

Medical perception of indigenous rice production in Ndop – Northwest Region - Cameroon: Trends, Constraints and Opportunities

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ABSTRACT

Although rice production and expansion in Cameroon in general and Ndop in particular has receive considerable attention, less is mentioned about the sickness and medical values of rice. However, rice production in Ndop has given opportunities for the local people. It has helped to increase its opportunities for expansion and production with the increasing demand for food as rice serves as a major food worldwide. On the contrary, disease such as running stomach, fungi and others often comes up because of rice consumption. This write up sets to presents the trend, constraints and opportunities for rice consumption. Though a valuable food, eaten all over the world. Through the descriptive approach with qualitative design as our research method, we were able to put down this data collection. We used techniques such as: interviews, Focus Group Discussions (FGD), observations, life history and iconography. Tools such as interviews guide, Focus Group Discussions guide, observation checklist, and life history guide, amongst others enable us to reach the objective of our research. A total of 24 men and women participated in 04 FGDs conducted in the 04 villages of Ndop. Meanwhile, 50 people were interviewed, 10 from the four villages of Ndop as well as UNVDA workers. A total of 08 life histories with some key informants were piloted.

Findings revealed that, rice farming is the major cause of illnesses like fungi, pneumonia and body aches while its consumption at times causes running stomach, diabetes and constipation. According to the Ndop district hospital 2015, 30% of the total number of patient received in the hospital every month had illnesses related to the consumption of rice. However, rice equally brings about solutions to many health problems like the rice stock, used for brushing and treatment of the teeth. *Par boiled* and unpolished rice controls diabetes. Boiled rice water treats eye problems. Water from boiled rice helps in reducing body joint pains as well as stop running stomach and help to reduce/stop bed-wetting in children.

Keywords: Medical perception, indigenous rice production, Trends, Constraints and Opportunities, Ndop, Cameroon.

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INTRODUCTION

People worldwide need food and good health that is why food production is very necessary for human sustainability. Lack of food or insufficient food intake can impact enormous consequences to individuals. Some of these are; low faculty development, low productivity, poor health morbidity and eventually mortality [1, 2]. This is to affirm that without food and medication, humans will have challenges in development, so they need food and health care for existence and survival. Rice is one of the most important food crops that are produced in the world. UNCTAD [3], rice is the World's second largest produced cereal. It is produced on every continent but for Antarctica. Rice provides some nutritional values such as protein, mineral, vitamin, and fibre to the body. David Dawe[4] pointed out that, rice is one of the most widely grown crops in the world, and it is the most important food crop for the poor. Rice (*Oryzopsisativa*) was probably first domesticated in the Yangtze River Valley in China perhaps about 7,000 years ago, after which it spread to other parts of Asia. Much later, it spread to Europe, possibly through Alexander the Great's expedition to India in the 4th Century BC. Portuguese and Spanish colonists then introduced it to Latin America. The first record of cultivation in North America was in 1685 in what is now South Carolina. It may have been carried to that area by African slaves [5]. On the other hand, Ngwa[6] cited by Fonjong[7] argues that, one of the important food crops in the world ranking second is rice to wheat. He said, though in the long history of cultivation, Cameroon is yet to meet its international demands for the food crop. When compared with other sub Saharan countries like Cote d'Ivoire and Senegal which made production capacity of about 300,000 and 250,000 tons respectively. In a similar perspective, Ngwa[6] explain that, rice production was introduced in Ndop in the 70's with the creation of the Upper Nun Valley Development Authority (UNVDA) by presidential decree No 70IDF/529 of September 1970. The reason why Cameroon government's decision to create this UNVDA was to improve on the agricultural sector, reduce rural exodus and also to bring development in the Ndop

region that was neglected since the colonial period. Still, this author outlined the historical evaluation of the changing fortunes of the rice sector in the Ndop plain under the UNVDA. It started in 1970 when the introduction of rice in the locality had greatly affected the life of the community. It worked on the land policy, market strategy, public relations and with this, sustainable development could be achieved.

