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ORIGINAL RESEARCH

Does the Family APGAR Effectively Measure Family Functioning?

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- BACKGROUND: The Family APGAR has been widely used to study the relationship of family function and health problems in family practice offices.
- METHODS: Data were collected from 401 pediatricians and family physicians from the Pediatric Research in Office Settings network and the Ambulatory Sentinel Practice Network. The physicians enrolled 22,059 consecutive office visits by children aged 4 to 15 years. Parents completed a survey that included the Family APGAR and the Pediatric Symptom Checklist. Clinicians completed a survey that described child psychosocial problems, treatments initiated or continued, and specialty care referrals.
- RESULTS: Family dysfunction on the index visit often differed from dysfunction at follow-up (k=0.24). Only 31% of the families with positive Family APGAR scores at baseline were positive at follow-up, and only 43% of those with positive scores at follow-up had a positive score at the initial visit. There were many disagreements between the Family APGAR and the clinician. The Family APGAR was negative for 73% of clinician-identified dysfunctional families, and clinicians did not identify dysfunction for 83% of Family APGAR–identified dysfunctions (k=0.06).
- CONCLUSIONS: Our data do not support the use of the Family APGAR as a measure of family dysfunction in the primary care setting. Future research should clarify what it does measure.

key words **Apgar score; family dysfunction [non-MESH]; primary health care; psychosocial problems [non-MESH]. (J Fam Pract 2000; 50:19-25)**

A strong family orientation has been a cornerstone of family practice since its emergence in the late 1960s[1-4] and is alo important in pediatrics.[5] The development of family medicine as a dominant primary care specialty has occurred in parallel with the development of clinical applications of family systems theory.[6-9] More recently the Institute of Medicine report on primary care in America[10] has reaffirmed provision of care in the context of family and the community as a central component of primary care.

Integrating an effective family orientation into everyday practice has proved feasible and extant in family practice.[11-13] Several approaches to examining and characterizing family function for research purposes have been proposed.[14] These include a combination of analysis of communication, observation of interaction, and individual patient report. Many of these approaches are time consuming and not practical for use in large sample studies requiring a brief instrument. The ability to assess the family context, however, is critical to many primary care studies and particularly those that deal with behavior, mental health, and psychosocial problems.

The Family APGAR was introduced by Gabriel Smilkstein in 1978 to assess adult satisfaction with social support from the family.[15] It draws its name from a 5-item measure of perceived family support in the domains of adaptation, partnership, growth, affection, and resolve. The statements focus on the emotional, communicative, and social interactive relationships between the respondent and his or her family, for example: “I find that my family accepts my wishes to take on new activities or make changes in my lifestyle.”

Several studies have examined the psychometric properties of the instrument. We focus on evidence about the validity of the instrument, as it has regularly been found to be internally consistent.[16,17] Good and colleagues[16] found that Family APGAR scores correlated highly (r=0.80) with scores on the Pless-Satterwhite Family Function Index[18] in a small nonclinical sample (N=38). In a small sample of mental health outpatients (N=20), the same authors found that Family APGAR scores correlated (r=0.64) with therapists’ ratings of the degree of family distress. Foulke and coworkers[19] administered the Family APGAR and the Family Adaptation and Cohesion Evaluation Scales[20] (FACES II) to 140 families and found that the Family APGAR correlated with the FACES Cohesion scale (r=0.70) and with the Adaptability scale (r=0.59; Stephen Zyzanski, personal communication, June 2000). However, when Clover and colleagues[21] administered the Family APGAR and the FACES II to 66 families they reported that there was no association between the 2 scales.

Smucker and coworkers[22] found no association (k=-0.05) between the Family APGAR and physicians’ judgments about the presence of family dysfunction among 152 families. This lack of association, however, could have resulted from the physicians’ difficulties in recognizing family dysfunction, problems in the Family APGAR, or both. North and colleagues[23] obtained ratings of the usefulness of family assessment tools from 299 family physicians. The Family APGAR was rated less useful than any other tool.

Smilkstein and coworkers[17] found that adults in counseling perceived their families as more dysfunctional than adults in other samples. There was, however, no assessment of the family; thus the finding does not directly support the validity of the Family APGAR as a measure of family dysfunction. Smilkstein and colleagues also found that adopted children were more likely to perceive their families as dysfunctional than were biological children. This would not validate the Family APGAR as a measure of family dysfunction, because it seems unlikely that families who adopt are more dysfunctional than other families.

