


Improving Post-Laparotomy Wound Healing With Snakehead Fish Extract

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Article Info	ABSTRACT
<p>Keywords: Snakehead Fish Extract, Post-Laparotomy Wound Healing, Wound Healing Acceleration, Laparotomy Recovery.</p>	<p>Post-laparotomy wound healing is a critical aspect of surgical recovery, often influenced by various factors including age and nutritional interventions. This study investigates the potential of snakehead fish extract in expediting wound healing processes among post-laparotomy patients. A total of 30 participants were enrolled, with 15 individuals assigned to both control and experimental groups. Participants were from the Jatirogo Community Health Center's working area. The distribution of respondents was analyzed based on age demographics and grouped by control and experimental categories. Wound healing progress following laparotomy surgery was monitored after the administration of snakehead fish extract. The majority of control group respondents were aged between 41 and 45 years (13.34%), while the experimental group comprised individuals predominantly aged 21-25 years and 41-45 years (13.34%). Analysis revealed significant differences in wound healing progress between the control and experimental groups, particularly after the administration of snakehead fish extract. Administering snakehead fish extract demonstrated a significant effect on post-laparotomy wound healing, particularly among participants in the experimental group. This suggests the potential therapeutic benefits of snakehead fish extract in surgical wound management, warranting further investigation and clinical application.</p>
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INTRODUCTION

Laparotomy surgery is performed to assess the condition of abdominal tissue and blood vessels, typically indicated for patients experiencing abdominal pain of unknown etiology or abdominal trauma. Consequently, post-laparotomy wounds ensue, necessitating a process for tissue restoration, termed wound healing (Fauziah & Soniya, 2020). This physiological process comprises three phases: inflammatory, proliferative, and maturation (Yasmara et al., 2016). Inflammation occurs during days 1 to 5 post-injury, marked by hemostasis and inflammation. Various factors, including nutrition, age, anemia, obesity, sepsis, medication, and mobilization, influence wound healing (Yasmara et al., 2016). According to Tuban District Health Service data, there were 4,271 post-laparotomy surgery cases in 2019, decreasing to

3,326 cases in 2020. Specifically, in the Jatirogo subdistrict, there were 107 cases in 2019 and 70 cases in June 2020, with a further decline to 29 cases by October.

Notably, a study investigated the impact of snakehead fish on caesarean section wound healing in postpartum mothers within the Ciasem Subang Community Health Center in 2020, revealing accelerated wound healing in the treatment group compared to the control group (Nurhikmah et al., 2020). Administration of snakehead fish extract has been investigated in research titled "Effect of Giving Snakehead Fish Extract on the Healing of Perineal Wounds in Postpartum Mothers" conducted in Bonangrejo. This study compared mothers who experienced postpartum recovery without consuming snakehead fish to those who did (Karina et al., 2016). However, previous research has not addressed post-laparotomy wounds, and observations of respondents were not performed routinely over a 10-day period; observations were only conducted on days 1, 4, 7, and 10.

Good nutrition is critical to support the post-operative wound healing process, particularly protein-rich foods. Protein is essential for regenerating damaged cells and replacing them with new ones, thereby facilitating wound healing (Fauziah & Soniya, 2020). Enhancing the nutritional status of post-laparotomy patients is crucial for expediting wound healing, with protein, vitamins (especially A and C), and minerals being vital components (Roselita & Khoiri, 2018). Fish, including snakehead fish, are excellent protein sources, with snakehead fish particularly rich in nutrients compared to other varieties (Susilowati et al., 2017). Comprising 70% protein, 21% albumin, amino acids, zinc, and selenium, snakehead fish aids the wound healing process (Ardianto, 2015). Nurses can facilitate rapid wound healing by encouraging post-laparotomy patients to consume snakehead fish extract capsules twice daily for 7 days (Carina, 2016).

One nursing intervention to prevent infection in post-surgical wounds includes encouraging patients to adhere to appropriate wound care and consume proper nutrition. Proper nutrition for post-laparotomy surgery patients should be high in protein, as protein aids in the regeneration of damaged cells and their replacement with new cells, accelerating the wound healing process. One such high-protein food is snakehead fish. Motivated by these concerns, researchers aim to investigate the efficacy of snakehead fish extract in healing post-laparotomy wounds within the Jatirogo Community Health Center.

