Patient Satisfaction With Nurse Practitioner and Physician Services in the Occupational Health Setting

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RESEARCH ABSTRACT

The purpose of this research was to determine if patient satisfaction differed when clinical services were provided by nurse practitioners versus physicians in the occupational health setting. This convenience sample included 129 patients visiting community-based occupational medicine clinics for evaluation of a new work-related injury. There was high satisfaction with both nurse practitioner and physician providers. There was no significant difference in overall patient satisfaction between provider types. Results of this study support a practice model using nurse practitioners as primary providers in the occupational health setting.

Editor’s Note—The AAOHN Journal usually refrains from using the term “patient” in its articles except when referring to those who are cared for by health care providers (workers), the clients of occupational health nurses. An exception has been made for this article as the authors do not believe that “client, worker, or employee” adequately reflect the purpose of their research and are concerned that the article might not be included in the “patient satisfaction” literature.” —J.W.

Occupational health is devoted to the prevention and management of occupational and environmental injuries, illnesses, and disabilities and the promotion of the health, productivity, and safety of workers in the workplace. The specialty of occupational health nursing delivers educational programs, clinical services, case management, and safety programs to employees and employers. The practice is focused on promotion and restoration of health, prevention of illness and injury, and protection from work-related and environmental hazards. Registered nurses provide an array of services to business and industry and fill diverse roles in occupational health, including those of clinician, educator, case manager, corporate director, and consultant (American Association of Occupational Health Nurses, Inc. [AAOHN], 2007b).

Although medical care in the occupational health clinical arena has traditionally been delivered by physicians, nurse practitioners now fill valuable roles as primary providers of occupational health care services. In the earliest literature addressing nurse practitioners in the occupational health setting, Grimes and Garcia (1997) analyzed the new role for nurse practitioners applying principles of primary care in the occupational setting. The Occupational Safety and Health Administration (OSHA) first addressed the role of the nurse practitioner in the occupational health setting in 1999.


Applying Research to Practice

This study supports the role of the nurse practitioner in the occupational health setting regarding patient satisfaction with nurse practitioner and physician services. The findings demonstrate the value of the nurse practitioners as patient satisfaction outcomes do not differ for nurse practitioners and physicians. The findings also support the model of collaborative practice in place at the study setting, assuring no difference in patient satisfaction between services provided by nurse practitioners and those provided by physicians. The study also strongly supports patient satisfaction with the role of the nurse practitioner as primary treating provider in the occupational health setting.

in a publication regarding the qualifications of occupational health professionals (OSHA, 1999). AAOHN also first addressed the nurse practitioner role in an advisory report in 1999. The report, updated in 2007 (AAOHN, 2007a), addressed the various roles of the nurse practitioner in the occupational health setting, including the role of primary care provider. Opportunities for nurse practitioners have since evolved within the occupational health setting, yet little research has been conducted evaluating this nurse practitioner role.

The aim of this study was to describe patient satisfaction with clinical services delivered by nurse practitioners and physicians in the occupational health setting. The primary purpose was to determine if patient satisfaction differed when clinical services were provided by nurse practitioners versus physicians in the occupational health setting.

BACKGROUND

Use of the term “patient satisfaction” dates back to the early 1980s, when outcome measures in health care delivery became popular. Mahon (1996) indicated that identifying patient expectations of nursing care determines the components of patient satisfaction. Patient satisfaction, part of patient outcome measures, is most appropriate for evaluating the results of nursing interventions (Mahon). Current professional health care standards often use patient satisfaction as a key performance measure, a measure of quality from the patient’s perspective. Patient satisfaction can also be used to measure quality in health care research (Agency for Healthcare Research and Quality, 2005; Speight, 2005).

Patient Satisfaction With Nurse Practitioners

The literature has supported patient satisfaction with nurse practitioners in various health care settings, other than occupational health. Several researchers have examined the role of the nurse practitioner in relation to clinical outcome effectiveness and patient satisfaction (Bryant & Graham, 2002; Green & Davis, 2005; Knudtson, 2000). In addition, the role of the nurse practitioner has been examined in relation to other health care professionals, specifically physicians and physician assistants (Hooker, Potts, & Ray, 1997).