About 2.5 billion people in the world depend on rice as their main source of food. Moreover, rice is responsible for over 2 billion jobs in the world. Asia alone has over 200 million rice workers. Over 6000 local residents in Ndop got direct recruitment due to rice production [8].

Definitions

In Cameroon rice is being cultivated in the three ecological zones i.e. forest, grassland and savanna. Here we have high or upland grown rice like Nerica 3, 6 and 8 with low/wet land rice variety rice like Nerica L60 and others. Rice is cultivated in Cameroon in places like the SEMRY in Yagoua Far North Region, Makenene in the Centre Region and the Ndop Plains. Other areas like Osing village in Manyu division, Southwest Region are recent areas that rice cultivation is on its trial phase. For the purpose of this paper, we are interested in the cultivation of rice in Upper Nun Valley Development Authority (UNVDA) in the Ndop plains and the health issues link to its faming and consumption.

Before then, man had depended on other food crops for growth. Rice production came to boost population growth. Given the energy, time and money people put in rice production, an indication of the importance this crop has. For about 3.3 billion people living in Asia, rice provides 35-80% of their total calorie intake. Crop production is not done merely for consumption but equally because of the culture and geographic location of the people involved in its production. The people of Ndop adopted rice cultivation in their cultural system and contextualised it. This goes in line with Mbonji[9] who sees culture as a sum of solution, a human spirit, a way of life of a given people use in solving their daily problems of eating, drinking, sleeping, shelter and making love... That is to say, the choice of crop and where to cultivate depends on the culture of the people. Rice was produced in a very small quantity in Cameroon, so the government with intension to increase production created the UNVDA in 1970's.

Rice is produced to solve principally feeding problem but in the course of this production, we observe some sicknesses cause by this activity. Where rice is produced depend on the geographical location of the people. Nkwemoh, (1999), cited by Mphoweh[8] who says, these activities were judged as being accountable for the food security and abundance in the area. This success is enhanced by the favourable edaphic and climatic factors which also prevail in the region. However, with increasing population density, new farming strategies have been adopted and are seen to be detrimental to the environment and the natural vegetation cover. An example is the practice of bush burning, intensive use of fertilizers and seasonal food crop rotation in the wetlands, which gives no opportunity for the natural vegetation cover to regenerate.

Rice plant

A rice plant is a monocotyledonous cereal crop that has narrow and tapered leaves. It grows from about 60 to 180cm tall in the moist areas [10]. Several tillers emerge from each stem that grows to lose clusters of branching stems called panicles. From the top of each stalk is a small green flower hanging from each stem. When the plant is mature, the stalk panicle droops. The amount of productivity depends on the species.

Rice grain

A kernel or grain of paddy is a seed that contains an embryonic content. The hull, a hard protective covering that surrounds the bran. After the husk is a transparent coverage called the bran, rich in protein, vitamin, minerals and oil Kelbi[11]. Beneath is an endosperm comprising of starch, the energy source use by the germinating seed. The bran and endosperm is the edible portion of the grain.

Background of Research Area

Ndop is the headquarters of Ngoketunjia Division and itself is a sub-division amongst the three sub-divisions that make up the Ngoketunjia division in the North West Region of Cameroon. Geographically, Ndop lies approximately from latitude $5^{\circ}37' N$ to $6^{\circ}14' N$ of the equator and from longitude $10^{\circ}23' E$ to $10^{\circ}28' E$ of the Greenwich meridian. It is located some 42Km (26Miles) away from Bamenda town on the Bamenda-Nkambe through Kumbo stretch of the ring road. Administratively, it is bordered to the North by Babessi Sub-division, to the South by Balikumbat Sub-division, to the West by Tubah Sub-division and to the East by Bangourine Sub-division in the West Region. Ndop is made up of four villages that is, Bamessing also known as "Nsei", Bamali also called "Pechop", Bamunka also known as the "Munkoh" and finally Bambalang equally known as the "Bong Yakum". The topographic landscape is low-lying with an average altitude of 1200m above sea level. The extension of the Oku Mountain range stretches from the North where it overlooks the Sub-division with an outstanding hill known as Ngoketunjia hill from which the division got its name. The highest point above sea level in this sub-division is the Ngoketunjia hill with 1500m while the lowest point of about

900m is recorded in Bambalang. The low-lying nature of the area is drained by numerous rivers and streams that accounts for the existence of wetlands. These rivers and streams take their rise from the surrounding highlands, then flow downwards across the Sub-division and empty their waters in the Bamendjim dam. The wetness of this area is of great importance for rice cultivation, irrigation farming, fishing, and grazing and for other domestic purposes Ngwa[6].

