Adult ADHD: An Assessment Tool for Non-Psychiatric Nurse Practitioners

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Abstract

Evidence suggests primary care providers, including nurse practitioners (NPs), have deficits in knowledge, use of assessment tools, and management of adult attention deficit hyperactivity disorder (ADHD). Education to familiarize NPs with a valid and reliable adult ADHD assessment tool may improve the initial management of adult ADHD in the primary care setting. An educational intervention, intended to increase NPs awareness of the *Adult ADHD Self-Assessment Scale v1.1*, was presented to a small convenience sample of non-psychiatric NPs, followed by a survey to evaluate the effectiveness of the intervention. Data were collected to determine any differences in diagnostic ability post-intervention.

Keywords: adult, ADHD, ASRS, assessment, nurse practitioners

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According to the National Institute of Mental Health, attention deficit disorder (ADHD) is estimated to occur in 7-8% of adults and ranks second among neuro-psychotic disorders in all ages (Goodman, Surman, Scherer, Salinas, & Brown, 2012; National Institute of Mental Health, 2014). The recent trend in primary care is to diagnose and treat adult ADHD, however, it is estimated that only one third of adults who have symptoms of ADHD will receive a diagnosis and appropriate treatment (Asherson et al., 2012; Morley, 2010). Adults with undiagnosed and untreated ADHD experience significant impairment in daily functioning, and proper screening and treatment are needed to mitigate the morbidity associated with this disorder (Matheson et al., 2013). Low levels of provider confidence in diagnosing and treating adult ADHD have been identified and are associated with lack of knowledge on the provider's part (Adler, Shaw, Sitt, Maya, & Morrill, 2009; Goodman et al., 2012). The purpose of this project was to educate primary care NPs on the utility of using a valid ADHD screening tool in practice and to assess the providers' diagnostic accuracy through the use of case studies.

Background and Significance

ADHD is recognized and accepted as a pediatric diagnosis. It is estimated that the occurrence of ADHD in adults is similar to that of children (Centers for Disease Control and Prevention, 2013). Comorbidity is common, and it is estimated that 77-87% of adults with ADHD have at least one other psychiatric condition (Hines, King, & Curry, 2012). The comorbidities make diagnosing ADHD complicated and contribute significantly to the associated morbidity (Hines et al. , 2012). Quality of life (QOL) can be markedly impaired in adults with ADHD (Argarwal, Goldenberg, Perry, & Ishak, 2012). They may experience anxiety,

depression, poor social functioning, and lower incomes in comparison to adults not affected by ADHD (Argarwal et al., 2012). ADHD is also associated with antisocial behavior, increased arrests, and a higher incidence of substance abuse in adolescents and adults (Rutledge, van den Bos, & Schweitzer, 2012).

Appropriate diagnosis and treatment of adult ADHD can mitigate the negative social and health effects and improve QOL (Argarwal et al. 2012). For this to occur, it is important that all primary care practitioners have appropriate knowledge and skills to identify and manage these patients. Research has demonstrated that primary care physicians have a lower confidence rate than psychiatrists. Goodman et al. (2012) write that eight per cent of primary care physicians report that they are extremely confident in diagnosing ADHD, compared to 28% of psychiatrists. Furthermore, when presented with 12 evidence-based questions on ADHD, 32% of primary care physicians exhibited awareness of ADHD prevalence compared to 47% of psychiatrists (Goodman et al., 2012). In another study, 48% of primary care physicians reported comfort in diagnosing and treating ADHD (Adler, Shaw, Sitt, Maya, & Morrill, 2009). However, Knutson and O'Malley (2010) found that nurse practitioners overall had limited formal education about mental health disorders. It is reasonable to assume knowledge deficits that occur with primary care physicians also occur in advanced practice nurses and physician assistants, and may be a contributing factor to low diagnostic rates of adult ADHD.

Hines et al. (2012), report that the under-diagnosis of adult ADHD in primary care settings may be related to several causes, including unfamiliarity of screening tools and lack of time. Screening tools that are time-consuming to administer are not well received in primary if they impede productivity (Hines et al., 2012). Patients may also hesitate to participate in lengthy

screening procedures (Hines et al., 2012). Primary care practitioners also hesitate to administer screening tests for conditions with which they are unfamiliar or those for which they do not have appropriate resources or referral options (Hines et al., 2012). Knutson and O'Malley (2010) noted the need for NPs to become more familiar with subtle signs and symptoms of ADHD and with the use of available screening tools. These authors surveyed non-psychiatric NPs and found only 12.6% were using any type of screening tool to diagnose adult ADHD (Knutson & O'Malley, 2010). This underscores the need for primary care practitioners to become familiar with screening options.

