Quality of Life in American Indian and White Women With and Without Rheumatoid Arthritis

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KEY WORDS
• activities of daily living (ADLs)
• ethnicity
• quality of life
• rheumatoid arthritis
• women

OBJECTIVE. The purpose of this study was to examine quality of life (QOL) in American Indian and White women with and without rheumatoid arthritis.

METHOD. This cross-sectional study included 64 women in four groups: American Indians with rheumatoid arthritis, healthy American Indians, Whites with rheumatoid arthritis, and healthy Whites. Participants received evaluations of pain, joint motion, hand function, daily task performance, community participation, and QOL.

RESULTS. There was a significant difference in QOL between the participants with rheumatoid arthritis and the healthy control groups but not between the American Indian and White groups. Current health and emotional–social function related to QOL in all groups. Dexterity also correlated with QOL in the two groups with rheumatoid arthritis. Performance of daily activities correlated with QOL in all groups except the healthy White groups. Community participation did not correlate with QOL.

CONCLUSIONS. The findings suggest that rheumatoid arthritis in American Indian and White women does affect QOL and that QOL does not seem to be influenced by ethnicity. Factors that related to QOL also were similar for both groups with rheumatoid arthritis.


Quality of life (QOL) refers to one's global feeling of well-being or satisfaction with one's life in the context of the culture and value system in which one lives (Campos & Johnson, 1990). QOL has been studied over the past 20 years in people with chronic disorders, such as rheumatoid arthritis, that interfere with continued involvement in valued occupations and thus disrupt feelings of well-being. Research has shown that rheumatoid arthritis causes specific impairments in body function and structure such as pain, stiffness, swelling, and loss of motion in joints (American College of Rheumatology, 2000). The progression in these impairments over time results in a loss of ability to perform occupations of self-care, leisure, and work (Doeglas et al., 2004; Hewlett, Young, & Kirwan, 1995; Katz & Yelin, 1995; Pincus et al., 1984; Roberts, Matejczyk, & Anthony, 1996; Stamm, Wright, Machold, Sadio, & Smolen, 2004; Wright & Owen, 1976; Yelin, Lubeck, Holman, & Epstein, 1987). Indeed, a loss of valued occupations has been reported to be a strong risk factor for developing depressive symptoms, leading to decreased QOL (Blalock, Orlando, Mutran, DeVellis, & DeVellis, 1998; Doeglas et al., 2004; Katz & Yelin, 1995). Decreased occupational performance, therefore, may be a major factor in influencing QOL (Blalock et al., 1998; Burckhardt, 1985; Katz & Yelin, 1993, 1995; MacKinnon & Miller, 2003; Pincus et al., 1984; Reisine, Fifield, & Winkelman, 1998; Stamm et al., 2004; Wikstrom, Isacsson, & Jacobsson, 2001; Wright & Owen, 1976). However, Burckhardt (1985) found
that QOL for people with arthritis depended more on psychosocial factors than occupational performance or pain. A later study showed that psychological functioning was the best predictor of QOL in women with rheumatoid arthritis (Burckhardt, Archenholtz, & Bjelle, 1993).

Sociodemographic variables also have been shown to be important factors related to QOL. Studies report that being married relates to having higher QOL (Katz, 1998; Katz & Yelin, 1993; Wright & Owen, 1976; Zautra et al., 1998). Social support may allow people with rheumatoid arthritis to continue participation in valued activities because social support minimizes anxiety and depression at times of stress (Zautra et al., 1998) and helps people from becoming dependent on social services (Archenholtz, Burckhardt, & Segesten, 1999). The ability to be employed is another factor reported to affect QOL. Loss of employment is associated with poorer health, greater psychosocial distress, and monetary losses, which result in decreased QOL (Reisine et al., 1998).

