



# Changes of Fatigue, Muscle Strength, and Quality of Life in Patients in Pancreatic Cancer Within Six Months After Surgery

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## Introduction & Aim

Patients with pancreatectomy generally suffer from fatigue, decreasing physical activity and impact their quality of life (QOL). However, there is limited evidence about the changes of fatigue, muscle strength, and QOL on this population. **The aim of this study** was to explore changes of fatigue, muscle strength and skeletal muscle mass (SMM) and their relations with QOL after six months of pancreatectomy.

## Method

A longitudinal correlational study design was used to recruit eligible patients with undergoing operable pancreatic or periampullary cancer in a medical center in Taiwan. Data were collected three times: within two weeks to one month prior to operation (T0), and at the first (T1), second (T2), third (T3), and six months (T4) post-operation. The structured questionnaires included demographic and disease data, Fatigue Symptom Inventory, and Functional Assessment of Cancer Therapy-General Scale were used to assess patients' demographic and clinical characteristics, fatigue, and QOL. Skeletal muscle mass was measured by Bioelectrical Impedance Analysis and muscle strength indicated handgrip strength measured by Handgrip dynamometer and 30-second sit-to-stand test. Data were analyzed by generalized estimating equations to examine their associations with QOL within 6 months.

## Results

- Forty-five patients were recruited in this study.
- The level of overall fatigue reached peak at T1 (M = 30.05) and then decreased by time and its level at T4 (M = 11.67) lower than T0 (M = 22.42).
- The lowest number of 30-second sit-to-stand test at T1 and the lowest power of handgrip was at T2.
- Skeletal muscle mass kept the same level (M = 42.48- 42.70) during the five times.
- The level of QOL improved at T4 and better than at T0. Fatigue was the only significant factors related to QOL during the six months.

**Table 1. Mean Scores of Symptom Distress, Fatigue, Muscle Mass, and Quality of Life Across Times<sup>d</sup> (N=45)**

Scales	T0		T1		T2		T3		T4	
	M	(SD)	M	SD	M	SD	M	SD	M	SD
Symptom Distress Scale <sup>a</sup>	33.20	(25.67)	<b>35.56</b>	(23.59)	22.91	(18.94)	23.63	(22.48)	19.24	(14.01)
Fatigue Symptom Inventory <sup>b</sup>	22.42	(26.35)	<b>30.05</b>	26.11)	20.23	(18.75)	20.60	(23.23)	11.67	(16.64)
Interference	10.27	(15.72)	<b>13.30</b>	15.83)	8.37	(10.08)	9.20	(13.97)	4.30	(8.81)
Intensity	7.02	(7.33)	<b>9.53</b>	7.18)	6.86	(6.06)	6.78	(6.04)	4.52	(6.18)
Duration	5.13	(5.14)	<b>7.21</b>	5.13)	5.00	(4.26)	4.63	(4.66)	2.85	(3.21)
Muscle power										
Hand grip	<b>28.11</b>	(10.59)	25.56	(9.62)	<b>24.41</b>	(8.43)	24.79	(10.02)	26.64	(11.54)
30-second chair stand test	18.77	(6.05)	<b>13.88</b>	(4.47)	17.70	(5.90)	18.82	(6.79)	19.33	(8.71)
Muscle mass	42.48	(8.12)	42.54	(7.24)	–	–	42.51	(7.56)	42.70	(7.48)
Quality of Life <sup>c</sup>	<b>76.35</b>	(16.71)	–	–	78.51	(19.50)	78.44	(17.75)	<b>84.86</b>	(15.51)

Note: <sup>a</sup> Symptom distress was measured by the Symptom distress Scale (SDS) ranging from 1 (no problem) to 5 (very severity); <sup>b</sup> Fatigue characteristics was measured by fatigue symptom inventory. <sup>c</sup> Quality of life was measured by the questionnaire of Functional Assessment Anorexia/cachexia therapy, (FAACT), ranging from 0-156, the higher score means the higher quality of life. <sup>d</sup>T0: before operation; T1: 1 months after operation; T2: 2 months after operation; T3: 3 months after operation; T4: 6 months after operation.

**Table 2. Examining the Associated Factors Quality of Life in the Generalized Estimating Equations Analysis<sup>a</sup>**

Variable	Coefficient	Std. Err.	Wald chi-square	p-value
Occupational status (0= Unemployed; 1=part-time/ full-time work)	4.147	2.660	2.430	.000
Symptom distress	-.152	.102	2.196	.138
Fatigue	-.331	.106	9.817	<b>.002</b>
Muscle mass	-.092	.232	.157	.692
Hand grip	.188	.230	.672	.412
30-second chair stand test	-.262	.219	1.433	.231
Time	.535	1.616	.110	.740
Intercept	89.360	10.184	76.999	.000

Note: a generalized estimating equation was based on unstructured working correlation matrix.

## Conclusion

- Fatigue at its peak at one month but decreased 2 months after surgery and it was the significant factors to affect QOL.
- Their QOL improved after 2 months after surgery.
- Muscle mass has not been strongly affected by the process of surgery.
- Healthcare providers should encourage cancer patients to exercise as early as possible after receiving surgery to managing fatigue.
- Larger sample size is suggested to confirm the results for the future studies.

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