

A Workforce Survey on Developmental-Behavioral Pediatrics

Carolyn Bridgemohan, MD,^a Nerissa S. Bauer, MD, MPH,^b Britt A. Nielsen, PsyD,^c Anne DeBattista, PhD, CPNP,^d Holly S. Ruch-Ross, ScD,^e Linda B. Paul, MPH,^e Nancy Roizen, MD^f

abstract

BACKGROUND AND OBJECTIVES: Developmental-behavioral conditions are common, affecting ~15% of US children. The prevalence and complexity of these conditions are increasing despite long wait times and a limited pipeline of new providers. We surveyed a convenience sample of the developmental-behavioral pediatric (DBP) workforce to determine current practices, workforce trends, and future needs.

METHODS: An electronic survey was e-mailed to 1568 members of the American Academy of Pediatrics Section on Developmental and Behavioral Pediatrics and Council on Children with Disabilities, the Society for Developmental and Behavioral Pediatrics, and the National Association of Pediatric Nurse Practitioners Developmental and Behavioral Mental Health Special Interest Group.

RESULTS: The response rate was 48%. There were 411 fellowship-trained physicians, 147 nonfellowship-trained physicians, and 125 nurse practitioners; 61% were women, 79% were white, and 5% were Hispanic. Physicians had a mean of 29 years since medical school graduation, and one-third planned to retire in 3 to 5 years. Nurse practitioners were earlier in their careers. Respondents reported long wait times for new appointments, clinician burnout, increased patient complexity and up to 50% additional time spent per visit in nonreimbursed clinical-care activities. Female subspecialists spent more time per visit in billable and nonbillable components of clinical care.

CONCLUSIONS: The DBP workforce struggles to meet current service demands, with long waits for appointments, increased complexity, and high volumes of nonreimbursed care. Sex-based practice differences must be considered in future planning. The viability of the DBP subspecialty requires strategies to maintain and expand the workforce, improve clinical efficiency, and prevent burnout.

^aDepartment of Medicine, Boston Children's Hospital and Department of Pediatrics, Harvard Medical School, Boston, Massachusetts; ^bDepartment of Pediatrics, Indiana University School of Medicine, Indianapolis, Indiana; ^cDepartment of Psychiatry, MetroHealth Medical Center and Department of Psychiatry, Case Western Reserve School of Medicine; ^dDepartment of Pediatrics, UH/Rainbow Babies and Children's Hospital and Department of Pediatrics, Case Western Reserve University, Cleveland, Ohio; ^eDepartment of Developmental-Behavioral Pediatrics, Stanford Children's Health, Palo Alto, California; and ^fAmerican Academy of Pediatrics, Elk Grove Village, Illinois

Dr Bridgemohan contributed to the conception and design of the study, analysis and interpretation of the data, and drafted the manuscript; Drs DeBattista and Roizen and Ms Paul contributed to the conception and design of the study, analysis and interpretation of the data, and reviewed and revised the manuscript; Dr Bauer contributed to the conception and design of the study, completed the coding and analysis of qualitative data, analysis and interpretation of the data, and drafted the manuscript; Dr Nielsen contributed to the conception and design of the study, completed the coding and analysis of qualitative data, analysis and interpretation of the data, and reviewed and revised the manuscript; Dr Ruch-Ross contributed to the conception

WHAT'S KNOWN ON THIS SUBJECT: Despite the high prevalence of developmental-behavioral pediatric (DBP) conditions, there is a shortage of DBP specialists. This results in long wait times and increased demands on primary-care providers to manage complex developmental-behavioral conditions.

WHAT THIS STUDY ADDS: The 2015 DBP workforce survey was used to identify key trends and critical viability challenges that must be addressed: increasing service demand, patient complexity, and nonreimbursed care; provider burnout; a limited pipeline; and an aging workforce.

To cite: Bridgemohan C, Bauer NS, Nielsen BA, et al. A Workforce Survey on Developmental-Behavioral Pediatrics. *Pediatrics*. 2018;141(3):e20172164

Developmental-behavioral (DB) conditions are common and affect ~15% of children in the United States.^{1,2} However, despite knowledge that prevention, early identification, and treatment can significantly reduce morbidity and improve long-term outcomes,^{3–5} there are multiple barriers to providing and accessing developmental-behavioral pediatric (DBP) care.^{1,6,7} In a recent American Academy of Pediatrics (AAP) periodic member survey, for example, 65% of respondents said they lacked the training to treat mental health problems; additional barriers to practice included time required and poor reimbursement, whereas barriers to access included a lack of available specialists.⁸ DBP care is currently provided by a range of clinicians, including general and specialist pediatricians. Primary-care pediatricians conduct developmental screening and identify and manage common DB conditions. Typically, children with more complex needs are referred to DBP subspecialists; however, some general pediatricians also treat complex DB conditions.^{9,10} In addition, nurse practitioners (NPs) are increasingly specialized in DBP care.^{11–13}

To guide future DBP workforce development and resource planning, the AAP, the Society for Developmental and Behavioral Pediatrics (SDBP), and the National Association of Pediatric Nurse Practitioners Developmental and Behavioral Mental Health Special Interest Group (NAPNAP DBMH SIG) collaborated to develop and administer an updated survey of the DBP workforce to determine the following: which professionals comprise the current workforce, how these increasingly prevalent and complex conditions are managed, and what challenges and trends need to be considered.

The previous (1997) DBP workforce survey was administered to physicians before the establishment of DBP and neurodevelopmental disabilities (NDD) subspecialty boards.⁹ Given the interprofessional nature of DBP practice¹⁴ and the limited DBP subspecialist pipeline, this survey was used to examine a broader workforce, including DBP and NDD fellowship-trained physicians, general pediatricians who provide DBP care, NPs, and psychologists. We also examined other pediatric workforce trends, including the increasing proportion of female providers and nonreimbursed time.^{15–18} In this article, we report on the DBP medical workforce and do not include data on psychology or trainee respondents.

