

Traditional knowledge and coping strategies of *Muthuvan* tribe in Tamil Nadu: A study of narrative based FGD on COVID-19

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Abstract

The COVID-19 pandemic has highlighted the importance of Traditional Knowledge (TK) in protecting the health of indigenous communities. A study was conducted among *Muthuvan* tribe living in *Muthuvakudi*, Bodinayakanur Taluk, Theni District in Tamil Nadu, under the project of Risk Communication and Community Awareness Building on Science and Health (YASH) supported by NCSTC, DST, Govt. of India, an explorative study was conducted at their settlement. The study aimed to assess the basic understanding, attitude and behaviour during COVID-19 of the *Muthuvan* Community and their indigenous coping strategies. In the mixed-method approach 21 *Muthuvan* tribe participated in survey and Narrative FGD (n=21). Primary data was collected at their hill settlement of *Muthuvakudi* in 2021. The Narrative FGD indicate that they have followed the Tree Shed Self Quarantine (TSSQ) method for isolation of persons who visited nearby towns. Also, the Zootherapy of *Karu Nandu Rasam* [Freshwater Crab - *Travancoriana convexa* (Roux, 1931) (Parathelphusidae) Broth] and herbal braising of *Manathakkali* [*Solanum nigrum* L. (Solanaceae)], *Sundakkai* [*Solanum torvum* Sw. (Solanaceae)] and *Vathakkal* (Braising of Turkey Berries and black nightshade) were their preventive strategy for coping pandemic spread. The quantitative results show the tribal community were aware about transmission of COVID-19 virus, understood the need of extra attention to hygiene and adopted the social distancing for preventing the pandemic. Nobody from the settlement was hospitalised due to COVID-19. Effective communication and dissemination of Traditional Knowledge are critical for preserving these practices during the times of healthcare challenges including pandemic spread.

Keywords: COVID-19 coping Strategies, Crab, *Muthuvan* tribe, Risk communication, Traditional knowledge, Turkey berries

1. Introduction

India has 84 million people of Scheduled tribe, and it is home to almost 50 percent of the world's tribal population. Tribe in Tamil Nadu constitute less than one percent of the total population. As per the 2011 census, the growth rate of ST population is in the increasing trend in the state. During 1991-2001, the growth was at 13.4 per cent. The COVID-19 pandemic has highlighted the importance of Traditional Knowledge (TK) in protecting the health of indigenous communities. WHO (2024) informed that India has committed to establish WHO Global Traditional Medicine Centre. *Muthuvan* tribe in Tamil Nadu, India have their unique strategies to overcome challenges of

health and wellbeing. *Muthuvans* settled in a few parts of the Western Ghats of Kerala; they are called “*Malayalam Muthuvan*,” and those who live in Tamil Nadu are called “*Tamil or Pandya Muthuvan*”. *Muthuvans* from *Muthuvakudi* belong to *Pandya Muthuvans*.

Muthuvans are also known for their reluctance and hesitation, living in their remote location and not being integrated into mainstream society. They believe that their native is Madurai, and they later migrated and settled in hilly areas of Western Ghats in Tamil Nadu and Kerala. The name '*Muthuvan*' is thought to mean "the person who carries weight on the back," representing their traditional

practices. It is also believed that they were carrying *Meenakshi Amman* (Goddess *Meenakshi*) on their back while they went to their settlement, hence they were named after this (Cherian *et al.*, 2018). *Muthuku* means back, *Muthuvans* carried their children and their goods on their back. They also worship “*Kannagi*” (Ilañkōvatikal and Daniélou, 2009) as their goddess.

They believe that the spirits of their ancestors are to be the first migrants to the hill forests (Adivasi Awaaz Project, 2017), they speak slightly two different dialects. *Muthuvans*, like other tribal communities, have a natural understanding of indigenous healing practices using herbs and plants available in their hilly areas. This knowledge is passed down through generations and used even during the times of COVID-19 pandemic spread.