A few studies have examined whether low Family APGAR ratings (which mean higher perceived family dysfunction) predict other clinical phenomena,[12,22,24-27] with mixed results. However, an association between a patient's report on the Family APGAR and later mental health service use does not directly bear on whether the instrument is a valid measure of family dysfunction. Therefore, the evidence of whether the Family APGAR is a valid measure of family dysfunction is mixed.

We used the Family APGAR as a measure of family dysfunction in a large study of psychosocial problems in children. Our study accomplished 3 goals that had not been achieved in previous research. First, we examined the internal consistency of the Family APGAR in a very large sample of office-based visits (N=21,285). In an internally consistent survey the items essentially measure one thing. Researchers who use the Family APGAR to compare families on the basis of functionality are assuming that there is a single dimension of family characteristics that is tapped by the survey.

Second, we used a large sample of repeat office visits (N=1146) to examine whether positive (dysfunctional) Family APGAR scores are stable over 6 months. When health service workers speak of dysfunctional families they often mean those that are persistently dysfunctional. Similarly, clinicians often adopt a watch and wait strategy for dealing with an initial report of psychosocial problems.[28] If a positive score on the Family APGAR signals persistent dysfunction, then a positive score at the index visit should usually be matched by a positive score at follow-up.

Third, in a large sample of office visits (N=4050) we examined whether an adult family member's report of problems on the family APGAR matched the clinician's independent judgments of whether there were family problems. Although there are many reasons to expect disagreements between a valid survey measure of family dysfunction and clinicians' judgments, a very weak level of agreement would raise questions about whether the Family APGAR measured dysfunctionality.

METHODS

Study Sites

The Child Behavior Study (CBS) was conducted in several large primary care research networks in North America. The Ambulatory Sentinel Practice Network (ASPN), a family practice research network, included 141 practices in 41 states and 6 Canadian provinces and was composed of approximately 680 clinicians. Eightyfive percent of the ASPN clinicians were family physicians, 7% were nurse practitioners, and 8% were physician assistants. Additional family physician participants came from the Wisconsin Research Network and the Minnesota Academy of Family Physicians Research Network, which had characteristics similar to ASPN. The primary care practice–based Pediatric Research in Office Settings (PROS) network included more than 1500 clinicians from more than 480 pediatric practices in all 50 states and the Commonwealth of Puerto Rico. Eightynine percent of the PROS clinicians were pediatricians, 10% were nurse practitioners, and 1% were physician assistants. Of the 206 practices participating in the CBS, 30% were urban, 38% were suburban, and 32% were rural.

All clinicians participating in the CBS were included for our analysis (401 clinicians in 44 states, the Commonwealth of Puerto Rico, and 4 Canadian provinces). The clinicians included 267 pediatricians, 134 family practitioners, and 29 nurse clinicians. Previous research from both ASPN and PROS confirmed the comparability of patients, clinicians, and practices in primary care network studies with those identified in national samples.[29,30] In addition, we compared participating pediatric clinicians with a random sample of pediatricians from the American

Academy of Pediatrics[31] on demographic factors and practice characteristics. We found few differences between participating clinicians and other clinicians.

Patient Sample

Each participating clinician enrolled a consecutive sample of approximately 55 children aged 4 to 15 years presenting for nonemergent care with a parent or primary caretaker. We enrolled each child only once and excluded children seen for procedures only. Some eligible children were not recruited, primarily because of parental refusal (63% of eligible but not participating children) and occasionally because the opportunity was either overlooked by the office staff (25%) or because the family dropped out of the study (12%). We compared participating children with those who were eligible but not participating on the basis of age and sex, and found no differences. In addition, we examined whether clinician or practice characteristics might affect patient participation, including clinician discipline, geographic region, practice population size, percentage of managed care patients, and clinician attitudes toward mental health treatment. Only those clinicians located in the South and West seemed to include a higher percentage of their eligible participants (94% to 89% for each); none of the other measured sources of selection bias were statistically significant.

This procedure produced a sample of 22,059 children seen in office visits. Among those visits 774 (3.5%) with missing data on 1 or more of the 5 APGAR items were excluded, resulting in a final study sample of 21,285 visits.

