

Effectiveness of *Garra Rufa* Care Toward Pruritus Elderly Who Live in Indonesian Village

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Abstract

Pruritus is a neurodegeneratif disease that attacks the peripheral skin. It is not infrequently the elderly experience these health problems with itching complaint, so that it cause a feeling of wanting to scratch. High itching complaint can also cause the anxiety level increased. The purpose of this study was to determine the effectiveness of *Garra Rufa* Care pruritus elderly who live in the village area, Indonesia This study was designed as a quasy experiment using non-probability techniques with a simple random sampling method. The respondents of this study consisted of 40 elderly people who had pruritus caused by dermatology and were divided into an experimental group and a control group. The independent variable was *Garra Rufa* Care, and the dependent variable was elderly with pruritus. This instrument of the study used the Numeric Rating Scale (NRS), Geriatric Anxiety Inventory (GAI) and used the Wilcoxon and Mann Whitney test with $\alpha < 0.05$ as data analysis. The results showed the effect of *Garra Rufa* Care on itching complaint ($p = 0,000$) and there was a significant low ($\alpha = 0.014$). The results showed the effect of *Garra Rufa* Care on anxiety level ($p = 0,000$) and there was a significant significance ($\alpha = 0,000$). Psychological effect have given “micro massage” and decreased the anxiety level which have physically reduced itching scores. *Garra Rufa* was effectively used as an intervention in the elderly with pruritus by decreasing itching complaint and anxiety level. Further study was expected to replicate similar studies with more samples and carried out observation after making intervention.

Keywords: *Anxiety, Elderly, Garra Rufa, Itching, Pruritus.*

Introduction

Pruritus is an unpleasant sensory perception that causes a strong desire to scratch and has a high impact on the quality of life¹. Chronic pruritus (CP) is a symptom with a negative impact on quality of life and it is known to be associated with anxiety². The elderly is one of the patients who often experience pruritus skin disorders. This is due to pruritus being one of the neurodegeneratif diseases that attacks peripheral skin³. Patient with the high pruritus intensity is more susceptible to experience anxiety⁴.

Pruritus can be found all over the world. According to a cross-sectional study in Oslo, Norway, pruritus

affects 8.4% of the general population⁵. While in a French study a survey was sent to 10,000 randomly selected households⁶. From the 7,500, 87% reported skin problems since their born and 43% of patients with skin diseases stated that they had experienced pruritus¹. According to a study in Turkey which involving 4099 elderly dermatological patients, 11.5% reported pruritus, and the highest prevalence was recorded in patient who aged over 85 years. From a study in Thailand which involving 149 elderly patients, pruritus was the most common in 41% of the total patients involved¹. The results of the preliminary study conducted in one of the Villages, Indonesia, there were 40 elderly out of 521 elderly who experienced pruritus or 7.6% of the number of elderly people.

The number of elderly people in Indonesia is 7.6% or 18 million out of 237 million inhabitants. In East Java, there are elderly with 11.6% or 4.4 million inhabitants as the highest number 3 after the Daerah Istimewa

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Yogyakarta (DIY) and Central Java^{7,8}. Based on the data from the population in the village there are 10.9% elderly or 521 out of 4810 inhabitants.

Skin aging comes from a combination of chronological and environmental factors. This involves intrinsic, hormonal, biological and genetic factors as well as extrinsic and dangerous stimuli such as accumulation of UV radiation, pollution or nicotine for life⁹. Ageing skin will be characterized by epidermal and dermal atrophy, due to the loss of collagen, degeneration of elastic fiber tissue and loss of hydration. The characteristics of intrinsic and extrinsic aging are progressive loss of function, structural integrity and physiological function of the skin, which involves impaired immune responses and skin barrier function, vascular atrophy, metabolic imbalance of reactive oxygen species and extracellular matrix component^{10,11}. Therefore, the molecular mechanism that protects and defends against extrinsic factor decreases progressively over a lifetime¹².