METHODS

The AAP Division of Workforce and Medical Education Policy conducted the 2012–2015 workforce survey in collaboration with 20 AAP sections, including the Section on Developmental and Behavioral Pediatrics (SODBP). The survey included a 44-item, standard questionnaire that was completed by all respondents regardless of subspecialty to capture pertinent data related to training, clinical practice, and demographic characteristics. Representatives of the SODBP, SDBP, and NAPNAP DBMH SIG worked closely with AAP staff to develop an additional 23 questions that addressed the time spent in DBP, general pediatric clinical care, and other professional activities; types of conditions treated; and constraints to providing DBP care. Two open-ended questions were asked about general comments and changes anticipated in practice over the next 3 to 5 years. The SODBP, the AAP Council on Children with

Disabilities (COCWD), and SDBP leadership pilot tested the survey, and questions were adjusted for clarity (Supplemental Information).

Eligible respondents were identified via membership e-mail lists. After the removal of duplicate addresses, respondents were e-mailed an invitation and link to complete the survey. Discipline-specific instructions were provided to clarify how to respond to items (eg, professional school versus medical school). No identifying information was linked to the surveys. The initial e-mails were sent in May 2015 to 1568 members of the SODBP, COCWD, SDBP, and NAPNAP DBMH SIG. E-mail reminders were sent every 3 weeks directly from SurveyMonkey to nonresponders up to a total of 5 times. The survey was closed in September 2015. The AAP institutional review board provided exemption approval for the project.

Data analysis was performed by using SPSS 18.0 (IBM SPSS Statistics, IBM Corporation).¹⁹ Respondents who spend >50% of their time in training and psychology respondents were excluded from the analysis. Physician respondents who indicated DBP and/or NDD fellowship training were characterized as subspecialists; those without fellowship training were classified as generalists. Respondents who endorsed their primary practice site as a medical school, hospital, and/or parent university were characterized as academic. Only respondents who answered yes to the question, “Do you assess or treat patients for developmental or behavioral concerns?” were queried about clinical practice characteristics. Descriptive statistics, including frequency distributions and measures of central tendency, were summarized for all responses to the

TABLE 1 General Demographics

	All Physicians, <i>N</i> (%)	DBP- and/or NDD-Trained Specialty Physicians, <i>N</i> (%)	Non-DBP- and/or NDD-Trained Generalist Physicians, <i>N</i> (%)	NPs, <i>N</i> (%)
Total	558	411	147	125
Sex				
Female	298 (59.0)	233 (61.5)	65 (51.6)	110 (98.2)
Male	207 (41.0)	146 (38.5)	61 (48.4)	2 (1.8)
Race				
White	428 (76.7)	320 (77.9)	108 (73.5)	101 (91.0)
Black/African American	10 (1.8)	9 (2.2)	1 (0.7)	2 (1.8)
Asian	47 (8.4)	38 (9.2)	9 (6.1)	4 (3.6)
American Indian or Alaska native	5 (0.9)	2 (0.5)	3 (2.0)	0 (0)
Native Hawaiian or other Pacific Islander	0 (0)	0 (0)	0 (0)	1 (0.9)
Other	13 (2.3)	9 (2.2)	4 (2.7)	3 (2.7)
Ethnicity				
Hispanic or Latino	30 (5.9)	26 (6.8)	4 (3.2)	0 (0)
Years since medical and/or professional school graduation	Mean (SD) 29 (11.9)	Mean (SD) 28.2 (11.9)	Mean (SD) 31.3 (11.7)	Mean (SD) 16.5 (12.2)

Missing values are excluded from the calculation of percentages.

survey. The statistical significance of bivariate relationships was tested by using χ^2 or *t* tests as appropriate.

Qualitative methods were used to analyze 736 total responses to 2 open-ended questions that were used to elicit general comments and changes that were anticipated in practice in the next 3 to 5 years. Two authors (N.B. and B.N.) independently coded the first 50 responses to identify potential themes. These were then jointly reviewed, and a preliminary coding scheme was developed.^{20,21} Differences were resolved through discussion. The remaining open-ended responses were reviewed and coded by 1 author using the established coding scheme (N.B.). Final coding and exemplar quotes were reviewed by all the authors.

RESULTS

The overall response rate was 48% and included 558 non-trainee physicians and 125 NPs; e-mail lists did not specify disciplines, precluding further analyses of the response rate.

Physicians

The 558 non-trainee physicians included 411 subspecialists who were fellowship trained in DBP (*n* = 345), NDD (*n* = 43), or both (*n* = 23) and 147 generalists with no fellowship training. Of the fellowship-trained respondents, 318 had board certification (DBP [*n* = 261], NDD [*n* = 36], or both [*n* = 21]); 2 respondents without fellowship training reported NDD certification. Physicians were 59% women, 77% white, and 6% Hispanic, with a mean of 29 years since graduation from medical school (Table 1). Most respondents engaged in a range of professional activities, with patient care making up the major percentage (mean = 65%) of time (Table 2).

