The treatment of child and adolescent mental health problems in primary care: a systematic review

Peter Bower, Elena Garralda, Tami Kramer, Richard Harrington and Bonnie Sibbald


Background. There is significant potential to increase the accessibility and effectiveness of child and adolescent mental health services through the involvement of primary care professionals and the delivery of interventions in the primary care setting. However, little is known about the actual clinical and cost-effectiveness of such service delivery.

Objective. The aim of the study was to review systematically the evidence concerning the effectiveness of interventions for child and adolescent mental health problems in primary care, and interventions designed to improve the skills of primary care staff.

Methods. Searches were made of The Cochrane Clinical Trials Register, MEDLINE, PSYCINFO, EMBASE and CINAHL, together with correspondence with subject experts and authors of studies, and checking of references in identified papers.

Results and Conclusions. There was some preliminary evidence that treatments by specialist staff working in primary care were effective, although the quality of included studies was variable and no data were available on the cost-effectiveness of interventions. Equally, some educational interventions show potential for increasing the skills and confidence of primary care staff, but controlled evaluations were rare and few studies reported actual changes in professional behaviour or patient health outcomes. A significant programme of research is required if the potential for child and adolescent mental health services in primary care is to be realized in an effective and efficient way.

Keywords. Adolescents, children, education, mental health, psychotherapy.

Introduction

Psychosocial problems are prevalent in children and adolescents attending primary care,1,2 and UK government policy has highlighted primary care for further development of child and adolescent mental health services.3,4 The Audit Commission identified three roles for non-specialist staff, which reflect standards 1 and 2 of the mental health National Service Framework:5

(i) early identification of mental health problems;
(ii) offering treatment for less severe problems; and (iii) pursuing health promotion and problem prevention.6

Based on work on the interface between primary care and specialist services,7,8 it is possible to identify three methods of strengthening the role of primary care. The first is increased management by primary care and community professionals, such as GPs or health visitors (HVs). However, such professionals may not have adequate training, skills or confidence.9,10 The second is management by specialist mental health professionals working in primary care. The third approach involves ‘consultation–liaison’,7 where the specialist acts to support management by primary care rather than take responsibility for individual patients themselves. ‘Primary care child and adolescent mental health workers’ have been proposed for this role.3

Previous analyses of services8,11 have not focused on effectiveness, prioritizing other issues such as access and multidisciplinary working.12 However, the recent NHS...
Plan promoted the use of ‘primary care workers trained in brief therapy techniques of proven effectiveness . . . in all age groups, including children’. This paper seeks to review the evidence of the effectiveness of interventions for children and adolescents in primary care, and to determine future research priorities.

Methods

Design
The design involved a systematic literature review. Electronic database searching, examination of the reference lists of identified studies and correspondence with identified authors and subject experts were used to search for relevant studies.

Inclusion criteria
This review sought to examine evidence concerning the three models of provision of child and adolescent mental health services described in the Introduction, by reviewing (i) studies of the effectiveness of educational interventions with primary care or community staff; (ii) studies of the effectiveness of treatment by primary care or community staff; (iii) studies of the effectiveness of treatment by specialist staff in primary care; and (iv) studies of the effectiveness of consultation–liaison. The inclusion criteria for each type are summarized in Table 1. Controlled and uncontrolled evaluations were included as it was expected a priori that the available literature would be relatively small. There were no specific quality criteria for inclusion of studies, but information on methodological issues was extracted in order to examine the overall quality of the studies and assist in the interpretation of results.

Search strategy for identification of trials
The Cochrane Clinical Trials Register (1999), MEDLINE (1966–999), PSYCINFO (1966–1999), EMBASE (1980–1999) and CINAHL (1982–1999) were searched electronically in August 1999. Full details of the search strategy are available from the first author. The reference lists of all relevant studies were searched for further studies. Thirty-four subject experts known to RH and EG were contacted by post with a request for any further studies. Additionally, letters were sent to all authors of studies included in the review in order to enquire about new or ongoing studies of relevance, and to enquire about relevant grey literature.