While the problem of pruritus continues to be left and it is not immediately treated in the elderly, then the negative impact that will arise such as a scratching scar that can cause ulceration in the legs. Then the ulcer can develop into an infection and worsen the skin condition of the elderly. Therefore a special nursing intervention is needed to overcome this.

Garra Rufa Care is an action in the form of nursing intervention using Garra Rufa fish. Garra Rufa is a fish species that is beneficial for skin health by releasing the enzyme dithranol (anthralin) which can decrease the inflammatory process and increase skin moisture^{13,14}. Garra Rufa can also be used for aesthetic purposes and as a medical treatment of patient with psoriasis¹⁵. The function of the dithranol enzyme released by Garra Rufa fish produces a therapeutic effect to improve blood circulation, the skin becomes smoother, reduces and

blurring of the scars and increases skin regeneration¹⁶. This study was conducted to determine the effectiveness of Garra Rufa Care Toward Pruritus Elderly in Village Areas of Indonesia.

Material and Method

Quantitative approach with the Quasy Experimental design and pre-post control design research was conducted to determine the effectiveness of garra rufa care toward pruritus elderly who live in the villages of Indonesia. This study was carried out in Pagerejo Village, Pacitan Regency, East Java, Indonesia. The population in this study was 521 elderly who aged more than 60 years. Calculation of the large sample using the application G * Power 3.1.9.2¹⁷. A sample of 40 elderly is obtained, that is 20 samples from the control group and 20 samples from the treatment group (nursalam).

The instrument in this study used the Geriatric Anxiety Inventory (GAI)¹⁸ and Numeric Rating Scale (NRS)¹⁹. The study process began with pre-test activities to determine itching complaint and anxiety level, then intervening with Garra Rufa fish in accordance with SOP (Standard Operating Procedure). After the intervention, it was carried out a post-test to determine the final condition of itching complaint and anxiety level.

The collected data was then analyzed using the Wilcoxon test to determine whether there was difference between the 2 samples. Then, it also performed a non-parametric test using the Mann-Whitney statistical test. Finally the data were analyzed using the SPSS windows program.

Result

Characteristic of respondent in the gender category were dominated by women in both the control group (60%) and the treatment group (60%), if it was counted, the total female respondent were 24 respondents (52.5%).

Table 1. Respondent Demographic Characteristics.

No.	Characteristic	Treatment		Control		Total	
		n	%	n	%	n	%
1.	Gender						
	a. Male	8	40	8	40	16	47,5
	b. Female	12	60	12	60	24	52,5
	Total	20	100	20	100	40	100

Cont... Table 1. Respondent Demographic Characteristics.

2.	Age						
	a. 60-74 years old	18	90	14	70	32	80
	b. ≥ 75 years old	2	10	6	30	8	20
	Total	20	100	20	100	40	100
3.	Last Education						
	a. Not finished Primary School	2	10	5	25	7	17,5
	b. Finished Primary School	18	90	15	75	33	82,5
	Total	20	100	20	100	40	100

The pretest results of the elderly itching complaint in treated group before being given Garra Rufa Care showed that 17 respondents felt moderate itching, and 3 respondents felt severe itching. The posttest results of the treatment group after being given Garra Rufa Care showed 18 respondents felt moderate itching, and each respondent in mild itching and normal/ not itchy.

Table 2. Itching Complaint Scores in the Elderly with Pruritus Before and After Garra Rufa Care.

Itching Complaint Score (NRS)								
No	Treatment Group			Control Group			Treatment	Control
	Pre	Post	Difference	Pre	Post	Difference		
1	5	4	2	8	4	4	4	4
2	4	4	0	9	4	5	4	4
3	7	6	1	6	4	2	6	4
4	6	5	1	5	5	0	5	5
5	8	5	3	7	5	2	5	5
6	7	4	3	6	4	2	4	4
7	7	6	1	8	5	3	6	5
8	6	4	2	4	4	0	4	4
9	7	2	5	6	5	1	2	5
10	6	4	2	5	4	1	4	4
11	5	5	0	8	4	4	5	4
12	6	0	6	5	4	1	0	4
13	5	4	1	5	3	2	4	3
14	8	4	4	7	4	3	4	4
15	7	5	2	6	5	1	5	5
16	7	4	3	8	6	1	4	6
17	8	6	2	9	7	2	6	7
18	7	4	3	7	6	1	4	6
19	6	4	2	8	5	3	4	5
20	7	6	1	7	6	1	6	6
P = 0,000 Wilcoxon P \leq 0.05			The Decrease Average $\frac{44}{20} = 2,2$		The Decrease Average $\frac{39}{20} = 1,95$		$\alpha = 0.014$ Mann Whitney $\alpha \leq 0.05$	