Muthuvans rely upon their own practices of healing for fever, cough, body aches, etc., they have knowledge on plants and zootherapy and they integrate them into their daily life. As they are in the hilly area, which is not connected by road from *Kurangani*, 6 Kms from their hamlet. As there is no road connectivity, the access for healthcare is also very limited. They only approach medical attention and visit hospitals in nearby towns. *Muthuvans* till today carry their children on their back to travel distances. Plants naturally grown in the areas were used by them as food and for healing. The study was conducted among *Muthuvan* tribe living in *Muthuvakudi* near *Kurangani* in Bodinayakanur Taluk, Theni District in Tamil Nadu, to understand their indigenous knowledge and awareness to cope COVID-19 pandemic.

The objective of the study is to assess the basic understanding, attitude, and behaviour during COVID-19 of the *Muthuvan* Community and their indigenous coping strategies with herbs and Zootherapy through, narrative Focus Group Discussions (FGDs) and Survey Questionnaire.

Under the permission of the Pharmaceutical Society of Great Britain, Rai Bahadur and Kenny Lall Dey' published "The Indigenous Drugs of India," in 1896, which served as a comprehensive reference for medicinal plants, their pharmacological applications and indigenous Indian drugs in India. "In 1981 Giri Raj Gupta published two volumes of the Social Cultural Context of Medicine in India where social scientists and Botanists contributed on indigenous medicine system" (Jakka, 2008).

Tribal communities often use their food for their well-being. In communities where physicians and chemists are not accessible, people rely on their home remedies, which are traditional and Indigenous information, knowledge, memories, and beliefs transmitted from generation to generation in the community (Amiri *et al.*, 2020). The *Muthuvan* tribal community also believes that food is the reason for their issues of well-being, and the same will be the solution for their ill health. Roberfroid (2000) asserted that food can be regarded as a pharmaceutical if it improves bodily processes and produces outcomes other

than nutritional ones, such as promoting health and preventing disease.

Vedavathy (2002) argued that tribe's knowledge about the use, properties and efficiency of medicine is obtained from nature and their experience. In a study on the wild plants that the Gujjar and Bakarwal tribe eat to meet their basic needs, Khan *et al.*, (2024) explain that through oral communication, indigenous people pass down their traditional knowledge from one generation to the next. Each community food has its own story, including its nutritional benefits and culinary. *Muthuvans* also have the same, and elders in the settlements have their own stories. The traditional knowledge of tribal communities has been shared among Kani tribals through food (Nagarathinam *et al.*, 2024), which is also present in the culture of *Muthuvans*. With traditional knowledge, *Muthuvans* often share their experiences of well-being when food is being shared.

Tribal communities use flesh foods such as crab, singhi fish, snails, and freshwater mussels to get a good source of calcium and protein. (Ghosh *et al.*, 2015). Elders from *Muthuvan* have extensive knowledge of both plants and animals. They have a great extent of understanding of the forest and utilise herbs as medicine (Narain, 2024). Freshwater crabs are eaten by communities as a source of protein and for medicinal purposes. In a study of Ethno-medical importance of crabs, Rana (2018) mentioned uses of crabs as medicine among Jirel tribe of Nepal, ethnic group Magar of central Nepal, Nagaland tribe, and other groups in Tanzania, Kenya and Egypt. Burnt crab ashes are used to cure injuries, cough, asthma, liver disease, jaundice, and tuberculosis (Jamir and Lal, 2005). The *Bhuiyan* tribe uses freshwater crab fat after boiling; it turns jelly-like consistency to heal the lip cracks during winter. The tribe believes in the healing properties of freshwater crabs (Tripathi *et al.*, 2024). *Muthuvan* tribe have been using freshwater crabs for their health benefits. Ethnic and traditional food-based treatments not only can prevent and control chronic diseases without showing the side effects of synthetic pharmaceuticals in humans but also do not cause obesity, neurological problems, or cardiovascular disease (Martirosyan and Prasad, 2009). Community health can be enhanced by promoting and educating people about the use of traditional food knowledge (Ghosh *et al.*, 2015).

Muthuvan tribe have also been using greens and herbs as they believe food as a medicine for well-being. They use *Solanum torvum* Sw. (Solanaceae) (Turkey Berry) and *S. nigrum* L. (Solanaceae) (black nightshade) for their health benefits. CABI Compendium (2022) listed that *S. torvum* is categorised under traditional/folklore medicinal/pharmaceutical uses list. In a pilot study to understand about the benefits of Turkey Berry conducted by Appiah *et al.* (2023), there was a positive impact on the haemoglobin levels and cognitive performance of the interventional group. Chen *et al.* (2022) asserted that *S. torvum* is used to treat a wide range of illnesses, including

high blood pressure, wounds, anaemia, bacterial and viral infections. However, modern research supporting its efficacy for these purposes is mostly limited.

