A COMPARATIVE STUDY OF PERINEAL WOUND HEALING RATES IN POSTPARTUM WOMEN CONSUMING SNAKEHEAD AND MACKAREL TUNA FISH

Dwi Kurnia Purnama Sari[1], *Nur Cholila* [2]
[1,2] Institut Ilmu Kesehatan Nahdlatul Ulama Tuban

Correspondence address:
Tuban, Indonesia
Email : ncholilla@gmail.com
Mobile phone : 081232914440

Abstract

Background: Ideally, perineal wounds take 6-7 days to heal. The wound healing process requires protein that can be obtained from fish as a basic nutrient for cell formation. The availability of fish in Indonesia is very high, but the national fish consumption rate is low. The purpose of this study was to analyze the difference in the speed of perineal wound healing in postpartum mothers with protein intake from snakehead fish and mackarel tuna fish. **Method:** This study used a quasi-experimental design with a post-test only control group design approach. The number of samples used was 48 respondents who were selected using simple random sampling and divided into three groups. **Result:** The results of the Kruskal Wallis analysis showed a P value of 0.036, so it can be concluded that there is at least an effect of providing intervention on perineal wound healing. The highest wound healing ranking was in the snakehead fish group with a value of 20.45, then the mackarel tuna fish group 16.45 and the control group 9.60. **Conclusion :** So mothers who have perineal stitches are advised to increase their protein consumption from either snakehead fish or mackarel tuna fish as an alternative to accelerate the perineal wound healing process.

keyword : snakehead fish, mackarel tuna fish, perineal wounds

INTRODUCTION

Childbirth often results in perineal tears, either in primigravidas or multigravidas with a rigid perineum (Manuaba, 2010). 75% of women in Indonesia who give birth naturally experience damage to the perineum. Data from 2017 stated that out of a total of 1,951 vaginal births, 57% of mothers required perineal stitches (Cholila, Faizah and Yani, 2023). Tearing of the perineum is one of the causes of infection during the postpartum period, because the perineum...is an area that does not dry easily so it can become a place for bacteria to enter.One of the risk factors for perineal infection is the slow healing of perineal wounds (Rahmawati and Triatmaja, 2017).

If there is no infection, the perineal wound will heal within 6-7 days. The speed of healing of the perineal wound is influenced by the

basic nutritional needs of the postpartum mother (Frilasari *et al.*, 2020). Ideally, the wound healing process requires nutrients as a basis for cell formation. Vitamins A, B, C and K are needed to help the wound closure process, collagen synthesis, regulate protein metabolism and also prothrombin synthesis. According to Boyle (2009) the wound healing process also requires protein in the development of cells in the body. Protein also plays a role in the immune system, because protein is needed in cell division in the body. Protein deficiency can result in a decrease in the angiogenesis process, a decrease in fibroblast and endothelial cell proliferation, and a decrease in collagen synthesis and remodeling (Fadelika, Rahayu and Sendra, 2018).

Fish is a second-class source of animal protein after meat, milk and eggs. Fish contains various nutrients such as protein, fat, vitamins, minerals, carbohydrates and water content. Fish is one of the foodstuffs that is quite easy to obtain in Indonesia. The availability of fish in Indonesia is very high and the price is relatively cheap. Food technology for processing fish is also quite sophisticated. However, national fish consumption in Indonesia is still lower when compared to Malaysia and Singapore (Dewi, Widarti and Sukraniti, 2018).

All types of fish are generally excellent sources of protein. Snakehead fish according to various sources and studies is one of the fish with more nutritional and protein content than other types of fish and its role in the wound healing process is no doubt (Sebayang and Ritonga, 2021). In addition to snakehead fish, Indonesia is also rich in sea fish, one of which is mackarel tuna. Mackarel tuna is one source of animal protein that is quite easy to obtain. Mackarel tuna is one of the sea fish that contains a lot of highly nutritious food ingredients. In terms of nutritional content, mackarel tuna is not inferior to the quite popular snakehead fish (Zukaidah, Mundarti and Arfiana, 2022).

