

นิพนธ์ต้นฉบับ

**ผลการใช้น้ำต้มใบมะละกอในผู้ป่วยมะเร็งต่อมน้ำลายและมะเร็งเม็ดเลือดขาว
ชนิดมัลติเพิลมัยอิโลมา : รายงานผู้ป่วย**

พิมพ์ลดา พงศ์ชัยขานนท์^{1*} ปรีชา หนูทิม¹ ชุติวัด หยุทองอินทร์¹ กมลวรรณ บานชื่น¹
ศรีสุภักดิ์ นันทา¹ ปาริณกุล ตั้งสุขฤทัย² จักรเวทย์ ตันแทน¹ ลักขณา รามวงศ์¹
ยุทธนา บุญกัน¹ และ เขมานันท์ จุ่มทอง¹

¹ กรมการแพทย์แผนไทยและการแพทย์ทางเลือก กระทรวงสาธารณสุข นนทบุรี

² วิทยาลัยแพทยศาสตร์นานาชาติจุฬาภรณ์ มหาวิทยาลัยธรรมศาสตร์ ปทุมธานี

*ผู้นิพนธ์ที่ให้การติดต่อ E-mail: pimlada7856@gmail.com

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บทคัดย่อ

โรคมะเร็ง เป็นโรคส่งผลกระทบต่อร่างกายและจิตใจของผู้ป่วย ผู้ป่วยจึงแสวงหาการรักษาทางเลือกเพื่อใช้ควบคู่กับการรักษาหลัก การใช้สมุนไพรจึงเป็นทางเลือกที่ผู้ป่วยสามารถเข้าถึงได้ง่าย หนึ่งในนั้น คือ ใบมะละกอที่มีสรรพคุณทางยาและพบได้ทั่วไป แต่ยังมีข้อมูลทางวิชาการในการรักษาโรคมะเร็งไม่เพียงพอ การวิจัยครั้งนี้เป็นการศึกษาย้อนหลังจากประวัติผู้ป่วย โดยวิธีการสัมภาษณ์และรวบรวมผลการตรวจทางห้องปฏิบัติการ เพื่อบรรยายผลและความปลอดภัยเบื้องต้นของผู้ป่วยมะเร็งต่อมน้ำลายและมะเร็งเม็ดเลือดขาวชนิดมัลติเพิลมัยอิโลมา จำนวน 2 ราย ที่ใช้น้ำต้มใบมะละกอจากการเตรียมด้วยตนเอง รับประทาน 1 แก้วกาแฟ วันละ 3 ครั้ง ก่อนอาหาร เข้ากลางวัน และเย็น ติดต่อกันมากกว่า 3 เดือน หลังรับประทานผู้ป่วยมะเร็งต่อมน้ำลายพบ ค่า eGFR ลดลงจากปกติเล็กน้อยจาก 96.00 เป็น 83.00 ml/min/1.73m² ค่า AST เพิ่มขึ้นจาก 34.00 เป็น 39.00 U/L ค่าเกล็ดเลือดเพิ่มขึ้นจาก 280,000 เป็น 301,000 cell/mm³ ค่าคะแนนคุณภาพชีวิตและภาวะสุขภาพทางตรงเพิ่มขึ้น ผู้ป่วยมะเร็งเม็ดเลือดขาวชนิดมัลติเพิลมัยอิโลมา พบ ค่า eGFR เพิ่มขึ้นจาก 57.69 เป็น 61.75 ml/min/1.73m² ค่า AST เพิ่มขึ้นจาก 27.80 เป็น 32.00 U/L ค่าเกล็ดเลือดเพิ่มขึ้นจาก 145,000 เป็น 151,000 cell/mm³ คะแนนคุณภาพชีวิตและภาวะสุขภาพทางตรงมีค่าเพิ่มขึ้น จึงสรุปได้ว่าผลจากการตรวจทางห้องปฏิบัติการและการสอบถามคุณภาพชีวิตของผู้ป่วยทั้ง 2 ราย มีแนวโน้มค่าเกล็ดเลือดและคุณภาพชีวิตที่ดีขึ้น