Procedures

Procedures and consent forms for the CBS were approved by institutional review boards affiliated with PROS, ASPN, and the University of Pittsburgh. Study procedures have been described in detail elsewhere[32] Consenting parents (or the accompanying primary caregiver) filled out a parent questionnaire while waiting to see the clinician. The questionnaire included demographic data, the Family APGAR, and the Pediatric Symptom Checklist (a psychosocial screening instrument). The clinician did not see the completed Family APGAR, Pediatric Symptom Checklist, or other parent questionnaire data.

After seeing a patient the clinician completed a survey about the encounter, documenting whether a new, ongoing, or recurrent psychosocial problem was present, including an explicit statement of family dysfunction. Finally, the survey also included a checklist of a series of psychosocial problems that the clinician might have recognized in the child (clinicians could and often did check more than one problem).

Procedures for Follow-up

A random sample of children with clinician-identified psychosocial problems was identified for follow-up. African American children were oversampled for follow-up to obtain a sufficient sample. A total of 1970 children were included in the follow-up, and 1354 (69%) were successfully followed up. For this analysis, we used the 1146 patients with complete APGAR data for whom the adult respondent was the same at enrollment and follow-up.

RESULTS

Table 1 shows the associations between the Family APGAR scores and several demographic variables. The strongest predictor of a low Family APGAR score was when the

child's parents were either not married or were separated. Table 2 presents the results for individual items of the Family APGAR.

Internal Consistency

We examined the intercorrelation of the Family APGAR items to determine whether the scale measured a single dimension of family functioning. The correlations of items with the total score ranged from r=0.63 to 0.71. Coefficient a, a summary measure of the intercorrelation of items, equaled 0.85, and deletion of any item from the scale reduced the a. This is a respectable level of internal consistency, suggesting that the Family APGAR items can all be viewed as measures of a single underlying dimension.

Stability of Family APGAR Over Time

Table 3 compares response on the Family APGAR on the initial and follow-up visits. There was a slight but statistically significant difference between the frequency of positive scores (Ž5, indicating family dysfunction) with families appearing more dysfunctional at the follow-up (McNemar's test: (c2[1]=29.02; P <.001).

If the Family APGAR measures a stable characteristic of family functioning, a family's dysfunctional status at the index visit should usually agree with its status at the 6-month follow-up. However, only 31% of families appearing dysfunctional during the initial visit still seemed so during the follow-up, and only 43% of those appearing dysfunctional during the follow-up appeared so during the initial visit. The k statistic, a chance-corrected measure of the agreement between the time 1 and time 2 scales, was only 0.24.

Clinician Assessment of Psychosocial Problem and the Family APGAR

Table 4 presents the concordance between a positive score on the Family APGAR and clinicians' identification of family dysfunction. This Table includes the subset of children for which clinicians recognized a psychosocial problem, because this is the group for which a clinician would be likely to use the Family APGAR. There were high rates of disagreement between clinicians and the scale concerning positive cases. The Family APGAR was negative for 73% of clinician-identified dysfunctional families, and clinicians did not identify dysfunction for 83% of APGAR-identified dysfunctions. Although there was a significant positive association between the Family APGAR and clinician identifications (c2[1]) =19.12; P <.002), the k agreement statistic was only 0.06.

DISCUSSION

Our study adds important new information on the performance of the Family APGAR as a measure of family support and dysfunction. Our results confirm some of the previous work that found that the Family APGAR is an internally consistent measure. Nevertheless, it is unclear exactly what it measures. The Family APGAR did not remain stable across assessments that averaged 6 months apart. On the one hand, it is correlated with both parental reports of symptoms and physician treatment decisions. Previously we reported[27] an association of Family APGAR with behavioral problems in children as assessed by both physicians' reports and scores on the Pediatric Symptom Checklist.[22] Also, positive Family APGARs were more frequent among single or separated parents. This could reflect a higher level of dysfunction among such families, but it is equally consistent with the premise that the Family APGAR is a measure of family support.

Less than a third of the families who screened positive at time 1 on the Family APGAR also screened positive at follow-up. By the design of our study, only families in which the clinician had

recognized a psychosocial problem at time 1 were followed up. It is plausible that the prevalence of family dysfunction among such families is higher than the general population. If so, it implies that in the general population, the rate of positive time-2 Family APGAR scores given positive time-1 scores would be even lower. The pattern of strong internal consistency and weak temporal stability suggests that the Family APGAR tracks a labile characteristic of families. By itself the transience of positive Family APGAR scores does not imply that it is an invalid measure of dysfunction. It is possible that family dysfunction can be serious but transient. Given what the Family APGAR actually measures, however, this interpretation is hard to support. A positive Family APGAR score is a report by a single individual that the family does not adequately communicate with, emotionally support, adapt to, or problem-solve with him or her. Is one such report evidence of serious family dysfunction, or does normal family functioning include occasional transient disturbances of the relations between a family and one of its members? We incline to the latter view.

