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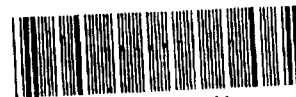
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An Intervention to Increase the Use of Asthma Action Plans in Schools: A MASNRN Study

Joyce Pulcini, PhD, APRN, BC, FAAN; Marie C. DeSisto, RN, MSN; and C. Lynne McIntyre, RN, PhD

ABSTRACT: School nurses, in collaboration with primary care providers (PCPs), can work to better manage asthma by using the Asthma Action Plan (AAP) with peak flow monitoring. The aim of this pilot study was to determine the effectiveness of an intervention to increase the number of AAPs in schools for students with asthma by having school nurses provide the students' peak flow measurements to their PCPs with a request for an AAP. The study found a significant increase in AAPs when school nurses provided PCPs with accurate peak flow data and requested an AAP from the PCP than when school nurses requested an AAP via the students' parents and did not provide peak flow data to the PCP. This study provided data on the importance of collaboration with PCPs in order to affect better care for children with asthma.

KEY WORDS: asthma, Asthma Action Plan, collaboration, MASNRN, peak flow measurement, school nurse

INTRODUCTION

Asthma has become a significant health issue for the United States and is currently the most common chronic illness in children. It is associated with high mortality, significant acute care service use, and is the leading cause of school absenteeism related to chronic conditions. School nurses have a long history of coordinating care for children with asthma and are an essential link to primary care providers (PCPs) and asthma specialists to better manage this disease. School nurses monitor children's response to care on a regular basis and provide education about the disease. Yet studies have found that few school nurses actually communicate with the PCPs of students with asthma on a regular basis (Borgmeyer, Jamerson, Gyr,

Westhus, & Glynn, 2005; Halterman et al., 2004). To date, no studies have examined the impact of implementing formal mechanisms of communication between school nurses and PCPs on outcomes for students with asthma.

The school nurses involved in this study were affiliated with the Massachusetts School Nurse Research Network (MASNRN), a Practice-Based Research Network (PBRN), whose aim is to conduct research and translational research designed to improve student health outcomes and the efficacy and efficiency of school nurse care (Vessey & the Founding Oversight Board Members of MASNRN, 2007). The impetus for this intervention pilot study evolved from previous quality improvement activities in which some Massachusetts school districts monitored the number of Asthma Action Plans (AAPs) for students with asthma in schools and attempted to identify interventions that would increase the number of AAPs available to the school nurse. In one school district with low numbers of AAPs, physicians reported that they did not complete AAPs because they did not have information on the child's "personal best" peak flow measurement,

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the lung function measurement that a child is able to achieve when their asthma is well controlled (ASHA, 2003). A school nurse in another school district began obtaining peak flow readings from students with asthma and sending the information to their PCPs with a request for an AAP. She felt that this intervention was increasing the number of AAPs she received. Based on these ideas and information, MASN RN decided to develop an intervention protocol and design a pilot study to scientifically examine its effectiveness.

The purpose of this study was to determine if the provision of peak flow meter readings directly to the PCP with a request by the school nurse for an AAP would increase the number of AAPs received by the school nurse compared to the current procedure of requesting an AAP via the child's parent.

REVIEW OF THE LITERATURE

The prevalence of asthma in children increased from 3% in 1981 to 5.5% in 2004 (Child Trends Data Bank, 2006). Asthma is the third leading cause of hospitalization in children and the leading cause of school absenteeism related to chronic illness (Child Trends Data Bank, 2005), with an estimated 14.6 million lost school days per year (American Lung Association, 2004). Negative effects of asthma on school performance include loss of class time due to symptoms, treatment, or health care visits and lack of concentration or attentiveness due to nocturnal symptoms or medication side-effects (Diette, Markson, Skinner, & Nguyen, 2000). In Massachusetts, the prevalence of asthma in school-age children ages 0–17 years is 14.1% compared to a national prevalence of 12.1%. (Child and Adolescent Health Measurement Initiative, 2005). A survey based on school health records in Massachusetts found the prevalence of asthma among school-age children in kindergarten through grade 8 to be 10% (MA DPH, 2006).