Zeeshan *et al.* (2023) has studied that *S. nigrum* has traditionally been used for the prevention of symptoms such as discomfort, inflammation, infections, and problems with the gastrointestinal tract. Overall, their comprehensive study reveals the varied therapeutic qualities of *S. nigrum* that demand further exploration. Hill (2020) reported that *S. nigrum* exhibits a wide range of therapeutic potential, including antitumor, anti-inflammatory, antioxidant, antibacterial, and neuroprotective activities both *in-vivo* and *in-vitro*. The indigenous knowledge is often based on their belief system and traditional practices. If the healing method based on the food, it is safe and the negative impact will be minimal.

2. Materials and methods

Muthuvakudi is located above the hills of *Kottakudi* in Theni district. There is no road connection between *Kurangani* and *Muthuvakudi*. The path can only be used by Jeeps. No two wheelers and other vehicles climb the path which has rocks and streams on the way. *Kurangani* village is situated in the Western Ghats of Theni District in Tamil Nadu, which is around 109 kilometres from Madurai City. On October 1st, 2021, a team visited the *Muthuvakudi* hamlet for this study. A mixed-method approach was employed, combining quantitative frequency for descriptive analysis and Narrative focus group discussions (FGD) to explore their knowledge systems with Prior Informed Consents (PIC). In earlier research conducted by Gjessing *et al.* (2023), it was asserted that storytelling is a useful research approach to include temporal dimensions in cross-sectional qualitative data collection. The *Muthuvan* tribe from *Muthuvakudi*, *Kurangani*, Bodinayakanur Taluk, Theni Dt., Tamil Nadu participated in the survey and narrative FGD of n=21. Nobody from the tribal community of 25 families was affected by COVID pandemic. This Narrative FGD is an integrated approach of both Oral Narrative and Focus Group Discussion. This method was invoked because many participants were reluctant to speak, and when others spoke, they did not interfere. Hence, they

expressed the stories of their tough time with their own expressions. In this tribal research, combining both Oral narrative and FGD can explore how individual experiences are perceived within the *Muthuvan* community context. In health communication research, it can be understood through personal experiences alongside the shared perspectives of a Muthuvan tribal group. A questionnaire was also implemented to collect quantitative data to describe the basic knowledge, behaviour and attitude.

3. Results and discussion

Results of the study have been given in five items, where the first results based on the survey and FGD were conducted.

3.1. Awareness, behaviour and attitude

Though the *Muthuvan* tribe is living in a remote location, they are aware of the transmission of the COVID-19 pandemic and preventive measures. They had an understanding on asymptomatic transmission of disease. Respondents' answers were positive for four questions out of six questions on awareness about COVID-19. Many of the respondents accepted that COVID-19 is transmitted by coughing, sneezing, droplets in the air and on surfaces and washing hands frequently with water and soap can reduce the disease cause, and only a few entries were observed with knowledge gaps. They are aware that COVID-19 can be prevented by wearing masks, and social distancing and isolation of people with COVID-19 is an effective way to reduce the spread of the virus (Table 1).

The behaviour descriptions (Table 2) among *Muthuvan* tribe during the period of the pandemic show positive. Respondents answered positively for all the four questions. They accepted and adopted the social distancing of extra attention to personal hygiene and cleanliness and practised isolation when need. Most of them accepted that they used face masks when they were out.

The attitudes of *Muthuvan* towards the COVID-19 vaccination were mixed (Table 3). Respondents answered positively for one question and mixed response for two questions. The *Muthuvan* tribe trusted the pharmaceutical

Table 1. Understanding basics of COVID-19

Sl. No	Awareness*	Yes	No	Don't know
1	COVID-19 can infect people even without symptoms	4	3	14
2	Washing hands frequently with water and soap can reduce the disease cause	21	0	0
3	COVID 19 is transmitted by droplets in air and on surfaces	21	0	0
4	COVID 19 is transmitted by cough and sneeze.	21	0	0
5	Isolation of people with the covid-19 virus is an effective way to reduce the spread of the virus.	21	0	0
6	COVID 19 can be prevented by Vaccine	3	16	2