Methodological approach

This study is an anthropological type which employs the descriptive qualitative approach. The vital aim of this work is to describe, explore, interpret and analyse the perceptions, attitudes, views, and behaviours when faced with circumstances or significant events. In Data collection we implore the use of techniques like in-depth interview, focus group discussion, observation and life history were implore. This study time frame was from February 2016 to September 2019.

In the case of our work, formal and informal interviews were used with the help of interview guides, recorders to collect data from our respondents. With formal interviews, farmers who are involved in rice production either as main or secondary activity were interviewed. Among our informants, we had technical informant who are mainly workers of UNVDA and the Divisional delegation of agriculture in Ndop. The type of questions we used were opened ended questions which gave the place for informants to express themselves freely so as to be in depth with the information they gave. Informal interview here involved simple discussions with friends, family and relatives during visits, occasions, walk, and at times in meetings. A total of 32 informal interviews were conducted. As such experiences, opinions, altitudes and the feelings of the people concerning culture and its influence on rice production were collected.

FGDs were equally used to have in-depth information on culture and rice production. Six FDGs were conducted with each of the following; the UNVDA officials, UNVDA workers, women who own rice farms, men who own rice farms, labourers and finally, rice consumers. This technique of data collection was very necessary as information on cultural practices, beliefs system, rituals, and rites in relation to rice cultivation were recorded. The FGDS were recorded for further exploration with the help of a recorded.

Theoretical framework

The theory of functionalism is used in this article with focus on the medical role of rice. Functionalism is an anthropological theory that stipulates that, a society operates with a totality of orders or totality of elements that have important functions and in the absence of one, and the society will not work accordingly. In anthropology, the premise of functionalism holds that, the society is linked to a living organism having different parts which function independently but as a whole for the general welfare of the organism. Hence, an organism is able to live, reproduce and function thanks to the organized system of all its parts [2].

According to [2], with Malinowski idea of psychological functionalism, society functions to serve the individual's interest or needs. Also, the idea of structural functionalism and focused on the society as reflected in the different institutions that function to integrate the survival of society. He argued that, a society's economic, social, political and religious institutions serve to perpetuate the society as a whole [2]. For example, he studied the social institutions that function to enhance group solidarity in small scale societies. Nevertheless, we have gone in for Raffclift Brown's approach to explain culture and rice production in Ndop.

In reaction to rice production, we notice that rice and its by-product have a function of food and medicine to sustain human development. We explore the cultural function that rice farming has to the indigenous people of Ndop. We notice that rice have the function of health solutions to many health problems like the rice stock used for the brushing and treatment of the teeth, par boiled and unpolished rice used for the control of diabetics. Boiled rice water for eyes treatment, boiled rice water used to stop running stomach, boiled rice water also used for body joints pains and boiled rice water that stop children from bed wetting. This theory equally stipulates the concept of dysfunctions. That is rice whichis meant to play her initiation function of food and medicine now has a dysfunction. This dysfunction comes in as rice farming brings fort illnesses like fungi, pneumonia and body aches. Rice consumption at times causes running stomach, diabetes and constipation.

This theory shows us that each of the above mentioned elements has a role to play for rice production to be completed. That is to say in the absence of one, the process will not work well which will eventually lead to low production. Therefore to expect normal and high production, the different elements should be put together. Sushil Pandey[4] said for them, it is important for policy and for research to consider whether rice has a special role in African agriculture. Certainly, if past trends hold, it will play an increasingly important role in the African diet, as urbanization and household time constraints favour further increases in consumption. In recent years, imports, made affordable by a low world price, have supported increases in rice consumption in Africa. However, the prospects of higher global

commodity prices and the production potential of modern varieties both support the notion that future market conditions will favour African producers as well.