Results

Data were extracted by PB, and details of the studies included in the review can be found in Tables 2–5. Tables of excluded and ongoing studies are available from the first author.

Scope of the included studies
Most of the studies concerned specialist treatment in primary care or treatment by community nurses: there was little concerning the work of GPs, and consultation–liaison methods had received only a single evaluation. In terms of treatment, the interventions tested included behaviour therapy or cognitive–behaviour therapy, family therapy, non-directive counselling, dynamic therapy, psychiatric evaluation and guidance, parent education and counselling, group work and child education. Most interventions were brief (6–12 sessions) and the therapists had specific psychiatric training, but in general they were not senior therapists.

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Studies included in the review</th>
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<tbody>
<tr>
<td>Study types</td>
<td>Treatment by primary care or specialist staff or effect of consultation–liaison on patients</td>
</tr>
<tr>
<td>Types of participants</td>
<td>Randomized controlled trials (RCTs)</td>
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<tr>
<td></td>
<td>Controlled before and after studies (CBA)</td>
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<tr>
<td></td>
<td>Simple before and after studies without controls (SBA)</td>
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<tr>
<td></td>
<td>Children and adolescents aged 18 or under with ‘mental health problems’ (broadly defined).</td>
</tr>
<tr>
<td></td>
<td>Interventions for mothers were included if outcomes were measured at the level of the child</td>
</tr>
<tr>
<td>Types of interventions</td>
<td>Interventions designed to improve the skills of professionals in the mental health care of children (rather than generic mental health skills)</td>
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<tr>
<td></td>
<td>Treatments provided by primary care providers or specialists working in primary care settings</td>
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<tr>
<td></td>
<td>1. Treatment by the primary care team</td>
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<td></td>
<td>2. Treatment by specialists</td>
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<td>3. Treatment by consultation–liaison methods</td>
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<tr>
<td>Outcomes</td>
<td>Clinical outcomes</td>
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<tr>
<td></td>
<td>Attitudes</td>
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<td></td>
<td>Knowledge</td>
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<td></td>
<td>Diagnostic and treatment behaviour</td>
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<td></td>
<td>Costs</td>
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<td></td>
<td>Costs</td>
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</tbody>
</table>


Quality of the included studies

The full range of study designs were located, from randomized controlled trials (RCTs) to simple before and after (SBA) studies without controls. Although the latter are useful in the development of interventions, they are difficult to interpret because of known confounds such as spontaneous remission. A number of studies used control groups, but did not use randomization. Although the addition of a non-randomized control provides some protection against threats to internal validity, some of the controls chosen in the studies were particularly vulnerable to selection bias, and only one study explicitly matched controls in terms of psychological distress, and that was done retrospectively. Even when RCTs were used, the description of randomization often was insufficient to judge its quality or the methods used were suboptimal.

Studies in the present review often were missing information concerning important issues such as the process of treatment delivery (e.g. the amount of treatment offered), patient compliance and use of other mental health treatments outside of the intervention. Basic demographic information on the comparability of intervention and control groups was also not always presented. Statistical analyses were also very varied. Power analyses were almost entirely absent. A number of studies reported the significance of changes within control and intervention groups individually: differences in the significance of the changes were used as evidence of differences between the groups, a procedure that is generally viewed as invalid. Some studies conducted interventions (such as training) at the level of the health professional but examined effects at the level of the patient. Finally, although some of the studies discussed

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### Table 2: Educational studies involving the primary care team