Also, the Family APGAR was not associated with clinician reports of family dysfunction. Disagreement between clinicians and the Family APGAR does not necessarily imply that the Family APGAR is wrong. It is likely that clinicians have difficulty recognizing family dysfunction, as would be suggested by the literature showing that clinicians often fail to recognize psychiatric disorder.[32,33] In the latter case, however, it has been found that primary care clinicians' judgments about the presence of psychiatric disorders fail to agree with well-validated psychiatric instruments. Given the scarcity of previous evidence about the validity of the Family APGAR, we do not believe that the lack of agreement between the clinicians and the Family APGAR implies that the clinicians were in error. All we can say is that there is little agreement between the instrument and clinician-identified family dysfunction.

Limitations

Our data have important limitations for examining the ability of the Family APGAR to provide a measure of family function. In our study, the Family APGAR was reported by a single adult in the family. We do not have data from other adults in the family or the index child in the study. Also, we do not have a gold standard criterion assessment of family dysfunction. Our study focused on psychosocial problems in the index child, and thus we did not document a complete picture of the psychosocial problems of the family. Finally, entry into the study was through a child's visit; this was not a systematic sample of families visiting primary care offices. Therefore, our study oversampled families of children who were presenting for a medical or psychosocial problem.

Future Research

The Family APGAR appears to have utility in family practice research, but researchers should carefully consider how they are using it. Further research could provide a more complete explanation of the association between distress as measured by the Family APGAR and psychosocial problems in children. Our speculation is that because the Family APGAR assesses an adult's perceptions of family support, low scores may measure parental distress, which will sometimes reflect parental depression. The detrimental effects of parental depression on children are well established. This suggests that the Family APGAR may be an important variable to investigate as a determinant of care-seeking behavior, parent and physician treatment decisions, and as a marker for problems in one or more children. It might be more efficient, however, to screen for parental depression.

CONCLUSIONS

Although originally introduced as an assessment of adult satisfaction with family support, the Family APGAR has developed a research following as a measure of family functioning. We present data from a large community-based study of behavioral problems in children that raise questions about the Family APGAR as a measure of family dysfunction. Viewed in the light of the scarcity of previous evidence on the validity of the Family APGAR, we do not believe it should be used as a measure of family functioning. However, because the Family APGAR is associated with child psychosocial problems, it remains of interest for clinical research. One of the goals of future research should be to clarify what the Family APGAR does measure.

We note, however, that the fundamental problems we have discussed may not be in the Family APGAR but rather in the lack of clarity about the meaning of family dysfunction.[13] What is the justification for using a measure of social support as a measure of family dysfunction? Many other issues arise in discussion of dysfunctional families, such as parental drug use, the lack of a stable family residence, neglectful child rearing, and the occurrence of domestic violence. The Family APGAR was never intended to measure these issues. A prerequisite for future research must be a clarification of what it means to label a family as dysfunctional.