Typology of rice production in Ndop

When it comes to the classification of rice into families, one can find the following; accompanied by their scientific names.

Table 1: Classification of rice into families

N/S	Rice Name	Rice Scientific Name
1	Kingdom	Plantae,
2	Phylum	Gramineae
3	Family	Poaceae (Formerly Known Asgramineae),
4	Genus	Oryza,
5	Specie: Genus: Oryza,	OryzaSativa (Asian) And OryzaGlaberrima (African).

SOURCE: Adapted by Bonuhche 2016

Couple with this classification of the rice plant, there are many varieties of rice cultivated in Ndop.

Table 2: varieties of rice cultivated in Ndop

N/S	Rice Name	Full meaning
1	TOX	Nontoxic Rice
2	NERICA	New Rice for Africa
3	TAINA	name of the town in japan from which this specie of rice got it name

SOURCE: Adapted by Bonuhche 2016

The UNVDA cultivate TOX (Nontoxic Rice), NERICA (New Rice for Africa) and TAINA which is named from the town in Japan where the rice is cultivated. The Eco-farms; cultivate NERICA (New Rice for Africa) and most of the local farmers still hold on to the old rice species. Nevertheless, some farmers have started cultivating NERICA which is hybrid rice introduced in Ndop by the UNVDA. Apart from these rice varieties cultivated in Ndop at the moment, other varieties had existed since the 1930s which was introduced in Cameroon. These species included, MEGA KILO which is short, red and very sweet, TINGOH that is fat, pink-brown and sweet, DONA has long grains (upland rice) and fairly sweet and finally, MANGA which is very long rice, red in colour and not really tasteful. Balasubramanian [12], NERICA (New Rice for Africa) applies to the rice varieties that come out of this inter specific crossing of the two distinct rice species. Fourteen field tests suggested that the new varieties hold great promise with higher yield potential under a variety of soil and weather conditions. It has more protein, a shorter growing period, and a greater resistance to African pests and diseases. NERICA varieties were developed at the main Mbé research centre of the Africa Rice, through conventional crossbreeding. Africa Rice estimates that the initial research, which focused on upland rice, generated more than 3,000 inter specific siblings, encompassing a wide variety of attributes. By the close of 2005, 18 upland varieties (NERICA1–NERICA18) had been selected through participatory varietal selection (PVS) and on-farm trials by African National Agricultural Research and Extension Systems (NARES) for release in their countries. Rice farm report says rice yields in excess of 1 t/ha without fertilizer in rain fed areas and up to 5.7 t/ha when fertilizers are applied. Africa Rice has also examined rationing yields, that is, a secondary production obtained by leaving the lower part of the rice plant during harvesting. Based on field studies from Dévé, at the savannah zone, Adi Mama *et al.*[13], report that rationing yields ranged from 39% to 13%, potentially pushing the combined yields past 6 t/ha. Kouko (2006), reported in Watanabe *et al* (2021), found similar results from field tests in Kenya. Below are rice varieties that are cultivated in Ndop as of present.

Table 3: Rice varieties cultivated in Ndop with shapes, colour, taste and origin

Names/Brand	Shapes	Colour	Taste	Origin
TOX	Long pin brown	White	Sweet	Japan
TAINA1,2,3,5	Short and round	Pin brown	Sweet, very tasteful	Japonica rice cultivars
NERICA 1,2,3	Long grain	White	Not really sweet	Africa
NERICA 4,5	Short grain	White brown	Not really sweet	Africa
VARIETY 14	Long grain	White brown	Fairly sweet	China
IRGA 147	Long small grain	White	Good flavour.	Brazil

Source: Fieldwork analysis (2015)