DBP clinical-practice characteristics were examined in the 475 physicians and 105 NPs who responded yes to the question, “Do you assess or treat patients for developmental or behavioral concerns?” (Table 3). Respondents indicated their overall full-time equivalent (FTE) worked, with the example that half-time would be 0.50. Questions about number of

patients seen and time spent in visits were specific to DBP practice; questions about FTEs, wait times, and the number of clinical sessions were not. A majority of physicians worked full-time (mean = 48 hours per week; mean FTE = 0.9). Total clinical duties comprised, on average, 5.1 half-day sessions per week, in which respondents saw a mean number of 6.2 new and 15.5 established DB patients per week. Generalists reported similar FTEs and numbers of clinical sessions and new DB visits per week but a higher number of return DB visits (17.3 vs 14.9) compared with subspecialists (Table 3). Physicians indicated long wait times: 50% reported ≥ 8 weeks for nonurgent new appointments. Generalists reported shorter wait times than subspecialists and were more likely to offer same-day appointments. Constraints to seeing more patients included paperwork (63%), the clinical complexity of referrals (46%), and a lack of clinical support (46%), with subspecialists being more likely to report administrative duties (39%) and generalists being more likely to report a lack of training (22%; Table 3). More than

TABLE 2 Professional Practice Characteristics

Activity	All Physicians (N = 558)		DBP- and/or NDD-Trained Specialists (N = 411)		Non-DBP- and/or NDD-Trained Generalist Physicians (N = 147)		NPs (N = 125)	
	Engaged, %	Average time, % (SD)	Engaged, %	Average time, % (SD)	Engaged, %	Average time, % (SD)	Engaged, %	Average time, % (SD)
Academic main employment site, N (%)	223 (40.0)	176 (42.8)	47 (32.0)	33 (30.3)				
Time in professional activities (proportion engaged in each activity and average time spent by those engaged in the activity)								
Direct patient care	87	65 (26)	88	65 (26)	82	66 (28)	86	73 (27)
Administration	66	19 (18)	66	19 (18)	64	19 (19)	42	19 (19)
Teaching	68	13 (14)	71	12 (14)	61	14 (16)	45	24 (26)
Clinical research	34	15 (19)	36	16 (21)	28	10 (13)	19	15 (17)
Basic science research	1	6 (3)	1	5 (1)	2	8 (3)	2	3 (3)
Health services research	12	20 (22)	10	22 (23)	17	16 (20)	8	11 (11)
Committee work, consulting	43	11 (15)	42	10 (11)	43	14 (21)	45	12 (15)
Other	9	35 (38)	9	33 (36)	8	41 (42)	7	16 (14)

Missing values are excluded from the calculation of percentages.

one-third of respondents, primarily those with more years in practice and those in specialty practice, indicated plans to retire fully (11%) or partially (22%) in 3 to 5 years (Table 3).

Among subspecialists, women had fewer years in practice (25.5 vs 32.5; $P < .001$) and spent less of their time in administrative duties (17% vs 22%; $P = .03$) and more time in subspecialty practice (95.1% vs 88.8%; $P = .004$). There were no differences by sex in FTE, clinical sessions, DB visits per week, academic employment, or time spent in clinical, teaching, or research duties. After controlling for years in practice, there were no significant differences by sex in planned 3- to 5-year retirement (Table 4).

When asked to estimate the total number of billable and/or face-to-face and nonbillable and/or nonface-to-face minutes spent during initial and return DB visits, respondents documented spending up to 50% additional time outside of the visit in care activities for which they could not bill. New visits comprised a mean of 84 minutes in billable and 51 minutes in nonbillable time, and return visits comprised a mean of 40 minutes in billable and 23 minutes in nonbillable time (Table 3). DBP and/or NDD subspecialists spent more time than generalists in billable and nonbillable time for all visit types (Table 3). Women spent significantly more time than men in billable and nonbillable minutes (Table 4).

NPs

The 125 NP respondents were primarily women (98%) and non-Hispanic white (91%) and included DBP specialists, mental health specialists, primary-care providers, and faculty in doctoral nursing programs. NPs had fewer years in practice than physicians (16.5 vs

TABLE 3 Clinical Practice Characteristics of Respondents Who Reported Treating DBP Patients

Specialty	All Physicians (N = 475), Mean (SD)	DBP- and/or NDD-Trained Specialty Physicians (N = 359), Mean (SD)	Non-DBP- and/or NDD- Trained Generalist Physicians (N = 116), Mean (SD)	NPs (N = 105), Mean (SD)
FTE	0.9 (0.4)	0.9 (0.3)	1.0 (0.5)	0.9 (0.5)
Hours per wk	48.0 (15.1)	47.7 (14.8)	49.0 (16.2)	40.3 (11.4)
Half-day sessions per wk	5.1 (2.9)	5.1 (2.8)	5.2 (3.2)	4.1 (2.8)
New DBP visits per wk	6.2 (7.5)	6.2 (4.9)	6.2 (12.7)	4.5 (3.9)
Return DBP visits per wk	15.5 (14.0)	14.9 (11.7)	17.3 (19.4)	17.6 (15.3)
No. engaged in primary care	N = 151 (32%)	N = 77 (21%)	N = 74 (64%)	N = 39 (37%)
% of time in primary care ^a	55.0 (38.0)	40.8 (34.8)	69.7 (35.6)	65.5 (31.8)
No. engaged in specialty care	N = 408 (86%)	N = 343 (96%)	N = 65 (56%)	N = 86 (82%)
% of time in specialty care ^b	90.8 (21.0)	93.1 (18.7)	78.7 (27.6)	85.5 (25.3)
Time spent in new and return visits, min				
Initial visit billable	83.8 (50.5)	91.2 (47.7)	61.1 (52.0)	68.1 (33.9)
Initial visit nonbillable	50.6 (47.6)	55.3 (51.0)	36.0 (31.0)	36.3 (31.0)
Return visit billable	39.7 (26.9)	43.0 (28.6)	29.3 (17.1)	40.0 (34.6)
Return visit nonbillable	22.8 (21.8)	23.8 (21.9)	19.6 (21.2)	25.4 (38.3)
Time to new, nonurgent appointment	N (%)	N (%)	N (%)	N (%)
Same day	22 (4.7)	9 (2.5)	13 (11.5)	10 (10)
>8 up to 16 wk to new appointment	100 (21.3)	87 (24.4)	13 (11.5)	15 (15)
>16 wk to new appointment	136 (29.0)	129 (36.2)	7 (6.2)	15 (15)
Constraints to seeing more patients				
Administrative duties	174 (37)	140 (39)	34 (29)	23 (22)
Paperwork	300 (63)	244 (68)	56 (48)	48 (46)
Teaching and/or research	164 (34)	141 (39)	23 (20)	20 (19)
Telephone consultations	108 (23)	83 (23)	25 (22)	25 (24)
Inadequate reimbursement	167 (35)	130 (36)	37 (32)	32 (31)
Clinical complexity	221 (46)	174 (48)	47 (40)	57 (54)
Lack of training	33 (7)	8 (2)	25 (22)	24 (23)
Lack of clinical support by other professionals	219 (46)	169 (47)	50 (43)	54 (51)
RVU or billing expectations	131 (28)	101 (28)	30 (26)	45 (43)
Set appointment time slots	120 (25)	85 (24)	35 (30)	46 (44)
Plan to fully or partially retire in next 3–5 y	158 (34)	112 (32)	46 (41)	19 (19)

