Teaching Residents About Development and Behavior

Meeting the New Challenge

Carolyn Frazer, MD; S. Jean Emans, MD; Elizabeth Goodman, MD; Maria Luoni; Terrill Bravender, MD; John Knight, MD

Objective: To determine the teaching methods, materials currently used, and unmet needs for teaching developmental-behavioral pediatrics (DBP) at pediatric training programs in the United States.

Design: Cross-sectional survey of US pediatric residency training programs. The survey questionnaire consisted of 3 instruments: a program director survey, a developmental-behavioral pediatrics survey, and an adolescent medicine survey.

Participants: Survey packets were mailed in January 1997 to 211 programs identified by mailing labels from the Association of Pediatric Program Directors.

Results: Data from 148 programs (70%) completing both the DBP survey and program director survey were analyzed. Ninety-five percent of programs reported a block rotation, and 95% of those stated that the rotation was mandatory. Eighty-seven percent had a formal curriculum. Most programs reported using articles, lecture outlines, and precepting for teaching DBP. Few programs used standardized case-based or computerized materials. Most programs, however, indicated a desire for these materials. Few programs felt that 4 topics were covered adequately: adoption (12%), violence (24%), substance use (28%), and conduct problems (41%). Programs that perceived that they covered these topics adequately were more likely to use written cases as part of their curriculum (Mann-Whitney test, 1373.5; P = .04). Barriers to teaching included lack of adequate faculty, time, money, and curricular resources.

Conclusions: Pediatric residency programs have made significant gains in mandatory DBP training. However, many programs report a lack of adequate faculty, teaching materials, and methods. Responding programs indicated an interest in case-based materials. This approach may represent an alternative and underutilized resource for teaching DBP.


Editor’s Note: As the demands for practicing in managed cost environments increase, I’m afraid that developmental-behavioral teaching is not the only education victim. Time, money, and other resources seem to disappear from the teaching mission first.

Catherine D. DeAngelis, MD

From the Divisions of General Pediatrics (Drs Frazer and Knight) and Adolescent/Young Adult Medicine (Dr Emans, Goodman, and Bravender and Ms Luoni), Children’s Hospital and the Department of Pediatrics, Harvard Medical School (Dr Frazer, Emans, Goodman, Bravender, and Knight and Ms Luoni), Boston, Mass.

Primary care pediatricians are challenged by the need to diagnose and treat many children with chronic illness and behavioral and developmental problems. Up to 15% to 20% of all children present to their pediatrician with behavioral or developmental problems at some time during childhood. In addition, up to 10% have a developmental delay and 12% have learning difficulties serious enough to require special education. Advances in medical technology over the past 20 years have resulted in increased survival of children with prematurity, congenital anomalies, and chronic disease. In addition, more children and families are living in poverty and face stresses related to overcrowding, poor nutrition, and exposure to violence. Pediatric primary care providers often feel ill prepared to ask the appropriate screening questions and manage these problems after residency training, and a number of experts have recognized the urgent need to enhance pediatric residency training in developmental and behavioral pediatrics (DBP). In 1978, the Task Force on Pediatric Education recommended increased training during pediatric residency in child development and behavior. In 1997, the Residency Review Committee (RRC) mandated training in DBP with specific new objectives. According to RRC guidelines, pediatric residency training programs are now required to have both a block rotation and a longitudinal curriculum in
SUBJECTS AND METHODS

SURVEY INSTRUMENT

A 92-item pediatric residency program survey was developed and pilot-tested as previously described. The survey consisted of 3 sections: a residency program director survey, a DBP survey, and an adolescent medicine curricular survey. Only the DBP survey results and selected results for the program director survey will be reported in this article. The DBP survey contained questions about the person completing the form, presence of a formal curriculum in DBP, teaching materials currently used and desired, DBP faculty and trainers, and a series of 5-point Likert scale questions about the frequency with which various teaching methods were used (from 1, never, to 5, very frequently). Given a checklist of 7 items, programs were asked to identify teaching materials they currently used and those they would find helpful. Programs were also asked to indicate on a checklist which of 17 specific content topics they believed were adequately covered in their present curriculum. Finally, there were open-ended questions asking whether programs had adequate faculty and what barriers existed for DBP teaching.