PRESNTATION OF RICE IN NDOP

Trends

The danger of social life in Ndop

Since the inception of rice farming in Ndop and UNVDA as a government structure to control this activity, the quality of life for an ordinary farmer in Ndop has changed considerably. There has been social disorder, prostitution, juvenile delinquency and the spread of diseases like HIV/AIDS, and many other sexually transmissible diseases. There have been development of urban centres like Ndop town, Babessi, Balikumbat and Bamessing which are favoured with several opportunities and amenities vis-à-vis the outlying villages which have remained more or less a rural backwater. Pumping into the economy in the form of UNVDA's circulation capital and payment for farmers produce greatly improved the economic standing of farmers in particular and the Ndop economy in general. From UNVDA's estimates, the revenue of an average rice farmer has increased three-fold. Additionally, the region's economy has experienced an annual growth rate of approximately 4 per cent[14]. Field observation and information from the respondents revealed that, apart from improved housing and medical services, social life especially in the Divisional headquarters Ndop, has improved remarkably.

That is why Mrs. Nkwenti Glory who lives in Bamunka village which is the base of the Ndop central town testify by saying,

Perhaps the most striking feature in these locations is the overwhelming presence of beer and liquor parlours that suck dry the incomes of the farmers. These parlours are always richly stocked with assorted beer and palm and raffia wine. (FGD with women in Bamunka, 12/04/2016)

It is common sight to see people drinking after working hours, at times, even well into the late hours of the night. These parlours are complemented by nightclubs, video clubs and hotels. Even though some commentators have emphasized the corrupting influence of all those outfits on children, married life, the culture of the people, crime and delinquency, these places have, however, served as centres for socialization as people from diverse cultural backgrounds and walks of life congregate to relax. This has hindered rice production in that many farmers tend to live very high lives and as such consuming even their capital meant to bounce back effectively in the next farming season and as such leading to low production of rice in the Ndop plains.

Health hazard in Ndop

With regard to health, Ndop has witnessed some improvement in infrastructures. Ndop has one Divisional Hospital and several health centres. These institutions have greatly tried in improving the health situation of the local population and enhanced their productivity. UNVDA itself has also contributed immensely to the improvement of the health sector in Ndop. In 1982, UNVDA established a medical centre which became fully operational only in January 1984 Canute A. The centre caters only for the health needs of UNVDA workers and their dependents. In its early days, the centre provided free medical care to the staff of UNVDA and dependants. However, if a patient were referred to another hospital, the Corporation bore 80 per cent of the cost. The medical staffs in the centre included, a medical doctor employed on contract basis to consult on Mondays, Wednesdays and Fridays, two nurses and a laboratory attendant. Health problems too greatly hinder the production of rice.

In the same light, Nkum James revealed how health hazard contribute greatly to the low output of rice in the Ndop plain by saying that,

Most local farmers always fall seriously sick because of the heavy work they do in the farms and as such the work force for rice production is always affected. (Interview conducted in Bambalang, 11/04/2016)

This goes a long way to show that health hazard play a very important role in rice production as sick farmers will lead to low production. The number of labourers will reduce when many farmers are affected with diseases. In addition, the number of working hours reduces as the farmer or labourer will not have the strength to resist work for a long time.

The practice of witchcraft

Witchcraft is the metaphysical manipulations of objects. It is a magical practice better understood by their members who have many things in common and oriented toward the evil spirit. Most often, their objectives is to do bad to people or their properties According to Melengfe[15].

When the people of Nsei finally settled on their land, their leaders who assisted the Fon in ruling the village had amongst them, some people who could do evil to citizens who were stubborn or disobedient. These devilish actions extended to quarters and families. The witches and the wizards were feared in the community. If one

speak rudely to them in a group, family or to one of them, he/she was spiritually dealt with and will either be ill, have ill-luck or even die...

These witches and wizards tried by all possible means to recruit many people so as to have a great number of people when they goes out for destruction. To show more further how the practice of witchcraft act as a setback to rice production, Melengfe[15] continued to express that,

Interested members feels that people in the society could protect other family members from being harmed but it is the reverse because the price for belonging to the society are human being killed. As members of this society, one can disguise into the following; owl, hawk, snakes, any kind of animal, a person covered with grass or a person covered with fire worms etc. when this people go out, the only do evil. These people have different cult societies (beuzey, mesae)..... With the ‘mesae’, members could bring either good or evil to the family or themselves i.e riches, abundant delivery, abundant crops, barenness, ill luck etc.