Missing values are excluded from the calculation of percentages. RVU, Relative Value Unit.

^a Among those engaged in primary care.

^b Among those engaged in specialty care.

29 years; Table 1), and only 19% planned to retire in the next 3 to 5 years (Table 3). Most practiced in nonacademic settings (70%), and those who provided direct clinical care spent an average of 73% of their time in that activity, the second-largest proportion of time was spent in teaching (24%), and the remainder was divided among administrative and research activities (Table 2). Most NPs spent the majority of their time providing subspecialty care (82%). On average, NPs worked full-time (mean FTE = 0.9) and completed 4.1 half-day clinical sessions, in which they saw a mean of 4.5 new and 18 established patients per

week (Table 3). In comparison with physicians, NPs spent more of their time in direct clinical care and teaching but had fewer clinical sessions per week despite similar FTEs. NPs had shorter wait times for new appointments and more frequently offered same-day appointments (Tables 2 and 3).

Constraints to seeing more patients included clinical complexity (54%), a lack of clinical support (51%), and paperwork (46%). NPs, similar to generalist physicians, were more likely to report a lack of training (23%) and were less likely to report teaching and/or research constraints (19%). NPs also

reported spending an additional 54% of their time in nonbillable activities for new and return visits (Table 3).

Open-Ended Responses

In open-ended responses, respondents deemed DBP practice rewarding but highlighted significant barriers to providing DBP care, including a declining workforce, inadequate reimbursement, high demands for care coordination, a lack of access to community services, and a need for more training to manage complex patients. Respondents indicated that the current situation is not sustainable and described

TABLE 4 Comparison of DBP- and/or NDD-Trained Physician Responses by Sex

Variable	Women (N = 233)	Men (N = 146)	P (95% Confidence Interval) ^a
	N (%)	N (%)	
Academic main employment site	107 (45.9)	60 (41.1)	.395; $\chi^2 = 0.85$
	Mean (SD) ^b	Mean (SD)	
Years since medical school graduation	25.5 (11.0)	32.5 (12.2)	<.001 (4.6 to 9.4)
Hours per wk	45.4 (15.5)	48.1 (16.7)	.11 (−0.6 to 6.1)
% of time in primary care	36.5 (36.0)	49.4 (34.1)	.11 (−3.0 to 28.7)
Women, N = 40 (17%)			
Men, N = 38 (26%)			
% of time in subspecialty care	95.1 (15.7)	88.8 (23.7)	.004 (−10.5 to −2.1)
Women, N = 209 (90%)			
Men, N = 129 (88%)			
% of time in professional activities (among those engaged in the activity)			
Direct patient care	66.5 (25.5)	63.0 (26.8)	.23 (−9.1 to 2.2)
Administration	17.0 (17.5)	22.0 (18.6)	.03 (0.6 to 9.5)
Teaching	11.7 (13.2)	12.7 (12.2)	.49 (−2.0 to 4.2)
Clinical research	17.1 (21.9)	16.6 (19.9)	.90 (−7.7 to 6.7)
Basic science research	4.3 (1.1)	5.0 (0)	.49 (−2.1 to 3.4)
Health services research	20.6 (22.9)	23.2 (24.4)	.73 (−12.5 to 17.7)
Committee work, consulting	9.6 (12.8)	9.9 (9.6)	.86 (−3.4 to 4.0)
Other	39.1 (39.1)	20.7 (30.5)	.17 (−44.7 to 8.1)
	Women (N = 216) ^a	Men (N = 136) ^a	
FTE ^c	0.9 (0.4)	0.9 (0.3)	.83 (−0.1 to 0.1)
Sessions per wk	5.1 (2.7)	5.0 (3.1)	.64 (−0.8 to 0.5)
New DBP visits per wk	6.2 (4.3)	6.2 (5.7)	.99 (−1.0 to 1.1)
Return DBP visits per wk	15.1 (11.1)	14.4 (12.9)	.61 (−3.3 to 1.9)
Time spent in new and return visits, min			
Initial visit billable	95.7 (52.0)	83.5 (40.0)	.02 (−22.6 to −1.8)
Initial visit nonbillable	61.0 (56.4)	45.8 (40.4)	.007 (−26.3 to −4.2)
Return visit billable	45.0 (33.9)	39.8 (17.3)	.10 (−11.4 to 1.0)
Return visit nonbillable	25.9 (24.1)	20.4 (17.9)	.02 (−10.2 to −0.7)
Plan to fully or partially retire in next	N (%)	N (%)	
3–5 y			
1–21 y since graduating	4 (4.8)	1 (3.4)	.767; $\chi^2 = 0.088$
22–34 y since graduating	17 (20.7)	9 (21.4)	.928; $\chi^2 = 0.008$
35–63 y since graduating	34 (73.9)	46 (71.9)	.813; $\chi^2 = 0.056$

^a Missing values are excluded from the calculation of percentages.