SUBJECTS

Survey packets were mailed in January 1997 to 211 programs identified by mailing labels from the Association of Pediatric Program Directors. The packet was sent to residency directors, asking them to either complete the survey or forward it to a DBP faculty member for completion. An instructional video in pelvic examination was offered as an incentive for completion of all 3 sections of the program survey. Reminder telephone calls were made at 3 months.

ANALYSIS

Programs completing both the program director and DBP surveys were included in the analysis. Data were entered and analyzed using SPSS 8.0 for Windows statistical software. Categorical variables were analyzed using Pearson χ² or Fisher exact tests. Mann-Whitney tests were used for group comparison of continuous variables since they were not normally distributed.

DBP. The Ambulatory Pediatric Association has also developed specific goals and objectives for teaching DBP to residents. However, little is known about how pediatric residency programs are currently responding to the RRC training guidelines and what resources are available for teaching DBP. Given the complexities of developmental and behavioral concerns in children and adolescents, case-based discussion may offer an ideal teaching method. While case-based teaching has been used extensively in medical schools, not much is known about the use of standardized cases in pediatric resident education.

RESULTS

One hundred forty-eight (70%) of 211 programs returned both the program director and DBP surveys. The person completing the DBP survey was a DBP faculty member (53%), the residency director (39%), or the chief resident or fellow (2%). In the remaining cases, the person was listed as other than residency director but not specified (3%) or not identified (5%). Ninety-five percent of programs reported having a block rotation in DBP. Of those programs with a block rotation, 93% stated that the rotation was mandatory. Most (78%) reported a 4-week block; however, 13% of programs reported a 5- to 8-week rotation. Other training in DBP occurred as follows:

<table>
<thead>
<tr>
<th>Location</th>
<th>Programs Reporting, No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity clinic</td>
<td>122 (82)</td>
</tr>
<tr>
<td>Lectures, rounds, conferences</td>
<td>140 (95)</td>
</tr>
<tr>
<td>Speciality clinic</td>
<td>72 (49)</td>
</tr>
<tr>
<td>Other</td>
<td>25 (17)</td>
</tr>
</tbody>
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Eighty-seven percent of programs reported having a “formal curriculum” (eg, rotations, lectures, readings), and 82% had a specific faculty coordinator. The faculty supervising residents included fellowship-trained developmental-behavioral pediatricians (79% of programs), psychologists (39%), and general pediatricians (47%). Less commonly cited were adult and child neurologists, adult and child psychiatrists, nurse practitioners, and social workers (each reported by fewer than 30% of programs). (Table 1) The materials most commonly used for teaching DBP included articles and chapters (93% of programs) and lecture outlines (80%). Few programs stated they would find additional articles, chapters, or lecture outlines helpful. Teaching materials least commonly used included standardized written cases (20%), computerized cases (3%), and CD-ROMs (1%); however, most programs indi-

<table>
<thead>
<tr>
<th>Total No. (%)</th>
<th>Programs Reporting, No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fellowship-trained developmental-behavioral pediatrician</td>
<td>115 (79)</td>
</tr>
<tr>
<td>Psychologist</td>
<td>87 (59)</td>
</tr>
<tr>
<td>General pediatrician</td>
<td>70 (47)</td>
</tr>
<tr>
<td>Child psychiatrist</td>
<td>43 (29)</td>
</tr>
<tr>
<td>Pediatric neurologist</td>
<td>41 (28)</td>
</tr>
<tr>
<td>Social worker</td>
<td>35 (24)</td>
</tr>
<tr>
<td>Other</td>
<td>32 (22)</td>
</tr>
<tr>
<td>Teaching resident/fellow</td>
<td>18 (12)</td>
</tr>
<tr>
<td>Nurse practitioner</td>
<td>15 (10)</td>
</tr>
<tr>
<td>Adult psychiatrist</td>
<td>3 (2)</td>
</tr>
<tr>
<td>Adult neurologist</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Family practice physician</td>
<td>1 (1)</td>
</tr>
</tbody>
</table>
cated that they would find these materials helpful for teaching DBP (Figure). In response to open-ended questions, programs indicated that they would find specific materials, including standardized written cases, videos, computer programs, slide series, specific assessment tools, and pretests and posttests, helpful for teaching DBP.