It can be understood from the above assertion that, witchcraft is a metaphysical practice that can better be understood by those who practice it. The advantages of this practice if any is only known by those involved. However, as far as this work is concerned, witchcraft plays a drawback role to rice production in Ndop as those involved either kill people who could work on the rice farms or destroy them leading to low production of rice in this region. Hence witches and wizards are a great set back to crop production in general and rice cultivation in particular.

Theft in the farms

This is one of the major problems that most local rice farmers faced. Here, farmers that always decide to allow their rice products in the farm before or after harvest for long, always come to mourn because the rice has been tampered with or stolen. Mrs Tannan Nesla affirm the theft that exist in the farms and the reason behind these theft by saying that,

This situation has been so rampant and it is caused by the fact that farmers lack and easily access roads to transport their rice to their various destinations and because of this they have no choice but to cover the rice in their farms so that they can be transporting it gradually. This act has often attracted the attention of thieves who always invade many farms after rice has been harvested to search for rice that has been left in the farms in order to steal overnight.

The coming of the UNVDA was like a relief to farmers who knew that the Parastatal Company will help them create accessible farm to market roads that will enable them to transport all their rice to their destination immediately after harvest. Despite the fact that UNVDA has done much as far as road creation is concerned, much is still expected from them by the farmers because they lack roads that link the farms for easy accessibility and as a result leading to much theft in the farms. This aspect greatly hinders the production of rice in Ndop because many farmers have been forced to stop farming. Due to lack of capital caused by the fact that the rice that had to bring them much profit was all stolen in their farms before or after they harvested.

Impact of rice production

Our results indicated that, rice production in Ndop has intervened in the health domain. The health of the people of Ndop has greatly improved for rice farming. Also, other business men in the rice domain generate much income that has permitted them to pay hospital bills, buy drugs, and are able to go for consultation in bigger hospitals out of the division. Some of the people have also used money made out of rice production to open pharmacies, health centres and clinics that has greatly improved the health of the inhabitants of Ndop. Still in the health domain, it is also good to know that rice production, and consumption equally cure health problems as well as act as medicine in resolving many health problems as will be seen further in this work.

Rice farming causes general body pains

Rice farming causes body pains. This is because local farmers do not have money to use machine in cultivating rice. They have to use physical strength to work and as such it causes body pains especially backaches and joints aches since rice farming needs a lot of man power. We discovered that most of the health problems of smallholder farmers are caused by rice farming. However, this makes the people to get old at very young ages.

Rice consumption causes running stomach

Furthermore, from our field study, it came to our notice that rice consumption also causes running stomach. Too much consumption of rice was noted to be one of the causes of running stomach mostly in children and some adults in the area. This is a similar situation in India articulated in the study of Umadevi *et al.* [16], that, rice is useful in treating diarrhea in children. A teaspoonful of powder of charred par-boiled rice mixed with a glassful of butter-milk should be given in doses of an ounce every half an hour in this condition. This will bring excellent results.

Nails fugue sickness

However, rice production in general and consumption in particular have resulted to some illnesses. These illnesses were gotten from working in the rice field. Most of the respondents report that, when they stand in water for so long a time for softening of the soil and planting of rice, it gives them fugue of the nails. Also, that rice farming causes general body pains. This is because local farmers don't have money to use machine in ploughing, tilling and harvesting of rice. They have to use physical strength to work and as such it causes body pains especially backaches, joints aches since rice farming needs a lot of man power. Field investigation revealed that, backache and joint aches constituted about 40 percent of the total health problems faced by rice farming. However, one of our informants in Bambalang village said rice farming activity makes the people to get old at very young ages.

Too much rice consumption causes diabetics

Furthermore, still from the field, we discovered that, rice is not good for diabetic patients. This is because rice has a lot of starch so much so that too much consumption of it will cause diabetes. High blood pressure is very common among patients in this region especially within the adult and old age group between the ages of 40 to 80years. Nevertheless, there is particular rice that is good for diabetic patients. There is the unpolished rice and Par-boiled rice which have a less starchy content hence good for these patients.