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Brief description of intervention</th>
<th>Study population</th>
<th>Sample size</th>
<th>Summary of results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stevenson</td>
<td>RCT</td>
<td>12-session introduction to use of behaviour modification techniques versus delayed training group</td>
<td>HVs and families on their caseload</td>
<td>14 HVs and 205 families</td>
<td>Few changes in child behaviour in either analysis, although those changes that were significant suggested that the delay group were less effective post-training. No differences in resolution of target behaviours. No significant changes in maternal GHQ scores for either group.</td>
</tr>
<tr>
<td>Weir</td>
<td>CBA</td>
<td>Instruction in behaviour modification (manualized) and group meetings</td>
<td>HVs and children with sleep problems</td>
<td>Number of HVs unclear, 51 children</td>
<td>Few differences in outcomes between intervention and control, using either clinical or health visitor ratings, although more children in control group referred to other agencies (8% versus 41%).</td>
</tr>
<tr>
<td>Davis</td>
<td>CBA</td>
<td>Parent advisor training versus no training</td>
<td>HVs and CMOs</td>
<td>6 HVs and 3 CMOs</td>
<td>Significant changes in counselling knowledge, perception of self as counselor, self-esteem, overall counselling ability and attending behaviour.</td>
</tr>
<tr>
<td>Seeley</td>
<td>SBA</td>
<td>Training in detection and management of post-natal depression (use of EPDS and counselling/ CBT skills)</td>
<td>HVs and post-natally depressed women</td>
<td>46 HVs, number of patients unclear</td>
<td>No significant difference in change in mothers’ experience of infant care. Rate of mother–baby relationship problems lower at follow-up in intervention group.</td>
</tr>
<tr>
<td>Bernard</td>
<td>SBA</td>
<td>Preparatory reading and single structured teaching sessions using either vignettes or video</td>
<td>GP trainees</td>
<td>61 GPs and 174 patients</td>
<td>Scores on 5/6 attitude/competence questions increased post-training. Small but significant increase in knowledge quiz scores. Significant increase in diagnostic accuracy in subsample of GPs.</td>
</tr>
<tr>
<td>Appleton</td>
<td>SBA</td>
<td>Behavioural intervention methods. 3-day induction followed by 3 follow-up days, plus access to specialist HV</td>
<td>HVs</td>
<td>13 HVs and 72 families</td>
<td>Significant reductions in mothers’ perception of the severity of the problem, and mothers’ and fathers’ GHQ scores pre- and post-intervention.</td>
</tr>
<tr>
<td>Bowler</td>
<td>SBA</td>
<td>3-day workshop and follow-up session 6 weeks later</td>
<td>HVs</td>
<td>6 HVs</td>
<td>5/6 HV’s increased scores on case vignettes. Average score pre-training 10.2, post 18.7</td>
</tr>
<tr>
<td>Hewitt</td>
<td>SBA</td>
<td>2-day behavioural workshop on managing children’s behavioural problems. Additional in vivo case supervision and training</td>
<td>HVs</td>
<td>9 HVs</td>
<td>Significant increase in ratings of appropriateness post-training. No differences in ratings of difficulty in dealing with problems post-training. No effect of training on methods of case identification.</td>
</tr>
</tbody>
</table>

CBA, controlled before and after study without randomization; EPDS, Edinburgh post-natal depression scale; GHQ, General Health Questionnaire; HV, health visitor; RCT, randomized controlled trial; SBA, simple before and after study without control group.
resource usage and costs, none provided an actual economic analysis.

Because of the variability in study design, quality, interventions and outcomes, any attempt at quantitative summary would have been inappropriate. Instead, details of the studies are presented in Tables 2–5, and the studies are discussed in the text. A brief summary of the evidence for each of the methods of service delivery is also provided.

Results of the included studies
Educational interventions with primary health care staff (eight studies, three controlled). Of the controlled studies, two tested the effects of training by examining child behaviour outcomes in families treated by trained and untrained HVs. Stevenson et al. evaluated the effect of 12-session training in behaviour modification techniques by examining various outcomes in families treated by HVs who were randomized to either immediate training or a delayed training group. There were few significant differences in general child behaviour outcomes associated with the training, nor any significant changes in the resolution of the targeted behavioural problem. Weir et al. also examined the effectiveness of similar training for HVs in the behavioural management of sleep disorders. Again, neither HVs' subjective ratings nor those based on a structured questionnaire showed any improvements in the severity of the problems associated with training. The authors of both these studies considered that the training provided to the HVs may have been insufficient to demonstrate an effect, rather than the intervention being ineffective in this context per se.

