Cardiac Rehabilitation Improves Health-Related Quality of Life for Patients with Atrial Fibrillation: A Pilot Study

Lynn Macken, PhD, RN

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Disclosures

The authors have no conflicts of interest to report:

• Lynn Macken, PhD, RN
• Charles Carpenter, MD, FAAC
• Caitlin Coppenrath, MS, RCEP
• Gail Crocker, BS, RN
• Karen Kurkjian, MD, FAAC
• Aimee Chapman, BS, RN, CHFN
• Kristiina Hyrkas, PhD, LicNSc, MNSc, RN

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Learner Objectives

The learner will be able to:

1. Describe the prevalence of atrial fibrillation, the impact of recurring symptoms on quality of life, and recent risk factor modification strategies aimed at reducing symptom burden.

2. Describe two valid instruments used to measure symptoms and disease-specific quality of life in patients with atrial fibrillation.

3. Discuss the six-month trajectory of symptom and health-related quality of life outcomes in patients with atrial fibrillation who participated in a community based cardiac rehabilitation program or received usual care.
The Atrial Fibrillation “Epidemic”

• Atrial Fib or “AF” is one of the most common and significant dysrhythmias found in industrialized countries

• Recent studies from the U.S., the U.K., Germany and others have shown dramatically increasing rates of AF incidence and prevalence
  - Significantly associated with ageing populations

• Picinni et al. (2012) - U.S. Medicare beneficiaries (age 65+ years)
  - From 1993 – 2007
    » Incidence: 27.3 to 28.3/1000 person-years
    » Prevalence: 41.1 to 85.8/1000 beneficiaries
      ▪ Mean prevalence increased by 5% per year (p<.001)

(Heeringa et al., 2006; Murphy et al., 2007; Picinni et al. 2012; Wilke et al., 2013)
AF: Associated Risks and Treatment Options

Associated Risks

• Stroke, myocardial infarction, heart failure, morbidity and mortality

• Health-related Quality of Life (HRQoL)
  - Symptom recurrence
  - Physical and psychological functional impairment

Treatment options

• Managing rate and/or rhythm
  - Pharmacological or electrical cardioversion
  - Catheter ablation or surgical interventions

• Risk factor modification (RFM)

(Alli et al., 2013; Conen et al., 2009, Gami et al., 2007, Ganesan et al., 2013; Pathak et al., 2014; Wang et al., 2004)
Two studies conducted in Australia

(1) Abed et al. (2013) - 150 patients with symptomatic AF
- Intervention: aggressive weight management
- Outcomes: weight loss, AF symptom burden, symptom severity, number of AF episodes and AF duration

(2) Pathak et al. (2014) - 149 patients undergoing AF ablation
- Intervention: physician-directed RFM clinic/weight management
- Outcomes: weight loss, AF symptom burden, symptom severity, AF frequency and duration
  - Significant improvement in arrhythmia-free survival in RFM group
Pilot Study: Cardiac Rehabilitation vs. Usual Care

• **Purpose:** To describe and compare the six-month trajectory of Health-Related Quality of Life (HRQoL) outcomes of patients with symptomatic AF who participate in cardiac rehabilitation or receive usual care.

• **Design:** Prospective, observational.

• **Setting:** Community-based, cardiac rehabilitation center associated with a large, tertiary care hospital in northeastern U.S.

• **Subjects:** Convenience sample of patients with symptomatic AF referred to cardiac rehabilitation by their physicians.
  - Rate-controlled rhythm, at least one cardiometabolic risk factor, and medical clearance for moderate exercise.