คำสำคัญ: น้ำต้มใบมะละกอ, มะเร็งต่อมน้ำลาย, มะเร็งเม็ดเลือดขาว ชนิดมัลติเพิล มัยอิโลมา

The Effect of Papaya Leaf Decoction in Salivary Gland Cancer and Multiple Myeloma patients: A Case Report

Pimlada Pongchaichanon^{1*}, Preecha Nootim¹, Chutiwat Yuthong-in¹,
Kamonwan Banchaun¹, Srisupak Nantha¹, Parankul Tungsukruthai²,
Jagavet Tontan¹, Lakkana Ramwong¹, Yuttana Boonkan¹,
and Kaemanun Joomthong¹

¹Thai Traditional and Complementary Medicine Hospital, Department of Thai Traditional and Alternative Medicine, Ministry of Public Health, Bangkok 10100, Thailand

²Chulabhorn International College of Medicine, Thammasat University, Pathum Thani, Thailand

*Corresponding Author E-mail: pimlada7856@gmail.com

Abstract

Cancer is a disease that significantly impacts both the physical and mental well-being of patients. Patients usually seek alternative treatments to complement conventional therapies. One accessible alternative for patients is herbal remedies, with papaya leaves being a commonly found option known for their medicinal properties. However, there is still limited academic evidence supporting the effectiveness of papaya leaves in cancer treatment. This study aims to describe the effects of papaya leaf decoction using retrospective patient histories, interviews, and laboratory results from patients with salivary gland cancer and multiple myeloma. The salivary gland cancer patient exhibited swelling and a lump on the right side of the face, while the multiple myeloma patient experienced shortness of breath, difficulty breathing and discomfort under the right rib cage. Both patients consumed a self-prepared papaya leaf decoction, drinking one cup three times daily before breakfast, lunch and dinner for over three months. The patient with salivary gland cancer exhibited a slight decrease in the eGFR from 96 to 83 mL/min/1.73m². AST level increased from 34.00 to 39.00 U/L and the platelet count from 280,000 to 301,000 cells/mm³. Additionally, there was an increase in the average quality of life score and the patient's overall health status. The patient with multiple myeloma showed an improvement in the eGFR from 57.69 to 61.75 mL/min/1.73m². AST level increased from 27.80 to 32.00 U/L, and the platelet count increased from 145,000 to 151,000 cells/mm³. Moreover, the quality of life score and the patient's overall health status also improved. In conclusion the laboratory results in both patients showed an increase in platelet count and quality of life.

Keywords: Papaya leaf decoction, Salivary gland cancer, Multiple myeloma cancer

Introduction

Cancer is a disease characterized by the uncontrolled growth and division of abnormal cells in the body. These cells can invade nearby tissues and spread to other parts of the body through the blood and lymphatic systems, a process called metastasis. When these abnormal cells occur in a specific organ, the cancer is named after that organ, such as lung, brain, breast, cervical, leukemia, lymphoma, skin and salivary gland among others.⁽¹⁾

Multiple myeloma (MM) is a hematological cancer resulting from the abnormal proliferation of plasma cells, a type of white blood cell in the bone marrow. This leads to the production of abnormal proteins in the blood, which can be detected through laboratory methods such as protein.⁽²⁾ Multiple myeloma accounts for approximately 1% of all cancers and 10 of hematological cancers, making it the third most common after lymphoma and acute leukemia. Statistics show a continuous increase in the incidence of multiple myeloma each year. Men and individuals over 65 years may be at higher risk of developing this disease. Diagnosis can be made through blood tests, urine tests, bone marrow examinations and bone X-rays.⁽³⁾

