

Acceptability of a Web-based Attention-deficit/Hyperactivity Disorder Scale (T-SKAMP) by Teachers: A Pilot Study

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Background: The American Academy of Pediatrics (AAP) recommends that physicians obtain information directly from teachers or other school professionals as a part of the periodic assessment of children with attention-deficit/hyperactivity disorder (ADHD). This can be difficult for physicians, however, and despite the guideline, treatment decisions are often made without this key information. Hence, alternative means of obtaining data need to be considered. One alternative is using a Web-based instrument as described in this paper.

Purpose: This pilot, qualitative study examined teacher acceptability of a Web-based version of an ADHD rating scale known as Swanson, Kotkin, Agler, M-Flynn and Pelham Scale-Teacher Version (T-SKAMP) for weekly monitoring of ADHD-impaired children relative to paper-based scales.

Methods: Following a 2-month clinical trial using the Web-based T-SKAMP, we conducted a qualitative semi-structured interview known as the Teacher Preference Interview (TPI) to 19 teachers.

Results: Seventeen of 19 teachers (89.5%) rated Web-based T-SKAMP to be easier, shorter, simpler, and more informative than paper-based scales. They further perceived this Web-based scale to be a time saver (both long and short term) and more flexible, efficient, and effective to use than paper-based scales.

Conclusions: Teachers participating in this pilot study generally preferred a Web-based mechanism of relaying classroom behavioral data on ADHD-impaired children. Web-based T-SKAMP was found to be efficient and effective, and has the potential to improve communication between teachers and physicians. Enhanced communication and cooperation can facilitate increased adherence to established ADHD management guidelines and ultimately benefit affected children. (J Am Board Fam Med 2006;19: 195–200.)

Included in the American Academy of Pediatrics (AAP) practice guidelines for attention-deficit/hyperactivity disorder (ADHD) are 3 processes that require clinician-educator cooperation and communication.^{1,2} First, the AAP recommends that primary care physicians obtain information directly from the child's teacher or another school professional about the expression of symptoms in the

classroom. In fact, the Diagnostic and Statistical Manual for Mental Disorders (DSM-IV) requires that ADHD symptoms must be documented in at least 2 settings.³ Second, the AAP recommends that physicians, in cooperation with school professionals, base decisions concerning treatment on specific behavioral goals or target outcomes. Third, the AAP recommends that physicians periodically provide a systematic follow-up for a child with ADHD. This can be difficult, however, and despite these guidelines physician-teacher communication is often lacking ("educational-medical disconnect"), and many clinical decisions are made without teacher input.^{4–8} Hence, alternative means of obtaining data need to be considered^{6–9} and must necessarily be accepted by the teachers who provide the data. One alternative is using a Web-based instrument, as described in this article, and which we hypothesized would be judged to be a more efficient method.

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Discussions with personnel in the Sioux Falls school system revealed that treatment monitoring by physicians through the use of rating scales was infrequent beyond the initial assessment of a child. The purpose of this study was to collect pilot data on the acceptability of a Web-based version of an ADHD rating scale known as Swanson, Kotkin, Agler, M-Flynn and Pelham Scale-Teacher Version (T-SKAMP) relative to paper-based scales previously completed by teachers.^{7,10-14} The use of this rating scale is a major component of our Web-based classroom data collection system. The conceptualization of this system has been previously described⁶ and its use reported.⁷ A paper version of T-SKAMP is displayed in Table 3.

Methods

The Board of Education of the Sioux Falls School District and the Avera-McKenna Hospital and University Health Center Institutional Review Board approved this study.

Subjects and Assessed Instrument

Nineteen elementary school teachers who had participated in a 2003 clinical trial involving the use of T-SKAMP were recruited for this study. We selected T-SKAMP for monitoring classroom behavior for several reasons.¹⁰⁻¹⁴ First, paper-based versions of T-SKAMP have been found to be quite useful and sensitive in monitoring short-term changes specific to ADHD in research studies, including, the landmark Multimodal Treatment study of children with ADHD (the MTA Study).¹² Second, this is a brief instrument. The paper-based version of T-SKAMP can be completed in 5 minutes; thus, there is minimal respondent burden.¹² Third, it focuses on assessment of functions specific to ADHD and the types of issues most relevant for classroom success. Fourth, the paper-based version of this scale is in the public domain.¹⁰ Fifth, it has moderate to good test-retest reliability over a single day.¹⁰⁻¹⁴ The main disadvantage of this scale is the lack of normative data.¹² Without the normative data the application of this scale is limited to treatment monitoring, that is, it cannot be used for diagnostic assessment of ADHD.

