

# Kolcaba's Theory of Comfort: Effects of *Garra Rufa* Fish Intervention Towards the Comfort of Elderly Dermatitis Patients

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**ABSTRACT---Background** Contact dermatitis in the elderly is chronic and recurrent, which can be caused by an immune decrease in the elderly, causing them to be more vulnerable to the exposure of contact dermatitis. *Garra Rufa* fish intervention with environmental modification according to Kolcaba's theory is an intervention that can be given to clients with skin diseases, one of which is contact dermatitis.

**Purpose:** This study aims to analyze the effect of *Garra Rufa* intervention on the comfort level of the elderly with contact dermatitis.

**Method:** The design used in this study was quasi-experimental design of the intervention and control groups with pre-test and post-test. The respondents of this study were 22 people with contact dermatitis. Respondents were selected through purposive sampling. Data were collected using an ordinal questionnaire with Wilcoxon and Mann Whitney statistical tests. Wilcoxon Signed Rank Test and Mann Whitney U Test have a significant level of  $p < 0.05$ .

**Results:** The results of this study showed a change in the comfort level ( $p = 0.002$ ) of the elderly treatment group, while the control group showed ( $p = 0.317$ ). Mann Whitney U Test Results show ( $p = 0.000$ ). There were differences in comfort levels between the intervention group and the control group ( $p = 0.000$ ).

**Conclusions:** *Garra Rufa* intervention with the Kolcaba nursing care model can provide a relaxed sensation that increase the comfort of elderly who have contact dermatitis.

**Keywords ---***Garra Rufa, Contact Dermatitis, Kolcaba Theory, Comfort, Elderly,*

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## I. Introduction

Dermatitis is a skin disease that often attacks the elderly and requires special attention(1). Someone who suffers from dermatitis experience symptoms of itching, erythema, scaly skin and over time it will appear swollen, in which if it is scratched continuously, it will cause blisters(2). The symptoms of pruritus or itching caused by dermatitis can interfere with elderly's resting time(3). Research mentions that pruritus or itching in the elderly due to dermatitis can have a negative impact on their comfort and health aspects, especially the ability to carry out daily activities and to mobilize(4). Itching that is left unchecked and not immediately treated in the elderly will result in negative impact such as scratching scar that can cause ulceration of the feet(5). The ulcer can then develop into an infection and worsen the skin condition in the elderly. In addition, poor foot hygiene can cause discomfort, pain and infection(6).

The number of elderly patients with pruritus has increased gradually in some countries(7). In 1982, dermatitis became one of the top 10 occupational diseases. The United States Bureau of Statistics noted that in 1988 dermatitis

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caused about 24% of all illnesses originating from the workplace(8). In Indonesia, the prevalence of dermatitis is still the highest among 8 hereditary diseases, especially in the Wakatobi and Southeast Sulawesi regions(9).

Meeting the comfort needs of the elderly is very important(10). Dermatitis in the elderly causes physical comfort disorders such as itching which can also result in sleep disturbance and psychological comfort disorders, decreasing their self-esteem due to scaly and reddish skin(11). *Garra Rufa* fish intervention is seen to be able to release the enzyme dithranol that can increase comfort level(12). However, the influence of Kolcaba's nursing care model with *Garra Rufa* fish intervention towards the comfort level of the elderly with contact dermatitis still needs to be studied.

The elderly is more susceptible to the incidence of contact dermatitis. This is due to the formation of epidermal filagrin which reduces natural moisturizing factors and reduced skin hydration in the stratum corneum, thereby causing the skin to become more dry and scaly(13). Skin aging that occurs in the elderly will show thinning of the epidermis and there is a leveling of the epidermal-dermal link. Decreased immune response in the elderly, especially those mediated by immune cells, can make them more vulnerable to irritant exposure(2).

