outcomes of children and adolescents. The ‘Pre-school Behaviour Questionnaire’ could be used for younger children. Unfortunately, there are no measures available to assess pre-schoolers’ self-esteem or quality of life.

The time taken to complete a measure plays a large part in a clinician’s acceptance of it. As the task of getting the teacher or teachers to complete a measure will be time consuming, there is a good argument for omitting the teacher assessment, unless it is clinically indicated. The Conners parent and teacher rating scales – revised, or the Rutter A2 parent and teacher rating scales, could be used to supplement or as an alternative to some of the above measures.

In assessing outcome it is important to consider ‘sleeper effects’, whereby the beneficial effects of some psychiatric treatments have been shown to continue after treatment is terminated. In the clinic setting, the presence of sleeper effects will depend on interventions having achieved the necessary improvements to meet the child’s needs, including stress reductions and changes in children’s attitudes and self-concept. Therefore, measurement may also require long-term follow-up of interventions.

Performance indicators
Performance indicators are indirect measures of the quality of care, and their value depends on the nature of their influence on care. Structure or process are relevant, because they increase or decrease the probability of a good outcome. However, they are only valuable as a proxy for outcome, once the elements of structure or process are known to have a clear relationship with the desired changes in outcome. Therefore, if a therapy is proven to be effective in research studies, a good proxy of outcome would be to measure the process of whether that therapy is correctly applied.
<table>
<thead>
<tr>
<th>Scale</th>
<th>Type of scale</th>
<th>Factors assessed</th>
<th>Age (years)</th>
<th>Ability to detect clinical change</th>
<th>No. of items</th>
<th>Time (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behaviour Problem Checklist – revised</td>
<td>Questionnaire: parent, teacher</td>
<td>Identifies and assesses behavioural problems</td>
<td>5–17</td>
<td>Yes</td>
<td>89</td>
<td>15–20</td>
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<td></td>
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<tr>
<td>Child behaviour Checklist</td>
<td>Questionnaire: parent, teacher, child</td>
<td>Identifies behavioural and emotional problems and level of functioning</td>
<td>4–16</td>
<td>Yes</td>
<td>138</td>
<td>15–20</td>
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<tr>
<td>Conners Parent Teacher Rating Scale – revised</td>
<td>Questionnaire: parent, teacher</td>
<td>Identifies psychiatric disorders (especially conduct disorders)</td>
<td>3–17</td>
<td>Yes</td>
<td>48 parent 28 teacher</td>
<td>10</td>
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<td></td>
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<tr>
<td>Short Conners Parent Teacher Rating Scale</td>
<td>Questionnaire: parent, teacher</td>
<td>Probably only useful for assessing hyperkinetic problems</td>
<td>3–17</td>
<td>Yes</td>
<td>10 parent 10 teacher</td>
<td>5</td>
</tr>
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<td></td>
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<tr>
<td>Rutter A Questionnaire</td>
<td>Questionnaire: mother</td>
<td>Diagnostic tool, assesses emotional and behavioural problems</td>
<td>9–13</td>
<td>Unknown</td>
<td>54</td>
<td>?</td>
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<tr>
<td>Rutter A2 Parent and Teacher Rating Scale</td>
<td>Questionnaire: parent, teacher</td>
<td>Screening instrument for behavioural and emotional problems</td>
<td>9–13</td>
<td>Unknown</td>
<td>31 parent 26 teacher</td>
<td>5 min each</td>
</tr>
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<td></td>
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<tr>
<td>Pre-school Behaviour Checklist</td>
<td>Questionnaire: teacher</td>
<td>Screening for behavioural problems</td>
<td>2–5</td>
<td>Unknown</td>
<td>23</td>
<td>10</td>
</tr>
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<td></td>
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<tr>
<td>Pre-school Behaviour Questionnaire</td>
<td>Questionnaire: parent, teacher</td>
<td>Identifies pre-schoolers at risk for emotional problems</td>
<td>3–6</td>
<td>Probably</td>
<td>30</td>
<td>5–10</td>
</tr>
</tbody>
</table>
## TABLE 2 Symptom interview schedules