Davis et al. evaluated counselling training for HVs and paediatric community medical officers, to prepare them to work in a ‘parent advisor’ role (i.e. the development of a respectful partnership with parents as a way of supporting them and enhancing their self-esteem). A 15-session training intervention was associated with significant changes in a number of relevant outcomes, such as counselling skills, self-esteem and counselling knowledge, that did not occur in a control group matched for profession and experience.

In the uncontrolled evaluations, Seeley et al. evaluated a course (of six half-days) on post-natal
depression, using pre–post comparisons of mothers treated by HVs, before and after the latter received their training. The training involved both the identification of depression as well as counselling and cognitive–behavioural skills, which were put into use in weekly visits to women in need of support. As well as reductions in post-natal depression, the women treated by the trained HVs reported reductions in mother–baby relationship problems over time post-training, whereas there was no comparable reduction over time in the pre-training

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Brief description of intervention</th>
<th>Population</th>
<th>Sample size</th>
<th>Length of follow-up</th>
<th>Summary of results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finney14</td>
<td>CBA</td>
<td>Behaviour therapy by psychologists versus routine care</td>
<td>Children with psychological problems</td>
<td>186</td>
<td>12 months</td>
<td>Externalizing and internalizing scores reduced significantly (within intervention group only). HMO medical encounters significantly lower post-intervention in intervention group compared with controls</td>
</tr>
<tr>
<td>Finney15</td>
<td>CBA</td>
<td>Behaviour therapy by psychologists versus routine care</td>
<td>Children with recurrent abdominal pain</td>
<td>32</td>
<td>42 weeks</td>
<td>School absence reduced (within intervention group only). Significant reduction in medical visits within intervention group, no change in controls</td>
</tr>
<tr>
<td>Martin22</td>
<td>CBA</td>
<td>Behaviour therapy by psychologists versus usual care</td>
<td>Children with mental health problems</td>
<td>65</td>
<td>12 weeks</td>
<td>Treatment was associated with a significant drop in intensity of problems, but not the number reported</td>
</tr>
<tr>
<td>Blakey17</td>
<td>CBA</td>
<td>Behaviour therapy versus routine primary care</td>
<td>Patients with psychological problems</td>
<td>178</td>
<td>3 years</td>
<td>Rates of service use in intervention group were higher pre-treatment, reduced post-treatment but increased again over time</td>
</tr>
<tr>
<td>Cooper16</td>
<td>RCT</td>
<td>Counselling versus cognitive–behaviour therapy versus dynamic therapy (one specialist, one generalist providing each) versus routine primary care</td>
<td>Mothers suffering from post-partum depression</td>
<td>191</td>
<td>18 months</td>
<td>Small improvements in mother–child interaction over time, but these were not related to receipt of treatment. No relationship between cognitive development and receipt of treatment. No relationship between behaviour problems and receipt of treatment</td>
</tr>
<tr>
<td>Benson11</td>
<td>RCT</td>
<td>Group therapy by psychologist/GP versus routine primary care</td>
<td>Frequent attenders</td>
<td>17</td>
<td>17 months</td>
<td>Family consultations significantly reduced in intervention group 6 months after intervention completed</td>
</tr>
<tr>
<td>Nicol26</td>
<td>RCT</td>
<td>Intensive health visiting versus family therapy (by social workers) versus mother and toddler’s groups (social workers and HVs) versus control</td>
<td>Pre-school children with emotional and behavioural problems</td>
<td>260</td>
<td>1 and 3 years</td>
<td>At 1 year, significant difference in developmental quotient, with family therapy lower than other three groups. No difference in total child behaviour. At 3 years, none of the major outcome variables showed a treatment effect. Some subgroup effects noted</td>
</tr>
<tr>
<td>Davis28</td>
<td>CBA</td>
<td>Parent counselling by trained HVs and CMOs versus control</td>
<td>Families referred to a Parent Advisor Service (HVs, GPs, nursery, voluntary, self-referrals)</td>
<td>93</td>
<td>16 weeks</td>
<td>Reductions within intervention group significant in relation to perceptions of family relationships, child behaviour and contacts with primary care professionals. Between-group analyses of change scores significant for family relationships</td>
</tr>
<tr>
<td>Graves24</td>
<td>CBA</td>
<td>Patients treated by psychologists versus controls</td>
<td>Children with mental health problems</td>
<td>63</td>
<td>12 months</td>
<td>Significant reductions in medical visits in intervention group, non-significant change in controls</td>
</tr>
<tr>
<td>Coverley27</td>
<td>SBA</td>
<td>Psychiatric evaluation by child psychiatrist</td>
<td>Mothers of children with psychiatric disorders</td>
<td>26</td>
<td>12 months</td>
<td>12 month clinic attendance reduced from 6.5 to 2.8, and maternal confidence increased post-intervention</td>
</tr>
</tbody>
</table>