METHODS

This study employs experimental research Quasi-Experimental Design Using a Pretest-Posttest Control Group Design, This technique aims to reveal causal relationships in a control group alongside a treatment group. However, the selection of these groups does not use randomization techniques. In both groups, the intervention begins with a pretest, and after the treatment is administered, measurements are taken again (posttest). Encompassing all post-laparotomy patients within the Jatirogo Community Health Center, totaling 30 individuals. The sample comprises 15 treatment and 15 control group patients, meeting inclusion criteria of being postoperative on days 1 to 7 with no comorbidities. Non-probability sampling techniques are utilized. Variables include snakehead fish extract administration and laparotomy wound healing. In the treatment group, snakehead fish extract was administered

twice daily after meals for two weeks. The control group received only basic wound care without additional nutritional supplementation. Data collection involves online questionnaires via Google Form and research instruments based on standard operating procedures for administering snakehead fish extract over one week. Observations are conducted for two weeks, utilizing a checklist for wound healing in the inflammatory and proliferative phases. Data analysis involves editing, coding, scoring, and tabulating.

RESULTS AND DISCUSSION

Respondent distribution data delineates wound healing processes before and after snakehead fish extract administration, alongside the extract's effects on post-laparotomy wound healing within the Jatirogo Community Health Center in 2023. Of the 30 respondents, 15 belong to each group. Most control group respondents are aged 41-45 years, while the experimental group comprises varying age ranges.

The total number of participants in this study was 30 individuals, evenly divided into 15 individuals for both the control and experimental groups. It was observed that the majority of respondents in the control group were aged between 41 and 45 years, comprising 4 respondents (13.34%). Conversely, in the experimental group, the majority fell within the age ranges of 21-25 years and 41-45 years, each accounting for 4 respondents (13.34%).

Table 1. Illustrates the distribution of respondents categorized by their respective groups (control and experimental) and their wound healing progress following laparotomy surgery subsequent to the administration of snakehead fish extract in the Jatirogo Community Health Center's working area in 2023.

Respondent Characteristics	Group				SUM	
	Control		Experiment		N	%
	N	%	N	%		
Age						
21-25 Years Old	1	3,33%	4	13,34%	5	16,67%
26-30 Years Old	3	10%	1	3,33%	4	13,33%
31-35 Years Old	3	10%	0	0%	3	10%
36-40 Years Old	2	6,67%	1	3,33%	3	10%
41-45 Years Old	4	13,34%	4	13,34%	8	26,67%
46-50 Years Old	1	3,33%	3	10%	4	13,33%
51-55 Years Old	0	0%	1	3,33%	1	3,33%
56-60 Years Old	1	3,33%	1	3,33%	2	6,67%

Age is a significant factor influencing the wound healing process following laparotomy surgery, impacting various stages including vascular alterations affecting wound perfusion, reduced hepatic function affecting clotting factor synthesis, delayed inflammatory response, and diminished antibody and lymphocyte formation. The optimal reproductive age range is typically considered to be between 20 and 35 years, with a decline in overall physiological functions occurring after the age of 35. Age-related changes in the skin include alterations in epidermal cell turnover, inflammatory responses to injury, sensory perception, mechanical

protection, and skin barrier function. The pace of cellular repair parallels growth and maturation processes (Nuraini, 2015).

Following completion of the research, initial observations revealed a 33% acceleration in the wound healing process within the experimental group. Among the 30 respondents, comprising 15 individuals in each group, the experimental group exhibited a higher rate of improvement. Specifically, 80% of the control group respondents and 66.7% of the experimental group respondents demonstrated accelerated wound healing. This observation suggests notable advancements in wound recovery within both groups.

Table 2. Percentage distribution of wound healing process within the control and experimental groups.

Crosstab

			Post Wound Healing Process		
			Ontime	Faster	N
Group	Control Group	Count	12	3	15
		Expected Count	8,5	6,5	15,0
		% within Group	80,0%	20,0%	100,0%
	Experiment Group	Count	5	10	15
		Expected Count	8,5	6,5	15,0
		% within Group	33,3%	66,7%	100,0%
Total	Count	17	13	30	
	Expected Count	17,0	13,0	30,0	
	% within Group	56,7%	43,3%	100,0%	

Table 3. Crosstabs Test of Wound Healing Process After Administering Snakehead Fish Extract

NO	Group	Wound Healing Process		
		Longer	on time	Faster
1.	Control Group	0	12	3
	(%)	0%	40%	10%
2.	Experiment Group	0	5	10
	(%)	0%	16,67%	33,33%