The results of statistical tests using the Wilcoxon Test in the treatment group found a decrease in itching complaint of the elderly with pruritus after being given Garra Rufa Care with p value = 0,000 which means $p < 0.05$, then H_1 was accepted, it means that there was an effect of Garra Rufa Care in itching complaint of the elderly with psoriasis by an increase average in the treatment group of 2.2 points. Mann Whitney test results in the control and treatment group obtained a value $a = 0.014$, which means there were significant differences in the treatment group and the control group. So it was said that there was an influence of Garra Rufa Care on itching complaint of the elderly with significant pruritus.

Discussion

Pruritus was caused by a number of causes, including dry skin, immunosuppression and nerve degeneration and also it can caused by skin diseases, systemic condition, and psychogenic condition²⁰. As we got older, changes of skin structure and loss of cell function gradually cause the skin to become more sensitive which was susceptible to disease. Pruritic skin disorder that occurred in the elderly was the result of normal skin aging due to the decrease of mobility²¹.

Function changes of the Stratum Corneum (SC) barrier, lipid matrix cell and intercellular (ILM); pH variations; SC protease changes; the decrease of sebaceous and sweat gland activity; and the decrease of estrogen level. All of these factors can cause itching induction²⁰. As we got older, the decrease of cell function gradually causes the skin to become more sensitive and at risk of itching.

After being given the Garra Rufa Care therapy there was a change in the decrease of itching complaint. Garra Rufa fish was known as “nibble fish” or “doctor fish of Kangal” which was an effective therapy to reduce itching complaint and it was used as ichthyotherapy for medical treatment of psoriasis^{22,23}. By Ichthyotherapy, itching complaints that often arises will not relapse although it has been for some time²³. Plaque psoriasis patient with severe pruritus report the higher scores for depression and anxiety⁴. A decrease in anxiety can occur due to a decrease in itching complaint with Garra Rufa Care which provided the effect of psoriasis spa therapy in the form of a relaxation sensation that results a comfortable feeling²⁷.

The treatment of pruritus was very complex and depends on the underlying condition and the

accompanying disorders¹⁹. Skin disease was often suffered by the elderly, and therefore there was a necessity for special nursing intervention to handle it²⁸. Types of treatment in pruritus were creams and ointments that contain anti-pruritic substances such as urea, menthol, or polydocanol¹⁹.

The intervention using Garra Rufa fish works spontaneously, that was the condition of fish that will swarm around the skin which contains many dead skin cells and simultaneously the fish will secrete the enzyme ditrhanol²⁹. Other benefits can also improve blood circulation, eliminate bacteria, and also reduce foot odor. Moreover to the benefits above, Garra Rufa Care provides a “micro-massage” therapeutic effect providing psychological comfort when the fish bites produce a feeling of comfort³⁰.

Conclusion

Garra Rufa Care intervention was effective in reducing itching complaint in the elderly with pruritus, without any side effects. Providing Garra Rufa Care intervention was also effective in reducing anxiety level in the elderly with pruritus, on the other hand, decreasing anxiety level was obtained without any side effects. There was an influence of Garra Rufa Care in the reduction of itching complaint and the anxiety level of the elderly with significant pruritus. Garra Rufa Care can reduce itching complaint, so that reducing anxiety after the intervention.

Ethical Clearance: This research has passed the ethics test with number 501-KEPK by the health research ethics commission of the Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia.

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