Salivary gland cancer is a relatively rare type of cancer, but it is also hazardous. It is classified as a head and neck cancer, accounting for approximately 6% of cancers followed by the American Head and Neck Association, according to the American Head and Neck Society.⁽⁴⁾ It affects health by impairing digestive processes, compromising the body's immunology and increasing the propensity for metastasis to other body regions.⁽⁵⁾ The exact cause of salivary gland cancer is still unknown. However, it is believed to be associated with certain risk factors. These include age, particularly for individuals aged 55 and older and a higher prevalence in males compared to females. A history of radiation therapy to the head or neck may also be a factor. Additionally, occupations with prolonged exposure to heavy metals or certain minerals, such as those involving asbestos, plumbing, or woodworking, can contribute to the risk. Lifestyle behaviors such as smoking or regular alcohol consumption may further increase the risk of developing salivary gland cancer. If left untreated, the cancer can lead to complications as the tumor may rapidly grow or spread, impacting speech, swallowing, breathing and daily activities. Furthermore, cancer cells may metastasize to other organs or areas of the body.⁽⁶⁾

Cancer not only affects the body but also has a profound impact on the mental health of patients. It can cause significant distress and feelings of hopelessness about treatment and daily life. Patients might feel a loss of self-worth and see themselves as a burden to their families or caregivers, which can lower their overall quality of life.⁽⁷⁾ Additionally, the high cost of medical care and the severity of the disease may lead to death. Therefore, it is not uncommon for patients to seek alternative treatments to improve their chances of survival and enhance their quality of life. They may incorporate alternative methods alongside conventional medicine, such as traditional Thai medicine or other complementary therapies. This includes the use of herbal remedies in the

form of food, medications, dietary supplements, or even papaya leaf decoction, which patients may learn about from news sources, relatives or friends who have experience using papaya leaf decoction for cancer management. In vitro studies showed that the aqueous extract of *Carica papaya* is capable of reducing cancer cell proliferation and inhibiting the growth of human breast cancer cells of the MCF-7 line, with an IC_{50} value of 1319.25 $\mu\text{g/ml}$ measured by MTT assay.⁽⁸⁾ Moreover, the study demonstrated that daily oral administration of *Carica papaya* leaf extract at doses up to 2 g/kg body weight over 13 weeks did not produce significant toxic effects in rats.⁽⁹⁾

Additionally, clinical studies on increasing platelet count in pediatric patients with dengue fever have shown that papaya leaf extract syrup significantly improves platelet levels in these patients.⁽¹⁰⁾ Therefore, the researchers aim to describe the effects of papaya leaf decoction using retrospective patient histories, interviews and laboratory results from patients with salivary gland cancer and multiple myeloma who utilize papaya leaf decoction for self-care. This study is intended to generate crucial data that will support academic research and contribute to future studies.

Objective

To describe the effects of papaya leaf decoction using retrospective patient histories, interviews and laboratory results from patients with salivary gland cancer and multiple myeloma.

Research Methodology

These retrospective case reports aim to report the effects of consuming papaya leaf decoction on laboratory results and quality of life assessment in two patients with salivary gland cancer and multiple myeloma. The case recording form consist of the following five sections 1) General information record including gender, age, occupation, marital status, income, place of residence and current province of residence 2) The medical history record such as chief complaints, current medical history, past medical history, family history, physical examination findings, diagnosis, treatment and treatment outcomes 3) The laboratory results record such as complete blood count and assessments of liver and kidney function 4) Quality of life assessment use the EuroQol Group 5 Dimensions (EQ-5D-5L) consists of 2 parts: the EQ-5D-5L descriptive system and the EQ visual analogue scale (EQ VAS) for patient's self-rated health from 0 which means the worst health, to 100 which means the best health. 5) Papaya leaf decoction usage records the components, preparation methods and consumption instructions for papaya leaf decoction.

This research was approved by the human research ethics committee of Thai Traditional and Complementary Medicine Hospital, Department of Thai Traditional and Alternative Medicine. The human research ethics reference number was T008/66 certified on May 15, 2024.