Knudtson’s (2000) study to determine the level of patient satisfaction with services provided by nurse practitioners to rural patients supported high patient satisfaction with nurse practitioner services. Bryant and Graham (2002) described high student satisfaction with care provided by nurse practitioners in a university health setting.

Green and Davis (2005) studied 348 nurse practitioners and 817 patients in various practice settings in Louisiana to identify patient characteristics that predict satisfaction. Results indicated that younger patients (18 to 25 years old) were actually less satisfied with nurse practitioner care.

Patient Satisfaction With Nurse Practitioners Compared to Physician Assistants and Physicians

Several studies compared patient satisfaction with nurse practitioners, physician assistants, and physicians (Hooker et al., 1997; Lenz, Mundinger, Kane, Hopkins, & Lin, 2004; Mundinger et al., 2000; Pinkerton & Bush, 2000; Roblin, Becker, Adams, Howard, & Roberts, 2004; Taylor, 2007). Studies have consistently found no significant differences in overall patient satisfaction with care provided by physicians, physician assistants, or nurse practitioners in non-occupational health settings.

Several studies of patient satisfaction with nurse practitioner services were conducted outside the United States (Byrne, Richardson, Brunson, & Patel, 2000; Cooper, Lindsay, Kinn, & Swann, 2002; Seale, Anderson, & Kninnersley, 2006). Although these studies may not be generalizable to the U.S. health care system, researchers consistently demonstrated patient satisfaction with nurse practitioner services equal to or greater than with physician services.

Patient Satisfaction in the Occupational Health Setting

Only a few researchers have evaluated occupational health programs by measuring patient satisfaction with services (Sears, Wickizer, Franklin, Cheadle, & Berkowitz, 2007; Shaw, Zaia, Pransky, Winters, & Patterson, 2005; Texas Department of Insurance, 2007), and little research has been undertaken related to patient satisfaction with services delivered by community primary care providers (Rudolph, Dervin, Cheadle, Maizlish, & Wickizer, 2002; Verbeek et al., 2005). No studies were found in which researchers specifically addressed patient satisfaction with nurse practitioners as primary treating providers in the occupational setting. Agosta’s (2005) dissertation explored the degree of client satisfaction with primary health care services delivered by nurse practitioners in the employee health department in a not-for-profit hospital. Although patients reported high satisfaction with nurse practitioner services, no comparison to physician services was included.
The literature review found a predominance of occupational health studies conducted in the United Kingdom and the Netherlands (Verbeek et al., 2001, 2005). Although the studies were conducted outside the U.S. health care system, findings supported this study design.

**METHODS**

**Sample**

A convenience sample was drawn from an accessible population of patients visiting seven community-based for-profit clinics specializing in occupational medicine for evaluation of new work-related injuries. Patients referred to the clinics by employers are usually evaluated on the day the work-related injury occurs.

Patients were identified for inclusion in this study through completion of the inclusion/exclusion criteria checklist at the conclusion of their health evaluations. Inclusion criteria for the sample were patients 18 years or older with the ability to read, comprehend, and speak English who were making first-time visits for evaluation of new work-related injuries. Exclusion criteria for the sample were patients with injuries requiring emergent referral outside the clinic; those with serious health-related conditions in acute distress; those physically or mentally incapable of completing the survey; those co-examined by a nurse practitioner and a physician; and those who visited the clinic for any purpose other than initial injury treatment. Because the researcher was employed as a nurse practitioner at the study site, patients examined by the researcher were excluded from the study to avoid bias.