Process of Web-Assisted Data Collection

Teachers completed the Web-based T-SKAMP weekly for 2 months. A care manager (social

worker) coordinated collection of classroom data. Raw data were uploaded and converted into meaningful information. To assess overall academic and social functioning of the children, the social worker also conducted monthly structured interviews of teachers by telephone using an instrument called Clinical Global Impressions.¹⁵ To protect confidentiality, each student and teacher was assigned a number, obviating the need for transmitting any identifying information. As a further safeguard, we used encryption and passwords during the data collection process. The care manager processed the data on each child for review by a board certified child psychiatrist who prepared a feedback report for the treating primary care physician. The report included an assessment of how the child was doing and suggestions to either modify or not modify the medication regimen. The individualized recommendations were made based on the following: (1) assessment of the clinical data collected by the care manager, (2) a standardized and algorithm-based pharmacotherapy manual for ADHD adapted from current sources, and (3) the best clinical judgment of the child psychiatrist.

Assessment of Teacher Acceptability of Web-based T-SKAMP

Following the 2-month trial, we administered an internally developed qualitative semi-structured interview known as the Teacher Preference Interview (TPI) to the 19 participating teachers. Before administering the TPI, we explained that the purpose of the interview was to learn whether they preferred the Web-based Internet-based T-SKAMP or a paper-based scale for reporting classroom behavior of children with ADHD. The TPI begins with 3 open-ended questions. First, teachers are asked to describe their experiences with the Web-based T-SKAMP in general. Second, they are queried about their experience with paper-based ADHD scales. Third, they are asked to compare these experiences.

A 10-item section followed with specific questions on the efficiency and effectiveness of the Web-based T-SKAMP relative to paper-based scales. The interview responses were anchored on a 6-point Likert scale as follows: disagree a lot (1); disagree (2); disagree a little (3); agree a little (4); agree (5); and agree a lot (6). Three interviewers were involved in data collection from each teacher. While the lead interviewer asked the questions, the

other 2 professionals monitored the interviewer-teacher interaction. The purpose of this arrangement was to be sure teachers understood the questions and that the teacher-selected responses were accurately recorded.

Results

Of the 19 teachers enrolled in the study, all completed the interview. When asked to describe their experiences with ADHD scales, they reported limited past experience completing paper-based scales and no experience completing electronic-based scales before this study. The distribution of teacher responses to the 10 structured interview items of the TPI are summarized in Table 1.

Seventeen out of 19 (89.5%) agreed a little, agreed, or agreed a lot that it was easier for them to complete the Web-based SKAMP than a similar paper-based scale. They perceived the Web-based scale to be shorter, simpler, quicker, and more efficient than paper-based scales. They found it easier to fit Web-based process into their schedule because of its flexibility. They believed that both the quality and frequency of physician-teacher information exchange could be improved by the use

of Web-based SKAMP. They agreed that the physician-teacher communication needed to be improved for better adjustment of ADHD medication. One of the 2 teachers who preferred to manually complete a paper-based scale had little experience in using computers and was about to retire. The other teacher did not perceive the Web-based scale to be efficient and a time saver but was willing to support its use with some reservations.

Discussion

The majority of teachers in our sample preferred using a Web-based scale over a paper-based scale particularly when they were asked to complete a rating scale every week. They reported the Web-based T-SKAMP as easier and quicker to complete. This suggests that most teachers prefer a Web-based means of relaying information. Collection of classroom data by this method can potentially improve physician-teacher communication and practice-guideline adherence by physicians.

A valid criticism of our study is that it did not involve a comparison of a paper-based T-SKAMP with the Web-based system. Although a paper-

Table 1. Frequency Distribution of Responses to Teacher Preference Interview

Interview Item	1. Disagree a Lot	2. Disagree	3. Disagree a Little	4. Agree a Little	5. Agree	6. Agree a Lot
1. It was easier for me to complete the Web-based SKAMP than a similar paper-based scale	1		1	2	5	10
2. The completion time was shorter for the Web-based SKAMP than paper-based scales I have completed in the past	1		1		6	11
3. It saved me time in the short run to use Web-based SKAMP compared with the paper-based scales			1	1	6	11
4. It saved me time in the long run to use Web-based SKAMP compared with the paper-based scales			1		6	12
5. It was easier to fit Web-based process into my schedule because of its flexibility			1	2	4	12
6. It was easier to fit Web-based process into my schedule because of its simplicity			1		5	13
7. The quality of physician-teacher information exchange can be improved by use of Web-based SKAMP			1	2	6	10
8. The frequency of physician-teacher information exchange can be improved by use of Web-based SKAMP		1	1	3	2	12
9. The physician-teacher communication needs to be improved for better adjustment of ADHD medication		1	1	3	2	12
10. My involvement in the process of medication adjustment was made more efficient by the use of the Internet		1	1	3	5	9