Results

Case I Salivary Gland Cancer: A 59-year-old female Thai patient, working as an assistant to a Thai traditional medicine practitioner. Originally from Chiang Rai province, she has the chief complaint of swelling and a mass on the right side of her face. A physical examination reveals a weight of 53 kg, a height of 143 cm, and a BMI of 25.92 kg/m². The general appearance of the tumor is mild swelling on the right side of the face, with normal skin color and no bruising. Palpation of the right side of the face reveals a nodular mass with no tenderness or associated pain. The patient was diagnosed with right-sided salivary gland cancer in 2020, she came to the hospital in Chiang Rai province for treatment and she was diagnosed with salivary gland cancer. However, the patient declined treatment due to concerns about the treatment process, fearing that it might worsen her condition and lead to death. Subsequently, the patient had insomnia, stress and a loss of appetite, leading to a weight loss from 53 kg to 49 kg within two weeks. Then the patient began taking a dietary supplement believed to treat cancer and abstained from consuming meat, which improved her ability to eat normally. However, her weight continued to decrease, reaching 45 kg. Later, a neighbor recommended drinking papaya leaf decoction daily to enhance her health, which resulted in a weight increase to 53 kg of 8 kg and better sleep.

The preparation methods of a papaya leaf decoction are using 2-3 fresh *Carica papaya* leaves (1 leaf approximately 103 g), 2-3 *Pandanus amaryllifolius* (pandan) leaf (1 leaf approximately 5 g), 3 *Cymbopogon citratus* (lemongrass) stalks (1 stalk approximately 3.5 g) and 1.5 L of water. Then, wash the papaya leaves thoroughly and cut them into pieces of the desired size. Prepare the pandan and lemongrass. Add 1.5 L of water to a pot. Then add all the ingredients. Boil for 20-30 minutes, or until the water turns yellow, strain the mixture to leave only the liquid. Drink one cup (60 ml) before each meal (breakfast, lunch, and dinner) while the liquid is still warm.

After using papaya leaf decoction every day for 3 months by herself, laboratory results during a complete blood count revealed minor increases in Mean Corpuscular Volume (MCV) and Mean Corpuscular Hemoglobin (MCH) levels, a slight decrease in estimated Glomerular Filtration Rate (eGFR) and a liver function test showed increasing aspartate aminotransferase (AST) levels. The platelet count increased from 280,000 to 301,000 cells/mm³. Quality of life scores showed significant improvement, with the health utility score rising from 0.67 to 0.96 and direct health status improving from 55 to 90. (Table 1 and Figure 1)

Case II: Multiple Myeloma: A 66-year-old Thai male in Nonthaburi province. The participant's medical history has shown benign prostatic hyperplasia and cannabis oil drug allergies. In 2021, the patient had symptoms of dyspnea and discomfort in the right upper quadrant. Therefore, he came to consult a physician at a hospital in Bangkok. The physician ordered a complete blood count to assess anemia, white blood cell count, and platelet levels, along with chemistry tests to evaluate kidney function and blood calcium levels. Additionally, protein

electrophoresis, immunofixation and free light chain assays were performed to detect M-protein and identify the type of multiple myeloma. The results showed a negative Hepatitis B core antibody (IgM) and the following findings from the monoclonal protein analysis: Myelocyte/Metamyelocyte: 10.00%, Band/PMN: 32.40%, PR Normoblast/Normoblast: 2.70% Lymphocyte: 5.40, Plasma Cell: 49.50% Myeloid/Erythroid Ratio: 15.90. Based on these findings, the physician diagnosed the patient with stage 2 multiple myeloma. Following the diagnosis from the physician, the patient received conventional medical treatment. This included chemotherapy to destroy the target cancer cells, immunotherapy, blood-boosting medications, and hematopoietic stem cell transplantation after chemotherapy. Subsequently, the patient looked for self-care to prevent cancer from recurring but did not want to use modern medicine and received advice from a friend about the benefits of papaya leaf decoction for cancer treatment. The patient started drinking papaya leaf decoction in August 2023 and continues to do so. After successful treatment, the patient maintained his health and continued taking a dietary supplement and drinking papaya leaf decoction for over six months.