Research says that treatment intervention with *Garra Rufa* can improve the level of physical comfort, psychospiritual, and socio-cultural environment in the elderly with dermatitis(14). *Garra Rufa* intervention is a fish intervention treatment method that has been used for a long time in Turkey, the treatment involves the patient's feet which are left bitten by fish(15). *Garra Rufa* has the ability to provide health and comfort benefits to humans, which is able to reduce the effects of dermatitis(12). If someone who has skin problems do *Garra Rufa* fish therapy, then the fish will spontaneously swarm the skin that contains many dead skin cells. When a fish sloughs off dead skin cells, it simultaneously secretes *dithranol (anthralin)* enzyme which can smoothen the skin if done several times. Other functions are useful for inhibiting skin growth that is too fast, increasing skin moisture, improving blood circulation, reducing and blurring scars, helping skin rejuvenation, making skin smoother and cleaner(12).

Based on this background, this study aims to determine the effect of the Kolcaba nursing care model with *Garra Rufa* fish intervention towards the comfort of the elderly with contact dermatitis.

## II. Research methods

Data was collected at nursing homes. The study was conducted for three weeks with a duration of five minutes for each session. This study applied *quasi-experiment with pre-test and post-test control design*. The *pre-test* was first carried out treatment was given, and *post-test* was done after giving the treatment. The number of samples in this study were 22 elderly.

Inclusion criteria in this study include:

1. Respondents suffering from irritant contact dermatitis
2. 60 years or older
3. Able to communicate well

While the exclusion criteria in this study include:

1. Elderly who has dementia
2. Elderly who are not willing to become participants
3. The elderly who suffer from allergic contact dermatitis

The instrument used to determine the level of comfort of respondents was the Shortened General Comfort Questionnaire in the form of an ordinal questionnaire, consisting of 24 questions. The question consists of three types

of comfort, namely relief, ease, and transcendence. Each type of comfort covers four contexts of experience namely physical, psycho-spiritual, environmental, and socio-cultural.

Implementation of *Garra Rufa* fish interventions was done for three weeks. Each week, the intervention is carried out for three times with the duration of each session for five minutes. The intervention was carried out in the morning with one day interval between sessions. The intervention was conducted in one of the rooms in the nursing home.

Kolcaba developed an instrument to measure patient comfort, the Shortened General Comfort Questionnaire. The questionnaire described positive and negative items in several columns(16).

The taxonomic structure of Kolcaba's theory of comfort consists of three types of comfort, namely relief, ease, and transcendence; and covers four comfort contexts, including physical, psycho-spiritual, environmental and social. Data processing is carried out after the data has been collected by making an assessment on the questionnaire sheet by scoring answers items that require a score. The collected data was then analyzed using Mann-Whitney statistical test to determine differences in the mean values of the two free groups with a significant degree of  $p \leq 0.05$ . This study also conducted a Wilcoxon Rank Sum Test to determine the comparison of the pre-test and post-test comfort results of the elderly in the treatment group and the control group with a significance level of  $\alpha \leq 0.05$ . This study was approved by the Health Research Ethics Committee of the Faculty of Nursing, Universitas Airlangga (No: 435-KEPK).

### III. Result

Table 1 explains the characteristics of respondents. The highest number of respondents is in the age group of 71-80 years, which is 11respondents (45.83%), and in the group of 60-70 years as many as 10 respondents (41.67%). The gender was dominated by women both in the control group (75%) and the treatment group (58.33%), the total overall female respondents were 16 respondents (66.67%). The last education of the majority of respondents was elementary school, finished and unfinished, both in the control group and the treatment group. In the control group there were 5 respondents (41.67%) who did not complete primary school and 4 respondents (33.33%) whose final education was elementary school. Whereas in the treatment group there were 4 respondents (33.33%) who did not complete primary school and 5 respondents (41.67%) whose final education was elementary school.

Table 2 shows the results of the pretest and posttest in the treatment group. The table shows that as many as 12 respondents experienced a decrease in discomfort from *moderate* and *severe* to *mild*. Wilcoxon test results showed that  $p = 0.002$ , with  $p$  value  $<0.05$  which can be interpreted that the treatment group was affected by *Garra Rufa* fish intervention with the Kolcaba nursing care model for the comfort level of the elderly with contact dermatitis. Table 3 shows the results of the pre-test and post-test of control group in with the value of  $p = 0.317$ , in which  $p > 0.05$  means that there is no difference between *pre-test* and *post-test* in the control group.