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In 2002, a committee of nationally recognized experts in childhood asthma developed policy recommendations for improving childhood asthma outcomes in the United States (Lara et al., 2002). One of the 11 recommendations proposed was to strengthen the health care infrastructure through the development of school-based asthma initiatives. Because school-age children spend approximately a third of their day in schools, services in this setting, such as direct care, education, support, and coordination of

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Several national organizations have developed goals and guidelines for the management of asthma. The National Asthma Education and Prevention Program (NAEPP) developed practice guidelines for the management of asthma in 1997, with updates disseminated in 2002 (National Institutes of Health [NIH], 1997; 2002). Included in these guidelines were recommendations for written action plans and peak flow monitoring to promote self-care and enhance patient-provider communication. The use of an AAP, a written plan provided by the PCP or asthma specialist that documents the medical intervention for asthma, is recommended by several professional organizations, including the American Academy of Pediatrics (AAP, 2006), the American Academy of Allergy, Asthma, and Immunology (AAAAI, 2004), and the American Thoracic Society (2003).

Availability of an AAP provided by a PCP or asthma specialist, as specified in these national guidelines, is an important component of successful case management for students with asthma in the school setting. Among elementary-age students in western New York, the use of an Asthma Care Plan was found to significantly reduce the number of asthma exacerbations (Millard et al., 2003). Even though school nurses report increased confidence in their ability to manage asthma when they have access to an AAP (Borgemeyer et al., 2005), this tool is frequently not available in schools, either because the PCP has not developed a plan or because the family has not provided a copy to the school.

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In 2001, an AAP created by the New England Public Health and Managed Care Collaborative (NEPHMCC) was disseminated to physicians and school nurses in

several New England states, including Massachusetts (MA). The intent of this initiative was to increase the number of AAPs available in schools for students with asthma. However, few AAPs were actually received by school nurses. In an effort to understand the barriers to receiving completed AAPs from physicians, a focus group of MA school nurses was conducted. The nurses felt that a lack of awareness regarding the AAP and the amount of paperwork required for already overtaxed PCPs were contributing factors in the low return rate (NEPHMCC, 2003). According to one study, pediatricians reported that lack of awareness or agreement with the guidelines, lack of self-efficacy, and low outcome expectancy due to poor patient compliance presented significant barriers to implementing the guidelines (Cabana et al., 2000). Specifically, pediatricians identified lack of office time to measure peak flow, inadequate training, and low outcome expectancy with regard to patient compliance as barriers to implementing the recommendation of daily peak flow monitoring in children. Anecdotally, school nurses in MA conducting continuous quality improvement (CQI) projects to improve asthma care in schools found that physicians were reluctant to use peak flow monitoring since they are frequently not able to ascertain the child's "personal best" reading.

Various strategies have been explored in an effort to improve adherence to the national guidelines. A multi-site randomized trial that examined the effects of physician peer education alone or in combination with the use of nurses with specialized asthma education found that the addition of nurses had a greater effect on improving asthma care in the primary care setting. Nurses in these practices worked in partnership with physicians and provided assessment, education, and support to families in developing self-management skills (Lozano et al., 2004). The major disadvantage of this model was the cost to practices when they added more staff to coordinate care.

Multiple studies have demonstrated the positive effects of school-based interventions on asthma (Clarke et al., 2004; Gregory, 2000; Halterman et al., 2004; Lurie, Bauer, & Brady, 2001; Lwebuga-Mukasa & Dunn-Georgiou, 2002; Millard et al., 2003; Perry & O'Toole, 2000; Spencer, Atav, Johnston, & Harrigan, 2000; Taras, Wright, Brennan, Campana, & Lofgren, 2004). Most interventions have included an educational component of some type that resulted in increased knowledge about asthma. School nurses who use the American Lung Association's Open Airways for Schools (OAS) educational curriculum have reported improvement in students' self-management skills (Bruzzese, Markman, Appel, & Webber, 2001; Gregory, 2000; Spencer et al., 2000), better academic performance for elementary school students, improvement in parents' ability to manage symptoms (Evans et al., 1987), and a decrease in the percentage of parents reporting emergency department visits and hospital

stays related to asthma (Spencer et al., 2000). An intervention that included education of school personnel (principals, counselors, and custodians), classmates, and parents, in addition to the OAS training for students, resulted in fewer daytime and nighttime symptoms in children with persistent asthma compared to baseline (Clark et al., 2004). The OAS program, while effective, is a formal educational intervention and has limitations in terms of personnel, resources, time constraints, and complexity of implementation for all students with asthma in a school.