Two hundred seven patients from the representative new-injury population were identified as potential participants in the study. Of the 207 patients, 160 (77%) met the inclusion criteria for the study. Thirty-one patients (15%) refused to participate in the study. Patients not meeting the inclusion criteria included 19 (9.2%) who did not have English-language abilities; 13 (6.3%) who were examined by the researcher; 12 (5.8%) who were co-examined by a nurse practitioner and a physician; 2 (1%) who had serious health-related conditions or an emergent referral; and 1 (0.5%) who was younger than 18 years. Table 1 provides the characteristics of the participants.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>69 (53.5)</td>
</tr>
<tr>
<td>Male</td>
<td>60 (46.5)</td>
</tr>
<tr>
<td>Ethnicity*</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>98 (76.0)</td>
</tr>
<tr>
<td>American Indian/Alaskan Native</td>
<td>2 (1.6)</td>
</tr>
<tr>
<td>Asian</td>
<td>3 (2.3)</td>
</tr>
<tr>
<td>Black/African American</td>
<td>16 (12.4)</td>
</tr>
<tr>
<td>Education*</td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>11 (8.5)</td>
</tr>
<tr>
<td>High school or general equivalency diploma</td>
<td>44 (34.1)</td>
</tr>
<tr>
<td>Some college</td>
<td>46 (35.7)</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>17 (13.2)</td>
</tr>
<tr>
<td>Graduate/professional degree</td>
<td>10 (7.8)</td>
</tr>
<tr>
<td>Marital status*</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>60 (46.5)</td>
</tr>
<tr>
<td>Unmarried</td>
<td>67 (51.9)</td>
</tr>
</tbody>
</table>

*Note. Mean age was 39.9 (SD = 13.9) years. Numbers do not total 129 and percentages do not total 100% due to failure of some participants to answer all questions on the demographic questionnaire.*

Instruments

The surveys were color-coded to identify the type of health care professional, nurse practitioner or physician, treating the participant. The surveys contained no personal identifying information to later identify the specific health care professional. Participants’ background data included age, gender, ethnicity, years of education, and marital status. Two instruments measuring patient satisfaction were used in this study: the Visual Analog Scale (VAS) and the 9-item Visit Specific Questionnaire (VSQ-9).

**VAS.** A 100-mm horizontal visual analog scale was used to measure the patient’s overall satisfaction with the health care professional. The bipolar anchors indicated “least possible satisfaction” and “most possible satisfaction.” Patients were asked to place a mark through the scale line to indicate their level of satisfaction with the health care professional.

The literature supports strong internal consistency, reliability, and predictive validity of the VAS. Studies by Singer and Thode (1998), Millis et al. (2001), and Kindler, Harms, Amsler, Ihde-Scholl, and Scheidegger (2000) demonstrated higher reliability coefficients for the VAS compared to longer, multiple-item rating scales (r = 0.91 to 0.93).

**VSQ-9.** The VSQ-9 was used in this study to measure patient satisfaction; it is a 9-item, visit-specific satisfaction instrument adapted by the American Medical Group Association from the Visit Rating Questionnaire used in the Medical Outcomes Study (RAND Health, 2007). The four items specifically addressing satisfaction with the health care professional were used in this study: time spent with the health care professional, explanation of what was done, technical skills of the health care professional, and personal manner of the health care professional. The patient was also asked to rate the visit overall.

The VSQ-9 uses a 5-point response scale (“poor,” “fair,” “good,” “very good,” and “excellent”). To score the VSQ-9, the responses from each individual are trans-
formed linearly to a 0 to 100 scale, with 0 corresponding to “poor,” 25 corresponding to “fair,” 50 corresponding to “good,” 75 corresponding to “very good,” and 100 corresponding to “excellent” (RAND Health, 2007).

