



An Overview of Fish Pedicure/Spa Activity in Madu River of Sri Lanka

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ABSTRACT

Fish spa has provided a treasured experience for locals as well as foreigners who are visiting Madu river estuary located in southern part of Sri Lanka. It has becoming a popular activity in community based-tourism as water based recreational activity. Due to the rapid development in tourism industry prevalent in the country it has a greater potential in expanding further as well as generating foreign exchange and employment opportunities for local people. Therefore this study planned to explore the social and economic importance of fish pedicure/spa activities in Madu River.

The study was a questionnaire survey conducted during the time period of January to April in 2014. Respondents were fish spa operators and local and foreign visitors. All spa operators due to lesser number in operation and a convenience sample of local and foreign visitors (n=200) were interviewed. Data were analyzed using SPSS version 20. Fish pedicure/spa is seasonal: November to April of the year based on the tourist availability and total number of five fish spa centers were in operation in Madu River. Fishes of *Oreochromis mossambicus* and *Oreochromis niloticus* were utilized and the average length of fish was 15cm. The visiting ratio of locals and foreigners for spa was 1:3 in a season. Both local and foreign visitors were willing to pay more than that of pay at present for a spa. Visitors suggested that the length of fish employed, fish stocking density, variety of used fish species and sanitary condition of spa practices should be standardized to make visitors delighted and development of the industry. Furthermore, it is proposed that introduction of a co-operative management system to manage the industry is needed for the sustainability of the fish pedicure industry in Madu River.

KEYWORDS: Fish pedicure, Madu river, socioeconomic, Therapeutic fish, community based tourism.

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1 Introduction

Tourism is a potential industry to diversify economic activities and improve regional economies in developing countries (Silva and Wimalaratana, 2009). Rural people explore different types of products and services to deliver a value to the tourists and hence earn money to support household economy. The fish spa is enormously a phenomenon and also becoming a fashion which utilizes different kind of therapeutic fish species at mid calf stage to nibble the feet that immersed in to an individual tank or a shared one for a time period of 15 to 30 minutes. (Guidance on the Management of the Public Health Risks from Fish Pedicures, 2011). Different names are used in general to identify this experience such as fish pedicure, fish spa, fish therapy, foot massage by tourist guides. The concept has been emerged originally in the indoor fish spas in shopping malls and beauty shops in some regions of the world and later has brought it in to the natural open environment conditions.

In Sri Lanka, fish spa/fish pedicure in Madu river (located in southern part of Sri Lanka and enters to the sea at Balapitiya in galle district) is an newly explored recreational area in eco-tourism which delivers a higher valued service to both foreign and local visitors. Unlike other fish spas found in the world, Madu river fish spas are located in open natural environmental condition.

Tourism industry is developing rapidly in Sri Lanka and Madu river boat safari has been becoming a hotspot for visitors of local and foreign origin. Madu River fish pedicure / fish spa is a value added service as a part of the boat safari and persons who enjoy the safari can be witnesses for the amazing fish spa practices. Safari boats stop at the floating fish cages which are full of fishes and then visitors can treat their feet with extremely unique pedicure techniques. Due to the successful expansion of tourism activities, local and foreign tourist arrivals have been increasing over the years and pave the way for a higher visitor pressure on Madu river natural environment and resources (CEA/Euroconsult, 1997). With the existing increasing trend in tourism development of the country fish pedicure industry could be helpful to enhance the economic development of the country through bringing foreign currency and generating new employments for the local people. On the other hand it delivers the pleasure, relaxation and health benefits to the visitors. Since Madu river spa is the first and only open environmental spa activity taken place in Sri Lanka, it is worth to study the current situation and future prospects of the industry..

2 Statement of the problem

Fish pedicure/spa is a potential economically viable recreational business in line with the expansion of the tourism industry in the country. On the other hand, it has a great potential for generating employment opportunities for the surrounding communities. For Sri Lankans as well as for majority of foreigners all over the world fish pedicure in an open environment is a new concept. Although there are indoor spas services practice in the world no evidence is found in practicing the natural open environment. Sri Lanka Madu river spa is the first and only place where tourist and local visitors can enjoy such an amazing experience in outdoor open environmental conditions. A little attention has been devoted into this industry and therefore, a well planned study is needed to unveil the information on industry, economic viability, environmental consequences, visitors preference and sustainability arrangements of the industry. On the other hand, literature had made remarks on possibilities of disease transmission through this practices and a research study data is needed to verify the situation.