Studies have also evaluated the impact of direct services, such as the administration of asthma medication in schools. School-based administration of inhaled corticosteroids was found to be associated with improved asthma control (Millard et al., 2003) and better school attendance (Halterman et al., 2004). Other studies have focused on the coordination role of school nurses in improving asthma management. Perry and Toole (2000) found that, while case management by the school nurse resulted in improved parental knowledge, actual changes in behavior were dependent on the severity of the child's asthma, the frequency of encounters, and the perceived benefit of behavioral changes on their daily lives. School nurse case management has been shown to increase the likelihood that students have asthma medications available and use peak flow monitors at school (Taras et al., 2004).

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The school nurse has access to children for at least 6 hours per day, and with the increase in extended-day school programs, this often extends to 8 hours or longer. School nurses are usually the sole health providers in educational settings. They have the unique ability to monitor the effects of treatment on student functioning during diverse school activities and can provide ongoing, "real-time" education, both to prevent symptoms from occurring (e.g., prior to athletic events) or during acute exacerbations. School nurses have the potential to significantly improve students' asthma management through ongoing, quality care. Research has shown that two important components of successful asthma management are (a) active involvement of the patient in managing the disease, and (b) the objective monitoring of the condition by patient and provider (Stanton, Dougherty, & Rutherford,

2005). The school nurse can play a key role in addressing both of these components by developing asthma self-management skills in students and devising efficient collaborative systems with PCPs/asthma specialists for tracking clinical outcomes. To date, no studies have examined the effectiveness of improving the asthma self-management skills of students and increasing interprofessional communication between school nurses and PCPs on the quality of asthma management in schools.

METHODS

This pilot study used a quasi-experimental non-equivalent groups design to determine if a school-based intervention for students with asthma that included (a) educating students on correct peak flow meter technique, (b) daily monitoring of each student's peak flow reading by the school nurse for two weeks, usually during lunch or non-classroom time, and (c) providing the student's PCP with the peak flow information along with a request for an AAP would increase the number of AAPs received by the school nurse when compared to the traditional method of requesting an AAP via the student's parent.

The researchers hypothesized that students with asthma whose school nurses provide PCPs/asthma specialists with student peak flow data and request an AAP from the provider will have more AAPs returned to the school than students with asthma whose school nurses request an AAP via the students' parents without peak flow reading results.

Sample

The sample consisted of 40 middle school students in grades 6 through 8 from four school districts in Massachusetts. Each school district participating in the study was required to have at least two middle schools, which were randomly assigned to either the experimental group or the control group. Five students with asthma from each school were enrolled in the study. Inclusion criteria were that students: (a) had a diagnosis of asthma with medications ordered in school, (b) had no current asthma action plan on file, (c) were from English-speaking families, (d) were free from developmental disorders, and (e) have a regular primary care provider or asthma specialist to manage the medical aspects of their condition.

The school-specific procedures for authorizing research studies in each of the eight participating middle schools were followed. In all of schools, parents of the participating students completed a consent form and students completed an assent form written at the 6th grade reading level, including permission to share information with the PCP. The study was approved by the Boston College Institutional Review Board.

Procedures

Once consent and assent forms were received from those students ($n = 20$) who wished to participate in the study, the school nurse scheduled visits to meet with the students on a daily basis for a 2-week period. During the initial visit, the school nurse gave the student participants a peak flow meter and educated them in the correct technique to measure lung function. Over the 2-week period, the school nurse continued to verify that the student was using the peak flow meter correctly. After each reading, the student graphed the results on a paper and pencil form with help from the school nurse. The peak flow data were collected for 2 weeks, stored in a locked cabinet in the school nurses' room, and forwarded to the student's parent and the primary care provider with a request for an AAP from the provider. A follow-up request was made if no response was received within 2 weeks. The number of AAPs received was recorded by the school nurse in the fall of 2005 and reported as a total number in early 2006 at the end of data collection.