*Note: Based on one-time survey conducted on 01.10.2021

Table 2. Respondents' description on behaviour, hygiene and social distancing

Sl. No	Behaviour*	Yes	No	Don't know
1	During COVID-19 times, I give extra attention to my personal hygiene than usual	21	0	0
2	To prevent contacting and spreading COVID-19, I use face masks all the time whenever I am outside of my home	16	4	1
3	To prevent contacting and spreading COVID-19, I follow social distancing	21	0	0
4	When suspecting infection with COVID-19, I will isolate myself	19	2	0

*Note: Based on one-time survey conducted on 01.10.2021

companies and their vaccines and expressed that vaccination will not have serious long-term effects. They also followed the guidelines issued by the government. Around 12 respondents feel safe after being vaccinated, but there is a level of scepticism, with around 8 people expressed doubts and most of the respondents felt about the future risk of the same.

3.2. Narrative Focus Group Discussion results

During the pandemic, wild edible plants were part of the food of the *Muthuvans*. The faunal species Freshwater crab - *Karu Nandu* - *Travancoriana convexa* (Roux, 1931) (Parathelphusidae) (Plate 1.a&b) was used to prepare the remedy and prevent the possible symptoms of cold, fever and cough. Among two types of crabs in the stream - *Karu* crab and *Varakali*, *Karu* crab is only used for medicinal broth (Personal Communication, Ayyappan, 01.10.2021). Crabs were mostly hunted by males in the community in river streams, which were crushed, put ginger along with bird's eye chilli and make the remedy by boiling them together. The extract of crab broth was given for consumption. The practice was prevalent among the whole population of the settlement. A community member revealed that the local concept of medicine that

our ancestors have told us that eating crab is a good controlling measure of any disease, so we made *Karu Nandu rasam*. (S. Ramar, Personal Communication, 01.10.2021). The wellbeing effect is related with body strengthening and symptoms associated with cold. This shows lineage, tradition, and community cultural heritage in protecting their health.

3.3. TK - *Manathakkali sundakkai vathakkal* (braising of turkey berry and black nightshade)

The wild edible plants, black nightshade, *S. nigrum* (Plate 1d) and Turkey berry, *S. torvum* (Plate 1c) were collected from the forest area. The respondents in the FGD mentioned that fruits of the turkey berries and whole leaves with tender parts of stems of black nightshade were used to prepare the remedy. It must be braised with water and green. Then the taste is maintained. (Personal Communication, R. Rajkumar, 01.10.2021). Due to the wealth of flora, it can be easily included in the regular food. As it has a delicate taste of greens, children and elders of the community consumed. The small '*Sundakkai*' consumed with greens. The possible remedies are from cold and fever and even from cough. "If anybody gets affected by a headache or fever, we usually give them

Table 3. Attitude responses towards vaccine

Sl. No	Attitude*	Yes	No	Don't know
1	I trust the pharmaceutical companies for producing a safe and effective vaccine	20	0	1
2	I feel safe after being vaccinated against COVID-19	8	12	1
3	There are serious long-term effects of the COVID-19 vaccine in the future	4	16	1

*Note: Based on one-time survey conducted on 01.10.2021

Table 4. Traditional food source of *Muthuvan* tribe during COVID 19

Sl. No.	Common name	Local name	Scientific name	Medicinal use*
1	Freshwater crab	<i>Karu Nandu</i>	<i>Travancoriana convexa</i> (Roux, 1931) (Parathelphusidae)	Cough, fever and cold.
2	Turkey berry	<i>Sundakkai</i>	<i>Solanum torvum</i> Sw. (Solanaceae)	Cold, headache and fevers
3	Black nightshade	<i>Manathakkali</i>	<i>Solanum nigrum</i> L. (Solanaceae)	Cold, headache and fevers

*Note: Based on the Oral narration by *Muthuvan* tribe.