Too much rice consumption causes constipation.

Most of our participants indicated that, if anyone consumes too much rice, it causes constipation. That is difficulty in digestion after eating. Hence constipation is another sickness caused by rice consumption in this area that needs to be taken note of. Our research is different from that of Natalie Chun (2014), which pointed out that rice is the most important food crop in Asia and the Pacific region, and has an essential role in food security and sufficiency in the Asia and the Pacific region. Despite progress made in increasing yields, several biotic and abiotic factors continue to limit productivity. These include a lack of improved technologies and agriculture practices as well as the adverse impacts of climate change, including increased drought, soil salinity, temperature extremes and diseases and pests. Using crop mutation induction together with conventional and modern molecular tools for plant breeding supports the development and identification of crop varieties with higher adaptability to climate change and climate variability, and the selection of improved, more robust rice varieties with better yields.

Rice stealing causes madness, swollen stomach and or swollen legs.

In the cultural domain, we also got from our participant that, if someone stole rice from another person's farm, it can cause madness and to some extent swollen stomach and or swollen legs. Two inhabitants of Bamunka village were identified as suffering from swollen stomach because they stole rice from another people's farms. In Bamessing village on her part, the mystery behind the madness of a man was linked to stolen rice from another's farm. As of how all that happened, we allowed for further research. Nevertheless, there are some cultural practices that favour rice production in Ndop. These are rituals that are performed in the different villages of Ndop. We have rituals performed at the end of the traditional year done to protect all the villagers and their activities. This ritual in Bamessing village is called "Nsinteh". The ritual to the gods of rain is carried out by most villages since rice is a crop that needs a lot of water to grow. The people of Ndop perform sacrifices to the gods so as to have abundant rain for the growth of their rice. There is also the ritual of good harvest given to their gods of good harvest which bless them with good harvest. In Bamali, it is called "Moupet Nikang", in Bamessing, it is "fungnkoh" who is their god of good harvest whereas in Bamunka, this god is called "tunjia".

According to the respondents, the sacrifices performed to these gods help to increase rice production in Ndop. More so, the ritual of crops protection is another cultural practice that favours rice production in the area. This ritual is called in Bamunka "Mbaah", while in Bamessing it is called "Mbeau". There is also the ritual of cleansing which is performed to clean those who either kill a soil organism when working, work on a traditional day, work when someone dies or any other cultural offence that needs cleansing. Finally, royalties given to their different Fons is another cultural practice that encourages rice farming in our study area. That is why rice production was enormous in this zone in the early days of UNVDA creation but started reducing when the people of Ndop were gradually being converted to Christians and Muslims neglecting their culture. Therefore, cultural practices should be taken into consideration in rice farming in Ndop. All these rituals performed in Ndop help to protect all the villagers and their activities, hence a source of medication to their problems.

Rice farming and consumption: a source of high blood pressure

High blood pressure is very common among patients in this region especially within the old age group. This is because they have in their early lives, stressed in working so hard in the farms so as to earn a living for their families. Information from the field showed that, financial constraints for waiting for payment from the UNVDA for long periods of time for their supply of paddy also give psychological trauma. This is always due to the inability of farmers to solve

their financial problems. They equally use a lot of physical strength to work and as such it causes back and joints aches. So difficulties in being able to take care of their health problems easily bring forth high blood pressure. However, the consumption of rice especially par boiled rice is good for people suffering from high blood pressure. This goes in line with Umadevi *et al.* [16], as rice is low in sodium, it is considered best food for those suffering from high blood pressure and hypertension.

Medicinal Opportunities of rice production

However, despite all these illnesses and sicknesses caused by either the production or consumption of rice, rice is equally a remedy or medicine for so many illness and sickness. From our informants, we discovered that;

Rice stuck treats the teeth

Firstly, rice stuck is used as medicine for the teeth. After drying the stuck, it is burnt into ashes and used to brush our teeth. It is not only the rice stuck but also the rice chaffs which are also burnt into ashes to be used for the treatment of the teeth. To comfort the fact that rice stuck and chaffs act as medicine, Mrs. Ngumma Marie thought us that,

Recently, the “burnt rice chaffs” and or stuck has been on the rise in this region even across the national territory as medicine used in brushing and the treatments of teeth. People have even started packaging this powder in sealed papers for sale. They sell each package for 500 Frs/per packages. It is very common in travelling buses.