CBA, controlled before and after study without randomization; CMO, community medical officer; HV, health visitor; RCT, randomized controlled trial; SBA, simple before and after study without control group.
group. Because of the nature of the design, other interpretations of these changes cannot be ruled out. Bernard et al.\(^{38}\) used an SBA design without controls to evaluate the effect of a single structured teaching session for GP registrars, who showed increases in knowledge and confidence post-training. There was also an increase in identification of psychiatric disorder, although only a subgroup of 10 registrars provided data for this part of the evaluation. Appleton et al.\(^{39}\) also evaluated a short course for HVs on behavioural methods. The course was well received by the nurses, and a simple pre–post design analysis of the effects of this training on the outcomes of the HVs’ work showed that mothers’ ratings of problem severity reduced significantly over time, as did the GHQ scores of parents whose children were being managed. Bowler\(^{40}\) and Hewitt\(^{9}\) both examined short courses for HVs, and found improvements in scores on case vignettes and subjective perceptions of problems and their management post-training.

Overall, the studies would suggest that short courses for primary care professionals may be associated with changes in subjective outcomes (such as confidence and knowledge), although there was only one controlled evaluation. However, there is little good evidence of changes in either objective professional behaviour or child outcomes associated with any of the interventions tested.

Management by primary care staff (six studies, four controlled). Cullen\(^{10}\) examined the effect of a GP working in a preventive capacity with parents, using a dozen 20–30 minute, non-directive pre-school interviews, over a period of 5 years. The sample was a non-distressed community sample. Although the outcome instruments may not have been optimal, this study and the follow-up\(^{41}\) did present some evidence that a relatively low-intensity intervention might impact on behaviour and psychopathology up to 30 years later.

Hewitt et al.\(^{29}\) used a non-randomized, controlled before and after (CBA) design with historical controls to examine the effects of two schedules of HV visits versus usual care in the prevention of problem behaviours in children. The HVs used structured interviews and information leaflets for parents and received some supervision from clinical psychologists. However, the study did not demonstrate any marked benefits: perceived potential problems were actually higher in the group using more intensive visits than in the controls. Parent satisfaction with the programme nonetheless was relatively high.

Scott and Richards\(^{42}\) used an RCT to examine the effectiveness of an advice booklet (with and without support from a research worker) compared with controls in the management of night waking. Although the intervention was by a research worker, their visits were designed to reflect those that might be used by an HV. There were no significant differences in measures of night waking by both diary and self-report between the three groups.