Students from the same community and same grade levels ($n = 20$), but from different schools, served as the control group. Once consent and assent forms were received from those students who agreed to participate in the study, school nurses in the control group continued to use their standard procedure of requesting an AAP via the student's parent. The number of AAPs received were recorded by the school nurse for these students and reported as a total number in early 2006.

Instruments

Four instruments were used for the study. The Peak Flow Meter Competency Verification Form (Figure 1) was used to document the student's ability to use a peak flow meter correctly. The Peak Flow Measurement Record (Figure 2) was used to record daily peak flow readings for a 2-week period, and a form letter was used for communicating peak flow measurements and requesting an AAP from the student's provider. Finally, an AAP Data Report was used to document the number of AAPs received by the school nurse. The chi-square statistic was used to test for differences between groups. Analysis was performed using SPSS (Statistical Package for the Social Sciences, Version 10.0, Chicago, IL).

RESULTS

All 20 students in the experimental group were educated in correct peak flow meter technique. These students also obtained and recorded peak flow measurements daily for a two-week period and this information was forwarded to each student's PCP. At the end of the study period, AAPs were received for 10 (50%) of the students in the experimental group com-

cessful management of asthma: improved patient self-management skills and improved access to clinical information on individual patients (Wagner, Austin, & Von Korff, 1996; Bodenheimer, Wagner, & Grumbach, 2002). Self-management skills were promoted by teaching students the correct technique for using peak flow meters and encouraging daily monitoring. Improved access to important clinical information on students with asthma occurred as a result of communication between school nurses and PCPs/asthma spe-

Since many AAPs base interventions on the child's peak flow reading, it is essential to know the student's "personal best" reading.

cialists. Since many AAPs base interventions on the child's peak flow reading, it is essential to know the student's "personal best" reading. Recommendations for obtaining this information involve having the child perform peak flow readings twice daily for a two-week period (AAAAI, 2006). However, data on the child's "personal best" peak flow reading is often not available to the PCP/asthma specialist. This is because the child/family often fails to supply this information and the child only visits the PCP/asthma specialist episodically, frequently when symptoms are present. School nurses are in an ideal position to assist with this aspect of asthma management, since they often have access to the child on a regular basis during the school week and can obtain readings when the child is symptom-free.

Limitations

Limitations of the study include the small sample size, possible contamination due to the proximity of students in the control and experimental groups, and the possibility that students from control groups may have the same PCP/asthma specialist as students in the intervention group since control and experimental schools coexisted in the same community. Also, the control group could have been influenced to seek more AAPs by their knowledge of the study procedures.

IMPLICATIONS FOR PRACTICE AND FURTHER STUDY

The results of the study indicate that when the school nurse provided the PCP with a student's peak flow meter readings, including their "personal best" reading, the PCP was more likely to return a completed Asthma Action Plan to the school. The AAP can then be used by the school nurse to manage symptoms at school and decrease the likelihood of early dismissals or lost class time. This was an effective in-

tervention to improve one form of communication between the school nurse and the PCP by providing the PCP with important health information that could not be obtained at periodic sick visits or well child exams.

The results of the study indicate that when the school nurse provided the PCP with a student's peak flow meter readings, including their "personal best" reading, the PCP was more likely to return a completed Asthma Action Plan to the school.

The school nurses found the biggest barrier to implementing this study was the return of the signed consent forms by the parents. The study did add more work by the school nurse to teach the students the peak flow meter technique, graphing, and sending the results to the families and the PCP. However, the nurses were very enthusiastic about the results and felt that it was a successful intervention that they planned to continue. Future research should be conducted in other school systems, particularly those with high asthma rates, to determine if the results could be replicated. More information is needed on how frequently peak flow meter results should be done and for how long. For students with severity classifications of mild persistent asthma or greater, a school nurse-delivered intervention, consisting of symptom and medication monitoring in addition to peak flow monitoring, is being designed. Outcomes to be measured include the number of AAPs on file in schools, acute care and emergency room service use, and school attendance of children with asthma.

School nurses are an important component of the health care system for children and play a critical role in identifying solutions to the health problems faced by today's children and families.