Most of the research on QOL in people with rheumatoid arthritis has been based on a narrow population: mostly middle-class, White, and well-educated (Burckhardt, 1985; Burckhardt, Woods, Schultz, & Ziebarth, 1989; Husted, Gladman, Farewell, & Cook, 2001; Lambert, Lambert, Klipple, & Mewshaw, 1989; Pincus et al., 1984; Reisine et al., 1998; Sherrerr, Bloch, Mitchell, Young, & Fries, 1986; Whalley, McKenna, De Jong, & Van Der Heijde, 1997; Zautra et al., 1998). However, some of the highest prevalence rates of rheumatoid arthritis are in American Indian populations (Ferucci, Templin, & Lanier, 2004; Klipple, 1997; Peschken & Esdaile, 1999). Studies have shown that American Indians with rheumatoid arthritis have earlier disease onset and greater disease severity than the White population (Ferucci et al., 2004; Peschken & Esdaile, 1999). In addition, American Indian populations are reported to have less health insurance, limited access to health care—especially to specialists such as rheumatologists—lower education levels, and lower median incomes and are reported to be in poorer health than the general population of the United States (John, Kerby, & Hennessy, 2003; U.S. Department of Health and Human Services, 2001). American Indians with rheumatoid arthritis may live for a long time with pain, loss of joint motion, and inability to perform occupations of daily living, which might lead to decreased QOL. However, the impact of rheumatoid arthritis on occupational performance and QOL in American Indians has been studied minimally (Kramer, Harker, & Wong, 2002a, 2002b), and no studies have compared QOL and related factors in American Indians and Whites with rheumatoid arthritis.

This study sought to compare whether disease or ethnicity relate to perceived QOL in American Indian and White women with and without rheumatoid arthritis and to determine whether pain, joint motion, or the ability to perform activities of daily living affects perceived QOL. The research questions were the following: (a) Did perceived QOL differ in American Indian and White women with and without rheumatoid arthritis? (b) What factors were related to perceived QOL in American Indian and White women with and without rheumatoid arthritis? (c) How did factors relating to perceived QOL differ between American Indian and White women with and without rheumatoid arthritis?

Methodology

The current study is a cross-sectional design in which participants were tested once and within one geographic area to keep the variables, such as access to health care and occupational expertise, consistent for all groups. The sample was one of convenience.

Participants

The participants consisted of 64 women organized into four groups based on ethnicity and presence of rheumatoid arthritis: American Indians with rheumatoid arthritis (n = 17), healthy American Indians without rheumatoid arthritis (n = 17), Whites with rheumatoid arthritis (n = 15), and healthy Whites without rheumatoid arthritis (n = 15). The participants in the rheumatoid arthritis groups had been diagnosed by a rheumatologist as having rheumatoid arthritis according to diagnostic criteria of the American College of Rheumatology (formerly the American Rheumatism Association; Arnett et al., 1988) for at least 1 year. People with rheumatoid arthritis were excluded from the study if they had more than one rheumatic disease or any other disabling co-morbid conditions such as stroke or a cardiac condition. Participants in the healthy control groups did not self-report any neurological, psychological, medical, or orthopedic conditions that impaired their occupational performance. Healthy control groups were used because differences have been found in the factors related to QOL between two different groups living in the same geographic area (Archenholtz et al., 1999; Yelin et al., 1987); therefore, a difference could exist in the domains of QOL when comparing women with rheumatoid arthritis to healthy women without rheumatoid arthritis. Because QOL may be dependent on more than just health, the participants were group matched for age and education level (see Table 1 for demographics of participants). All participants could understand, read, and follow instructions in English. This study was approved by the Human Research Review Committee at the authors’ institution, the Albuquerque Service Unit.
Health Board, and the Albuquerque Area Combined Indian Health Services Institutional Review Board.

Instruments

Perceptions of QOL were assessed using global QOL and component-specific QOL instruments. The remainder of the instruments covered the International Classification of Functioning, Disability, and Health (ICF) categories of (a) Body Functions–Body Structures and (b) Activities and Participation (World Health Organization, 2001). The Body Functions–Body Structures instruments assessed pain, hand function, upper- and lower-extremity joint motion, and emotional and social function. Activities and Participation instruments assessed the ability to perform everyday occupations and community participation. A focus group of American Indian women found the instruments culturally acceptable.

Measures of QOL

Global QOL. Cantril’s (1965) Self-Anchoraging Scale was used to measure perceived global QOL. Campos and Johnson (1990) described this instrument as being the most capable of assessing QOL using “comparable and quantifiable data without imposing culture-specific standards” (p. 168). Participants were shown a picture of a 10-rung ladder. The top rung, 10, represented the best possible life, and rung 0 the worst possible life. Participants indicated where on the ladder they would place themselves at present, 5 years ago, and 5 years in the future. Interrater reliability was reported to be .95 (Cantril, 1965).