The *Adult ADHD Self-Report Scale (ASRS) version 1.1* has been used successfully to screen for adult ADHD in primary care, as noted in one of the foundational studies referenced in preparation for this project (Kessler et al., 2005). This valid and reliable tool was developed for the World Health Organization by Adler, Kessler and Spencer, and has been shown over time to be predictive of adult ADHD in the primary care setting (Kessler et al., 2005). In addition, the tool takes significantly less time for patients to complete and is well received by patients and providers (Hines et al., 2012). Studies have shown that the ASRS tool, when used to predict ADHD in adults, has a sensitivity of 67.8% and a specificity of 99.5%.

Methods

Project aims

The primary aim of this project was to improve adult ADHD diagnosis and management skills in non-psychiatric nurse practitioners. To be successful, translating new knowledge into practice was needed.

Theoretical design

To facilitate development and implementation of this evidence-based practice (EBP) project, Knowledge Translation (KT) was used as the overarching theoretical foundation. The seminal framework of KT uses a cyclical process comprised of steps that facilitate the translating of knowledge into action (Straus, Tetroe, & Graham, 2009). This cyclical process includes important facets for knowledge creation, including the identification of a knowledge deficit, synthesis of the knowledge, and the development of knowledge tools to support and meet the learners' knowledge deficit. The action cycle, as discussed in another influential article, is the application of knowledge through the identification of a deficit, selecting appropriate interventions, while monitoring and evaluating the increase in knowledge, including sustaining knowledge (Graham et al., 2006). Research has clearly provided evidence that education is necessary to improve patient care and outcomes. The KT process promotes knowledge-to-action through educational interventions, while monitoring and evaluating the effectiveness of an intervention.

For this project, KT provided a guide to promote the knowledge translation process related to NP's knowledge deficit in the care of adult ADHD patients. The application of knowledge was accomplished through the development of an educational intervention to aid in helping NPs make decisions related to adult ADHD diagnosis. Resources provided in an online educational intervention included ADHD case studies and online links to provide more detailed information related to the published adult ASRS screening tool. This endeavor was accomplished through the knowledge-to-action cycle, project development, implementation and evaluation process.

Participants

The inclusion criteria for NP participants were employment in a primary care setting and providing direct care to adult patients. Exclusion criteria included NPs who work in psychiatric settings or who exclusively treat children, and NPs who work in specialty areas. Participants were contacted via a sampling program provided by a national NP professional organization that provides contact information for organizational members who have agreed to participate in nurse practitioner research. Potential participants were vetted by the NP organization to ensure they met the criteria prior to releasing their contact information to the researcher. One hundred fifty names and mailing addresses of NPs were obtained from the AANP Sampling Program from a database of NPs who voluntarily participate in scholarly research. Postcards with a web address (URL) for the *Qualtrics* (2014) survey were mailed by the author via the U.S. Postal Service to all of the participants provided.

Setting

The project survey was accessible to participants via a web site developed by the author. A web address was presented to potential participants so that the survey could be accessed at a time and location of their convenience.

Intervention

This project used a two-group posttest-only randomized quasi-experimental design, involving a convenience sample of non-psychiatric NPs. Participants were randomly assigned to two groups, with one group receiving an educational intervention and both groups receiving two case studies utilizing the ASRS screening tool. The content of the educational intervention and case study development was based on current assessment and diagnostic recommendations from

the DSM IV. The ASRS tool was chosen because the screeing questions are specifically based on DSM IV criteria. Peer-reviewed literature was also identified that described the utility and accuracy of the ASRS tool. It is notable that the ASRS screeing tool is intended to be used in conjunction with the DSM IV manual.

The case studies were developed by the author and reviewed for validity by two independent psychologists who routinely diagnose and treat adults with ADHD and the associated psychiatric comorbidities (Gassaway, J., & Stookey, S., personal communication, November 3, 2014). One case study was representative of a patient with ADHD and was accompanied by a completed ASRS tool that reflected the patient's diagnosis. The second case study was representative of a patient with an anxiety disorder who displays some symptoms consistent with ADHD and was acompanied by a completed ASRS tool that reflected the patient's diagnosis. Permission to use the ASRS tool was obtained from Adler, Kessler and Spencer (2003) as shown in the appendix.

The educational intervention was developed by the author and consisted of information on the application and interpretation of the ASRS tool, as well as web links to peer reviewed information that supported the use of the ASRS tool. The project material was accessed by participants via a website developed by the author for this purpose. The website and data collection were managed using *Qualtrics*, an online survey data collection program. Upon accessing the web page, participants were automatically randomized by Qualtrics into two groups. Both groups were asked seven demographic questions and seven questions related to their individual practice characteristics. Participants were asked to specify their age, gender, race, patient population, type of practice, years of practice and education level. Group one received

the education intervention. Both groups were presented with the two case studies and asked to answer a multiple-choice question regarding the diagnosis that best applied to each case study subject. The case studies presented to the intervention and control groups were the same, as was the question used for each case study. Participants were asked to read the case studies and then answer a question that asked, "Based on the information you have received, what diagnosis would you assign to the patient in this case study?" The answer choices were: A. ADHD, B. Anxiety, C. Depression, D. Unsure.

