Educational Techniques Used in Occupational Therapy Treatment of Cumulative Trauma Disorders of the Elbow, Wrist, and Hand

Amy L. Lawler, Anne B. James, George Tomlin

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Objective. This study examined patient education techniques used by occupational therapists when treating cumulative trauma disorders (CTDs) of the elbow, wrist, and hand.

Method. A self-administered survey was sent to 232 registered occupational therapists whose primary area of practice was hand therapy. The questionnaire sought information about specific content areas and methods (i.e., media, format) used to educate patients about preventing the recurrence of CTDs in the elbow, wrist, and hand.

Results. One hundred twenty-eight therapists responded to the survey. A majority of respondents (n = 116) reported that patient education content areas consisted of anatomy of the joint, the CTD disease process, and job modification. Verbal instruction, illustrations, and pamphlets and handouts were the most frequently used forms of educational media. A majority of respondents (n = 111) also reported that individual interaction was the most common format of patient education.

Conclusion. The findings indicate that a majority of therapists use the same patient education techniques with regard to content areas, media, and format, regardless of the area being treated (i.e., elbow, wrist, hand). Furthermore, it appears that therapists with specialty training in CTDs more frequently include anatomy of the elbow, job modification, and proper body mechanics in the content of their patient education about the elbow.

Cumulative trauma disorders (CTDs), which are prevalent in many occupational settings, rank first in frequency of injury to workers, with nearly one half of the nation's workforce being affected (Dortch & Trombly, 1990). As a result, effective intervention strategies, such as patient education, are needed to reduce the prevalence of CTDs.

CTD is a term used to describe syndromes characterized by discomfort, impairment, disability, or persistent pain in joints, muscles, tendons, and other soft tissues (Kroemer, 1989). CTDs frequently occur at the neck and shoulder girdle, elbow, forearm, wrist, and thumb and result from highly repetitive job activities, sustained awkward postures and loads, and exposure to vibratory forces (Young, Nemecke, Higgs, & Ball, 1992). The occupational therapist's skills in task analysis, biomechanics of hand use, and patient education can assist both employers and employees by promoting health maintenance and disability prevention behaviors in workers (Dortch & Trombly, 1990). Patient education may prove beneficial in reinjury prevention as well.
The content of patient education programs can vary on the basis of factors that contribute to the injury or pathology, the patient population, and the preferences of the therapist. In a review of the literature, we found no articles that described patient education techniques used by occupational therapists when treating persons with CTDs of the elbow, wrist, and hand. However, there were studies that described patient education techniques used when treating other conditions. In a study of patients with back injuries, patient education included topics such as proper body mechanics, energy conservation techniques, and anatomy of specific joints (Bettencourt, Carlstrom, Brown, Lindau, & Long, 1986). In another study of patients with acute back pain, instruction was provided in proper body mechanics, proper posture, work simplification, relaxation techniques, and adaptive methods of performing daily activities (Caruso & Chan, 1986). This education also was aimed at helping the patient acquire problem-solving skills to promote independence in reinjury prevention strategies. To manage work-related back pain, patients have been instructed in the use of imagery in order to distract them from experiencing pain (Caruso, Chan, & Chan, 1987). Educational topics for patients with rheumatoid arthritis focused on body position, rest, activity analysis, and the disease process (Furst, Gerber, Smith, Fisher, & Shulman, 1987). A nationwide survey of patients being treated at burn centers revealed that educational content focused on positioning techniques, mechanisms of scarring, skin care, and proper wearing of splints and pressure garments (Kaplan, 1985).

In addition to content, methods of patient education may differ among therapists and settings. These methods can be divided into the type of media used to convey information (e.g., illustrations, models, video, written instructions) and the format used to educate patients (e.g., individual, group). Methods of patient education may be influenced by the patient’s educational level and learning style. Some patients learn best by observing demonstrations in familiar settings, whereas other patients’ understanding of educational material is enhanced by familiarity with anatomy specific to the area of focus (Caruso & Chan, 1986).

In Bettencourt et al.’s (1986) study, the media used were visual aids, and the format included discussion, demonstration, and active participation. Furst et al. (1987) used book illustrations for visual learning and discussion with the therapist, the family members, or a group of patients for auditory learning. Kaplan’s (1985) survey revealed that patient education media used at burn centers consisted of pictures, slides, pamphlets, and verbal and handwritten instructions. She did not report the format used. Holm (1983) reported that video is an advantageous medium for patient education because it provides consistent presentation of the educational topic.