2.1 Objective

The aim of the study is to examine the present status and future prospects of fish pedicure/spa industry in Madu River in Sri Lanka.

3 Literature review

The history of fish pedicure goes back to many decades and in 1917, fish spa or treatment was founded in Southern Turkey and Northern Syria with a rationale of exfoliating and softening of the skin. A Turkish shepherd was discovered this healing property by accident when his injured foot with an open wound was healed by little fishes nibbling and helping to close the wound. Many spas have used this practice as an alternative treatment (Ronca, 2015). First, psoriasis fish therapy became popular in the outdoor hot-springs of two small towns in Turkey called Kangal and Sivas, where the first public "Doctor Fish" pools were opened in 1963 (Grassberger and Hoch, 2006). The treatment for skin

wound/ condition with fish is called Ichthyotherapy (Mohanty et al., 2011). The fish feed or nibble on the affected skin removing the dead skin without damaging the healthy skin. Natural exfoliation of dead skin is one of health benefits of fish pedicure and other than this it gives smoother and complexion blazing skin with very simple moisturizer absorption. Micro massage sensation from these 'fish masseurs' will promote body fluid circulation. Cleansing and softening of skin and lightening of secondary scars are also health benefits of fish pedicure. Also this treatment will help to release stress and tension. The fish is sparsely fed and maintained in hygienic pools.

Further several empirical researchers have carried out research on the effectiveness of fish pedicure due to the recent popularity of fish spas. It has been identified that *Garrarufa* species (a toothless fish) secretes an enzyme which has been shown to be beneficial to human skin. *GarraRufa* can be found in Eastern Europe countries such as Turkey, Syria, and Jordan etc. Over the past few years, fish spas for cleansing of the skin have become a popular and increasingly fashionable treatment in the health care and tourism industry and most popular as indoor tanks used by individuals or shared by many people (Mohanty et al., 2011).

Further work is being done for looking into producing a topical application (Guidance on the Management of the Public Health Risks from Fish Pedicures, 2011). At present *Garrarufa* is mostly using for fish spa treatments in a few countries of Asia (such as Japan, Korea, China, Thailand, Singapore and Malaysia), USA, Ireland and United Arab Emirates. The first official fish spa was opened in the UK in 2010 and later the number of premises were quickly increased. A survey conducted in the spring of 2011 has identified 279 fish spas in the UK, with more planned to be opened over the following months (Wildgoose, 2012). In India, the spa treatments are available in metro cities like Mumbai, Delhi and Bangalore at present.

There is a certain amount of discussion to identify the best species of fish for use in fish spa. Most Spas favor the original *Garrarufa*, which is said to be a gentler fish, removing the dead skin by a suction type nibble rather than just a nibble. Other fish, like the Chin chin, a species of *Tilapia* are also being used in the industry but it is much contempt by people as an inferior fish having teeth and therefore it is not recommended for fish pedicure. (Guidance on the Management of the Public Health Risks from Fish Pedicures, 2011).

On the other hand fish spa can be a risk for public health if it is not maintained in full of hygienic and sanitation procedures. The main public health concern about the use of fish spas is related to the potential for the transmission of infection. This may include bacterial, viral and parasitic infections depending on the route of transmission. There are three potential routes of transmission. They are; fish to person, water to person, and person to person. In each case, if the client has an underlying health condition that reduces the effectiveness of their natural defense against infection, or if there is broken skin, the risk of infection will be increased (Guidance on the Management of the Public Health Risks from Fish Pedicures, 2011). There is evidence that poor water quality, handling and overcrowding can lead to chronic stress, deteriorations in fish health, compromised immune function and mortality (Ramsay et al., 2009). Many apparently healthy fish can harbor pathogens without obvious signs of disease, but when they are subjected to poor environmental conditions outbreaks in fish can occur (Gauthier and Rhodes, 2009). "Outbreaks of disease in fish could potentially increase the numbers of water-borne bacteria and increase the risk of transmission to fish spa clients" (Guidance on the Management of the Public Health Risks from Fish Pedicures, 2011).

Health experts have warned that fish foot spa pedicures could spread diseases such as HIV and hepatitis C. A weak immune system or Psoriasis is particularly vulnerable and should not take part in the beauty craze at all. In which dozens of tiny fish nibble dead skin from customers' feet, the risk of infection for users of the increasingly popular treatment is 'low but could not be completely excluded' (Ramsay et al., 2009).