Oliansky et al.\(^{32}\) screened adolescent patients for alcohol abuse risk in primary care and found that a brief nurse-led educational intervention (e.g. pamphlets, motivational interview, setting a contract of personal goals) was associated with reductions in self-reported alcohol use in the intervention group compared with the controls, although there was no objective measure of alcohol use.

Both Galbraith\(^{23}\) and Crawford\(^{21}\) reported an SBA design and were able to demonstrate significant reductions in sleep problems after behavioural interventions by HVs in primary care.

It is difficult to reach meaningful conclusions from the studies of treatment by primary care professionals because of the variability in interventions, problems treated and outcomes. It is unclear whether the results of the Cullen study could be replicated more generally, as the impact may have been dependent on the particular GP involved. The other studies did not indicate that particular treatments provided by primary care professionals were associated with greater gains than usual care.

Management by specialists working in primary care settings (10 studies, nine controlled). Four CBA studies examined the treatment of child behaviour problems by clinical psychologists using behaviour techniques. Finney et al.\(^{14}\) examined outcomes in children with psychological problems, treated by brief (1–6 sessions)
behavioural techniques in a Health Maintenance Organization (HMO) primary care service. Parents reported satisfaction with treatment and there were significant reductions in child behaviour problems (tested within the intervention group only). ‘Usual care’ control group data were available for HMO service utilization only, and the analysis suggested that treatment reduced medical encounters compared with untreated controls. In Finney’s second study of the treatment of children with recurrent abdominal pain, parents were again satisfied with brief treatment (including telephone contacts) and the intervention led to significant reductions in medical utilization (tested within groups). Martin also evaluated behavioural treatment by psychologists. Few details of the process of treatment were given in this thesis, but multiple regression analysis suggested that treatment was associated with clinically significant improvements in the reported intensity of problems, but not the overall numbers of problems reported. Blakey evaluated individual behavioural treatment of parents, but examined the consultation rates of their children as well. No statistical analyses were reported, although the data suggested that children of intervention patients may reduce their utilization of primary care during the intervention; however, these initial changes did not endure past the end of the intervention.

Cognitive–behavioural therapy was one of the specialist treatments tested by Cooper and Murray, who also compared non-directive counselling and dynamic psychotherapy in the treatment of post-natal depression and its consequences for the mother–child relationship and the child’s development. Each treatment was tested using both a specialist and a generalist (health visitor) therapist, and compared with routine primary health care. In terms of outcomes for mothers, all three specialist treatments had better outcomes than routine primary care. There was no treatment effect on mother–child relationships (based on assessment of videotapes). The treatments also did not impact on the child’s cognitive development or rates of insecure attachment. All three specialist treatments reduced maternal reports of infant relationship problems more than controls, but there were no differences between the three specialist treatments in this regard. No differences in outcomes between specialist and generalist therapists were reported, although power may have been limited.

Benson and Turk evaluated the effectiveness of a group support and educational intervention, led by a GP and a psychologist. The intervention was for mothers exhibiting frequent attendance in primary care, but the consultation rates of the entire family were used as an outcome measure. There was a significant reduction in the primary care consultation rate in the intervention group: no other outcomes were measured.

Nicol et al. evaluated three treatments (intensive health visiting, mother and toddler groups and family therapy) compared with no treatment in a sample recruited using community screening. The HVs had significant psychiatric experience, so this intervention was considered a specialist intervention for the purposes of this review. Overall, there was little obvious benefit associated with the treatment at 1 or 3 year follow-up, although further analyses indicated that certain treatments had more positive outcomes than controls in certain subgroups (e.g. children with a clinically significant disorder or high social adversity) and in relation to certain outcomes. The authors raised the possibility that some treatments (e.g. family therapy in this trial) may be associated with negative effects in some patients.