In testing the reliability and validity of the VSQ-9, Ware and Hays (1988) compared methods for measuring patient satisfaction with specific health care encounters using the 6-scale Patient Satisfaction Scale (PSS) and a 5-point response scale for the VSQ-9. The report of the VSQ-9 scale yielded satisfactory measures of internal consistency \( r = 0.87 \) to 0.93. The reliability coefficients also scored favorably when compared to other patient satisfaction questionnaires with more items, such as the 18-item and 36-item VSQ surveys. The predictive validity of the VSQ-9 was reported to be 0.44 to 0.82 when compared to the PSS (Ware & Hays). A report from the Medical Outcomes Study supported predictive validity of the VSQ-9 instrument, specifically that patients of physicians who received low patient satisfaction ratings were more likely to seek another provider within 6 months. Ware and Hays reported an alpha coefficient of 0.93 on the VSQ-9 items specific to health care professionals. The VSQ-9 has been used in other studies of various populations and has continued to demonstrate strong internal consistency, reliability, and construct validity as a measure of patient satisfaction (Barr, Vergun, & Barley, 1998; Rao, Weinberger, & Kroenke, 2000).

Reliability of the VSQ-9 instrument was calculated. Cronbach’s alpha, a reliability coefficient, was calculated for the 9 items. A covariance matrix reported overall high instrument reliability \( (\alpha = 0.94) \) [the reliability of the VSQ-9 instrument between items for the total group]; \( p = .00 \). Analysis of variance was used to test the between-group variance for the group of nurse practitioner patients and the group of physician patients. Results of the standardized item reliability indicated that the instrument was highly reliable \( (\alpha = 0.95) \) [the reliability of the VSQ-9 instrument between the nurse practitioner group and the physician group]; \( p = .00 \).

**Procedures**

Approval for the research study was received from Case Western Reserve University’s Institutional Review Board (IRB). The IRB proposal included written permission from the President/Medical Director of the occupational medicine clinics to conduct the study in the seven occupational medicine clinics.

A non-probability method was employed to recruit participants. The population of interest was limited to patients visiting the clinics for evaluation of a new work-related injury. This visit type was selected to narrow the population and provide a homogeneous sample. The sample size was calculated using G-Power Analysis 3.0.3, which estimated a desired sample size of 128 subjects to yield a power of 0.8 to detect a difference in satisfaction.

Patients were screened by the health care professional and the clinic coordinator for inclusion in the study in accordance with the inclusion and exclusion criteria. At the conclusion of the evaluation, health care professionals completed their portion of the inclusion/exclusion criteria checklist at the nurses’ station and placed it on the patient’s chart before leaving the chart at the nurses’ station for patient discharge. The clinic coordinator also reviewed and completed the inclusion/exclusion criteria checklist to determine if the patient met the inclusion criteria. The clinic coordinator then approached patients while still in the examination room, read a script introducing the study, and asked the patients if they wished to participate. If patients agreed, the clinic coordinator then read a study script outlining study procedures and instrument directions. Completion of the survey indicated patients’ consent to participate in the study. In the privacy of examination rooms, patients completed a survey form, answering each question as it related to that day’s visit. Patients enclosed the completed survey in an envelope provided, sealed the envelope, and deposited it in the secure survey box when exiting the clinic. The completed surveys were gathered from the clinics by the researcher weekly and the data analysis commenced once the desired sample size was reached.

**Analysis**

Levene’s statistic was used to test variance between groups. A \( t \)-test for independent samples was then computed to compare differences between groups by provider, testing the variables of overall satisfaction with the health care professional, time spent with the health care professional, explanation of what was done, technical skills of the health care professional, and the personal manner of the health care professional. These statistics are presented in Table 2.

**RESULTS**

The research question was, “Is there a difference in perceived patient satisfaction between care provided by nurse practitioners and care provided by physicians in the occupational health setting?”

Based on the VAS, overall satisfaction with providers was high \( (M = 89.47, SD = 16.86) \). The VSQ-9 demonstrated that the personal manner of the health care professional \( (M = 87.50, SD = 19.59) \), technical skills \( (M = 84.57, SD = 21.31) \), explanation of what was done \( (M = 83.66, SD = 23.44) \), and time spent with the provider \( (M = 77.76, SD = 27.32) \) were also high.