One prevalent modern myth is the belief in a cultural taboo, referred to as the "tarak culture," which prohibits the consumption of fish due to its purported adverse effects on stitched wounds. Consequently, many individuals remain unaware of the potential benefits of consuming snakehead fish, a species rich in protein, which could aid in expediting the wound healing process. Snakehead fish boasts a considerable nutritional profile compared to other freshwater fish varieties. Its composition includes 70% protein, 21% albumin, complete amino acids, zinc, selenium, and iron (Ardianto, 2015). Notably, snakehead fish meat contains numerous bioactive compounds such as minerals, albumin protein, and amino acids crucial for protein synthesis, along with the antioxidant glutathione. The amino acids present, namely

glutamate, cysteine, and glycine, serve as antioxidant precursors, enhancing glutathione levels. This composition holds promise in promoting wound healing and bolstering the body's immune response. Moreover, augmenting tissue protein synthesis and glutathione antioxidant levels can accelerate tissue repair processes and fortify cellular defense mechanisms (Sunarno et al., 2018).

Table 4. Crosstabs Test Using Chi-Square and Contingency Coefficient

Chi-Square Tests					
	Value	Df	Asymptotic Significance (2- sided)	Exact Sig. (2-sided)	Exact Sig. (1- sided)
Pearson Chi-Square	6,652 ^a	1	,010		
Continuity Correction ^b	4,887	1	,027		
Likelihood Ratio	6,946	1	,008		
Fisher's Exact Test				,025	,013
Linear-by-Linear Association	6,430	1	,011		
N of Valid Cases	30				

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 6,50.
 b. Computed only for a 2x2 table

Symmetric Measures		Value	Approximate Significance
Nominal by Nominal	Contingency Coefficient	,426	,010
N of Valid Cases		30	

Based on Table 4, utilizing the Crosstabs test with chi-square and the contingency coefficient, a significance value of 0.010 was obtained, which is lower than the significance level (α) of 0.05. Therefore, the null hypothesis (H0) is rejected. This indicates that administering snakehead fish extract has a significant effect on wound healing in post-laparotomy surgery patients in the Jatirogo Community Health Center working area.

This finding is supported by Karina's (2016) research titled "Effect of Giving Snakehead Fish Extract on Healing Perineal Wounds in Postpartum Mothers at BPM Bonangrejo Demak." Carina conducted experimental research with a post-test only control group design, involving 30 respondents selected through purposive sampling. Observations were made on days 1, 4, 7, and 10 post-surgery. Mann-Whitney analysis revealed a significant difference ($p < 0.05$) in healing time, with the experimental group showing an average healing time of 7 days

compared to 10 days in the control group. Therefore, snakehead fish extract demonstrated an effect on healing perineal wounds, accelerating healing by 2-3 days.

Additionally, Purba's (2020) study titled "Accelerating Healing of Post-Section Caesarean Wounds by Consuming Snakehead Fish (*Channa Striata*) at Grandmed Lubuk Pakam Hospital Deli Serdang" also supports this conclusion. Tetty employed a quantitative research design with Quasy Experiment methodology, dividing participants into intervention and control groups. The results showed that the intervention group experienced faster wound healing (82.4%) compared to the control group (76.5%), with a significant p-value of $0.002 < 0.05$, indicating an effect of snakehead fish consumption on wound healing after caesarean section surgery.

Snakehead fish emerges as a viable alternative to expedite wound healing post-laparotomy surgery due to its high protein and albumin content. Its protein levels surpass those of other protein sources such as eggs, chicken, and beef (Widodo et al., 2016). Therefore, snakehead fish offers significant benefits for accelerating the healing of post-operative suture wounds.

CONCLUSION

The administration of snakehead fish extract significantly influences wound healing in post-laparotomy surgery patients in the Jatirogo Community Health Center working area. Most notably, the experimental group exhibited a higher proportion of faster wound healing compared to the control group. Future research should explore the long-term effects of snakehead fish extract on wound healing, including its impact on various types of surgical wounds and different patient populations. It is recommended to utilize randomized controlled trials (RCTs) to enhance the reliability and validity of the findings. Additionally, investigating the molecular mechanisms through which snakehead fish extract influences cellular regeneration and wound healing processes would provide deeper insights into its therapeutic potential. Comparisons with other high-protein nutritional interventions could also be valuable to determine the relative efficacy of snakehead fish extract.

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