Effective patient education can be the key to success in achieving occupational therapy goals (Flower, Naxon, Jones, & Mooney, 1981). Patient education outcomes can be improved by identifying educational content and delivery methods therapists use and disseminating this information to therapists treating specific conditions like CTDs of the elbow, wrist, and hand. Furthermore, this information may serve as the basis for future research to determine the most effective educational techniques. Therefore, the purpose of this study was to describe both the methods (i.e., media, format) and the content of patient education that occupational therapists use when treating patients with CTDs of the elbow, wrist, and hand.

Method
Sample
A 10% (N = 232) random sample of registered occupational therapists whose primary area of practice was hand therapy was selected and put into the form of mailing labels by the American Occupational Therapy Association (AOTA). Input was sought from those in the sample currently treating patients with CTDs of the elbow, wrist, and hand.

Instrument
A two-page, self-administered survey consisting of both closed and open-ended questions was designed to obtain data about current patient education techniques. The questionnaire focused separately on the content and methods (i.e., media, format) of patient education used in the treatment of upper-extremity CTDs. Respondents were asked to identify from a checklist specific content areas and methods for the elbow, wrist, and hand. Demographic information was also requested, including gender, highest level of education attained, type of work setting, number of years specializing in hand therapy, and special training (e.g., specialty training in CTDs).

The questionnaire was pilot tested with five occupational therapists who specialize in hand therapy and three occupational therapy faculty members of the University of Puget Sound in Tacoma, Washington, to gain feedback on readability, clarity of questions, time needed to complete the survey, and presentation of items. No revisions of the survey were deemed necessary.

Procedure
The questionnaires and self-addressed stamped envelopes were mailed to the study sample with the request that the questionnaires be returned within 2 weeks. A cover letter explaining the purpose of the study and offering to send results to those who respond was also sent with the ques-
A second questionnaire with a letter requesting a timely response was mailed to 94 nonrespondents at the end of 2 weeks.

**Data Analysis**

Descriptive statistics were applied to responses about the content and methods of patient education. Responses were also classified according to whether the location of the injury was in the elbow, wrist, or hand. A chi square cross-tabulation was performed to detect whether hand certification, specialty training in CTDs or adult education, practice setting, years of practice, or the use of standard protocols were associated with different response sets.

**Results**

**Demographics**

Of the 232 potential respondents, 150 (65%) returned the questionnaire. Of these, 22 (15%) reported that they did not treat CTDs or that they no longer practiced in hand therapy; therefore, their surveys were excluded from data analysis.

Of the 128 respondents, women accounted for 92%. Seventy-eight percent of the respondents held a bachelor’s degree, and 22% held a master’s degree. Fifty-nine percent currently practiced in an outpatient clinic, 13% in an acute care hospital, 8% in a private practice or physician’s office, and 5% in a rehabilitation hospital. The remaining 15% indicated a variety of practice settings, including nursing homes, orthopedic hospitals, home health, or a combination of settings.

Fifty-seven percent of the respondents were certified hand therapists. The reported number of years of practice in hand therapy ranged from 1 year to 23 years (M = 12 years). Sixty-three percent of the respondents reported that they had specialty training or education in CTDs. Only 32% had specialty training in adult education methods (e.g., a methods course offered at a college or university). Fifty-six percent reported that they followed standard patient education treatment protocols or programs. When pair-wise comparisons of cross-tabulations were performed between demographic variables (e.g., hand therapist certification, years of practice, current practice setting, specialty training in CTDs), no significant associations were found.

**Content**

The most frequently reported patient education content areas were anatomy of the joint, disease process, and job modification followed by energy conservation and work simplification techniques, proper body mechanics, joint protection principles, and proper posture. The percentage with which respondents reported teaching content areas ranged from 73% to 95% (see Figure 1).

**Media**

The most frequently reported media used for patient education were verbal instructions, illustrations (e.g., books, posters, drawings), and pamphlets or handouts. Less frequently reported media consisted of models, video, and slides. Respondents who reported using media ranged from 3% to 95% (see Figure 2).