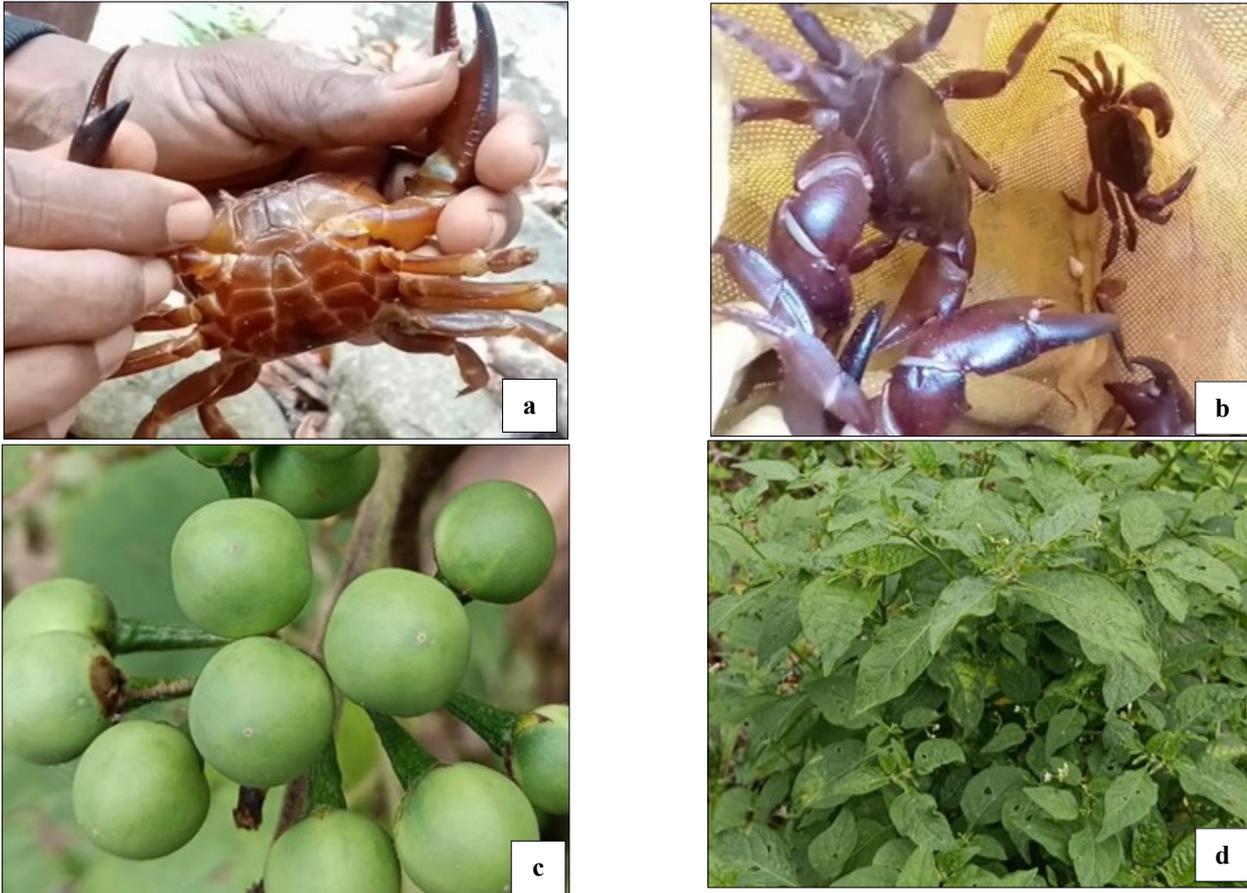


Plate 1. a & b. *Travancoriana convexa* [Karu Nandu]; c. *Solanum torvum* Sw. [Sundakkai]; d. *Solanum nigrum* L. [Manathakkali]

pepper and dried ginger” (Personal Communication, R. Pandishwari, 01.10.2024). These commonly available plants naturally occupied their culinary practice to cope up with the pandemic situation.

3.4. Traditional practices: Foraging with indigenous knowledge

Now *Muthuvan* tribe do not cultivate ragi or millets, as bisons damage it even if they plant it. So, locals are not cooking porridge nowadays. For preparing *Kali* (pudding), small millets are bought from the shops (Personal Communication, M. Jeyalakshmi, 01.10.2024). For food, mostly local tribe are dependent on their forage earlier. After the Forest Rights Act came into force in 2006, the forage was also limited. Now local community members have been working in cardamom, coffee, pepper, kapok plantations farms as labourers. This shows the change in the lifestyle, livelihood and socio-economic dependence. During the lockdowns, they didn’t go to work and never stayed inside their home; but used to roam around the forest for forage. Tribal community members used to go to the river, go to the forest, and collect some greens, jackfruit, small tomatoes, chillies, and some other ingredients to make food. Because of the lockdowns, community cannot go down to the city to buy groceries, but daily household work was not affected

because of foraged food items. Because of all these, no one in our village was affected by COVID-19 (Personal Communication, S. Ramar, 01.10.2021). This asserted that *Muthuvan*’s foraging capacity to collect food and herbs helped them resilient against pandemic.