The teaching methods used frequently or very frequently included precepting (94% of programs), independent reading (82%), and informal discussion (67%). Videotapes and grand rounds were used frequently or very frequently as a format for DBP teaching by only about a quarter of programs. Standardized written cases and computer materials, in contrast, were used infrequently (13% and 2% of programs, respectively) (Table 2).

Fifty-one percent of programs reported that they did not have an adequate number of faculty to teach DBP. However, having adequate faculty was not associated with having either a faculty coordinator (95% adequate faculty vs 92% inadequate, P = .72) or a formal curriculum (91% adequate faculty vs 89% inadequate, P = .65). There was no association between having a formal curriculum and the teaching methods used except for case discussion. There was a significant association between programs having a formal curriculum and those using informal case discussion for teaching DBP (Mann-Whitney test, 613.0; P = .046).

Most programs reported that the following topics were covered adequately in their residency training programs: attentional and learning disorders (88%), normal development (87%), and normal behavior (80%). Discipline, mental retardation, toilet training, and child abuse were reported as adequately covered by at least 60% of programs. Sleep disturbance, sexual abuse, and behavior problems were covered adequately by at least 50% of programs (Table 3). Residency directors were more likely than DBP faculty to report that “normal behavior” was adequately covered (P = .02). Developmental-behavioral pediatrics faculty were more likely than residency directors to report that cognitive disabilities (P = .01) and discipline/behavior management were adequately covered (P = .02).

The 4 topics least often reported as adequately covered were adoption (12% of programs), violence (24%), substance use (28%), and conduct problems (41%). A sum score of the total number of these “psychosocial topics” reported as covered adequately by each program was created for purposes of further analysis. Forty-four percent of programs covered none of the 4 topics adequately, 28% covered 1 topic adequately, and only 7% of programs covered all 4 topics adequately. There was no association between coverage of these 4 topics and the specific teaching materials used. Programs that reported using written cases perceived that they covered a higher number of the 4 psychosocial topics adequately than those programs not using written cases (Mann-Whitney test, 1373.5; P = .04).
Responses to open-ended questions indicated that a number of barriers exist to teaching DBP, including lack of time, money, teaching and curricular resources; limited faculty; lack of coordination of resources; lack of department support; and lack of integration into the pediatric residency training program. Developmental and behavioral pediatrics was seen as a broad and time-consuming field, which further hampered reimbursement and teaching. As noted earlier, programs felt limited by inadequate resources and evaluation tools. In addition, some programs commented on lack of clinical material and/or sites as a barrier, including the following: "We do not have a method to guarantee that each resident covers a wide breadth of topics in the area. Teaching cases would round out experiences." "The most important thing is real case material and effective faculty. Computer-based and video material would augment this."

**COMMENT**

Our survey results indicate that nearly all of the pediatric residency programs that responded are in compliance with the RRC mandate for a formal curriculum and block rotation in DBP. The number of residency programs that require training in DBP has increased consistently since the 1978 Task Force Report. In 1984, a survey of US residency programs showed that 49% offered formal training in DBP, 46% had mandatory training in DBP, and 27% used a block rotation. More recently, a 1993 survey of pediatric training programs found 73% of programs offered a mandatory rotation, with 89% offering some training in DBP. Thirty-nine percent of programs used a specific curriculum. The current survey shows that the percentages of programs offering a mandatory rotation (95%) and using a specific curriculum (87%) have increased further. The number of faculty specializing in DBP has also increased, possibly reflecting the increased fellowship training available in this field and programs’ response to the RRC requirements that “the resident must be directly supervised throughout the experience by faculty with training in behavioral-developmental pediatrics.” However, consistent with previous surveys of residency training, many programs do not feel they are adequately covering all content areas. Many barriers still exist, including lack of faculty, time, and effective teaching materials. Part of the difficulty in teaching DBP centers around the contextual nature of the problems and the fact that there is rarely one standard management technique or “textbook” answer that will be effective in all cases. Learning the management of behavioral problems may require actual practice, precepting, and discussion of alternative approaches, all of which take extra faculty time and resources.