The preparation method of papaya leaf decoction is using 2-3 fresh *Carica papaya* leaves (1 leaf approximately 103 g) and 1 L of water. The papaya leaves are washed thoroughly and cut into pieces of the desired size. Add 1.5 L of water to a pot. Then add the papaya leaves for about 60 minutes until the water is reduced by half. Strain the mixture to get only the liquid and drink one cup (60 ml) before each meal (breakfast, lunch and dinner).

Laboratory results after the patient began consuming papaya leaf decoction revealed an increase in red blood cell count from 4.05 million/ml to 4.43 million/ml, eGFR improved from 57.69 ml/min/1.73m² to 61.75 ml/min/1.73m², AST levels rose from 27.80 U/L to 32.00 U/L and platelet count increased from 145,000 to 151,000 cells/mm³. When assessing the patient's quality of life, it was found that the health utility score increased significantly after the use of papaya leaf decoction, rising from 0.31 before use to 0.89 afterward. Additionally, the patient's overall health condition was improved, with a score increasing from 45 to 80 after use. At present, there are no signs of cancer progression. The patient is sleeping well, has a healthy appetite and carries out daily activities as usual. Follow-up appointments are scheduled every two months, as detailed in (Table 2 and Figure 2)

Discussion

These retrospective case reports aim to describe the effects of papaya leaf decoction using patient histories, interviews and laboratory results in two patients with salivary gland cancer and multiple myeloma. In the first patient, it was found that eGFR decreased and AST levels increased. In the second patient, improvements were observed in creatinine levels, eGFR, and liver function test results, including direct bilirubin levels. However, consumption of papaya leaf decoction affects liver and renal function as multiple other factors could also influence changes in parameters. It was found other factors that may contribute to GFR such as age, sex, infection, dehydration,

hyperproteinemia etc.⁽¹¹⁻¹²⁾ Due to the changes in liver and kidney function parameters, it cannot be conclusively determined which factors contributed to these alterations. It is crucial to conduct long-term follow-up studies. This will provide valuable academic data for the development and design of future research on efficacy and safety.

Therefore, laboratory results to monitor kidney function should be conducted every three months to assess risk and ensure that care and treatment are provided according to standard protocols. Additionally, both patients showed increased platelet count following the use of papaya leaf decoction. This observation is consistent with a study evaluating the efficacy and safety of papaya leaf extract in patients with severe dengue fever and thrombocytopenia ($\leq 30,000/\mu\text{L}$).⁽¹³⁾ In this study, 51 patients who received the papaya leaf extract showed a statistically significant increase in platelet count to $50,000/\mu\text{L}$ ($p < 0.05$). A study investigated the preliminary effects of papaya leaf extract in treating patients with thrombocytopenia resulting from chemotherapy at an oncology clinic in Bengaluru.⁽¹⁴⁾ and study involved 20 participants who received 1,100 mg of papaya leaf extract three times daily for 7 days. Following treatment with the extract, platelet count increased significantly from $49,700/\mu\text{L}$ to $200,585/\mu\text{L}$, with a statistically significant difference ($p < 0.05$).⁽¹⁵⁾ Furthermore, the progression factors of cancer which indicates that blood tests alone may not be sufficient to confirm the efficacy and safety of medications or products. It is necessary to consider other factors such as diet, exercise, alcohol consumption and the use of medication.

In terms of health utility status (EQ-5D-5L) and visual analog scale (VAS), both patients with salivary gland cancer and multiple myeloma showed an increase in average scores after using papaya leaf decoction. This finding aligns with the efficacy and safety of papaya leaf decoction in patients with severe dengue-induced thrombocytopenia and found that after receiving the extract, patients experienced a faster recovery and a significant increase in overall well-being, with statistical significance ($p < 0.05$).⁽¹⁰⁾

Conclusion

The effect of papaya leaf decoction on patients indicates an increase in platelet count from laboratory reports and improved the quality of life by interviewing patients. But further research should be conducted on the preparation quality of papaya leaf decoction, increase the sample size and control factors that may influence the research outcomes in future studies.