Component-specific QOL. The Dartmouth Primary Care Cooperative Information Project (COOP) chart system is a series of pictorial charts that measure perceived QOL: daily activities, physical fitness, health, social activities, pain, and feelings (Nelson et al., 1987; Palmer, 1987). Each chart asks participants to rate the item with reference to the past 2 weeks on a 5-point scale from 1 (great difficulty) to 5 (no problem). A higher score indicated better QOL. The Dartmouth COOP charts were adapted for use with American Indians and reported to be both reliable and acceptable by this population (Gilliland et al., 1998).

Measures of Body Functions–Body Structures

Pain. Pain was measured using the Dartmouth COOP chart for pain (Gilliland et al., 1998; Nelson et al., 1987). Participants were asked to rate themselves on a 5-point single-item scale ranging from 1 (severe pain) to 5 (no pain). The Dartmouth COOP charts have been used with both American Indian and White populations.

Hand function. The Arthritis Hand Function Test (AHFT) comprises 11 items that measure hand strength, dexterity, applied dexterity, and applied strength (Backman & Mackie, 1995, 1997). Hand strength (i.e., grip and pinch strength) was measured with an adapted sphygmomanometer and a pinch meter, respectively. Dexterity was measured using the nine-hole pegboard. The applied dexterity section consisted of five timed bilateral activities (lacing and tying a bow on a shoe, buttoning, fastening and unfastening safety pins, cutting meat, and manipulating coins). The applied strength items consisted of pouring a measured volume of water from a pitcher and lifting a tray of cans. The AHFT has been reported to be a reliable and valid instrument for measuring hand function in people with rheumatoid arthritis (Backman, Mackie, & Harris, 1991).

Joint motion. The Keital Functional Test (KFT) was used to assess joint limitations in the upper and lower

Table 1. Demographic Statistics of Participants by Disease and Ethnic Group

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>American Indians With Rheumatoid Arthritis (n = 17)</th>
<th>Whites With Rheumatoid Arthritis (n = 15)</th>
<th>Healthy American Indians (n = 17)</th>
<th>Healthy Whites (n = 15)</th>
<th>p values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years of age (range)</td>
<td>44.1 (19–74)</td>
<td>47.7 (19–72)</td>
<td>45.7 (24–72)</td>
<td>45.8 (19–74)</td>
<td>ns</td>
</tr>
<tr>
<td>Years with rheumatoid arthritis (range)</td>
<td>9.3 (1.3–31)</td>
<td>10.6 (2.2–35)</td>
<td>—</td>
<td>—</td>
<td>ns</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1 year (%)</td>
<td>11.8</td>
<td>13.3</td>
<td>11.8</td>
<td>6.7</td>
<td>ns</td>
</tr>
<tr>
<td>1–2 years (%)</td>
<td>23.5</td>
<td>33.3</td>
<td>23.5</td>
<td>26.7</td>
<td>ns</td>
</tr>
<tr>
<td>&gt;2 years (%)</td>
<td>64.7</td>
<td>53.3</td>
<td>64.7</td>
<td>66.7</td>
<td>ns</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married (%)</td>
<td>52.9</td>
<td>53.3</td>
<td>41.2</td>
<td>40.0</td>
<td>ns</td>
</tr>
<tr>
<td>Single, never married (%)</td>
<td>29.4</td>
<td>20.0</td>
<td>41.2</td>
<td>33.3</td>
<td>ns</td>
</tr>
<tr>
<td>Work status (%)</td>
<td>47.1</td>
<td>26.7</td>
<td>70.6</td>
<td>66.7</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Health now (1–5)</td>
<td>3.0 (1–5)</td>
<td>2.7 (1–4)</td>
<td>4.12 (3–5)</td>
<td>4.17 (1–5)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Health now</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very good or excellent (%)</td>
<td>29.4</td>
<td>13.3</td>
<td>88.2</td>
<td>86.6</td>
<td>ns</td>
</tr>
<tr>
<td>Good (%)</td>
<td>23.5</td>
<td>26.7</td>
<td>11.8</td>
<td>6.7</td>
<td>ns</td>
</tr>
<tr>
<td>Fair (%)</td>
<td>47.1</td>
<td>60.0</td>
<td>0</td>
<td>6.7</td>
<td>ns</td>
</tr>
<tr>
<td>Poor (%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>ns</td>
</tr>
</tbody>
</table>

Note. ns = not significant. 1 = excellent, 2 = very good, 3 = good, 4 = fair, 5 = poor.
Extremities (Eberl, Fasching, Rahlf, Schleyer, & Wolf, 1976; Kalla, Kottke, Meyers, & Parkyn, 1988). The KFT has a range of scores for the 24 separate items; a lower score represents better joint motion. The KFT has been reported to be reliable and valid with people with rheumatoid arthritis (Eberl et al., 1976; Kalla et al., 1988).