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Nevada: Capital Medical Associates (Carson City), Physician's Center West (Fallon); New Hampshire: Exeter Pediatric Associates (Exeter); New Jersey: Delaware Valley Pediatric Association (Lawrenceville); New Mexico: Albuquerque Pediatric Associates (Albuquerque); New York 1: Pediatric Associates (Camillus), Elmwood Pediatric Group (Rochester), Park Medical Group (Rochester), Edward D. Lewis, MD (Rochester), Panorama Pediatric Group (Rochester), Amherst Pediatric Associates (Williamsville); New York 2: Centro Medico (Jackson Heights); New York 3: Pediatric Office at Roosevelt Island (New York); North Carolina, Triangle Pediatric Center (Cary), Goldsboro Pediatrics (Goldsboro), Medical Association of Surry (Mount Airy), Peace Haven Family Health Center (Winston-Salem); North Dakota: MeritCare MedicalGroup-Pediatrics (Fargo), Altru Clinic (Grand Forks), Dakota Clinic (Jamestown), Medical Arts Clinic (Minot); Ohio: Oxford Pediatrics & Adolescents (Oxford), Pediatrics (Portsmouth), St. Elizabeth Health Center (Youngstown); Oklahoma: Eastern Oklahoma Medical Plaza (Poteau), Shawnee Medical Center Clinic (Shawnee), Pediatric & Adolescent Care (Tulsa); Pennsylvania: Pediatric Practice of Northeastern (Honesdale), Schuylkill Pediatrics (Pottsville), Cevallos and Moise Pediatric Associates, PC (Quakertown), Pennridge Pediatric Associates (Sellersville); Puerto Rico: Ethel Lamela, MD (Isabela), Primary Care Pediatric Clinic Catano (Rio Piedras); Rhode Island: Marvin Wasser, MD (Cranston); South Carolina: Carolina Primary Care (Columbia); Tennessee: Johnson City Pediatrics (Johnson City); Texas: The Pediatric Clinic (Greenville), Department of Pediatrics (Lackland Air Force Base), MD Pediatric Associates (Lewisville), Winnsboro Pediatrics (Winnsboro); Utah: Gordon Glade, MD (American Fork), Mountain View Pediatrics (Sandy), Salt Lake Clinic (Sandy), Granger Medical Center (West Valley City); Vermont: CHP Brattleboro Pediatrics (Brattleboro), University Pediatrics (Burlington), Rebecca Collman, MD (Colchester), Essex Pediatrics (Essex Junction), Mousetrap Pediatrics (Milton), CHP Timber Lane Pediatrics (South Burlington), Joseph Hagan, Jr, MD (South Burlington), Practitioners of Pediatric Medicine (South Burlington), University Pediatrics (Williston); Virginia: Drs. Casey, Goldman, Lischwe, Garrett & Kim (Arlington), James River Pediatrics (Midlothian), Pediatric Faculty Practice Office (Richmond); Washington: Jemima Tso, MD (Auburn), Redmond Pediatrics (Redmond), Rockwood Clinic (Spokane); West Virginia: Tess Alejo (Martinsburg), Medical & Pediatric Associates (Parkersburg), Grant Memorial Pediatrics (Petersburg); Wisconsin: Beloit Clinic SC (Beloit), Middleton Pediatric Clinic (Middleton), Waukesha Pediatric Associates (Waukesha), Gundersen Clinic-Whitehall (Whitehall); Wyoming: Cheyenne Children's Clinic (Cheyenne), Jackson Pediatrics (Jackson).

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TABLE 1

DEMOGRAPHICS ASSOCIATED WITH FAMILY APGAR (N=21,285)

Variable	APGAR >5 N=19,123 n	(%)	APGAR ≤5 N=2162 n	(%)	χ^2	*P*
Child sex						
Female	9623	(90.4)	1024	(9.6)	6.8	.009
Male	9500	(89.3)	1138	(10.7)		
Child race						
African American	1164	(82.0)	255	(18.0)	125.9	<.001
Hispanic	1478	(87.3)	215	(12.7)		
White	15,692	(90.8)	1589	(9.2)		
Other	642	(88.6)	83	(11.4)		
Marital status						
Not married or not together	5081	(82.2)	1100	(17.8)		.001
Married and together	14,042	(93.0)	1062	(7.0)		

TABLE 2

RESPONSES TO FAMILY APGAR ITEMS (N=21,285)

Item	Hardly Ever n	(%)	Sometimes n	(%)	Almost Always n	(%)
Helps when troubled	571	(2.7)	3553	(16.7)	17,161	(80.6)
Talks things over with me	759	(3.6)	5514	(25.9)	15,012	(70.5)
Supports my wishes	554	(2.6)	4405	(20.7)	16,326	(76.7)
Expresses affection	640	(3.0)	4981	(23.4)	15,664	(73.6)
Shares time together	575	(2.7)	5484	(25.8)	15,226	(71.5)

TABLE 3

STABILITY OF THE FAMILY APGAR FROM INITIAL VISIT TO FOLLOW-UP (N=1968)

Initial Visit	Follow-up Positive	Negative	Total
Positive	116	264	380
Negative	153	1435	1588
Total	269	1699	1968

TABLE 4

CLINICIAN-IDENTIFIED FAMILY DYSFUNCTION VERSUS FAMILY APGAR-IDENTIFIED FAMILY DYSFUNCTION (N=4050)

	Clinician		
Family APGAR	Yes	No	Total
Yes	130	653	783
No	362	2905	3267
Total	492	3558	4050