^b Only respondents who answered yes to “Do you assess or treat patients with DB concerns?”

^c Full Time Equivalent.

burnout because of feeling overwhelmed and undervalued. Suggested solutions included training primary-care providers and NPs to expand the workforce, improving clinical efficiency, adjusting practice models to include more collaboration between primary-care and community agencies, and the use of telehealth (Table 5).

DISCUSSION

The current study highlights a number of DBP workforce trends that have implications for the

sustainability of the specialty and for access to care. Even with pediatric generalists and NPs expanding the workforce, the future pipeline for DBP and/or NDD subspecialists is limited. Among those taking the 2016 subspecialty certification examination for the first time, Developmental-Behavioral Pediatrics had the fourth-smallest number of fellowship trainees but the highest percentage (24.1%) reporting part-time employment across all 14 pediatric subspecialties.²² From 2000 to 2015, the mean number of matched first-year DBP fellows was 31 (range = 19–40).²³ The current

trainee numbers are not sufficient to match the planned retirement of the 159 physician respondents in the current study, and the actual number of subspecialists who are planning for retirement is likely higher. This trend is consistent with a recent survey of primary-care and subspecialty AAP members aged ≥ 50 years that indicated increasing plans for part-time work before retirement.²⁴

Respondents in the current study reported significant practice challenges (including increased referral volume and complexity and high levels of nonreimbursed time)

TABLE 5 Open-Ended Responses Regarding Barriers to Care: Themes, Subthemes, and Exemplar Quotes

Theme and/or Subtheme	Exemplar Quotes
Provision of DBP care	
Limited DBP workforce	<p>“There are not enough pediatricians training in [DBP], and I would like to see more done to provide incentives for pediatricians to specialize in this underserved field.”</p> <p>“There needs to be another pathway to DBP eligibility than the traditional 3-y fellowship after residency.”</p>
Need for more training	<p>“Despite learning a lot from my experience, I still often feel unprepared for the issues and often lack the support I need to provide the care needed.”</p> <p>“Most of what I have learned was on the job. I do not feel that residency prepared me very well for something I spend a lot of time doing right now.”</p>
Poor access to specialists	<p>“Due to [the] shortage of psychiatrists, we are being asked to see and manage these complex patients with seizures, developmental issues, ADHD, anxiety, depression, tics, OCD, bipolar [disorder], etc.”</p> <p>“The long waits for children at the mental health centers [have] encouraged our increased involvement in evaluation and treatment in primary care for those without severe psychiatric disease.”</p>
Problems accessing services	<p>“Insurance does not cover behavioral therapy. There are no behavioral therapists who take Medicaid in our immediate area.”</p> <p>“[It’s really] challenging to make a diagnosis but then have limited resources to refer [a] patient to; [an] incredible amount of time [is] spent on problem solving and advocating for your patient, which is complicated by little to no care coordination staff.”</p>
Workforce viability	
Inadequate reimbursement	<p>“Reimbursement remains problematic. The time it takes to do a good job, while appreciated by the patient[and/or] family, is not appreciated by administration. Without procedures, it is difficult to afford ancillary support.”</p> <p>“[It is very] difficult to find a position [in which] I can both see Medicaid patients and stay in practice.”</p> <p>“Much of the work involved is draining and not billable.”</p>
Not sustainable	<p>“[I am deeply] concerned about the sustainability of my subspecialty due to the tremendous clinical, nonbillable demands and the poor reimbursement for the work we do despite the overwhelming need for our services.”</p> <p>“Low reimbursement for DBP services makes it nearly impossible to sustain a clinical practice and have adequate quality of life.”</p>
Undervalued	<p>“I love what I do, but I am exhausted and disheartened [by] the lack of valuation by academic institutions for the art of medicine [and] the human side of medicine.”</p> <p>“There is real need for administrators and insurance companies to learn how valuable and how important it is.”</p> <p>“To sum it up: overworked and undervalued.”</p>
Burnout	<p>“The complexity of our patients and the inability of our communities [and/or] systems to meet their needs make this job overwhelming. The expectations of academic medicine, which require productivity standards that do not include time for staffing, training, QI, or paperwork, are leading to burnout and frustration.”</p> <p>“Something needs to change, or a generation of physicians will be retiring before we are 50 [y old] and seeking other careers with less stress and higher salaries.”</p>
Potential solutions	
Changes in practice	<p>“Transition out straightforward cases to maintain access, limit to <18 y olds, and weed out true psychiatric referrals to reduce wait times.”</p> <p>“New models of seeing patients for brief triage visits to plan who needs longer assessments.”</p> <p>“Training to become more efficient with time.”</p> <p>“We will be having more satellite clinics around the state.”</p>
Adding providers	<p>“NPs are underutilized in [DBP care]. This is a way to improve access for patients.”</p>
Increasing collaboration	<p>“More collaboration with community mental health, schools, and other community children’s agencies.”</p> <p>“Greater support to primary-care [pediatricians] to allow them to take care of children with complex conditions.”</p>
Using telehealth	<p>“More telehealth services for rural areas of the state.”</p>

ADHD, attention-deficit/hyperactivity disorder; OCD, obsessive-compulsive disorder; QI, quality improvement.