**Emotional and social function.** Emotional and social function was measured using the Dartmouth COOP Emotional charts, which included social activities and feelings (Gilliland et al., 1998; Nelson et al., 1987). For social activities, participants were asked to rate themselves from 1 (no participation in social activities) to 5 (much participation in social activities). For feelings, they were asked to rate themselves from 1 (bothered a lot by feeling nervous, sad, or easily angry) to 5 (not at all bothered by feeling nervous, sad, or easily angry). The scores are combined to form an emotional-and-social-function score. The emotional and social scores on the COOP correlated with scores on the Emotional Scale of the RAND (Nelson et al., 1987).

**Measures of Activities and Participation**

**Everyday occupations.** The Health Assessment Questionnaire (HAQ) is a self-administered questionnaire that measures occupational performance in people with rheumatic disease (Fries, Spitz, Kraines, & Holman, 1980). It consists of eight categories: dressing and grooming, arising, eating, walking, hygiene, reach, grip, and outside activity. Each question was scored on a 4-point scale from 0 (no difficulty) to 3 (cannot do). The highest score within each category was the score for that category. Adding the scores for each category and dividing by the number of categories answered yielded a disability index score between 0 and 3. Higher scores reflected greater disability. Reliability and validity of the HAQ with people with rheumatoid arthritis has been well documented (Fries et al., 1980; Hakala, Nieminen, & Manelius, 1994; Pincus et al., 1984; Wolfe et al., 1988). The HAQ also has been reported as valid to use with American Indians (Poole, Schukar, & Sibbitt, 2000).

**Community participation.** The Community Integration Questionnaire (CIQ) is a 15-item self-report questionnaire designed to assess the three domains of integration: home integration, social interaction, and productive activity (Wille, Ottenbrucher, & Coad, 1994). Twelve of the items are scored on a 3-point scale; the other three are scored on a 6-point scale. The total score for the CIQ ranged from 0 to 29, with a higher score indicating a higher level of community integration. In general, the more items one does by oneself, the greater the integration. The CIQ has been shown to be reliable and valid for American Indians and Whites with rheumatoid arthritis (Poole et al., 2000).

**Procedures**

Once a participant was identified and informed consent obtained, an assessment consisting of the described instruments was administered to the participant.

Data collection took about 1 hr per participant, and each participant was compensated $30 for her time.

**Data Analysis**

The data were analyzed using MiniTab and SAS statistical packages. Descriptive statistics computed the means and ranges for the QOL, Body Functions–Body Structures, and Activities and Participation measures (see Table 2). Because so many items were on the AHFT, items were combined to make four categories: hand strength (grip, 2-point pinch, and 3-point pinch), dexterity (nine-hole pegboard), applied dexterity (lacing and tying a bow on a shoe, buttoning, fastening/unfastening safety pins, cutting meat, and manipulating coins), and applied strength (pouring a measured amount of water from a pitcher and lifting a tray of cans).

Two-way analyses of variance (ANOVA) with appropriate post hoc analyses were performed to determine whether significant differences existed between the groups for any of the variables. Bonferroni adjustments were used to compute the $p$ values. Spearman rho correlations were then computed to examine which variables related to QOL and the strengths of those relationships; $p < .05$ was set for determining statistical significance.

**Results**

**Participants**

The demographic characteristics of people by condition and ethnic group are shown in Table 1. ANOVAs showed no significant differences between the groups for any age, education, income, marital status, or hand dominance. There also was no significant difference in disease duration between the American Indian and White groups with rheumatoid arthritis.

There was, however, a significant difference between the groups on employment status ($p < .01$ and health status ($p < .0001$). Both groups with rheumatoid arthritis worked significantly fewer hours than the healthy controls ($p < .01$), and the total percentage of the participants with rheumatoid arthritis working full-time was significantly less than the healthy controls. Participants with rheumatoid arthritis reported significantly poorer health status than the healthy controls ($p < .01$). However, there were no significant differences in self-reported health status between the
groups with rheumatoid arthritis or between the healthy control groups.

**Perceived QOL in American Indian and White women with and without rheumatoid arthritis.** An ANOVA showed no significant differences between any of the four groups for past, present, or future perceived QOL on Cantril’s Self-Anchoring Scale (see Table 2). Significant differences in perceived QOL between the four groups (p < .0001) were observed for the Dartmouth COOP charts. Both groups with rheumatoid arthritis had significantly lower COOP scores than both healthy control groups (p < .0001), indicating poorer perceived QOL in people with rheumatoid arthritis.

