State of the Science: Symptoms and Quality of Life in Individuals Undergoing Surgery for Pancreatic Cancer

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Pancreatic Cancer (PC)

• Global Cancer Statistics
  – 9th leading cause of cancer-related death
  – 2008 Incidence:
    • 279,000 new cases
    • 266,000 deaths

• United States Cancer Statistics
  – 4th leading cause of cancer-related death
  – 2012 Estimated Incidence:
    • 43,920 new cases
    • 37,390 deaths

(American Cancer Society [ACS], 2012; Jemal et al., 2011; Siegel et al., 2012)
Pancreatic Cancer (Cont.,)

• Financial Burden
  – In 2011, the overall annual cost of treating PC was $2.6 billion in the United States (U.S.) alone.
  – By 2020, it is estimated that the overall annual cost of treating PC will increase to $4.9 billion.

• Survival Rates
  – 5-year survival rate is 6% for all stages of PC combined.
    • Only surgery is associated with long-term survival in PC patients.
    • 5-year survival rates can approach 30 - 40% at institutions specializing in PC surgery.

(Cleary et al., 2004; Ferrone et al., 2007; Han et al., 2006; Helm et al, 2008; Mariotto et al., 2011 Seigel et al., 2012; Sohn et al., 2000)
Significance

• Symptoms and Quality of Life (QoL)
  – The majority of PC patients experience multiple symptoms due to the aggressive nature of the disease itself and as a result of treatment.
  – Thus, as survival rates improve in surgical populations issues regarding symptom management and QoL will become increasingly more important to PC survivors and their family members.
Methods

• An integrative review is a specific review method that summarizes the empirical and/or theoretical literature to provide a more thorough understanding of a phenomenon.
  – Broadest and most comprehensive method
  – Allows for the inclusion of diverse methodologies
  – Incorporates a wide variety of purposes

• Whittemore and Knafl’s (2005) updated integrative review guidelines were followed to complete this review of the literature.

(Broome, 1993; Whittemore & Knafl, 2005)
Purpose

- The aim of this integrative review was to examine state of the science regarding symptoms and QoL in patients with PC undergoing surgical treatment alone or in combination with adjuvant radiation therapy and/or chemotherapy.
Theoretical Framework

• Theory of Unpleasant Symptoms
  – Key Concepts
    • Influencing Factors
      – Physiological
      – Psychological
      – Situational
    • Symptom(s)
      – Singular or multiple
      – Multidimensional
  • Performance
    – Functional status

(Lenz et al., 1997; Lenz & Pugh, 2008)
Literature Search

- An electronic search was conducted using Medline, PubMED and CINAHL databases in February 2012.
  - Search Limits:
    - Between the years of 1995 and 2012
    - English Language
    - Quantitative Research Design
  - Key Search Terms:
    - Pancreatic cancer; pancreatic neoplasm; quality of life; health-related quality of life; symptoms; pancreaticoduodenectomy; surgery; adjuvant chemotherapy; and/or adjuvant radiation therapy.
  - Next, an ancestral search was conducted to ensure capture of all relevant studies.
Results

• 108 publications were reviewed and 14 studies were included in this integrative review.
  – All 14 studies examined QoL after surgery with or without radiation therapy and/or chemotherapy, 57% of these studies also examined symptoms.
    • The majority of researchers used a descriptive design (n=11); 55% of these studies utilized a cross-sectional approach
    • 3 studies were randomized control trials
    • There was evidence of international interest in this topic as researchers conducted studies in more than 8 different countries

(Carter et al., 2009; Crippa et al., 2008; Huang et al., 2000; Kostro & Velanovich, 2008; McLeod et al., 1997; Melvin et al., 1998; Nieveen van Dijkum, 2005; Oettle et al., 2007; Ohtsuka et al., 2001; Scheingraber et al., 2005; Schniewind et al., 2006; Shaw et al., 2005; Warnick & Slezinski, 2008; Yeo et al., 2012)
# Results: Symptoms

<table>
<thead>
<tr>
<th>Pain</th>
<th>Diarrhea</th>
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<tbody>
<tr>
<td>Weight Loss</td>
<td>Flatus</td>
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<tr>
<td>Fatigue</td>
<td>Belching</td>
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<tr>
<td>Weakness</td>
<td>Epigastric Fullness</td>
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<tr>
<td>Anxiety</td>
<td>Early Satiety</td>
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<tr>
<td>Depression</td>
<td>Symptoms of Diabetes Mellitus</td>
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<tr>
<td>Trouble Sleeping</td>
<td>– Thirst</td>
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<tr>
<td>Nausea / Vomiting</td>
<td>– Frequent Urination</td>
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</tbody>
</table>

(Huang et al., 2000; McLeod et al., 1997; Oettle et al. 2007; Ohtsuka et al., 2001; Scheingraber et al., 2005; Schniewind et al., 2006; Shaw et al., 2005; Yeo et al., 2012)
Results: Symptoms (Cont.,)

• Patients with PC were found to experience significantly higher symptom intensity compared to patients with benign pancreas diseases after surgery (Huang et al., 2000; Ohtuska et al., 2001; Shaw et al., 2005).