and access challenges (including long wait times and numerous constraints to increasing care). The high level of nonreimbursed clinical care for DB patients is not new. Administrators of the 1997 DBP workforce survey⁹ noted significant constraints with paperwork and inadequate reimbursement, whereas a more recent survey of 108 SDBP physician members revealed that an additional 58%

of time was spent on indirect (nonreimbursed) clinical activities.²⁵ Similar trends were found across pediatrics and medicine. A recent AAP workforce policy statement indicated that primary-care providers spend more time on nonreimbursed activities, such as care coordination, counseling, and paperwork, when caring for complex pediatric patients.⁶ A

survey of adult medical and surgical providers revealed that they spent an additional 2 hours of time for every hour of direct contact with patients. Even during direct clinical encounters, providers spent only 52.9% of their time on face-to-face care and 37% of their time on documentation and desk work.¹⁸

Given the shortage of subspecialists and long waiting lists, there has

been a push for primary-care pediatricians to take on more DBP care.¹⁰ In the current study, generalist DBP clinicians play a vital role in the DBP workforce, seeing more return patients and having shorter wait times than subspecialists. However, it is not clear if these generalists, a select group with interest in DBP care, are conducting primary management of all their DBP patients. In fact, previous studies reveal that many of those in primary care prefer comanagement with a subspecialist.²⁶ In our survey, we did not address chronic care comanagement, shared care models, the scope of practice or referrals to other specialists.

NPs are part of the pediatric workforce.²⁷ Like generalists, they report shorter wait times for new, nonurgent appointments. In DBP care, they will likely play an increasing role over time given the limited pipeline for DBP fellowship-trained physicians. In this survey, NPs reported fewer clinical sessions per week than physicians despite working similar FTEs. This may be due to respondents who were nursing teaching faculty with lower clinical loads.

Sex trends must also be considered. Those who most recently took the DBP sub-board examination for the first time were primarily women (79%) and were more likely to report working part-time and in academic settings.²² These trends, which impact access to care, are seen across pediatric subspecialties. In a recent survey of specialists enrolled in Maintenance of Certification, women were more likely than men to work part-time (odds ratio = 6.22),²⁸ and in the AAP survey of members aged ≥ 50 years, women were less likely than men to work past age 65 years.²⁴ In our study, female subspecialists

were not more likely to work part-time or in academic settings, and we did not find sex differences in planned retirement after controlling for years in practice. We found no differences in FTEs or the balance of academic activities by sex or years in practice except that those with fewer years in practice spent less of their time in administrative duties. However, women reported spending more time in both billable and nonbillable components of care. Researchers in previous studies have documented that female physicians spend 10% to 29% more time with their patients, engage in more patient-centered interaction, and offer more encouragement and reassurance.^{29,30} We do not have data to determine if extra time reported by our respondents translated to improved quality of care or patient satisfaction or how time spent related to clinician job satisfaction. In open-ended responses, however, many comments related to frustration with demands for documentation, nonreimbursed care, and clinician burnout. Without information on patient complexity, it is not clear whether more time spent indicates reduced efficiency. It is possible that these sex differences may be reflecting other trends, such as an increasing complexity of referrals. Researchers in the Physician Worklife Study, for example, documented that women had more patients with complex psychosocial problems and reported needing significantly more time than men (36% vs 21%, respectively) to provide quality care for new patients. Women were 1.6 times more likely to report burnout, and this increased with each additional 5 hours per week >40 .³¹

Solutions to these challenges must be broad and include strategies for workforce expansion and major changes in clinical practice and

care models. Workforce expansion must target multiple disciplines and begin much earlier, during high school and college. Graduate training programs have placed a greater emphasis on the inclusion of DBP-specific training to improve residents' mental health competencies; however, surveys of recently trained pediatricians continue to reveal that Developmental-Behavioral Pediatrics is a weak area in their training.^{26,32} Among our respondents, 23% of NPs and 22% of generalists indicated a lack of training as a constraint. Efforts to increase the capacity of the current workforce could include continuing education, mentoring, and clinical practicums.

Current practice models are inefficient and unsustainable. New models of care must improve reimbursement, reduce paperwork, and free providers to see more patients. Group treatment models for patient education and counseling could increase capacity.³³ DBP specialists need to develop more efficient clinical documentation while supporting billing requirements. Electronic data capture from patients and medical records, the use of templates, and scribes could be piloted.^{34,35} Comanagement models with the medical home should include supports for care coordination and other time-intensive duties that are part of the nature of DBP care.³⁶ Building partnerships with community agencies and providers remains critical for Developmental-Behavioral Pediatrics, which is a specialty that requires extensive expertise in systems-based care.

Limitations of this study include the use of a convenience sample of those with active membership

in ≥ 1 of the participating societies; results may not be generalizable to the entire DBP workforce. The survey underrepresents NDD specialists and psychologists, and there may be differences in practice patterns, perceived constraints, and patient access specific to these disciplines. Future studies could include additional societies to improve the representation of these groups. The adaptation of physician survey questions for NPs limited our ability to interpret some data related to specific nursing professional roles (eg, teaching faculty versus primary clinicians) and practice sites (eg, DBP or mental health practices).

The response rate of 48% could lead to bias in the results. There may be recall bias among those who chose to complete the survey as well as in demographics, practice characteristics, or perceptions of the current state of the workforce. However, basic demographics are similar to those of the surveyed societies.

CONCLUSIONS

The DBP workforce is aging and increasingly female, with many planning for retirement or part-time work. With a limited provider pipeline and increased demands for complex clinical care, the viability of the DBP subspecialty requires strategies to maintain and expand the workforce, improve efficiency, and prevent provider burnout. This will need to be accompanied by simultaneous strategies to support teaching and research innovation, which are required to sustain and advance the field.

ACKNOWLEDGMENTS

We thank the executive committees of the AAP SODBP and COCWD and the Board of the SDBP for their contributions to the development of the survey instrument and review of the article; Nathan Blum, MD, past chair of the SODBP Executive Committee, for his support of this project and key guidance throughout the project; and Carrie Radabaugh, Holly Mulvey, and the AAP staff for their assistance with survey development, administration, and analysis.