Davis and Spurr evaluated the effectiveness of parent advisors, who were trained to develop a respectful relationship with parents as a method of assisting them with a wide range of psychological and social problems. The HVs and medical officers involved had specific training for this role, so this intervention was considered ‘specialist’ for the purposes of this review. The study used non-randomized controls, involving both families from other areas who did not receive the intervention and other families who formed a waiting list control group. The results suggested that the parent advisors were effective in relation to a number of outcome measures including child behaviour problems and contact with primary care professionals, although many of the statistical analyses compared the significance of changes within the experimental and control groups only.

Graves and Hastrup used a controlled design and found that treatment (based on behavioural and family systems approaches) by psychologists in a community centre in the USA was associated with significant reductions in medical utilization within groups, whereas there was no associated reduction in controls matched retrospectively on a measure of psychological distress.

Coverley et al.’s uncontrolled study evaluated a single-session, 60-minute psychiatric evaluation for frequently attending mothers with children with psychiatric disorders. The session involved problem exploration and behavioural strategies. The session was rated positively by parents (although only 62% of those offered appointments attended). Mothers reported reduced problems in their children and the session was associated with a reduction in consultation rates. The authors suggested that the format of the intervention could be adapted for use by primary care workers.

The evidence concerning studies of specialist treatment is ambiguous. There are a number of studies suggesting that psychological treatments such as cognitive–behaviour therapy are effective in reducing primary care utilization, although there are fewer objective comparisons of child psychological outcomes such as behaviour problems. Very few of the studies of specialist intervention used randomization and it is noteworthy that the two large-scale studies that did randomize failed to demonstrate a marked effect of specialist treatment on child health. Therefore, the current evidence only suggests that
specialist treatment may be more effective than usual care, and definitive trials are required.

**Management by consultation–liaison methods (one controlled study).** Neira-Munoz examined the consultation–liaison model and looked at the effects on the primary care team rather than children, although few details were available in the short report. The effects of access to specialist mental health workers were examined by comparing referral rates and other indicators in eight intervention and eight control practices. The workers assessed referrals, ran liaison clinics with primary care staff and acted as solo clinicians. The presence of the worker was associated with a marked reduction in referral rate from the intervention practices, as compared with a much more modest reduction in the control practices, although no significance tests were reported. More referrals to specialist services from the intervention practices were rated as ‘appropriate’, and fewer had to be redirected to more appropriate agencies. The new service was rated highly by GPs and HVs, although it is of interest that only one-third of doctors thought that the liaison clinics increased their knowledge and skills in this area, which is supposedly one of the main benefits of consultation–liaison models.7

**Discussion**

The review is vulnerable to publication bias, and further limited by restriction of the search to publications in English. Although relevant grey literature may have been identified by the correspondence with subject experts or through references in published literature, there was no other specific mechanism for the identification of such literature. It is difficult to estimate the potential impact of such biases on the conclusions of the review, although it is possible that studies reporting non-significant results would be more likely to remain unpublished in academic journals, in which the review would overestimate the effectiveness of child and adolescent mental health interventions in primary care. Data extraction was only conducted by a single reviewer. Although this increases the likelihood of recording errors, such problems are more likely to be of importance when ratings of study quality and effect size are used in quantitative analysis, whereas the present report is more descriptive in nature. Inclusion of a wide variety of research designs also meant that between-study comparisons of quality were difficult, since the criteria of relevance to each study type differ.

One of the major problems was the definition of ‘primary care’. Although written definitions are available, their application was problematic. First, the clear demarcation between primary and secondary care in the UK is not mirrored in the USA, and thus decisions about studies in the latter context are problematic. For example, some US studies were concerned with the provision of primary care per se (i.e. access to public health nurses and community-based paediatricians), rather than treatment provision within primary care.8. Secondly, treatment by specialist providers based outside of the primary care context (such as out-patient departments) would normally be excluded from a review such as this but, when such specialists provide treatments in the patients’ home, their exclusion becomes more problematic. There were also occasions where treatments seemed to be provided in a ‘specialist’ context (e.g. in an out-patient department) but where the treatments (e.g. in terms of dosage and complexity) were described as ‘appropriate’ for primary care by the study authors.9 Therefore, the inclusion or exclusion of particular studies may be problematic.