(AACVPR, 2008)
Protocol

Referred patients were contacted for enrollment into the rehab program
• After they accepted or declined rehab, invited to participate in the research study

Cardiac Rehabilitation Intervention
• Non-ECG monitored, 12 weeks, 2-3 days/week
  - Exercise prescription, exercise supervision
  - Risk-factor modification and education

Usual Care
• Follow-up care routine office visits with providers

Data Collection
• Baseline (T1); 3 months or end of Cardiac Rehab (T2); and 6 months after study entry (T3)
Atrial Fibrillation Severity Scale (AFSS)

Three subscales: higher scores → worse/more severe

- **AF Symptoms**: how bothered by palpitations, shortness of breath, exercise intolerance, fatigue, lightheadedness, and chest pressure
- **AF Burden**: sum of frequency, duration and severity of AF episodes
- **AF Severity**: mean rating (1=not at all severe; 10=extremely severe)

One subscale: higher score → better

- **Global Well-being**: VAS (1=worst possible, 10=best possible) life

- **Health Care Utilization**
  - Number of emergency room visits, hospitalizations and specialist visits

*(Dorian et al., 2000; 2002)*
Atrial Fibrillation Effect on Quality of Life (AFEQT)

Overall score plus four subscales: higher scores → better

- Range: 0 to 100 = extreme to minimal disability or difficulty

• Symptoms
• Daily Activities
• Treatment Concerns
• Treatment Satisfaction

Meaningful Important Improvement (MII) Score

• Change score of ≥19 points

(Dorian et al., 2013; Spertus et al., 2011)
# Results: Sample Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Cardiac Rehab (n = 23)</th>
<th>Usual Care (n = 7)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age (min-max) years</td>
<td>66 (55 – 80)</td>
<td>73 (57 – 83)</td>
<td>.02</td>
</tr>
<tr>
<td>Mean Body Mass Index (min-max)</td>
<td>37.3 (22 – 59)</td>
<td>38.4 (21 – 54)</td>
<td>.81</td>
</tr>
<tr>
<td>Other Characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Female</td>
<td>61%</td>
<td>43%</td>
<td>.40</td>
</tr>
<tr>
<td>• <strong>Paroxysmal AF</strong></td>
<td>71%</td>
<td>29%</td>
<td>.04</td>
</tr>
<tr>
<td>• Orthopedic limitations</td>
<td>91%</td>
<td>83%</td>
<td>.57</td>
</tr>
<tr>
<td>• Retired</td>
<td>70%</td>
<td>50%</td>
<td>.37</td>
</tr>
<tr>
<td>• No regular exercise (T1)</td>
<td>70%</td>
<td>72%</td>
<td>.92</td>
</tr>
<tr>
<td>Risk Factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Central obesity</td>
<td>87%</td>
<td>71%</td>
<td>.33</td>
</tr>
<tr>
<td>• Hyperlipidemia</td>
<td>82%</td>
<td>86%</td>
<td>.81</td>
</tr>
<tr>
<td>• Hypertension</td>
<td>83%</td>
<td>100%</td>
<td>.24</td>
</tr>
<tr>
<td>• Type 2 Diabetes</td>
<td>26%</td>
<td>43%</td>
<td>.40</td>
</tr>
</tbody>
</table>
AFSS: Comparisons between Groups at T1, T2, T3

<table>
<thead>
<tr>
<th>Subscales (possible scores)</th>
<th>Cardiac Rehab</th>
<th>Usual Care</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• AF Symptom (0 - 35)</td>
<td>11.3</td>
<td>7.0</td>
<td>.15</td>
</tr>
<tr>
<td>• AF Burden (3 - 30)</td>
<td>18.8</td>
<td>11.4</td>
<td>.03</td>
</tr>
<tr>
<td>• AF Severity (0 - 35)</td>
<td>6.4</td>
<td>3.8</td>
<td>.06</td>
</tr>
<tr>
<td>T2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• AF Symptom (0 - 35)</td>
<td>5.8</td>
<td>7.0</td>
<td>.72</td>
</tr>
<tr>
<td>• AF Burden (3 - 30)</td>
<td>15.8</td>
<td>12.4</td>
<td>.17</td>
</tr>
<tr>
<td>• AF Severity (0 - 35)</td>
<td>5.9</td>
<td>2.3</td>
<td>.02</td>
</tr>
<tr>
<td>T3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• AF Symptom (0 - 35)</td>
<td>6.7</td>
<td>7.2</td>
<td>.77</td>
</tr>
<tr>
<td>• AF Burden (3 - 30)</td>
<td>15.1</td>
<td>9.3</td>
<td>.01</td>
</tr>
<tr>
<td>• AF Severity (0 - 35)</td>
<td>5.8</td>
<td>2.8</td>
<td>.00</td>
</tr>
</tbody>
</table>