Most responding programs indicated an interest in obtaining additional case-based materials for their DBP curriculum. Over the past decade, the importance of adult learning styles has been appreciated, and the use of case-based learning and group discussion has been extensively tested and evaluated in medical schools. In contrast, most materials developed in residency training programs are lecture outlines, texts, slides, and collections of relevant articles. Curricula are not generally learner centered; that is, the learners do not participate in identifying learning goals for the teaching sessions. Case-based materials encourage a more active learning experience for the student and are generally well received by learners. However, there are limited data on the use of case-based learning in pediatric residency programs, although Rosenblum et al did outline the positive value of case-based teaching in the setting of senior rounds.

It is possible that case-based teaching has been used more commonly in the medical school setting than in residency training programs because of limitations on faculty and resident time. During undergraduate years, case discussions may take place over several sessions, with students doing independent reading and research in the interim. This approach is more difficult to use in postgraduate hospital-based training because of the demands of providing clinical care. However, the case-based approach may be ideal for teaching about complex psychosocial/behavioral problems during residency. Discussion allows for consideration of multiple approaches and management strategies and allows mutual learning within the group. Our survey demonstrated that programs using written cases to teach DBP perceived that they covered a higher number of complex psychosocial topics adequately than those programs not using cases. It is not possible from the survey format to demonstrate a cause-and-effect relationship between use of cases and coverage of these specific topics; however, the data do suggest an association. Further studies are needed on the use of interactive approaches to teaching DBP in residency programs. In addition, programs that had a formal curriculum were more likely to use case-based teaching. This may reflect an increased breadth of training methods used with a formal curriculum. Case-based materials take more time and money to develop than lectures and handouts and require dedicated, trained faculty for teaching sessions.

One important limitation of this study is the nonresponse rate of 30%. We do not have any information on how nonresponding programs are teaching DBP. These programs may be more likely to lack a formal block rotation and curriculum, and it would be helpful to assess their needs as well. Our response rate is fairly consistent with prior surveys of DBP training, however. For example, Zehal and Friedman had a 60% response rate in 1984 and Teplin et al had a 73% response rate in 1993. For programs that did respond, we do not have information about methods used for teaching specific topics. In addition, this survey assessed only faculty perception of training adequacy. There is no confirmatory evidence of the actual adequacy of their training. It is likely that there is some respondent bias as well; program directors and faculty might be more likely to overreport adequacy of training. Despite the likelihood of respondent bias, these same respondents are probably the best to comment on barriers to training.

The reason for the difference in perception of program directors vs DBP faculty regarding the adequacy of training in certain topic areas might be explained by differences in training, clinical practice, and curricular responsibilities. Normal behavior may be covered by DBP rotations in some programs, but in others may be embedded throughout the residents’ curriculum or concea-
Educational Interventions

Purpose: This section is intended to share information concerning educational efforts in the broad field of pediatrics. We welcome studies on the following topics: undergraduate and graduate education in medicine and allied health occupations; continuing education of health professionals; education of patients and families; and health education for the general public, the community, and organizations that contribute to the promotion and improvement of the health of children and adolescents.

Residency programs have made significant gains in mandatory DBP training. However, many programs report a lack of adequate teaching methods, which may contribute to inadequate training. In response to our query, many programs indicated an interest in case-based materials for their DBP curricula. This learner-centered approach may represent an alternative and underutilized approach for teaching DBP. Standardized written cases would allow for teaching in broad settings with variable patient demographics and broaden faculty resources available to diverse training sites.

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Corresponding author: Carolyn H. Frazer, MD, Department of Medicine–General Pediatrics, Children’s Hospital, 300 Longwood Ave, Boston, MA 02115 (e-mail: frazer@al.ch.harvard.edu).

REFERENCES


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