To summarize, in terms of training of primary care and community professionals, only the parent advisor training has preliminary support from a controlled study, and neither controlled study that examined the effects of training nurses by measuring the behavioural outcomes in children provided evidence of effectiveness. There is little evidence that treatment by primary care and community staff is effective either, although the number of included studies is small. Studies of specialist interventions generally suggest that such approaches are superior to routine primary care, but it should be noted that most did not use random allocation and thus the evidence is only suggestive at best. There is some preliminary evidence that consultation–liaison approaches may influence the referral behaviour of primary care staff.

The Cochrane collaboration suggests that reviews can be used to categorize interventions, based on whether the evidence is sufficient to have immediate implications for practice (e.g. to suggest the adoption of a particular intervention) or should only influence priorities for research. Generally, the present review clearly functions as an example of the latter. Some of these priorities will be considered below.

Generally, the quality of the included studies was not high, thus reducing the possibility of drawing valid conclusions. Given the evidence concerning the importance of randomization, the continued use of non-randomized designs is problematic, although it has been suggested that there are additional practical and ethical issues associated with randomization of children.8. Generally, reporting would be improved through the use of standardized guidelines such as CONSORT.9 There is also an obvious need for economic evaluations in this area.8

This is especially true of comparative interventions, such as the trials of potentially expensive specialist treatments, where clinical outcome data may be difficult to interpret without knowledge of overall cost-effectiveness.

Current policy rightly stresses the importance of effective working across health, education and social services in relation to children’s problems, but interventions involving complex interactions between agencies may be
difficult to manipulate and control effectively within the format of a controlled trial. Pragmatic designs with built-in qualitative methods may overcome some of these difficulties, but significant challenges remain.

Since current policy has stressed the role of consultation–liaison, there is an obvious need for further research in this area. The included study represented a significant advance, but consultation–liaison services are complex to evaluate. As well as replicating this study, it will be necessary to examine a number of other facets of this model, ranging from the effects of direct treatment provision by the attached mental health workers (through traditional controlled trials of the type used to evaluate specialist treatments) to the effects of such workers at the level of the GP and practice (e.g. in relation to the number and appropriateness of referrals). The latter have additional methodological complexities, such as unit of analysis effects and definition of complex constructs such as ‘appropriateness’. Work in adult settings has suggested that traditional consultation–liaison models may have limited impact on objective measures of the behaviour of the primary care professionals.

The review did not find many studies concerning training of the primary care team. Because of the variability in skills and attitudes among GPs and HVs, and the possibility that volunteers on training courses are highly self-selected, the generalizability of the results will always be unclear. In terms of outcomes, although the objective evaluation of attitudes and knowledge is of relevance, the gold standard for training evaluations must be changes in objective behaviour (and the degree to which such changes endure over time) and, if possible, actual changes in child outcome.

Government policy has highlighted the role of the primary care team in the further development of child and adolescent mental health services in the future. However, at present, such developments cannot depend on a reliable base of evidence on which to make decisions relating to service provision and training. This leaves commissioners with two choices. The first is to make decisions based on generalizing research from other contexts. For example, a recent review found cognitive–behaviour therapy to be effective in the management of moderately severe childhood depression, although none of the studies were based in primary care. However, the applicability of such research cannot be assumed because of the differences in the nature of the problems presenting to primary care and the sorts of interventions that may be feasible in this setting, and estimates devised from other settings may be imprecise or positively misleading. Alternatively, decisions may have to be based on criteria other than effectiveness. However, if the promise of evidence-based policy making and service development is to be realized, a significant research effort may have to be initiated soon, given the methodological complexities of work in this area and the need for long-term follow-ups.

References

The text is a list of references, each beginning with a number followed by a citation. The references are in alphabetical order, detailing various studies and evaluations related to child and family health interventions.