Comparing overall satisfaction by provider, Levene’s statistic was not significant \( (F = 0.24, p = .63) \), assuming equal variances between groups. The \( t \)-test for equality of means between groups indicated no difference in overall satisfaction by provider \( (t = -0.35, p = .73) \). Comparing time spent with provider by provider, Levene’s statistic was not significant \( (F = 0.03, p = .87) \), assuming equal variances. The \( t \)-test for equality of means by provider indicated no difference in time spent with the provider \( (t = -0.14, p = .89) \). Comparing the health care provider’s explanation of what was done by provider, Levene’s statistic was not significant \( (F = 0.19, p = .66) \), assuming equal variances. The results of the \( t \)-test for equality of means between nurse practitioners and physicians indicated no difference in the explanation of what was done \( (t = 0.514, p = .608) \). Comparing technical skills by provider, Levene’s statistic
was not significant \((F = 0.13, p = .72)\), assuming equal variances. The results of the \(t\)-test for equality of means by provider indicated no difference in technical skills between nurse practitioners and physicians \((t = 0.42, p = .66)\). Comparing the personal manner of the health care provider by provider, Levene’s statistic was not significant \((F = 0.99, p = .32)\), assuming equal variances. The results of the \(t\)-test for equality of means by provider indicated no difference in personal manner between nurse practitioners and physicians \((t = 0.61, p = .54)\).

**DISCUSSION**

As the nurse practitioner role in the occupational health setting expands, this study examined patient satisfaction with nurse practitioners as primary care providers. The purpose of the study was to describe patient satisfaction with health care provider services in occupational health clinics. Patient satisfaction levels with nurse practitioners and physicians within the same practice environment were compared to determine if differences existed.

Patients were highly satisfied with both nurse practitioners and physicians. Patients reported no difference in overall satisfaction with nurse practitioner and physician services in occupational health clinics. Although the literature review failed to reveal prior studies of patient satisfaction with nurse practitioner services in occupational health clinics, the findings are consistent with published studies measuring satisfaction with nurse practitioner services in other specialty settings (Hooker et al., 1997; Lenz et al., 2004; Mundinger et al., 2000; Pinkerton & Bush, 2000; Pinkerton & Bush, 2000; Roblin et al., 2004). The findings of the current study are consistent with these prior studies.

In reviewing background data, a significant percentage of study participants were White (76%). Future studies need to incorporate more diverse samples. Additionally, patients excluded from the study because they were co-examined by a nurse practitioner and a physician may have experienced different outcomes and been more or less satisfied. The most common reasons for co-examination include complexity of the health concern, severity of injury, or mitigating factors that required physician-nurse practitioner collaboration and decision making.

Studies that compared satisfaction with nurse practitioners and physicians also found no difference (Hooker et al., 1997; Lenz et al., 2004; Mundinger et al., 2000; Pinkerton & Bush, 2000; Roblin et al., 2004). The findings of the current study are consistent with these prior studies.

The important difference between the current study and earlier research is that the current study was conducted in occupational health clinics. The review of the literature revealed only one study that explored degree of satisfaction with primary health care services in an employee health setting of a not-for-profit hospital (Agosta, 2005). Agosta’s study found overall high levels of satisfaction with nurse practitioner services. The setting used in Agosta’s study is somewhat similar to the occupational health clinic setting used in this study; however, Agosta’s setting served a specific subset employee population in a not-for-profit setting. The study differs in that it measured only satisfaction with nurse practitioners; physicians were not included. The setting used in the current study serves patients from diverse employment settings and may be more representative of the general population. The review of the literature failed to identify any studies comparing nurse practitioner and physician services in occupational health clinics. The current study represents a pioneering effort to define satisfaction with nurse practitioner and physician services in occupational health clinics and supports nurse practitioners serving as primary care providers in this specialty.