The protein contained in 100 grams of snakehead fish is 16.20 grams, while 100 grams of mackarel tuna fish contains 13.70 grams of protein.(Arie and Risqi, 2023). With the high protein content in snakehead

fish and mackarel tuna, it is possible to support the wound healing process. Based on the background above, it is necessary to analyze the differences in the speed of healing of perineal wounds in postpartum mothers with protein intake of snakehead fish and mackarel tuna fish so that it can be used as an alternative method for healing perineal wounds in patients during the postpartum period.

METHOD

This research is a quasi-experimental research, namely research that attempts to reveal causal relationships by involving a control group in addition to the experimental group (Munir *et al.*, 2022). The design used in this study was a post-test only control group design which aims to analyze the differences in the speed of healing of perineal wounds in each group. This study involved 3 groups, namely intervention group I (giving snakehead fish), intervention group II (giving mackarel tuna fish) and the control group.

The population in this study were all postpartum mothers who had perineal wounds in Tuban Regency. Sampling in this study used a simple random sampling technique. The sample in this study was some postpartum mothers with perineal wounds in Tuban Regency who met the criteria, as many as 48 postpartum mothers divided into 3 groups.

In this study, intervention group I was given raw snakehead fish 300 gr/day. Intervention group II was given raw mackarel tuna fish 300 gr/day. The fish rations given to intervention groups I and II were cut into 100 gr/portion to be consumed daily for 7 weeks and processed by frying over medium heat, adding salt and spices to taste. Meanwhile, the control group was advised to eat food according to taste without any dietary restrictions. On the 7th day postpartum, each group was observed for perineal wounds using the REEDA scale. After all the data was collected, data analysis was carried out using Mann Whitney test with a significance value of α=0.05.

RESULT AND DISCUSSION

1. Results of Perineal Wound Healing in Postpartum Mothers in the Control Group

Table 1. Frequency Distribution of Perineal Wound Healing in Postpartum Mothers in the Control Group in Tuban Regency

No	Perineal Wound Healing	Frequency	Percentage (%)
1	Good	4	25%
2	Not good	7	43.75%
3	Bad	5	31.25%
Total		**16**	**100%**

Based onTable 5.2 shows that the results of perineal wound healing in postpartum mothers in the control group are almost all in the poor healing category, namely 43.75%.

2. Results of Perineal Wound Healing in Postpartum Mothers in Intervention Group I

Table 2 Distribution Perineal Wound Healing Frequencyin Postpartum Mothers of the Snakehead Fish Group in Tuban Regency

No	Perineal Wound Healing	Frequency	Percentage (%)
1	Good	9	56.25%
2	Not good	6	37.50%
3	Bad	1	6.25%
Total		**16**	**100%**

Based on table 2, the results show that the healing of perineal wounds in postpartum mothers in the intervention group was mostly included in the good healing category, namely 56.25%.

3. Results of Perineal Wound Healing in Postpartum Mothers in Intervention Group II

Table 3 Distribution Perineal Wound Healing Frequencyin Postpartum Mothers of the Mackarel tuna Fish Group in Tuban Regency

No	Perineal Wound Healing	Frequency	Percentage (%)
1	Good	10	62.5%
2	Not good	5	31.3%
3	Bad	1	6.3%
Total		**16**	**100%**

Based on table 5.3, the results show that the healing of perineal wounds in postpartum mothers in the intervention group was mostly included in the good healing category, namely 62.5%.

4. The Effect of Consuming Snakehead Fish and Skipjack Mackarel tuna on Healing Perineal Wounds in Postpartum Mothers

The following are the results of the research analysis of the effect of snakehead fish consumption on the healing of perineal wounds in postpartum mothers in the Jenu Health Center work area and the results of the research statistical test based on the Mann Whitney test:

Table 4. Cross Tabulation and Statistical Test Results of the Effect of Consumption of Snakehead Fish and Skipjack Mackarel tuna on Healing of Perineal Wounds in Postpartum Mothers in Tuban Regency

Group	Perineal Wound Healing						Total		*p-Value*
	Good		Not good		Bad				
	f	%	*f*	%	*f*	%	*f*	%	
Control	4	25%	7	43.75 %	5	31.25 %	16	100	0.036
Snakehead	10	62.5%	5	31.25 %	1	6.25%	16	100	
Mackarel tuna	8	50%	7	43.75 %	1	6.25%	16	100	