In summary, school nurses must conduct research in order to support evidence-based practice and promote better health care for the children in their care. School nurses are an important component of the health care system for children and play a critical role in identifying solutions to the health problems faced by today's children and families.

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REFERENCES

- American Academy of Allergy, Asthma, & Immunology (AAAAI) Task-force. (2004). *Pediatric Asthma: Promoting Best Practice: Guide for Managing Asthma in Children*. Milwaukee, WI: AAAAI.
- American Academy of Allergy, Asthma, & Immunology (AAAAI). (2006). *Tips to remember: What is a peak flow meter?* Retrieved on January 26, 2006, from <http://www.aaaai.org/patients/publicedmat/tips/whatispeakflowmeter.stm>
- American Academy of Pediatrics (AAP). (2006). *Asthma Action Plan*. Retrieved on June 15, 2006, from <http://www.aap.org/schooledinasthma/tools.htm>
- American Lung Association (ALA). (2004). *Asthma & Children Fact Sheet*. Retrieved January 24, 2005, from <http://www.lungusa.org/site/pp.asp?c=dvLUK9O0E&b=44352>
- American School Health Association (ASHA). (2003). *Health in Action: Asthma in the school community*. Kent, OH: ASHA.
- American Thoracic Society. (2004). Guidelines for assessing and managing asthma risk at work, school, and recreation. *American Journal of Respiratory Critical Care Medicine*, 169, 873-881.
- Bodenheimer, T., Wagner, E. H., & Grumbach, K. (2002). Improving primary care for patients with chronic illness. *Journal of the American Medical Association*, 288(14), 1775-1779.
- Borgmeyer, A., Jamerson, P., Gyr, P., Westhus, N., & Glynn, E. (2005). The school nurse role in asthma management: Can the action plan help? *Journal of School Nursing*, 21(1), 23-30.
- Bruzzese, J., Markman, L.B., Appel, D., & Webber, M. (2001). An evaluation of Open Airways for Schools: Using college students as instructors. *Journal of Asthma*, 38(4), 337-342.
- Cabana, M.D., Ebel, B. E., Cooper-Patrick, L., Powe, N. R., Rubin, H. R., & Rand, C. S. (2000). Barriers pediatricians face when using asthma practice guidelines. *Archives of Pediatrics and Adolescent Medicine*, 154, 685-693.
- Child and Adolescent Health Measurement Initiative. (2005). *National Survey of Children's Health*, Data Resource Center on Child and Adolescent Health Website. Retrieved June 10, 2006, from <http://www.nschdata.org>
- Child Trends Data Bank. (2005). *Asthma*. Retrieved January 24, 2005, from <http://childtrendsdatabank.org/indicators/43Asthma.cfm>
- Child Trends Data Bank. (2006). *Percentage of Children ages 0-17 reported to have asthma, selected years 1981-2004*. Retrieved on June 12, 2006, from <http://www.childtrendsdatabank.org/tables/43-Table.1.htm>
- Clark, N. M., Brown, R., Joseph, C. L. M., Anderson, E. W., Liu, M., & Valerio, M. A. (2004). Effects of a comprehensive school-based asthma program on symptoms, parent management, grades, and absenteeism. *Chest*, 125(5), 1674-1679.
- Diette, G. B., Markson, S., Skinner, E. A., Nguyen, T. T. H., Algatt-Bergstrom, P., & Wu, A.W. (2000). Nocturnal asthma in children affects school attendance, school performance, and parents' work attendance. *Archives of Pediatrics and Adolescent Medicine*, 154, 923-928.
- Evans D., Clark N. M., Feldman C. H., Rips J., Kaplan D., Levison M. J., Wasilewski Y., Levin B., Mellins, R. B. (1987). A school health education program for children with asthma aged 8-11 years. *Health Education Quarterly*, 14, 267-279.
- Grace, J. A. (2006) Adolescent immunization: Challenges and opportunities. *Journal of School Nursing*, 22(2), 87-93.
- Gregory, E. K. (2000). Empowering students on medication for asthma to be active participants in their care: An exploratory study. *Journal of School Nursing*, 16(1), 20-27.