<table>
<thead>
<tr>
<th>Scale</th>
<th>Type of scale</th>
<th>Factors assessed</th>
<th>Age (years)</th>
<th>Ability to detect clinical change</th>
<th>No. of items</th>
<th>Time (min)</th>
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</thead>
<tbody>
<tr>
<td>Behaviour Screening Questionnaire</td>
<td>Semi-structured interview: parent</td>
<td>Identifies and assesses behavioural problems</td>
<td>3–5</td>
<td>Unknown</td>
<td>12</td>
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<tr>
<td>Kiddie Schedule for Affective Disorders and Schizophrenia</td>
<td>Semi-structured interview: parent, child</td>
<td>Focuses on affective disorders but identifies most disorders</td>
<td>6–18</td>
<td>Yes</td>
<td>89</td>
<td>15–20</td>
</tr>
<tr>
<td>Child Assessment Schedule</td>
<td>Semi-structured interview: parent, child</td>
<td>Diagnostic aid (corresponding to DSM diagnosis) and clinical assessment. Used mostly for depression</td>
<td>7–12</td>
<td>Unknown</td>
<td>75</td>
<td>45–60</td>
</tr>
<tr>
<td>Diagnostic Interview Schedule for Children</td>
<td>Highly structured interview: parent, child</td>
<td>Useful for epidemiological surveys and symptom inventory in clinical research</td>
<td>6–18</td>
<td>Unknown</td>
<td>264</td>
<td>40–80</td>
</tr>
<tr>
<td>Child and Adolescent Psychiatric Assessment</td>
<td>Semi-structured interview: parent, child</td>
<td>DSM-III and ICD diagnosis plus psychosocial and symptom intensity</td>
<td>8–16</td>
<td>Unknown</td>
<td>250</td>
<td>45–120</td>
</tr>
<tr>
<td>Interview Schedule for Children</td>
<td>Semi-structured interview (6 month's training): child, parent</td>
<td>So far, only used in out-patient setting. Symptom-based diagnosis, mental state, observed psychopathology, developmental milestones, severity. Two versions: initial assessment and follow-up, plus additional diagnostic addenda</td>
<td>8–17</td>
<td>Probably</td>
<td>242 (plus 22 addenda with up to 20 extra questions to be completed)</td>
<td>240</td>
</tr>
<tr>
<td>Scale</td>
<td>Type of scale</td>
<td>Factors assessed</td>
<td>Age (years)</td>
<td>Ability to detect clinical change</td>
<td>No. of items</td>
<td>Time (min)</td>
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<tr>
<td>Children's Global Assessment Scale</td>
<td>Scale judged by professional, parent, child</td>
<td>Measures functional adjustment</td>
<td>4-16</td>
<td>Yes</td>
<td>N/A</td>
<td>20-30</td>
</tr>
<tr>
<td>Children Quality of Life</td>
<td>Questionnaire: parent, child</td>
<td>Measures quality of life: 15 domains including satisfaction, 1 general statement</td>
<td>10-14</td>
<td>Probably</td>
<td>16</td>
<td>10-15</td>
</tr>
<tr>
<td>Proposed Health of the Nation Outcome Scale for Children and Adolescents (HoNOSCA)</td>
<td>Rating scale judged by professional</td>
<td>Multiple outcome measures – behaviour, functional impairment, symptoms, social context</td>
<td>All ages</td>
<td>Unknown</td>
<td>12</td>
<td>5-10</td>
</tr>
<tr>
<td>Proposed core data set for child and adolescent psychology and psychiatry – a suggested framework for outcomes (ACPP)</td>
<td>Rating scale: child, parent, referrer</td>
<td>Multiple outcome measures – records case characteristics, clinical change, compliance and satisfaction</td>
<td>All ages</td>
<td>Unknown</td>
<td>9</td>
<td>5</td>
</tr>
</tbody>
</table>
Henderson et al. have reaffirmed a widely held aim for treatment of any childhood and adolescent disorders, that is, to avoid hospitalization and to use community, out-patient and day case centres. They suggested using admission and re-admission rates, along with length of hospital stay, as a proxy indicator of overall quality of care. However, as only a small number of children and adolescents with mental health problems are admitted to hospital, this is unlikely to be a sensitive indicator of care for these services.

It is important that performance indicators are thoughtfully implemented in child and adolescent mental health units, otherwise the information may be limited or misleading. For example, simply recording the number of referrals or consultations in a unit is unlikely to accurately represent their workload. This is because one referral often means seeing the patient and family members, both individually and in group sessions, on a number of occasions. It would be more informative to document also the number of people seen, and the nature of the treatment given, during consultations.

**Conclusions**

This paper has identified three approaches for measuring child and adolescent mental health outcomes. Unfortunately, none of the approaches has been fully developed or evaluated.

We have focused on the evaluation of clinical change. Most of the measures identified are lengthy and few have been proved to detect clinical change. Further research in the clinical setting is required to establish the usefulness of these measures, pilot shortened forms of the measures, and develop other appropriate measures for assessing case complexity, pre-schoolers' quality of life, patients', carers' and referrers' satisfaction, and met and unmet needs.

A single tool that meets all our criteria would significantly aid the routine measurement clinical outcomes of such a heterogeneous group. The ACPP and HoNOSCA have the potential to adequately measure child and adolescent mental health outcomes in routine clinical practice. However, both tools would require further modification and piloting, formal comparisons with other tools and scientific validation. It may not be possible to modify HoNOSCA for more general clinical use, as its primary aim is to measure the Health of the nation mental health target Cl. In this case, one could either modify and test the ACPP or develop another measurement tool.

Finally, it is important to determine how useful the information collected is in assisting the purchasers of health services and the clinicians in their audit.

**References**

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