**Body Functions–Body Structures differences in American Indian and White women with and without rheumatoid arthritis.** ANOVAs calculated to determine differences in disease and ethnic groups for the Body Functions–Body Structures variables revealed significant differences for pain, joint motion, hand strength, dexterity, applied dexterity, and emotional and social function (see Table 2). Both groups with rheumatoid arthritis had significantly more pain than the healthy control groups (p < .0001). However, there were no significant differences in hand strength between the two groups with rheumatoid arthritis or between the two groups of healthy controls. The American Indians with rheumatoid arthritis had significantly lower dexterity scores than only the healthy White participants (p < .05); however, their applied dexterity scores were significantly slower than both healthy groups (p < .0001). On the other hand, the White participants with rheumatoid arthritis had significantly slower applied dexterity scores than the healthy American Indians (p < .0001), but their scores were not significantly different from the healthy White group. There were no significant differences in applied dexterity or applied strength between the groups with rheumatoid arthritis or between the healthy control groups.

The Whites with rheumatoid arthritis had the lowest emotional and social function scores (see Table 2), which were significantly lower than those for the healthy White women (p < .05) but not significantly lower than those for the healthy American Indian women. However, there were no significant differences in emotional and social function scores between the two groups with rheumatoid arthritis or between the two healthy control groups.

**Activities and Participation differences in American Indians and Whites with and without rheumatoid arthritis.** ANOVAs comparing the four groups on the Activities and Participation variables revealed significant differences between the groups for the HAQ and CIQ scores. The Whites with

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**Table 2. Scores for the QOL, Body Functions–Body Structures, and Activities and Participation Variables by Disease and Ethnic Group**

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>American Indians With Rheumatoid Arthritis</th>
<th>Whites With Rheumatoid Arthritis</th>
<th>Healthy American Indians</th>
<th>Healthy Whites</th>
<th>p values</th>
</tr>
</thead>
<tbody>
<tr>
<td>QOL</td>
<td>M (Range)</td>
<td>M (Range)</td>
<td>M (Range)</td>
<td>M (Range)</td>
<td></td>
</tr>
<tr>
<td>Global QOL, present</td>
<td>7.8 (5–10)</td>
<td>6.9 (3–10)</td>
<td>8.1 (5–10)</td>
<td>8.1 (5–10)</td>
<td>ns</td>
</tr>
<tr>
<td>Global QOL, 5 years past</td>
<td>7.1 (0–10)</td>
<td>7.6 (1–10)</td>
<td>6.1 (1–10)</td>
<td>7.2 (2–10)</td>
<td>ns</td>
</tr>
<tr>
<td>Global QOL, 5 years future</td>
<td>8.9 (5–10)</td>
<td>7.5 (2–10)</td>
<td>8.9 (4–10)</td>
<td>9.0 (2–10)</td>
<td>ns</td>
</tr>
<tr>
<td>COOP total</td>
<td>16.1 (10–23)</td>
<td>14.6 (8–21)</td>
<td>20.1 (16–24)</td>
<td>21.2 (13–25)</td>
<td>&lt; 0.0001</td>
</tr>
</tbody>
</table>