Table 2. Suggestions for Developing a Partnership with Schools

Principles	Physician-Directed Application
1. The solution to improving physician-teacher communication is community-specific and practice-specific.	To determine the feasibility of implementing different collaboration procedures in your community, consider holding discussions with local school administrators, teachers, physicians, parents, and other stakeholders. Additionally, interested physicians might request conduct of focus groups that involve key stakeholders.
2. Improved physician-teacher communication is best worked out by joint and voluntary efforts of all stakeholders.	Efforts should be made to create a community consensus. It is important that the collaboration between teachers and physicians is voluntary for both.
3. Clarification of roles can facilitate development of physician-teacher collaboration	Joint physician-teacher training workshops can help set expectations that physicians and teachers will collaborate in setting up treatment goals and monitoring of classroom behavior.
4. Several options may be considered before the procedure for setting-up physician-teacher linkage is selected	The procedures for connecting physicians and teachers include the following: <ol style="list-style-type: none"> 1. Direct linkage via mail, fax, phone, or e-mail (may involve physician office staff) 2. Linkage via a parent or a primary caretaker 3. Direct linkage via Web (involving physician office staff only) 4. Linkage via Internet involving a care manager and a child psychiatrist (who convert raw data into a meaningful feedback report for the treating physician) 5. Linkage via school nurse or school psychologist 6. Physician participation in parent-teacher school conferences 7. Other formalized arrangements between groups of physicians and school systems (eg, via a child evaluation team consisting of volunteer professionals)
5. The linkage procedure should be structured but allow flexibility	To accommodate physicians and teachers who are not comfortable with a highly centralized procedure, alternative methods of linkage may be necessary. Above all, find the method that works for your community and allow time for communication maturation.

based version of SKAMP is available and, therefore, it would have been more appropriate to compare teacher perceptions of a paper-based version of T-SKAMP with the Web-based version, none of the teachers had experience with this scale. Typically, they are asked to complete the ADHD Evaluation Scale¹⁶ or one of the Conners' rating scales¹⁷ for an initial evaluation because normative data for these scales are available. We were, however, interested in the acceptability of an electronic collection system compared with any paper-based scale. The fact that a great majority of teachers preferred the Web-based version of a scale, with which they were not familiar, over paper-based scales, with which they were familiar, suggests teachers would prefer the electronic version of T-SKAMP to a paper-based one. This would be an appropriate research question for a future study.

Another factor that may affect study generalizability is that the use of a Web-based scale was well accepted by the great majority of teachers in our sample because they worked in a "highly wired" environment. The findings of this pilot study may also be limited by the possibility that TPI may have

generated a positive-response bias among the teachers. For example, teachers may have provided more socially acceptable responses. Our findings need to be confirmed by a larger study with a more diverse sample (teachers, school systems). The very important question of physician preference also needs to be addressed by future investigations. Finally, regardless of teacher preference for Web-based or paper-based scales, not all classrooms have electronic communication capabilities. Our findings are relevant only for school systems in which computer and Internet access is readily available.

Conclusions

Inadequate physician-teacher communication is a barrier to the best care of children with ADHD. Our pilot study suggests that the Internet can be an effective tool for documenting and relaying information. Displayed in the Table 3 is a paper version of T-SKAMP, an instrument that measures levels of ADHD-related impairment.¹⁰ Clinicians might consider using either a paper or an electronic version of T-SKAMP for monitoring classroom be-

Table 3. Paper Version of T-SKAMP**Child's Name:** _____ **Teacher:** _____**Date:** // _____ **Time:** _____ **Session:** _____**READ EACH ITEM BELOW CAREFULLY, AND CIRCLE THE NUMBER THAT BEST DESCRIBES THIS CHILD DURING THE CLASS PERIOD.**

Degree of Impairment	Normal	Slight	Mild	Moderate	Severe	Very Severe	Maximal
Classroom Behavior:							
1. Getting started on assignments for classroom periods	0	1	2	3	4	5	6
2. Sticking with tasks or activities for the allotted time	0	1	2	3	4	5	6
3. Attending to an activity or discussion of the class	0	1	2	3	4	5	6
4. Stopping and making transition to next period	0	1	2	3	4	5	6
5. Interacting with other children (eg, other students)	0	1	2	3	4	5	6
6. Interacting with adults (eg, teacher or aide)	0	1	2	3	4	5	6
7. Remaining quiet according to classroom rules	0	1	2	3	4	5	6
8. Staying seated according to classroom rules	0	1	2	3	4	5	6
Written Work:							
9. Completing assigned work	0	1	2	3	4	5	6
10. Performing work accurately	0	1	2	3	4	5	6
11. Being careful and neat while writing or drawing	0	1	2	3	4	5	6
General:							
12. Complying with teacher's usual requests or directions teachers	0	1	2	3	4	5	6
13. Following the rules established for the school	0	1	2	3	4	5	6
14. Individual item A	0	1	2	3	4	5	6
15. Individual item B	0	1	2	3	4	5	6

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havior of children with ADHD. Our study suggests that this instrument can gain acceptability in school systems as an efficient, effective mechanism for documenting and relaying classroom behavioral data, and has the potential to improve communication between teachers and physicians. Enhanced communication and cooperation can facilitate increased adherence to established ADHD management guidelines and ultimately benefit affected children.

Suggestions for Setting-up Partnerships with Schools

The method used by us to promote physician-teacher linkage had several components, including a Web-based rating scale, and collaboration of healthcare professionals (primary care physicians, a social worker care manager, and a child psychiatrist) (Table 2). This method may not be suitable for many communities. Hence, we have summa-

rized several potential methods of setting physician-teacher linkages and physician-directed application of these methods (Table 2).⁹

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