Fish tank water contains micro-organisms and believes problems could arise from bacteria being transmitted by the pedicure's *Garrarufa* fish, from the spa water itself or from one customer to another if the water is not changed. If a user is infected with a blood-borne virus like HIV or hepatitis and bleeds in the water, there is a risk the diseases could be passed on. When the correct hygiene procedures are followed, the risk of infection is very low. As recommended by the Health Protection Agency (HPA), spa water should be changed after each client (Guidance on the Management of the

Public Health Risks from Fish Pedicures, 2011). According to the existing interferences, all have limitations in the fish spa setting to improve water quality, and there is little evidence that they affect microbiological parameters. However, maintenance of water quality remains important for customer aesthetic considerations and fish welfare. In 10 states of United Kingdom and some Canadian provinces fish spa has been banded because of some reasons including, the risk of diseases, insufficient cleaning of tanks, impossibility of disinfecting or sanitizing live fish and most of the animal scientist claim that the fish used in spas are treated cruelly and keep starve to induce the feeding on death skin of the customers (Guidance on the Management of the Public Health Risks from Fish Pedicures, 2011).

4 Methodology

The study was conducted targeting fish pedicure managers/owners and visitors; foreign and local. Two pre tested structured questionnaires were administrated as direct interviews with owners and visitors. The entire operated fish pedicure centers (05) and 100 of each foreign and local visitor selected in convenience sampling were interviewed from January to April 2014. Information on socio-demographic facts, commencement of the business, capital and recurrent investments, fish farm construction, fish species used and sizes, arrival of visitors, charges for service, contract with boat trip organizers, benefits for community, legislative limitations, environmental impacts and etc were gathered from the owners of fish spa centers during direct interviews. Furthermore data were collected from visitors asking different questions including country of origin, experience and reason for fish therapy, their perception on service, suggestions for improvement and etc. Secondary data were collected from web pages and local news papers.

Collected data were analyzed quantitatively using SPSS software with appropriate descriptive and mean separation techniques. Other data were evaluated qualitatively and suggestions and recommendations were stated accordingly.

5 Results and Discussion

The five fish pedicure/spa centers were operating in Madu River in an open environmental condition year round and the peak season is fallen during the months of November and April. The first pedicure centre in Maduriver was established in 2010 with an idea from a foreigner. He has given the instructions for initiation according to his previous experiences. Later another four centers were established within a three year time period. Fish spa centers were opened at 6.30 am to 6.00 pm throughout the week. On average 15 plots are available in a spa centre and the plot size was varied center to center and ranged in 10' x 6' and 20' x 12'. The wooden platforms which used to walk around the plot were replaced once a year to ensure the safety. All spas covered with nets to protect their fishes from predators such as crows and other birds.

Table 1: Establishment of fish pedicure in Madu River

Centre	Opened year	Source of Idea
1	2010	Foreign visitor
2	2011	Internet
3	2012	Foreign tourist
4	2013	Seen of other farms
5	2013	Seen of other farms

Source: Field survey

Fishes such as Oreochromismossambicus and Oreochromisniloticus being used in plots and the average size of a fish used was 15 cm which ranged from 8cm to 25 cm. Fingerlings of tilapia species which used in spa were purchased from Udawalawa Tilapia Breeding Station which belongs to National Aquaculture Development Authority (NAQDA). They were transported with in an aerated poly sacks. In a spa nearly 6,000 fingerlings were accommodated but due to causalities occurred during the period of growth and stocking the density of fingerlings was reduced. Fishes were fed with imported fish feeds

and unit cost of 1kg of feed SLR 175.00. It was found that 151 kg of fish feed per season were needed for a spa centre which nearly sum of SLR 26,725.00. On the other hand Spa owners used self prepared local feeds for feeding. Three laborers were hired by the spa centre during the peak season but two in the lean season. Of them one labor was used as security personnel during the night time for the protection of fish and nets from the outsiders. Moreover spa owners have contractual agreements with safari boat providers and tourist guides to attract foreign and local visitors for spa activities and paid a pre agreed commission.

Fish spa owners have concerned environmental impacts when establishing spa centers through avoiding building of permanent plots and platforms or lodges. Fish spa operators did not have experience in identification and management of fish diseases as well as precautionary actions needs to be taken if disease outbreaks occur. The main disease reported was blasting of eyes of fishes during the period of saline water inflow with the fresh water.