**Body Functions–Body Structures**

<table>
<thead>
<tr>
<th>Variables</th>
<th>American Indians With Rheumatoid Arthritis</th>
<th>Whites With Rheumatoid Arthritis</th>
<th>Healthy American Indians</th>
<th>Healthy Whites</th>
<th>p values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>2.8 (1–5)</td>
<td>2.1 (1–5)</td>
<td>4.4 (2–5)</td>
<td>3.8 (2–5)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>UE KFT</td>
<td>12.9 (4–35)</td>
<td>12.9 (4–50)</td>
<td>5.1 (4–9)</td>
<td>4.5 (4–6)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>LE KFT</td>
<td>9.4 (0–38)</td>
<td>4.9 (0–15)</td>
<td>1.2 (0–4)</td>
<td>1.3 (0–4)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Total KFT</td>
<td>22.3 (5–58)</td>
<td>17.9 (6–58)</td>
<td>6.3 (4–11)</td>
<td>5.8 (4–8)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>AHFT: Hand strength (in lbs)</td>
<td>98.9 (55.9–190.1)</td>
<td>112.6 (50.2–177.3)</td>
<td>180.0 (164.1–220.7)</td>
<td>181.9 (122.8–213.9)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>AHFT: Dexterity (in sec)</td>
<td>45.8 (32.5–113.0)</td>
<td>45.8 (33.0–95.0)</td>
<td>39.9 (33.0–46.0)</td>
<td>36.0 (31.0–40.0)</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>AHFT: Applied dexterity (in sec)</td>
<td>133.5 (82.5–265)</td>
<td>118.5 (94.5–190.5)</td>
<td>85.5 (66.5–109.5)</td>
<td>91.8 (74.0–106.0)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Psychosocial status</td>
<td>6.8 (3–10)</td>
<td>6.3 (2–10)</td>
<td>7.7 (6–9)</td>
<td>8.3 (5–10)</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Activities and Participation</td>
<td>1.0 (0–2.38)</td>
<td>1.4 (0.25–2.13)</td>
<td>0.2 (0–1.125)</td>
<td>0.1 (0–0.63)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>HAQ</td>
<td>18.4 (2.25–25)</td>
<td>20.0 (12.75–28)</td>
<td>21.8 (18–25)</td>
<td>25.7 (22.25–28)</td>
<td>&lt; 0.0001</td>
</tr>
</tbody>
</table>

**Note.** Means having the same superscript are not significantly different at p < .05 in the Tukey honestly significant difference comparison; QOL = quality of life; ns = not significant; UE = upper extremity; KFT = Keital Functional Test; LE = lower extremity; HAQ = Health Assessment Questionnaire; CIQ = Community Integration Questionnaire; AHFT = Arthritis Hand Function Test; COOP = Dartmouth Primary Care Cooperative Information Project.
rheumatoid arthritis had the highest HAQ scores, indicating greater disability in everyday occupations (see Table 2). Indeed, both groups with rheumatoid arthritis had significantly higher HAQ scores than both healthy control groups ($p < .0001$). However, the American Indians with rheumatoid arthritis had the lowest community integration as indicated by the CIQ, yet the CIQ scores for both groups with rheumatoid arthritis were similar. The scores from both groups with rheumatoid arthritis also were not significantly different from the healthy American Indians but were significantly different from the scores of the healthy White group. Furthermore, the CIQ was the only measure that revealed significantly different scores between the healthy American Indians and the healthy Whites.

Factors related to perceived QOL in American Indians and Whites. Spearman rho correlation analyses were performed to examine the relationships between perceived QOL and demographics (age, disease duration, income, marital status, education level, employment status, income, perceived current health), Body Functions–Body Structures, and Activities and Participation variables for each disease and ethnic group (see Table 3). Only the variables are presented for which there was a significant correlation between the variable and QOL measure for at least one participant group.

For all four groups, the only demographic variable that correlated with perceived QOL was health status, which significantly correlated with present global QOL and, except for the White participants with rheumatoid arthritis, the COOP total score. For the Body Functions–Body Structures variables, emotional and social function correlated with present global QOL in the two groups with rheumatoid arthritis. However, in all four groups, emotional and social function correlated with the COOP total. For the other Body Functions–Body Structures variables, there were differences for the groups. In the American Indians with rheumatoid arthritis, total KFT and dexterity correlated with the COOP total. In the healthy American Indians, pain correlated significantly with present global QOL and the COOP total. In the Whites with rheumatoid arthritis, applied dexterity and applied strength correlated significantly with the COOP total. For the Activities and Participation variables, only the HAQ correlated with both present global QOL and the COOP total in both American Indian groups. For the White groups, the HAQ correlated only with the COOP total in the Whites with rheumatoid arthritis. In the healthy White participants, none of the other Body Functions–Body Structures variables correlated with any of the perceived QOL variables. Additionally, no significant correlations were found between any of the variables and past and future global QOL in any of the four groups.

Discussion

Three major findings emerged from this study. First, contrary to our expectations, we found no significant differences in present, past, or future global perceived QOL between any of the four groups. In our study, therefore, neither ethnicity nor disease status affected global QOL. However, for the second perceived QOL measure, the Dartmouth COOP, there were differences based on the presence of rheumatoid arthritis but not ethnicity. The differences between the findings could be due to how the two assessments measured perceived QOL. Cantril’s Self-Anchoring Scale measured QOL in general, whereas the COOP measured QOL based on a summation of specific information regarding health, feelings, and daily physical and social activities. The finding that perceived QOL was similar for American Indian and White participants is in contrast with a previous study, which indicated that ethnicity did influence component-specific QOL (Johnson et al., 1988). However, our findings do agree with others (Berzon, Hays, & Shumaker, 1993; Leininger, 1994) who reported that some basic QOL factors transcend ethnic groups.