Ethics

Institutional review board (IRB) approval for this project was granted by Northern Arizona University (NAU). Informed consent was obtained from all participants prior to accessing the survey via a banner page on the survey web site that required acknowledgement of this consent in order to access the survey. All participants were informed that they had the option to refrain from participating in the survey if desired. To ensure confidentiality, participants were identified by a number and a password protected computer was used to collect data. All names and mailing addresses of NPs who were contacted for this project were destroyed by permanent deletion from the afore-mentioned password protected computer once all mailers were sent. Responses to the survey were annonymous. No identifying information other than demographic and practice characteristic information was requested.

Data Collection and Analysis

The Survey was available to participants for fourteen days. At the end of this period the responses were collected from Qualtrics and comparisons were made between the intervention and non-intervention groups to evaluate the impact of the educational intervention on the

diagnostic decisions. Additionally, demographic and practice charactics of survey participants were compared and contrasted. Responses to the diagnostic questions were evaluated using a Fisher's exact test calculator accessed via a web-based statististics tool (Stangroom, 2015). Demographic data on age, gender, race, patient population, practice type, time in practice and education level were collected and analyzed in aggregate. Survey responses were also confirmed by a hand tally to ensure the accuracy of the data presented by Qualtrics . The demographic responses were compared and contrasted to identify potential trends indicating whether these factors affected the results of the diagnostic responses. In order to examine NPs' accuracy in diagnosing adults with ADHA, the responses of both the intervention and non-intervention groups to the case study questions were compared. For the first case study, a diagnostic determination of ADHD was considered a correct response and any other answer was considered incorrect. For the second case study, a diagnostic determination of ADHD was an incorrect response and any other answer was considered correct.

Descriptive statistics were used to summarize the participants' responses to both the diagnostic and the demographic questions. The responses to the questions regarding diagnosis were compared and contrasted to identify any differences in diagnostic accuracy between the intervention and non-intervention groups.

Findings

The findings for this project were collected in two separate parts: demographics; case study question responses.

Demographics

Nineteen nurse practitioners responded to both surveys and of those, three were male and sixteen were female. Ethnic representation was predominately Caucasion (n=17). There was one African American and one particpant failed to answer. Age groups included; age 30-40 (n=5), age 41 to 50 (n=7), age 51 to 60 (n-4) and age greater than 60 (n=3). There was equal distribution of ages between groups. The majority of the participants reported that their practices included both pediatric and adult patients (n=13), compared to adults only (n=6). Similarly, the majority of the participants indicated that they worked in family practice settings (n=14), as opposed to internal medicine (n=3), and multi-disciplinary (n=2) settings. The mean time in practice was 3.6 years, with the largest segment among those who reported being in practice three to five years (n=7), and the smallest was more than twenty years (n=1) in practice. Most of the participants reported being educated at the master's level (n=17). Because of the small sample size, no statistically significant trends that affected the project outcomes that were observed among the various demographic categories.

Case Study Questions

Intervention group respondents for the first case (88%) made an accurate diagnosis of ADHD, versus 70% in the non-intervention group. For the second case, the diagnostic accuracy in ruling out adult ADHD was 100% in the intervention group versus 90% in the non-intervention group. The case study responses, evaluated using Fisher's exact test, were $p = .6$ for case one and $p = 1$ for case two. Neither group produced statistically significant results at a .05 level. These limited results failed to provide statistically significant evidence of the effectiveness of providing an educational intervention for improving non-psychiatric NP accuracy in diagnosing adult ADHD using the ASRS tool.

Discussion

Assessment and management of ADHD in adults remains a challenging task for many primary care providers, including NPs. Examining the accuracy of non-psychiatric NPs in assessing and managing adult ADHD, with and without a targeted educational intervention and the ASRS screening tool, may serve to provide better awareness of the utility of the ASRS tool in assisting in diagnosing adult ADHD. Unfortunately, the educational intervention used in this project was not shown to be effective in achieving this proposed improvement.

Although the results of this project failed to demonstrate the effectiveness of the educational intervention, the small sample size limited the overall utility of this project. Further research is necessary to better establish the effectiveness of the educational intervention. During the data analysis phase of this project, a question arose regarding Case Study 2 as to whether any answer other than "ADHD" was absolutely correct, or if an answer of "unsure" could be considered a marginally incorrect answer since it didn't specifically rule-in ADHD as a diagnosis. However, it was decided, for the purposes of this project, that a test of specificity should be absolute, and an answer of "unsure" was scored as correct. Additionally, the patient portrayed in Case Study #1 was based on the researcher's own personal experience as an individual diagnosed with ADHD, and may have contributed to some degree of bias in the implementation of this project.