Table 1: Characteristics of respondents in UPTD Griya Werdha Jambangan and UPT Tresna Werdha Pandaan in June-July 2017

Characteristics	Control		Treatment		Total	
	N	%	N	%	N	%

Age							
a.	60-70 years old	5	41,67	5	41,67	10	41,67
b.	71-80 years old	5	41,67	6	50	11	45,83
c.	81-90 years old	2	16,67	1	8,33	3	12,5
Sex							
a.	Male	3	25	5	41,67	8	33,33
b.	Female	9	75	7	58,33	16	66,67
Last Education							
a.	Did not finish elementary school	5	41,67	4	33,33	9	37,5
		4	33,33	5	41,67	9	37,5
b.	Elementary school	1	8,33	2	16,67	3	12,5
c.	Middle school	2	16,67	1	8,33	3	12,5
d.	High school						

Table 2: Analysis of Comfort Levels in Treatment Groups at Nursing Homes in June-July 2017

Discomfort Level	Pre-test		Post-test	
	N	%	N	%
None	-	-	-	-
Mild	-	-	12	100
Moderate	6	50	-	-
Severe	6	50	-	-
Total	12	100	12	100
Wilcoxon Singed Rank Test		p=0,002		

Table 3: Analysis of Comfort Levels in the Control Group at the Nursing Homes in June-July 2017

Discomfort Level	Pre-test		Post-test	
	N	%	N	%
None	-	-	-	-
Mild	-	-	-	-
Moderate	2	16,67	2	16,67
Severe	10	83,33	10	83,33
Total	12	100	12	100
Wilcoxon Singed Rank Test		p=0,002		

A total of 12 respondents (100%) in the treatment group experienced an increase in the level of comfort in the pre-test to post-test. 5 respondents (41.67%) in the control group experienced a decline in comfort in the pre-test to post-test, while 7 other respondents (58.33%) in the controls group have the same result; there was no change in the level of comfort between pre-test to post-test. Wilcoxon test results showed that  $p = 0.002$  where the value of  $p < 0.05$ , which can be interpreted that in the treatment group there is an influence of Kolcaba nursing care model with *Garra*

*Rufa* intervention on the comfort level of the elderly with contact dermatitis. The results of the Mann Whitney test between the post-test results of the treatment group and the control group show that there are difference and changes in comfort levels in the treatment and control groups. The comfort level of the treatment group increased, whereas in the control group there was no increase in comfort levels. A total of 8 respondents (33.33%) showed *moderate discomfort*, 16 respondents (66.67%) indicated *severe* discomfort. This shows that the elderly with dermatitis experience a ratio of the level of disability in the range *moderate* and most are at the *severe* level. A total of 12 respondents (50%) showed mild discomfort. While in the control respondents, 10 respondents (41.67%) showed severe discomfort and 2 respondents (8.33%) showed moderate discomfort. These results indicate that the treatment respondents all experienced an increase in comfort after being given the intervention, while the control respondents experienced moderate up to severe discomfort.

#### IV. Discussion

Elderly with contact dermatitis experience discomfort due to interference with aspects of physical, psychological, environmental and socio-cultural comfort. Based on the results of the interview, respondents claimed that the major factors that decrease their confidence are symptoms of dermatitis in the form of itching, erythema and scaly. Skin aging that occurs in the elderly with contact dermatitis will worsen by thinning of the epidermis and a leveling of the epidermal-dermal level. In addition it can be caused by a decreased immune response in the elderly, especially those mediated by immune cells which may cause more susceptibility when exposed to irritant(2). The elderly in the treatment and control groups have moderate and severe comfort levels due to the following 4 factors, physical, psycho-spiritual, environmental and socio-cultural, having the same level of influence.

Based on the comfort level measurement on the pre-test of *Garra Rufa* intervention with the Kolcaba nursing care model, it was found that the in the treatment group, there were 6 respondents (50%) who experienced moderate discomfort, six and six other respondents (50%) who experienced severe discomfort. While in the control group, it was found that the discomfort of 10 respondents (83.33%) is on the severe level and 2 respondents (16.67%) moderate discomfort. Based on the results of the questionnaire, the discomfort experienced by the elderly are caused by physical conditions that are not optimal due to symptoms of contact dermatitis, environmental conditions that are not in accordance with the expectations of the elderly, psychological conditions of the elderly that were saturated due to various causes, and socio-cultural environment in which the elderly are less able to socialize with others. Elderly people living in nursing homes complained about unclean air and water, a pivotal factor in the environmental discomfort in the elderly.