3.5. TK: Tree shed self-quarantine

The *Muthuvan* tribal community had knowledge to administer themselves with their own governance experience. They can organise themselves and adhere to the norms of the elders informed to the community.

During the spread of COVID-19 pandemic, meeting was organised by themselves in the *Muthuvakudi* village. It was organized to restrict people from going out and coming into village. Also decided not to go down to cities to purchase goods. Even if anybody goes, they should buy from one or two shops and isolate themselves when they come back. Because of these precautions, nobody in our village was affected by COVID-19 (Personal Communication, S. Ramar, 01.10.2021). Community members didn’t have much fear staying here because no one was in contact with other villages. But when go down to the towns, we fear about the spread. Because of the fear, we wore masks, washed our hands, and used sanitizers. (Personal Communication, S. Ramar, 01.10.2021).

In the *Muthuvakkudi* forest, a shed was built under a Tree. People who came back to the village from outside used to stay there for 1-2 days and then enter the village. In the village, it was decided that nobody would go out of the village or no outsiders would be allowed in the village (Personal Communication, Ayyappan, 01.10.2021). The tree was a place identified with Self Quarantine.

The study focused to understand the awareness about the COVID-19 and the strategies adopted during pandemic to cope the situation among *Muthuvan* tribe. Unlike centuries ago, tribal public have been visiting nearby towns and cities for their livelihoods. Now, they have not completely depended either on foraging foods or their own agricultural practices for their livelihood. As labourers, tribals need to go to towns along with farm produces and to purchase groceries and other required items for their families.

The study identified that the *Muthuvan* community was aware of the pandemic also their behaviour descriptions were positive. They were able to in touch with their contacts through mobile phones. The study also recorded that their indigenous knowledge on foraging had given them the opportunity to cope up with situations. The forage capabilities had given them the opportunity to hunt for the freshwater crab - *Karu Nandu* and *Kallutti* Fish, which is like *Channa striata*, and to harvest natural grown Turkey berry and black nightshade for their food as well as health protective measures.

The same indigenous culture of using crab as medicinal value is seen among other tribe communities, “the crab derived remedies has been in practice among *Bhuiyan* tribe in Odisha” (Tripathi, 2024). Obu (2020) explained that Turkey berries can also help get rid of phlegm and mucus. Dry berries and make into powder, this will dry up the mucus. They help with asthma, coughing, lung inflammation, etc.

Turkey berry's polyphenol antioxidants can help to eliminate phlegm and mucus from the lungs and nasal passages, which may help with asthma and respiratory problems. Modern pharmacological studies have shown that *S. nigrum* has antitumor, anti-inflammatory, antioxidant, antibacterial and neuroprotective activities. It also has antihypertensive, immunomodulatory and antiviral activities.

Alu Kurumbas distinguish between sickness, illness and disease. Their belief system embedded in symbolism and is directly linked with the ancestor's ethics within cross cultural sensitivity into medical knowledge (Jakka, 2008), *Muthuvans* also believe in their ancestor's ethics when they practise their indigenous knowledge on herbal (Table 4) medicine during this pandemic times.

4. Conclusion

Muthuvan tribe have benefited from the traditional knowledge of their ancestors, which has been passed through their lifestyle, oral narratives, and communication.

This study found that they have basic understanding, positive behaviour descriptions and mixed perception on vaccines. The key coping strategies of *Muthuvan* tribe which will also be helpful to their future generations. The foraged *Karu Nandu Rasam* (freshwater crab broth), *Manathakkali Sundakkai Vathakkal* (braising of turkey berry and black nightshade) foods and tree shed self-quarantine are their preventive strategies from their traditional knowledge of *Muthuvan* tribe during the times of pandemic.

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