Table Figure and Diagram

Table 1 Laboratory results Lab I and Lab II using papaya leaf decoction in salivary gland cancer patient.

Laboratory Examination	Case I: Salivary Gland Cancer						
	Lab I		Lab II		Normal value	Unit	
	01-02-2024		21-05-2024				
Complete Blood Count							
Red Blood Cell	3.84		3.89		3.50-5.50	106/ μ L	
Hemoglobin	11.9*	L	11.8*	L	12.0-16.0	Gm%	
Hematocrit	36*	H	36*	H	35.47	%	
White Blood Cell	6360		5990		4500-11000	Cell/ mn^3	
Polymorphonuclear Neutrophils	53.00		48.00		40.00-70.00	%	
Lymphocyte	40.00		44.00*		H	20.00-40.00	%
Monocyte	4.00		4.00		2.00-10.00	%	
Eosinophil	2.00		3.00		0.00-5.00	%	
Basophil	1.00		-		0.00-2.00	%	
Platelet	280000		301000		150000-450000	cell/ mm^3	
Renal Function Test							
Blood Urea Nitrogen	11.10		12.50		9.8-20.1	mg/dl	
Serum Creatinine	0.68		0.78		05.7-1.11	g/dl	
Estimated Glomerular Filtration Rate	96.00		83.00*	L	> 90.00	ml/min/ 1.73m ²	
Liver Function Test							
Albumin	4.50		4.40		3.50-5.00	g/dl	
Total Bilirubin	0.55		0.47		0.20-1.20	mg/dl	
Direct Bilirubin	0.15		0.14		0.00-0.50	mg/dl	
Aspartate Transaminase	34.00		39.00*		H	5.00-34.00	U/L
Alanine Transaminase	31.00		46.00		0.00-55.00	U/L	
Alkaline Phosphatase	62.00		83.00		40.00-150.00	U/L	

Note: Values marked with an asterisk (*) indicate laboratory results that are lower or higher than the normal range. These tests were conducted at laboratories accredited with ISO 15189 and ISO 12190 standards.

Table 2 Laboratory results LAB I and LAB II using papaya leaf decoction multiple myeloma.

Laboratory Examination	Case II: Multiple Myeloma					
	LAB I		LAB II		Normal value	Unit
	31-05-2023		28-02-2024			
Complete Blood Count						
Red Blood Cell	4.05*	L	4.43		4.30-6.10	106/ μL
Hemoglobin	14.40		14.70		12.90-17.10	Gm%
Hematocrit	43.70		43.50		38.00-51.10	%
White Blood Cell						
Polymorphonuclear	5.80		6.30		4.50-10.50	Cell/mn ³
Neutrophils						
Lymphocyte	66.4		63.60		42.70-69.60	%
Monocyte	27.40		28.30		20.40-45.80	%
Eosinophil	5.70		5.10		3.80-11.20	%
Basophil	0.40*	L	0.80		0.70-8.30	%
Platelet	0.10		0.20		0.10-1.70	%
Renal Function Test						
Blood Urea Nitrogen	13.80		13.90		6.00-20.00	mg/dl
Serum Creatinine	1.33*	H	1.25*	H	0.67-1.17	g/dl
Estimated Glomerular Filtration Rate	57.69*	L	61.75*	L	> 90	mL/min/1.73m ²
Liver Function Test						
Albumin	0.75		0.36		0.00-1.20	mg/dl
Total Bilirubin	0.33*	H	0.15		0.00-0.30	mg/dl
Direct Bilirubin	27.80		32.00		0.00-50.00	U/L
Aspartate Transaminase	40.80		46.00		0.00-50.00	U/L
Alanine Transaminase	63.00		56.00		4.00-129.00	U/L

Note: Values marked with an asterisk (*) indicate laboratory results that are lower or higher than the normal range. These tests were conducted at laboratories accredited with ISO 15189 and ISO 12190 standards.