ABBREVIATIONS

AAP: American Academy of Pediatrics
COCWD: Council on Children with Disabilities
DB: developmental-behavioral
DBP: developmental-behavioral pediatric
FTE: full-time equivalent
NAPNAP DBMH SIG: National Association of Pediatric Nurse Practitioners Developmental and Behavioral Mental Health Special Interest Group
NDD: neurodevelopmental disabilities
NP: nurse practitioner
SDBP: Society for Developmental and Behavioral Pediatrics
SODBP: Section on Developmental and Behavioral Pediatrics

and design of the study, conducted the initial analysis, contributed to the interpretation of the data, and reviewed and revised the manuscript; and all authors approved the final manuscript as submitted.

DOI: <https://doi.org/10.1542/peds.2017-2164>

Accepted for publication Dec 4, 2017

Address correspondence to Carolyn Bridgemohan, MD, Boston Children's Hospital, 300 Longwood Ave, Boston, MA 02115. E-mail: carolyn.bridgemohan@childrens.harvard.edu

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

Copyright © 2018 by the American Academy of Pediatrics

FINANCIAL DISCLOSURE: Two authors are employed, one as a consultant (H.S.R-R.) and the other as an employee (L.B.P.), by the American Academy of Pediatrics; the other authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: No external funding.

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

COMPANION PAPER: A companion to this article can be found online at www.pediatrics.org/cgi/doi/10.1542/peds.2017-4132.

REFERENCES

1. Boyle CA, Boulet S, Schieve LA, et al. Trends in the prevalence of developmental disabilities in US children, 1997-2008. *Pediatrics*. 2011;127(6):1034-1042
2. McMillan JA, Land M Jr, Leslie LK. Pediatric residency education and the behavioral and mental health crisis: a call to action. *Pediatrics*. 2017;139(1):e20162141
3. Garner AS, Shonkoff JP; Committee on Psychosocial Aspects of Child and Family Health; Committee on Early Childhood, Adoption, and Dependent Care; Section on Developmental and

- Behavioral Pediatrics. Early childhood adversity, toxic stress, and the role of the pediatrician: translating developmental science into lifelong health. *Pediatrics*. 2012;129(1). Available at: www.pediatrics.org/cgi/content/full/129/1/e224
4. Shonkoff JP, Garner AS; Committee on Psychosocial Aspects of Child and Family Health; Committee on Early Childhood, Adoption, and Dependent Care; Section on Developmental and Behavioral Pediatrics. The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*. 2012;129(1). Available at: www.pediatrics.org/cgi/content/full/129/1/e232
 5. Weitzman C, Wegner L; Section on Developmental and Behavioral Pediatrics; Committee on Psychosocial Aspects of Child and Family Health; Council on Early Childhood; Society for Developmental and Behavioral Pediatrics; American Academy of Pediatrics. Promoting optimal development: screening for behavioral and emotional problems [published correction appears in *Pediatrics*. 2015;135(5):946]. *Pediatrics*. 2015;135(2):384–395
 6. Basco WT, Rimsza ME; Committee on Pediatric Workforce; American Academy of Pediatrics. Pediatrician workforce policy statement. *Pediatrics*. 2013;132(2):390–397
 7. Bitsko RH, Holbrook JR, Robinson LR, et al; EdS. Health care, family, and community factors associated with mental, behavioral, and developmental disorders in early childhood - United States, 2011-2012. *MMWR Morb Mortal Wkly Rep*. 2016;65(9):221–226
 8. Horwitz SM, Storfer-Isser A, Kerker BD, et al. Barriers to the identification and management of psychosocial problems: changes from 2004 to 2013. *Acad Pediatr*. 2015;15(6):613–620
 9. Kelly D, Cull WL, Jewett E, et al. Developmental and behavioral pediatric practice patterns and implications for the workforce: results of the Future of Pediatric Education II Survey of Sections Project. *J Dev Behav Pediatr*. 2003;24(3):180–188
 10. Stein RE. Are we on the right track? Examining the role of developmental behavioral pediatrics. *Pediatrics*. 2015;135(4):589–591
 11. McCarthy AM. Focus on children with behavior problems. *J Pediatr Health Care*. 2016;30(1):1–2
 12. Simpson TE, Condon E, Price RM, Finch BK, Sadler LS, Ordway MR. Demystifying infant mental health: what the primary care provider needs to know. *J Pediatr Health Care*. 2016;30(1):38–48
 13. Van Cleve SN. The role of nurse practitioners in pediatric mental health. *J Pediatr Health Care*. 2013;27(3):162–163
 14. Feldman HM, Sutcliffe TL. The history of developmental-behavioral pediatrics. In: Carey WB, Crocker AC, Coleman WL, Elias ER, Feldman HM, eds. *Developmental-Behavioral Pediatrics*. Philadelphia, PA: Saunders; 2009:1–12
 15. DeAngelis C, Feigin R, DeWitt T, et al. Final report of the FOPE II pediatric workforce workgroup. *Pediatrics*. 2000;106(5):1245–1255
 16. Polsky D, Weiner J, Bale JF Jr, Ashwal S, Painter MJ. Specialty care by child neurologists: a workforce analysis. *Neurology*. 2005;64(6):942–948
 17. Primack WA, Meyers KE, Kirkwood SJ, Ruch-Ross HS, Radabaugh CL, Greenbaum LA. The US pediatric nephrology workforce: a report commissioned by the American Academy of Pediatrics. *Am J Kidney Dis*. 2015;66(1):33–39
 18. Sinsky C, Colligan L, Li L, et al. Allocation of physician time in ambulatory practice: a time and motion study in 4 specialties. *Ann Intern Med*. 2016;165(11):753–760
 19. SPSS. *PASW Statistics for Windows SPSS Inc. 18.0*. Chicago, IL: SPSS Inc; 2009
 20. Creswell JW. *Qualitative Inquiry & Research Design: Choosing Among Five Approaches*. 3rd ed. Thousand Oaks, CA: Sage Publications, Inc; 2013
 21. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005;15(9):1277–1288
 22. American Board of Pediatrics. *Pediatric Physicians Workforce Data Book 2016-2017*. Chapel Hill, NC: American Board of Pediatrics; 2017. Available at: <https://www.abp.org/sites/abp/files/pdf/pediatricphysiciansworkforcebook2016-2017.pdf>. Accessed September 26, 2017
 23. American Board of Pediatrics Inc. *2015-2016 Workforce Data*. Chapel Hill, NC: American Board of Pediatrics, Inc; 2016. Available at: <https://www.abp.org/sites/abp/files/pdf/workforcebook.pdf>. Accessed September 26, 2017
 24. Merline AC, Cull WL, Mulvey HJ, Katcher AL. Patterns of work and retirement among pediatricians aged ≥ 50 years. *Pediatrics*. 2010;125(1):158–164
 25. Adair R, Perrin E, Hubbard C, Savageau JA. Practice parameters and financial factors impacting developmental-behavioral pediatrics. *J Dev Behav Pediatr*. 2010;31(6):477–484
 26. Freed GL, Dunham KM, Switalski KE, Jones MD Jr, McGuinness GA; Research Advisory Committee of the American Board of Pediatrics. Recently trained general pediatricians: perspectives on residency training and scope of practice. *Pediatrics*. 2009;123(suppl 1):S38–S43
 27. Freed GL, Dunham KM, Loveland-Cherry CJ, Martyn KK; Research Advisory Committee of the American Board of Pediatrics. Pediatric nurse practitioners in the United States: current distribution and recent trends in training. *J Pediatr*. 2010;157(4):589–593, 593.e1
 28. Freed GL, Moran LM, Van KD, Leslie LK; Research Advisory Committee of the American Board of Pediatrics. Current workforce of pediatric subspecialists in the United States. *Pediatrics*. 2017;139(5):e20163604
 29. Bernzweig J, Takayama JI, Phibbs C, Lewis C, Pantell RH. Gender differences in physician-patient communication. Evidence from pediatric visits. *Arch Pediatr Adolesc Med*. 1997;151(6):586–591
 30. Roter DL, Hall JA, Aoki Y. Physician gender effects in medical communication: a meta-analytic review. *JAMA*. 2002;288(6):756–764
 31. McMurray JE, Linzer M, Konrad TR, Douglas J, Shugerman R, Nelson K; The SGIM Career Satisfaction Study Group. The work lives of women physicians results from the physician