**Format**

The most common type of format used was individual patient education. Discussion, demonstration, and practice were the most frequently reported forms of patient–therapist interaction. A group format was indicated by a very low percentage of respondents (3%-9%) and included discussion, lecture, demonstration, and practice as forms of patient–therapist interaction (see Figure 3).

A cross-tabulation between current practice setting (e.g., outpatient clinic, acute care hospital) and patient education content areas was performed, but no significant associations were found. Additionally, years of practice and patient education content areas were cross-tabulated. Years of practice were collapsed into five half-decade categories. These were then compared with educational content variables for the elbow, wrist, and hand to determine differences; however, respondents in all categories reported approximately the same proportions for each of the educational content variables. A cross-tabulation between the frequency with which respondents reported educational content variables and the variables of hand therapy certification, specialty training in CTDs and adult education methods, and use of standard patient education protocols was made. No significant associations were found, except for those respondents indicating specialty training in CTDs. These respondents more frequently reported that they included anatomy of the elbow, $\chi^2(2, N = 128) = 17.60, p < .001$, job modification regarding the elbow, $\chi^2(2, N = 128) = 6.11, p < .05$; and proper body mechanics regarding the elbow, $\chi^2(2, N = 128) = 14.18, p < .001$, in the content of their patient education.

**Discussion**

Findings from this study indicate that therapists with specialty training in CTDs more frequently include anatomy, job modification, and proper body mechanics with respect to the elbow in the content of their patient education than do therapists without CTD training. Identification of causes for these differences was beyond the scope of this study. However, one possible explanation may be that respondents who sought specialty training in CTDs were treating a caseload with a high proportion of
Figure 1. Percentage of respondents indicating patient education content areas.

Figure 2. Percentage of respondents indicating patient education media areas.
patients with medial or lateral epicondylitis related to occupation or participation in sports (i.e., golfer’s elbow, tennis elbow). These respondents may have recognized the need for more specialized training on the basis of the population they treated. Another reason may be that the respondents without specialty training in CTDs are less familiar with the elbow with regard to anatomy, body mechanics, posture, and disease processes. Therefore, they may provide less instruction in content areas with which they are less familiar.

This study revealed that therapists treating patients with CTDs use patient education techniques similar to those used with other conditions, such as back injuries, work-related back pain, and rheumatoid arthritis (e.g., body mechanics, joint protection). Few differences were found between the present study and other studies with respect to patient education content areas. The only notable exception was content specific to the patient’s condition (e.g., proper wearing of pressure garments for patients with burns).

One respondent used media not previously cited in the patient education literature. She used the patient’s own X rays and arthroscopic photographs to enhance understanding of the injury. These “personalized” media may be more likely to engage the patient than nonpersonalized media, thereby enhancing understanding of the injury and participation in the treatment process.

Our finding that the common forms of patient education methods are illustrations, demonstration, and verbal instruction is similar to those cited in previous studies. The use of models (which provide the patient with a three-dimensional view of educational content as well as an opportunity for a “hands-on” experience) and videos (which present the educational content the same way each time) was very low and may be due to the expense of these media types. Another finding was that the majority of respondents used an individual rather than a group format in the education process. Although individual instruction has the advantage of tailoring content and media to best meet the patient’s needs, group instruction provides peer support, increased feedback, and discussion among group members and may be more cost-effective.

Limitations

Results of this study can be generalized only to the population of occupational therapists who are members of AOTA and whose primary practice area is hand therapy. Perhaps this study would have revealed different responses in the content area if the population surveyed was more specialized (e.g., certified hand therapists). Further, data from the 82 nonrespondents may have provided additional data if followed up via telephone.
Directions for Future Research

Areas that may warrant further investigation include the use of individual versus group instruction in order to determine cost and effectiveness. Additionally, the effectiveness of various patient education techniques could be compared. Identification of the most effective techniques may contribute to the reduction of the recurrence of CTDs in the elbow, wrist, and hand.

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References


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CORRECTION


The sentence reading “Payton and Nelson have been using this system successfully at the University of Virginia for 5 years...” should read “Payton and Nelson have been using this system successfully at Virginia Commonwealth University for 5 years....”

The author regrets this error and hopes that readers were not inconvenienced.