Table 3. Correlations Between QOL and Impairment, Activities and Participation Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>American Indians With Rheumatoid Arthritis</th>
<th>Whites With Rheumatoid Arthritis</th>
<th>Healthy American Indians</th>
<th>Healthy Whites</th>
</tr>
</thead>
<tbody>
<tr>
<td>QOL at Present</td>
<td>0.89***</td>
<td>0.58*</td>
<td>0.65**</td>
<td>0.51*</td>
</tr>
<tr>
<td>QOL at Present</td>
<td>0.85***</td>
<td>ns</td>
<td>0.65**</td>
<td>0.66**</td>
</tr>
<tr>
<td>COOP Total</td>
<td>ns</td>
<td>ns</td>
<td>0.48*</td>
<td>ns</td>
</tr>
<tr>
<td>Pain</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Pain</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>KFT total</td>
<td>-0.53*</td>
<td>ns</td>
<td>-0.65*</td>
<td>ns</td>
</tr>
<tr>
<td>AHFT: Dexterity</td>
<td>-0.57*</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>AHFT: Applied Dexterity</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>AHFT: Applied Strength</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Psychosocial status</td>
<td>0.71**</td>
<td>0.63*</td>
<td>ns</td>
<td>0.61*</td>
</tr>
<tr>
<td>HAQ</td>
<td>-0.61*</td>
<td>ns</td>
<td>-0.86***</td>
<td>-0.80***</td>
</tr>
</tbody>
</table>

Note. QOL = Quality of Life; COOP = Dartmouth Primary Care Cooperative Information Project; ns = not significant; KFT = Keital Functional Test; AHFT = Arthritis Hand Function Test; HAQ = Health Assessment Questionnaire.

*p < 0.05; ** p < 0.01; *** p < 0.0001.
Second, although the four groups were similar in regard to demographics characteristics—except for current health status and employment status—people with rheumatoid arthritis had significantly poorer health, were less likely to work full-time, and had more Body Functions–Body Structures and Activities and Participation limitations than the healthy control groups. These differences appeared to be due to the presence of rheumatoid arthritis. Pain, limited joint motion, and decreased hand strength were related to the presence of rheumatoid arthritis, which agrees with previous researchers who found that people with moderate to severe rheumatoid arthritis tend to have greater pain and less joint motion compared to healthy controls (Katz & Yelin, 1993; Wolfe et al., 1988). However, in the current study, the differences in dexterity, applied dexterity, and emotional and social function were related to both the presence of rheumatoid arthritis and ethnicity. For example, the major difference in emotional and social function was between the Whites with rheumatoid arthritis and the healthy Whites, indicating that the White groups’ emotional and social function was highly related to rheumatoid arthritis. No significant difference, however, was seen in emotional and social function between the two American Indian groups. Thus, in this sample, rheumatoid arthritis in American Indians did not appear to be related to emotional and social function. Perhaps the American Indian populations had learned to manage the emotional impact of rheumatoid arthritis. Indeed, Kramer et al. (2002b) found that American Indians with rheumatoid arthritis did not tend to experience negative thoughts and catastrophizing.

For the Activities and Participation variables, we found that significant differences in the ability to perform everyday occupations were related only to the presence of rheumatoid arthritis; however, differences in community integration were related to both the presence of rheumatoid arthritis and ethnicity. Healthy Whites had significantly higher community integration scores compared to the other three groups. This difference in community integration may be due to the greater physical limitations of the groups with rheumatoid arthritis or the amount of social support. American Indian women with rheumatoid arthritis had the most limitations in joint mobility and hand function. In people with rheumatoid arthritis, limitations in joint motion and hand function can lead to more dependency on others for everyday and social occupations, especially in an inaccessible environment (Burckhardt et al., 1993; Soderlin, Kautiainen, Skogh, & Leirisalo-Repo, 2004; Whalley et al., 1997; Yelin et al., 1987). On the other hand, the difference in community integration may be that more of the healthy White women lived alone compared to people in the other groups and therefore had to rely on themselves for household management occupations such as cooking and shopping, as well as planning their social occupations. The lower scores in community integration seen in both American Indian groups compared to the White groups could be that the American Indians participated in household and community activities with family and friends rather than by themselves. This finding is not surprising because the majority of our American Indian participants lived on their pueblos or reservations near extended families (National Indian Council on Aging, 1981). On the CIQ, participating or doing an activity alone results in a higher score (more integration) than performing an activity with family or friends, which may reflect the importance of independence to the White culture (Leininger, 1994).