Based on table 4, it shows that the healing of perineal wounds in postpartum mothers in the intervention group using both snakehead fish and mackarel tuna fish appeared to have changed compared to the control group. The

distribution of perineal wound healing in the snakehead fish intervention was mostly (62.5%) in the good category, and some respondents (50%) in the mackarel tuna fish group also had wound healing in the good category. While in the control group, almost all respondents

Then based on the results of the Kruskal Wallis statistical test, the P value is 0.036, meaning <0.05. With these results, it can be concluded that there is at least an effect of providing intervention on healing perineal wounds, with the highest ranking in the snakehead fish group with a value of 20.45, followed by mackarel tuna fish 16.45 and the control group 9.60.

Albumin protein in snakehead fish in 100gr (36.10g) can accelerate the inflammatory face because it contains anti-inflammatory, namely arginine. Also to increase and the formation of new cells and granulation tissue consisting of macrophages, fibroblasts and blood vessels. Macrophages are needed to stimulate the formation of fibroblasts and blood vessels. Fibroblasts produce new extracellular matrices and one of the components of wound healing that is widely distributed in connective tissue, producing collagen, elastic fibers and reticular fibers. While albumin in blood vessels as a transport of drugs, oxygen and micro nutrients to maximize collagen formation and free tissue from necrosis and is needed to maintain new cell metabolism(Kusmini *et al.*, 2018).

In other words, the albumin protein contained in snakehead fish plays a role in the process of neo-vascularization, fibroblast proliferation, collagen synthesis and wound remodeling. The content of essential and non-essential amino acids in snakehead fish albumin has a much better quality than egg albumin.(Suprayitno, 2017). In line with research conducted by(Kholifah, 2017)that Healing of perineal wounds is highly dependent on nutritional intake. High protein foods contain body building substances so that they can grow new tissues in the wound area.

Cobis one of the sources of animal protein that is quite easy to obtain. Mackarel tuna is one of the sea fish that contains a lot of high-

nutrient food ingredients. Judging from its nutritional content, mackarel tuna is not inferior to the quite popular snakehead fish. The protein content in mackarel tuna per 100 grams is 13.70 g(Arie and Risqi, 2023). Poor protein role can prolong the chronic phase of wound healing. Some functions of protein in the wound healing process are to help fibroblast proliferation, collagen synthesis, aniogenesis and the remodeling phase.

Mackarel tuna (Euthynnus affinis) is a very interesting species to study both in terms of nutritional composition and economics. Mackarel tuna has a high nutritional content, especially protein, which is between 22.6-26.2 g/100 g of meat, fat between 0.2-2.7 g/100 g of meat, and several minerals (calcium, phosphorus, iron, sodium), vitamin A (retinol), and vitamin B (thiamine, riboflavin and niacin)(Hafiludin, 2011).

The main chemical components of fish meat are water, protein and fat which is around 98% of the total weight of the meat. This component has a major influence on the nutritional value, functional properties, sensory quality and storage stability of the meat. The content of other chemical components such as carbohydrates, vitamins and minerals is around 2% which plays a role in the biochemical process in dead fish tissue.(Girsang, 2008). In line with research conducted by (Kholifah, 2017)that Healing of perineal wounds is highly dependent on nutritional intake. High protein foods contain body building substances so that they can grow new tissues in the wound area.

Differenceprocessing method for the chemical composition of processed mackarel tuna fish, that the processing method withfried contains the highest protein content compared to other processing methods such as steaming, grilling, steaming and grilling. This is because the frying process causes the water content in the fish to decrease drastically/drier compared to other processing methods. So that the processed fish with the same weight is calculated after processing, the protein content of fried mackarel tuna is higher than fish with steamed, grilled, steamed and grilled processing.

The difference in wound healing in the snakehead fish and mackarel tuna fish groups was found that snakehead fish was better at healing wounds in postpartum mothers, this was based on the differences in the levels of albumin and collagen proteins contained in it. Based on this, researchers recommend consuming high protein from snakehead fish in postpartum mothers to heal perineal wounds. The use of mackarel tuna fish is another alternative as a high-protein food for the postpartum period. In other words, the addition of high-protein foods, especially animal protein, is very necessary to help heal perineal wounds.