Perhaps the most valuable lesson that was learned during the execution of this EBP project was the educational value of achieving results that were not statistically significant or unexpected. These results motivated more thorough exploration into the reasons for the

insignificant or unexpected results than may have been examined had the results been otherwise. Ultimately, a clearer understanding of the EBP process was learned by the researcher.

Limitations/Facillitators/Challenges

The greatest perceived limitation in the implementation of the planned application of the evidence project was limited participation by the intended cohort. From a total of one hundred fifty mailers sent to NPs from the national NP organization's sampling program, nineteen (13% response rate) responded as of day fourteen of the project. Self-selection by the participants contributed to this limited cohort size and may have involved a degree of bias by the participants related to their personal motivations to engage with the proposed project. Additionally, contacting the participants through the U.S. Postal Service was not optimal since it required potential participants to type a somewhat complex web address (printed on the postcard mailers) in order to access the survey. A method of contacting the participants, such as e-mail that would allow for use of a single-click hyperlink might have facilitated better participation. Another potential limitation was the post-test only design, which is limited in its usefulness in providing statistically significant results because it does not provide a baseline for comparison. Using a pre-test/post-test design might have contributed to improved significance of the project findings. Additionally, the format by which the educational material was presented was also a possible limitation. Although access to the survey was seen as beneficial to the success of implementation of the educational intervention, the format required that the participants review attached peer-reviewed studies in order to receive supporting information on the utility of the ASRS tool. This was probably time consuming for most participants and there was a possibility of inadequacy with regard to reviewing factors prior to taking the survey. Developing a presentation format for

the peer-reviewed data that is more concise and easy to review may facilitate improved effectiveness of the intervention.

The ease of access to the project participants and the intended simplicity of implementation of the educational intervention were beneficial in the overall success of the application of the EBP process. Obtaining the list of potential participants from the NP organization sampling program was simple and allowed for vetting of the participants regarding inclusion and exclusion criteria prior to being released to the investigator. The list of participants was received in electronic format which allowed for delivery less than one day from the date the list was requested. The survey was implemented using Qualtrics which is a web-based survey service that was relatively user friendly and provided tutorials on how to develop surveys. Collection of data from Qualtrics was simple as were other functions such as cross-tabulation and calculation of specific statistical information. Ease of access to the consulting clinical psychologists allowed the research to progress unimpeded.

Conclusion

The ASRS v1.1 (Adler et al., 2003) has been established through several studies to be a sensitive and specific tool that can be used by primary care providers and was one of the source documents for this project. Moreover, there was an inclusion of NPs who play a role in assisting the development of a diagnosis for adult ADHD in the primary care setting (Kessler et al., 2005). The tool is easy to administer and results easy to interpret which facilitates its use in the very brief time alloted for a typical primary care encounter (Hines et al. 2012). Unfortunately, awareness of this tool is fairly low among primary care professionals and this supports the reported underdiagnosis of the disorder (Goodman et al. 2012; Adler et al. 2009). It is possible

that education about the tool will facilitate improved diagnosis and treatment of adults with ADHD. Use of this instrument can play a significant role in identifying behaviors, symptoms and pertinent features that are associated with adult ADHD. Aside from the convenience that the tool offers, it can assist clinicians in diagnosing ADHD. When used in combination with an array of other assessment factors, the tool can help providers with the decisions about diagnosis and treatment in patients with ADHD.

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Appendix

Permission to Use ASRS tool

From: Andrew Hoeffler [adh323@nau.edu]
Sent: Thursday, August 07, 2014 4:22 PM
To: Lenard.Adler@nyumc.org
Cc: Kessler, Ronald; spencer@helix.mgh.harvard.edu
Subject: Permission to use ASRS v 1.1 in scholarly research

Dr. Adler,
I am a family nurse practitioner, currently studying for a doctor of nursing practice degree from Northern Arizona University. My scholarly work is focused on adult ADHD and the identification of it in the primary care setting. I would like to conduct a project using the ASRS v1.1 , and would like you permission, and that of your colleagues, Drs Kessler and Spencer (cc'd in this e-mail) to use and reproduce the ASRS in the Project, and possibly in a future related study.

Best regards

Andrew Hoeffler, MSN, RN, NP-C
Family Nurse Practitioner
(Maj. USAF, NC).

On Thu, Aug 7, 2014 at 4:19 PM, Kessler, Ronald <kessler@hcp.med.harvard.edu> wrote:
Andrew - Yes, you have my permission to use the ASRS in the way you describe. Good luck with your work. Ron Kessler

Ronald C. Kessler, Ph.D.
McNeil Family Professor of Health Care Policy
Department of Health Care Policy, Harvard Medical School