- Halterman, J. S., Szilagyi, P. G., Yoos, H. L., Conn, K. M., Kaczorowski, J. M., Holzhauser, R. J., Lauver, S. C., Neely, T. L., Callahan, P. M., & McConnochie, K. M. (2004). Benefits of a school-based asthma treatment program in the absence of secondhand smoke exposure. *Archives of Pediatrics and Adolescent Medicine*, 158, 460-467.
- Lozano, P., Finkelstein, J. A., Carey, V. J., Wagner, E. H., Inui, T. S., Fuhlbrige, A. L., Soumerai, S. B., Sullivan, S. D., Weiss, S. T., & Weiss, K. B. (2004). A multi-site randomized trial of the effects of physician education and organizational change in chronic-asthma care. *Archives of Pediatrics and Adolescent Medicine*, 158, 875-883.
- Lara, M., Rosenbaum, J. D., Rachelefsky, G., Nicholas, W., Morton, S. C., Emont, S., Branch, M., Genovese, B., Vaiana, M. E., Smith, V., Wheeler, L., Platts-Mills, T., Clark, N., Lurie, N., & Weiss, K. B. (2002). Improving childhood asthma outcomes in the United States: A blueprint for policy action. *Pediatrics*, 109(5), 919-930.
- Lurie N., Bauer E. J., Brady C. (2001). Asthma outcomes at an inner-city school-based health center. *Journal of School Health*, 71(1), 9-16.
- Lwebuga-Mukasa, J., & Dunn-Georgiou, E. (2002). A school-based asthma intervention program in the Buffalo, New York schools. *Journal of School Health*, 72(1), 27-32.
- Massachusetts Department of Public Health (MA DPH), Center for Environmental Health. (2006, March). *Pediatric Asthma in Massachusetts, 2004-2005*. Boston, MA: DPH.
- Millard, M. W., Johnson, P. T., McEwen, M., Neatherlin, J., Lawrence, G., Kennerly, D. K., & Bokovoy, J. L. (2003). A randomized controlled trial using the school for anti-inflammatory therapy in asthma. *Journal of Asthma*, 40(7), 769.
- National Institutes of Health, National Heart, Lung and Blood Institute (NIH, NHLBI). (1997). *National asthma education and prevention program expert panel report 2: Guidelines for the diagnosis and management of asthma*. Bethesda, MD: NIH.
- National Institutes of Health, National Heart, Lung and Blood Institute (NIH, NHLBI). (2002). *Guidelines for the diagnosis and management of asthma—Update on selected topics 2002*. Bethesda, MD: NIH.
- New England Public Health and Managed Care Collaborative (NEPHMCC). (2003). *Report of Interview findings with school nurses*. Boston: Author.
- Perry, C. S., & Toole, K. A. (2000). Impact of school nurse case management on asthma control in school-aged children. *Journal of School Health*, 70(7), 303-304.
- Spencer, G. A., Atav, S., Johnston, Y., & Harrigan, J. F. (2000). Managing childhood asthma: The effectiveness of the Open Airways for Schools Program. *Family and Community Health*, 23(2), 20-30.
- Stanton, M. W., Dougherty, D., & Rutherford, M. K. (2005). Chronic care for low-income children with asthma: Strategies for improvement. Rockville, MD: Agency for Healthcare Research and Quality; *Research in Action*, Issue 18. AHRQ Pub. No. 05-0073.
- Taras, H., Wright, S., Brennan, J., Campana, J., & Lofgren, R. (2004). Impact of school nurse case management on students with asthma. *Journal of School Health*, 74(6), 213-219.
- Vessey, J. A., & the Founding Oversight Board Members of MASNRRN. (2007). Development of the Massachusetts School Nurse Research Network (MASNRRN): A practice-based research network to improve the quality of school nursing practice. *Journal of School Nursing*, 23(2), 65-72.
- Wagner, E. H., Austin, B. T., & Von Kortoff, M. (1996) Organizing care for patients with chronic illness. *Milbank Quarterly*, 74, 511-544.
- Wasserman, R., Sora, E., & Bocian, A. (2003). Current status of pediatric Practice-Based Research Networks. *Current Problems in Pediatric and Adolescent Health Care*, 33, 115-123.