CONCLUSION AND SUGGESTION

There was a difference in the speed of wound healing in the control group and the intervention group. There is a significant influence of snakehead fish and mackarel tuna fish on the speed of healing of perineal wounds in postpartum mothers.

Midwives can recommend consuming snakehead fish as the main choice because it shows better wound healing results compared to mackarel tuna fish. But mackarel tuna fish can also be used as a good alternative. It is important to provide choices and variations to mothers to make it easier to consume highly nutritious foods. Further research needs to be carried out to see the long-term effects of consumption of snakehead fish and mackarel tuna fish on perineal wound healing. Apart from that, it is also important to research the effect of the type of preparation on the nutritional content and effectiveness of snakehead fish and mackarel tuna in helping wound healing.

REFERENCE

Arie and Risqi (2023) *Nilai Kandungan Gizi Ikan Gabus Segar dan Ikan Tongkol Segar*, *NilaiGizi.com*. Available at: https://nilaigizi.com/gizi/detail produk/883/Ikan-Gabus,-segar.

Cholila, N., Faizah, N.L. and Yani, I.A. (2023) 'The Effect of Snakehead Fish on Perineal Wound Healing', in *Procrrding International Midwifery Seminar & Research Findings Dissemination 'The Lastest Update on Complementary in Midwifery Care' Therapy*. Tahta Media, pp. 9–15.

Dewi, P.F.A., Widarti, I.G.A.A. and Sukraniti, D.P. (2018) 'Pengetahuan Ibu tentang Ikan dan Pola Konsumsi Ikan pada

Balita di Desa Kedonganan Kabupaten Badung', *Journal of Nutrition Science*, 7(1), pp. 16–20.

Fadelika, M.P., Rahayu, D.E. and Sendra, E. (2018) 'Pengaruh Konsumsi Ikan Lele terhadap Lama Penyembuhan Luka Jahitan Perineum', *Global Health Science*, 3(1), pp. 74–80.

Frilasari, H. *et al.* (2020) 'Nutritional Pattern And Healing Of Perineum Wound On Postpartum Period', *Journal Of Nursing Practice*, 3(2), pp. 172–180. Available at: https://doi.org/10.30994/jnp.v3i2.85.

Girsang, H. (2008) 'Studi Penentuan Daerah Penangkapan Ikan Tongkol di Pelabuhan Ratu Jawa', *Jurnal Kelautan* [Preprint].

Hafiludin (2011) 'Karakteristik Proksimat dan Kandungan Senyawa Kimia Daging Putih dan Daging Merah Ikan Tongkol (Euthynnus Affinis)', *Jurnal Kelautan*, 4.

Kholifah, S. (2017) *Analisis Faktor yang Berhubungan dengan Penyembuhan Luka Perineum di Wilayah Puskesmas Siwalan Kabupaten Pekalongan*. Poltekes Kesehatan Kemenkes Semarang.

Kusmini, I.I. *et al.* (2018) *Budidaya Ikan Gabus*. Jakarta: Penebar Swadaya.

Manuaba, I.B.G. (2010) *Ilmu Kebidanan, Penyakit Kandungan & Keluarga Berencana untuk Pendidikan Bidan*. Jakarta: EGC.

Munir, M. *et al.* (2022) *Metode Penelitian Kesehatan*. Edited by E. 1. Purbalingga: Eureka Media Aksara.

Rahmawati, E. and Triatmaja, N.T. (2017) 'Hubungan Pemenuhan Gizi Ibu Nifas Dengan Pemulihan Luka Perineum', *Jurnal Wiyata Peneliti Sains & Kesehatan*, 2(1), pp. 19–24.

Sebayang, W.B.R. and Ritonga, F. (2021) 'Nutrisi Efektif Mempercepat Penyembuhan Luka Perineum pada Ibu Post Partum (Systematic Review) Effective Nutrition Accelerates Perineum Wound Healing on Mother Post Partum (Systematic Review)', *Jurnal kesehatan*, 12, pp. 330–336.

Suprayitno, E. (2017) *Misteri Ikan Gabus*. Malang: UB Press.

Zukaidah, W., Mundarti and Arfiana (2022) *Efektifitas Ikan Tongkol dan Vitamin A terhadap Penyembuhan Luka Perineum*. Politeknik Kesehatan kemenkes Semarang