Third, our findings revealed similarities and differences in the factors related to QOL in people with rheumatoid arthritis and healthy controls. Factors of current health and emotional and social function were found to relate to QOL in all four participant groups. Current health has previously been shown to be a factor related to QOL in both American Indians and Whites (Burckhardt et al., 1989, 1993; Johnson et al., 1986), and emotional and social function previously has been found to be a factor related to QOL in Whites with rheumatoid arthritis (Burckhardt, 1985; Katz & Yelin, 1993). In the two groups with rheumatoid arthritis, however, additional Body Functions–Body Structures variables related to QOL. For American Indians with rheumatoid arthritis, joint motion and hand function also related to QOL, whereas for Whites with rheumatoid arthritis, only hand function additionally correlated with QOL. In the healthy control groups, the only additional Body Functions–Body Structures variable that related to QOL was pain, but only for the healthy American Indians.

The only Activities and Participation variable that related to QOL in any of the groups was the ability to perform everyday occupations as reported on the HAQ. Occupational performance related to QOL in both American Indian groups and for Whites with rheumatoid arthritis. Indeed, occupational performance has been reported previously to be an important factor influencing QOL (Katz & Yelin, 1995; MacKinnon & Miller, 2003; Stamm et al., 2004). In fact, maintaining independence was acknowledged by numerous researchers to be an important part of QOL for Whites (Archenholtz et al., 1999; Burckhardt et al., 1989, 1993; MacKinnon & Miller, 2003) but not for American Indians (Leininger, 1994).

Most of the demographic variables were not associated with QOL in any of the groups. No relationship was found between QOL and age, number of years with rheumatoid arthritis, or education level, which is similar to findings from other studies (Burckhardt, 1985; Katz & Yelin, 1993).
Limitations and Implications for Further Research

The small sample size may not have been representative of the overall population of women with rheumatoid arthritis. The low power from the small sample raises the possibility of a Type II error (not finding associations where they actually exist). Further research should replicate the current study with a larger sample size and cover a larger geographic location to deal with the small sample of convenience in the present study, which also would extend the generalizability of the results. Due to the exacerbations and remissions seen with rheumatoid arthritis, further research could include two interview periods separated by time to compare predicted and actual future QOL as well as to investigate the changes in demographics, Body Functions–Body Structures (especially in disease severity), and Activities and Participation variables over time.

Implications for Practice

With a better understanding of QOL and the factors influencing QOL in American Indian and White women with rheumatoid arthritis, occupational therapists can be more effective in designing interventions for people with rheumatoid arthritis. Indeed, the ability to perform everyday occupations was a factor related to QOL for people with rheumatoid arthritis. Although Blalock et al. (1998) found evidence that dissatisfaction with illness-related abilities can exacerbate psychological distress, improving people’s ability to perform valued occupations such as participating in social and leisure pursuits has been shown to increase emotional and social function. Furthermore, the findings from this study, as well as from previous research (Blalock et al., 1998; Katz & Yelin, 1995), suggested that improving emotional and social function will, in effect, also improve QOL. Kramer et al. (2002b) found that American Indians with rheumatoid arthritis were interested in education regarding self-care, pain management, and joint protection. Therefore, the role of occupational therapists treating people with rheumatoid arthritis should be to collaborate with their clients and to examine not only ways by which clients can continue to perform occupations that are meaningful and valued to them, but also ways to increase emotional and social support. Occupational therapy may also be valuable in assisting clients with goal setting and problem solving to cope with pain, fatigue, stress, and feelings and communication (MacKinnon & Miller, 2003; Steultjens et al., 2002).

Furthermore, the measures used in the present study may interest occupational therapists who work with clients with arthritis. These measures are appropriate to be used to determine the effectiveness of occupational therapy interventions for people with arthritis.

Although this was the first study comparing QOL in American Indian and White women with and without rheumatoid arthritis, it appears that in this particular sample QOL was influenced more by having a chronic disease than by ethnicity. Some of the factors found to relate to QOL across disease and ethnic groups—such as occupational performance, emotional and social function, and joint motion in the rheumatoid arthritis groups—are amenable to occupational therapy intervention. ▲

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References


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