• One study found that 92% of patients with pancreas and periampullary cancers (N=102) experienced 2 or more concurrent symptoms ($M=4.5$; range, 0-10) 3 months after surgery (Yeo et al., 2012).
  – These researchers also identified several symptom clusters. The most prevalent symptom cluster included: fatigue, weakness, pain, depression, and anxiety (n=61).
Results: Influencing Factors

- No studies examined the impact of potentially influencing psychological or situational factors on patient’s perceptions of the symptoms or QoL.

- Physiological Factors:
  - Extended lymph node dissection was associated with significantly more diarrhea, pain, fatigue, and poorer overall QoL (Schniewind et al., 2006).
  - Preoperative body weight loss, impaired preoperative pancreas exocrine function, long operative time, intraoperative radiation, and postoperative diarrhea were all significantly associated with a decreased QoL (Ohtsuka et al., 2001).
Results: Quality of Life

• 64% of studies found that overall QoL (n=3) or one or more domains of QoL (n=6) were significantly impaired in PC patients with PC after surgery with or without adjuvant radiation therapy and/or chemotherapy.

• Most Commonly Impaired QoL Domains:
  – Physiological QoL (n=2)
  – Psychological QoL (n=2)
  – Psychosocial QoL (n=1)
  – General Health (n=2)
  – Functioning: Physical (n=5)
  – Functioning: Role (n=4)
  – Functioning: Social (n=2)
  – Functioning: Emotions (n=2)

(Huang et al., 2000; McLeod et al., 1997; Melvin et al., 1998; Nieveen van Dijkum et al., 2005; Oettle et al. 2007; Ohtsuka et al., 2001; Scheingraber et al., 2005; Schniewind et al., 2006; Shaw et al., 2005; Warnick & Velanovich, 2008; Yeo et al., 2012)
Results: Quality of Life (Cont.,)

- **Timing of QoL Assessments**
  - In majority of studies (56%), QoL scores were found to be impaired within 6 months of PC surgery.
  - Although, several researchers found long-term impairments in QoL from a mean of 15 months to 5.5 years after surgery (n=4).

- **QoL and Symptoms**
  - 75% of QoL studies that also examined symptoms found a significant decrease in overall QoL (n=2) or one or more domain of QoL (n=6).

(Huang et al., 2000; McLeod et al., 1997; Melvin et al., 1998; Nieveen van Dijkum et al., 2005; Oettle et al. 2007; Ohtsuka et al., 2001; Scheingraber et al., 2005; Schniewind et al., 2006; Shaw et al., 2005; Warnick & Velanovich, 2008; Yeo et al., 2012)
Results: Methodological Limitations

• Several studies included in this integrative review had methodological limitations, which included:
  – Heterogeneous samples
  – Limited sample sizes
  – Low response rates

(Huang et al., 2000; Kostro & Slezinski, 2008; McLeod et al., 1997; Melvin et al., 1998; Nieveen van Dijkum et al., 2005; Ohtsuka et al., 2001; Scheingraber et al., 2005; Schniewind et al., 2006; Shaw et al., 2005; Warnick & Velanovich, 2008)
Conclusions

• Individuals with PC undergoing surgery with or without adjuvant therapy experience multiple symptoms that have a negative impact on QoL.

• Future research should include larger, homogenous samples to improve the generalizability of findings and be conducted longitudinally to capture changes in symptoms and QoL over time.

• It is clear that additional research is needed to gain a thorough understanding of symptoms, factors that influence symptoms, and the impact that symptoms have on QoL in this population.
Limitations

• Limitations of this integrative review included:
  – Exclusion of qualitative studies that may have allowed for a richer, more in-depth view of symptoms and QoL.
  – Studies were limited to articles published in the English language, which may have reduced the view of symptoms and QoL with regard to some cultures or ethnic backgrounds.
Questions
References


References Cont.,


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