**LIMITATIONS**

The current study was focused only on the role of the primary care provider in workers’ compensation. Because

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**Table 2**

<table>
<thead>
<tr>
<th>VSQ-9 Item</th>
<th>Nurse Practitioner ((N = 88^a))</th>
<th>Physician ((N = 39^a))</th>
<th>df</th>
<th>(t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall satisfaction with provider</td>
<td>89.1 ± 17.7</td>
<td>90.3 ± 14.8</td>
<td>124</td>
<td>-0.35</td>
</tr>
<tr>
<td>Time spent with health care professional</td>
<td>77.5 ± 28.5</td>
<td>78.3 ± 24.8</td>
<td>125</td>
<td>-0.14</td>
</tr>
<tr>
<td>Explained what was done</td>
<td>84.4 ± 24.4</td>
<td>82.1 ± 21.4</td>
<td>125</td>
<td>0.51</td>
</tr>
<tr>
<td>Technical skills</td>
<td>85.1 ± 21.6</td>
<td>83.3 ± 20.9</td>
<td>126</td>
<td>0.43</td>
</tr>
<tr>
<td>Personal manner</td>
<td>88.2 ± 19.2</td>
<td>85.9 ± 19.3</td>
<td>126</td>
<td>0.61</td>
</tr>
</tbody>
</table>

\(^a\)M ± SD.
health care professionals in occupational health settings can assume a diverse range of clinical roles, the findings are not generalizable to these other clinical roles inside or outside the occupational health setting. The findings are also only representative of patients and health care professionals within an established collaborative practice model at the study clinics; hence, these clinics are not representative of non-clinic-based occupational health settings, other practice specialties, or nurse practitioners practicing under different practice authority or in a different geographic locale.

The use of a nonrandom, convenience sample of injured patients also limits generalizability of these findings to other populations. In addition, a purposive sampling of new-injury patients is not representative of all patients in the occupational health setting; it excludes those patients attending the clinic for physical examinations and follow-up visits for injury evaluation. Additionally, the workers’ compensation population is not representative of patients in other practice settings.

The demographics of the sample used in this study, when compared to data from the Bureau of Labor Statistics, are representative of those found in the general patient population, except for race, which was reported as predominantly White (76%). The exclusion of non-English-speaking patients limits the diversity of the sample and generalizability. Therefore, the results may not be representative of all injured patients. Patients who were co-examined by a nurse practitioner and a physician also were excluded. These patients may have represented injuries of higher complexity that were excluded from the data. Also, 13 (6.3%) of the patients were excluded from the sample to avoid the introduction of bias because they were examined by the researcher.

SIGNIFICANCE

It is estimated that only about 10,000 American physicians practice occupational medicine. Data from 2003 indicate that only 3,211 physicians hold certification as specialists in this field (LaDou, 2003). Most occupational injuries and illnesses are treated by primary care physicians, who have little or no formal training in occupational medicine (Frank, 2000). LaDou, who estimated that nearly 6 million nonfatal occupational injuries and illnesses occur each year, stated that the Institute of Medicine has reported a severe shortage of front-line physicians competent and willing to care for occupational injuries and illnesses. This situation represents an opportunity for nurse practitioners to fill the role of primary care provider in occupational health settings.

This study supports the role of the nurse practitioner in occupational health clinics. The findings indicate that patients value both nurse practitioners and physicians. The findings also support a model of collaborative practice in the study setting, with no difference in patient satisfaction between services provided by nurse practitioners and those provided by physicians.

To build on this study, replication is needed in a variety of occupational health clinical venues and with larger, more diverse patient populations. Increasing minority representation in the sample could positively influence generalizability of the findings. Future research should also control provider variables (i.e., gender and the manner in which providers identify and introduce themselves to patients).

Occupational health settings have not yet been explored regarding patient satisfaction with nurse practitioner services. This study supports the need for continued efforts to investigate the emerging role of occupational health nurse practitioners. As a variety of roles and clinical opportunities for occupational health nurse practitioners emerge within occupational settings, it is important to assess the value of these roles through nursing research.

REFERENCES


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- **May 27, 2009**
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