*Garra Rufa* intervention and the the Kolcaba nursing care model shows that after being given an intervention, 12 respondents in the treatment group felt that their comfort level has increased. After the intervention in the control group, 10 respondents had severe discomfort and 2 respondents had moderate discomfort. However, in the control group the opposite happened, after being given an intervention the level of discomfort remained in the severe and moderate categories.

The level of comfort of the elderly with contact dermatitis is influenced by physical, psycho-cultural, socio-cultural and environmental factors surrounding the elderly residence(17). Predisposing factors that play an important role in the elderly with contact dermatitis are various, including exposure to chemicals, genetic factors, gender, age, history of atopy and other factors which is the behavior of respondents(18). Results of *Garra Rufa* fish intervention

showed significant results especially on physical comfort factors, because the symptoms of the elderly with contact dermatitis such as erythema, pruritus and scaly skin were significantly reduced. Thus, making respondents experience the level of comfort that has fulfilled the physical comfort factors.

In terms of psychological comfort, the elderly who experience contact dermatitis can experience lack of confidence and frustration; respondents assume others can observe, comment, ask annoying questions or even avoid the respondent because of the respondent's physical condition. From the result of the questionnaire, it is found that psychological and socio-cultural perception of people will be a stressor for the elderly with contact dermatitis. *Garra Rufa* fish intervention with the Kolcaba nursing care model give the effect of spa therapy on respondents, according to research in Turkey the sensation of relaxation is obtained when the "micromassage" therapy provides psychological comfort since the bites and crowds of fish produce a feeling of comfort(12). In the control group, there was an increase in the score of the questionnaire. However, it was still in the category of moderate and severe discomfort. The results of the questionnaire showed that the average results of the comfort level in the elderly with contact dermatitis in the treatment group has been increased into 100% good or fulfilled. This shows a change in comfort because of the intervention was carried out on the respondent. Respondents with *Garra Rufa* fish intervention in regard to its nursing care models have a sense of comfort in the environment and psychological condition during and after intervention.

*Garra Rufa* fish intervention with the model of Kolcaba nursing care can increase the sense of comfort in the elderly with contact dermatitis. *Garra Rufa* fish intervention with Kolcaba nursing care models improve mood and emotions, thus, causing a sense of comfort. Similarly, in the aspect of physical comfort, *Garra Rufa* fish intervention with Kolcaba nursing care model reduces symptoms of dermatitis. Likewise, in the aspect of environmental comfort, *Garra Rufa* fish intervention with Kolcaba nursing care model provides an ideal environment modification for the elderly. While in the aspect of socio-cultural comfort, *Garra Rufa* fish intervention with Kolcaba nursing model drive the elderly to interact with each other and makes them become confident, increasing socio-cultural comfort.

When *Garra Rufa* intervention with the Kolcaba nursing model was done, a comfortable atmosphere will exist in the minds of the elderly. When the elderly was treated with *Garra Rufa* with Kolcaba nursing care models, visual and kinesthetic function were stimulated. Kinesthetic function is stimulated through the outer skin of the body when the *Garra Rufa* fish "eat" dead skin cells. Stimulation is then transmitted by the afferent nerve to the spinal cord, then to the parabrachial complex, periaqueductal gray, and ends in the limbic system.

Like other studies, this study has limitations including sources of literature on *Garra Rufa* fish, which is still rarely done in Indonesia and the fish samples that require special attention.

## V. Conclusion

There is increased comfort in the elderly with contact dermatitis after the *Garra Rufa* intervention with the Kolcaba nursing care model. The characteristics of elderly respondents with contact dermatitis experiencing comfort disorders, including four types of comfort disorders, are as follow: physical disorders caused by physical conditions that are not optimal due to symptoms of contact dermatitis, environmental disorders due to environmental conditions that are not in accordance with the expectations of the elderly, psychological disorders due to elderly being stressed out and saturated for various reasons, socio-cultural disorders since the elderly are less able to socialize with others.

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