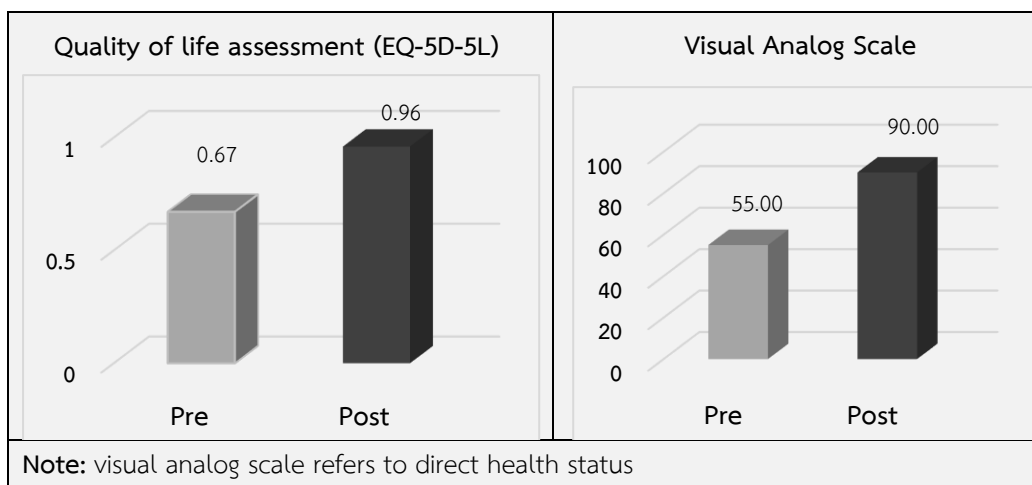


Figure 1 Comparison of the quality-of-life pre and post consuming papaya leaf decoction based on interviews.

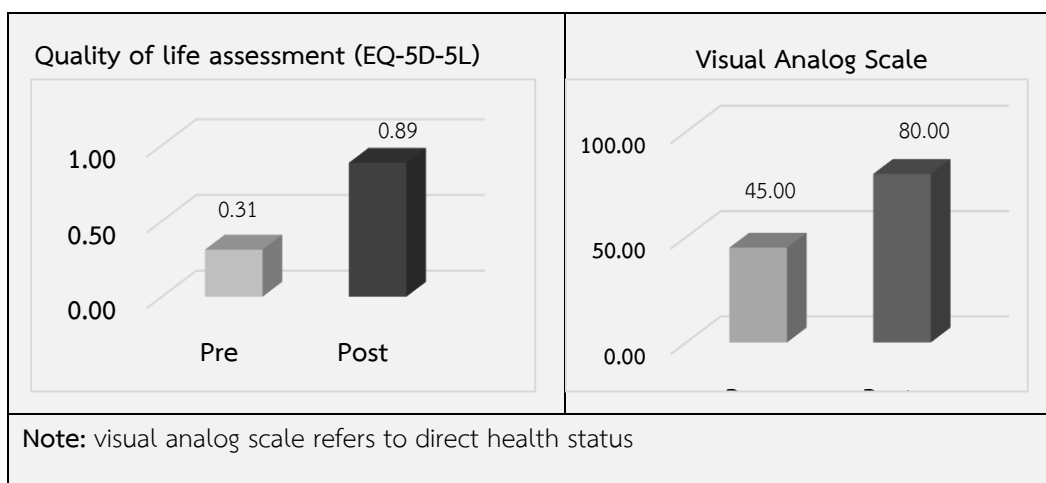


Figure 2 Comparison of the quality-of-life pre and post consuming papaya leaf decoction based on interviews.

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