The number of foreign visitors got spa services during the peak season was higher than that of local visitors. During the peak season on average 5,160 local and 1,800 foreign tourists have visited the site. But in the lean season the number of local visitors has surpassed the foreign visitors and collectively a minimum of 18 visitors have taken the pedicure services per day. Study results revealed that fish spa centers were mostly visited by Russian and European tourists and they represented 60 % of arrivals to the spa center in the season (Figure 1). About 80% of local visitors and 65 % of foreign visitors had no previous experience in fish pedicure. Some of foreign visitors had gained experience in fish spa activity from other countries such as from Egypt, Vietnam, Cambodia and Thailand but in indoor tanks.

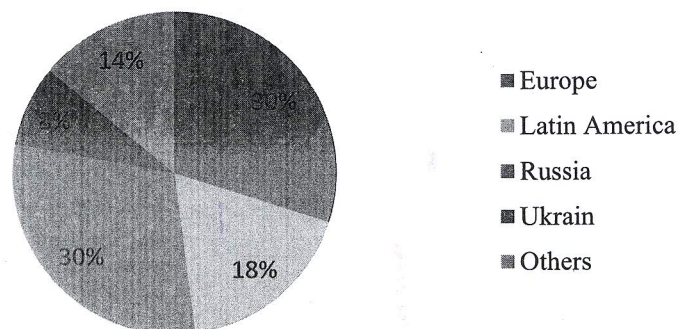


Figure 1: Composition of foreign visitors participated to fish spas(Source: Field survey)

About 10 % of foreign visitors and 30% of local visitors had known about fish pedicure in Madu River. All most all visitors were highly satisfied with the service provided by spa centre and the hospitality arrangement. More than 50 % of the foreign visitors and less than 30 % of local visitors were well known the therapeutic value of fish. Among dissatisfactory factors (Figure 2) size (length) of the fish and the color of the fish were prominent. About 75 % of visitors has stated that the size (length) of the fish was a matter for the satisfaction of the therapy and further mentioned they were hesitated to immerse the feet in to the plots when the size of the mouths were too large and it reduced the area that open to the fish to work on feet hence reduce the quality of the massage. Though there were separate plots for different sizes of fish more than 50% of visitors were immersed their feet in to the plots which contain 8cm-10 cm length fishes. Due to the inbreeding process fishes used in fish spa centers were been deviated from its natural color and so the color of the fish they use were not attractive and visitors said that they felt curiosity whether fish were bleeding or wounded.

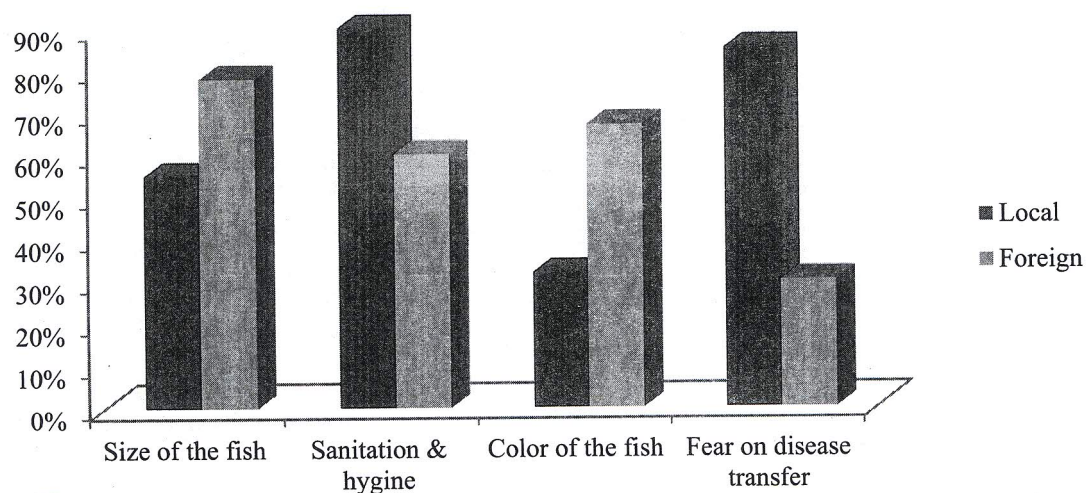


Figure 2: Dissatisfactory facts regarding the fish spa in *Madu* River among visitors(Source: Field survey)

Although local visitors were satisfied with sanitation and hygienic facilities but they were worried about possibility of transfer of diseases through the spa activities. Especially local visitors were nervous on both local and foreigners are sharing the same plot. But foreign visitors believed that due to the natural flowing water it is impossible to accumulate or tap disease causing pathogens and other agents in the plot.