- work life study. *J Gen Intern Med.* 2000;15(6):372–380
32. Rosenberg AA, Kamin C, Glick AD, Jones MD Jr. Training gaps for pediatric residents planning a career in primary care: a qualitative and quantitative study. *J Grad Med Educ.* 2011;3(3):309–314
33. Bauer NS, Szczepaniak D, Sullivan PD, et al. Group visits to improve pediatric attention-deficit hyperactivity disorder chronic care management. *J Dev Behav Pediatr.* 2015;36(8):553–561
34. Bergman DA, Beck A, Rahm AK. The use of internet-based technology to tailor well-child care encounters. *Pediatrics.* 2009;124(1). Available at: www.pediatrics.org/cgi/content/full/124/1/e37
35. Bowens FM, Frye PA, Jones WA. Health information technology: integration of clinical workflow into meaningful use of electronic health records. *Perspect Health Inf Manag.* 2010;7:1d
36. Cooley WC, McAllister JW, Sherrieb K, Kuhlthau K. Improved outcomes associated with medical home implementation in pediatric primary care. *Pediatrics.* 2009;124(1):358–364

A Workforce Survey on Developmental-Behavioral Pediatrics

Carolyn Bridgemohan, Nerissa S. Bauer, Britt A. Nielsen, Anne DeBattista, Holly S. Ruch-Ross, Linda B. Paul and Nancy Roizen

Pediatrics 2018;141;

DOI: 10.1542/peds.2017-2164 originally published online February 16, 2018;

Updated Information & Services	including high resolution figures, can be found at: http://pediatrics.aappublications.org/content/141/3/e20172164
Supplementary Material	Supplementary material can be found at: http://pediatrics.aappublications.org/content/suppl/2018/02/15/peds.2017-2164.DCSupplemental
References	This article cites 31 articles, 13 of which you can access for free at: http://pediatrics.aappublications.org/content/141/3/e20172164.full#ref-list-1
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): Medical Education http://classic.pediatrics.aappublications.org/cgi/collection/medical_education_sub Workforce http://classic.pediatrics.aappublications.org/cgi/collection/workforce_sub Developmental/Behavioral Pediatrics http://classic.pediatrics.aappublications.org/cgi/collection/development:behavioral_issues_sub
Permissions & Licensing	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: https://shop.aap.org/licensing-permissions/
Reprints	Information about ordering reprints can be found online: http://classic.pediatrics.aappublications.org/content/reprints

Pediatrics is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since . Pediatrics is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2018 by the American Academy of Pediatrics. All rights reserved. Print ISSN:

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

A Workforce Survey on Developmental-Behavioral Pediatrics

Carolyn Bridgemohan, Nerissa S. Bauer, Britt A. Nielsen, Anne DeBattista, Holly S. Ruch-Ross, Linda B. Paul and Nancy Roizen

Pediatrics 2018;141;

DOI: 10.1542/peds.2017-2164 originally published online February 16, 2018;

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://pediatrics.aappublications.org/content/141/3/e20172164>

Pediatrics is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since . Pediatrics is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2018 by the American Academy of Pediatrics. All rights reserved. Print ISSN:

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