Mann-U Test, two-tailed, α = .05.
AFSS Symptom Trajectory by Group

Cardiac Rehabilitation Group

- **T1 – T2**
  - Improved symptoms \( (p = .005) \)
  - Improved Global Well-being: 
    \[ M = 6.5 \text{ vs. } 7.6 \ (p = .003) \]

Usual Care Group

- **T1 – T2 and T2 – T3**
  - No significant changes in AFSS scores
### AGEQT: Comparisons between Groups at T1, T2, T3

<table>
<thead>
<tr>
<th>Subscales (possible scores)</th>
<th>Cardiac Rehab</th>
<th>Usual Care</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td><strong>T1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Overall HRQoL</td>
<td>60.8</td>
<td>71.3</td>
<td>.37</td>
</tr>
<tr>
<td>• Daily Activities</td>
<td>57.6</td>
<td>62.5</td>
<td>.84</td>
</tr>
<tr>
<td>• Treatment Concerns</td>
<td>59.5</td>
<td>85.3</td>
<td>.03</td>
</tr>
<tr>
<td><strong>T2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Overall HRQoL</td>
<td>80.1</td>
<td>72.5</td>
<td>.32</td>
</tr>
<tr>
<td>• Daily Activities</td>
<td>77.5</td>
<td>54.3</td>
<td>.07</td>
</tr>
<tr>
<td>• Treatment Concerns</td>
<td>78.9</td>
<td>89.2</td>
<td>.27</td>
</tr>
<tr>
<td><strong>T3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Overall HRQoL</td>
<td>78.7</td>
<td>82.1</td>
<td>.91</td>
</tr>
<tr>
<td>• Daily Activities</td>
<td>74.3</td>
<td>73.5</td>
<td>.52</td>
</tr>
<tr>
<td>• Treatment Concerns</td>
<td>79.1</td>
<td>87.2</td>
<td>.52</td>
</tr>
</tbody>
</table>

Mann-U Test, two-tailed, \( \alpha = .05 \).
HRQoL Trajectories by Group

* Improved HRQoL between T1 – T2 ($p < .01$)
Meaningful Important Improvement

- 61% (11/18) of Cardiac Rehabilitation subjects improved their overall HRQoL scores by 19 points or more between T1 and T2

- No MII found in the Usual Care group
Discussion and Conclusions

Limitations

• Pilot study, small sample size

Cardiometabolic Risk Factors

• Patients with primary diagnosis of AF present with multiple risk factors

Cardiac Rehabilitation

• Significant improvement AF symptoms, AF burden, daily activities, treatment concerns, treatment satisfaction, global well-being, and overall HRQoL

• After 3 months, Dorian and colleagues (2013) found that 35% of patients in usual care reported a meaningful important improvement in HRQoL

• With the addition of Cardiac Rehab in our study, 61% of patients reported a MII

(Dorian et al., 2013)
Implications for Practice and Research

Benefits of Cardiac Rehabilitation

• Structured and repetitive interaction with and coaching by skilled nurses and clinicians who specialize in exercise therapy, dietary modification, stress management, and self-care strategies

Future Research

• Identify characteristics of patients with AF who may benefit the most from a Cardiac Rehabilitation intervention
  - younger, experienced electrical cardioversion, worse treatment concerns, and greater disease burden
• Develop and test AF-specific educational and behavior change strategies within the context of Cardiac Rehabilitation and post-rehabilitation


References (continued)