Local visitor paid SLR100.00 whereas foreigners paid SLR 200.00 for a 20 min-30 minutes fish therapy practice. The seasonal income of spa centers generated by providing spa services to foreigners (SLR. 1,032,000.00 per season/spa) was significantly higher ($p=0.04$) than that of locals (SLR. 180,000.00 per season/spa). During the lean season spas earn SLR 39,000.00 and SLR 30,000.00 per month from local and foreign visitors respectively but it was not significantly different ($p=0.06$). Both local and foreign visitors were asked to measure their willingness to pay for a spa practice and estimated as SLR 150.00 and SLR 400.00 for local and foreign visitor respectively. It implies that there is a potential for increasing seasonal income by about 93 %.

The cost of fish pedicure is comprised with fixed and operational cost. The total investment cost included cost for barrels, woods, nets and other items such as ropes, pins etc used in developing a spa centre while other fixed costs such as payment for fish fingerlings and fingerlings transportation cost from hatcheries (Table 2).

Table 2: Fixed Cost of the fish pedicure industry

Description	Costs (SLR)
Barrels	80,556
Woods	73,643
Nets	57,490
ropes, pins etc.	17,295
Fish purchase	96,000
Fish transport	15,750
Total	340,734

Among fixed costs fingerlings purchase and cost of barrels were prominent. The operational cost of fish pedicure industry included the cost of tank preparation, feed cost, maintenance cost and cost for security. Maintenance cost comprised of costs for replacing of woods, barrels, pins, ropes as well as payments for laborers (Table 3).

Table 3: Operational cost of the fish pedicure industry

Description	Unit	Unit price/ value(SLR)	No. of units used	Total cost (SLR)
Tank preparation	Day	6,400	15	96,000
Feed cost	kg	175	151	26,425
Maintenance	Day	11,000	10	110,000
Salaries	Day	1000	150	150,000
Total				382,425

Considering the operational income, fixed cost, operational cost, the net income of fish pedicure industry for a season was estimated and shown in Table 4.

Table 4: Net income of fish pedicure center/season

Description	Income (Rs.)
Total operational income	1, 212, 000
Total operational cost	382, 425
Gross operational income	829, 575
Depreciations (capital investment*10%)	34,073
Net income	795, 502

It was found that the seasonal net income of fish pedicure centre was SLR 795, 502 or SLR 132,583 per month. Further the Investment Return Ratio ($IRR = (\text{Net income}/\text{Total investment}) \times 100$) of spa industry was 233, means industry was a highly profitable.

6 Conclusion

The five fish pedicure centers operating in the Madu River at the time the study. It has a seasonal pattern such as peak and lean in parallel with the tourism season of the country. Tilapia fish species are commonly used in spa plots with different length sizes. Madu River is located near to a river mouth saline water influx to the river and salinity levels are increased frequently therefore world accepted fish species that are used in spas cannot be utilized. Visitors ratio of local and foreign in the peak season was 3:1 but in the lean season locals participation was higher. Both local and foreign visitors were wishing to pay more that of they pay now for a spa service. There were some dissatisfied factors on spa and of them size of the fish used was critical. The risk of disease spreading by spa was highly concerned by local visitors than foreigners. The highest fixed cost factor was purchasing fingerlings while the salaries for laborers among operational cost. The fish spa industry is economically viable and net return ration is very high indicating potential expansion of the industry in future.

7 Recommendations

Parameters related to physical features of deployed fish such as length of the fish should be standardized according to the accepted guidelines prevailed and practiced in the spa industry. This could be helpful to avoided oversized fish being used in the plots that is common practice in Maduriver at present. It is recommended to explore the possibility to replace Tilapia species by internationally accepted and recommended species to the industry. This will paw the way to attract more visitors into the industry. Welfare of fishes used in the spa is another important aspect to be concerned of them stocking rate is critical, by doing this maximum growth of fish could be achieved.

Sustainable utilization of natural environment should be promoted by introducing rules and regulations for the industry in the context of environmental protection and management of spa centers. This could be helpful to institutional collaboration and promotion of spa recreational activity in Maduriver. It is

further recommended that further studies need to be carried out to explore the industry prospects in future.

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