Par-boiled and unpolished rice controls diabetics

Information revealed that, rice consumption especially par-boiled and unpolished act as a control remedy for diabetics. This is because diabetic patients do not consume starchy foods. As such to control it, Par-boiled and unpolished rice is good for these patients as it has a much reduced rate of starchy content. Therefore, these two-rice type are very good controllers of diabetics. In Ndop, we found out that most of the diabetic patients eat the par-boiled and unpolished rice.

Boiled rice water is medicinal for etching eyes and sight problems

Boiled rice water helps to solve eyes problems. Inhabitants having problems of sight and etching eyes can use boiled rice water. A few drops in the eyes for a month can help resolve the eye problem. When rice just starts boiling, the water is collected and allowed to cool after which the water can be dropped in the eyes. This is done for a period of about one month. After which the eyes problem will be history. However, our wish is that more scientific research be done in this domain to develop this unscientific practice of the people of Ndop. Moreso, boiled rice water is a medication that can be used to solve the running stomach problem. Information coming from most of the participants in Bambalang, Bamunka, Bamali and to a lesser extent Bamessing, showed that, boiled rice water is a medication for many health problems.

It was affirm more seriously to us by Mr. Nguisui Godfred Keno who has also use it to his children. So he said,

Boiled rice water has always helped for the treatment of running stomach. When this water is collected and cooled one can drink the water every morning and evenings till the running stomach stops. Informants taught us, that boiled rice water is more effective with children than adults (FGD conducted in Bamessing, 13/04/2016).

Boiled rice water is medication to stop bed wetting in children

Boiled rice water according to informants from Ndop can be used as a medication to stop children who bed wet. Children that have passed their normal age of bedwetting and even parents that do not want their children to bed wet can use boiled rice water for their children. Mr Ngusui Golfred told us that, *boiled rice water had always been a solution to my children’s bedwetting problem since I started bearing children.* There were many other people or informants who gave their testimony like the latter to show us how it has worked in their different cases. They include; wemba, Ntoh, Mingo and Chombong of Bamessing, Bamunka, Bambalang and Bamali villages respectively. However, we wish future research is done to equally develop this domain which will not only be of immense help to the people of Ndop but to the World at large.

Umadevi *et al.* [16], Rice is useful in treating diarrhea in children. A teaspoonful of powder of charred par-boiled rice mixed with a glassful of butter-milk should be given in doses of an ounce every half an hour in this condition. This will bring excellent results.

Boiled rice water relief children from constipation

In as much as too much rice consumption causes constipation that is difficulty in digestion after eating, our research found out that, if caught up with constipation cause by rice consumption, half a glass of boiled rice water morning, afternoon and evening can help bring back the situation to normal.

CONCLUSION

Revitalizing the rice production sector, and in particular the health domain of rice farming, is a precondition for achieving high and sustainable growth, poverty reduction, food security and eradication of some diseases in Ndop. Despite its enormous potential, however, the exploitation of the rice crop as medication has so far gain necessary attention. This study examines concerted efforts of all stakeholders, including governments, NGOs, and development practitioners. A combination of these is needed to improve the existing bottlenecks to productivity of rice for medicine agriculture and progress with the region's development agenda. Research reviewed in this study that, rice farming brings fort illnesses like fungi, pneumonia and body aches. Rice consumption at times causes running stomach, diabetics and constipation. However, rice equally brings about solutions to many health problems like the rice stock used for the brushing and treatment of the teeth, par boiled and unpolished rice used for the control of diabetics. Boiled rice water use for eyes treatment, boiled rice water used to stop running stomach, boiled rice water also used to treat body joints pains and boiled rice water that is used to stop children from bed wetting. Our work focused on the reasons of low production of rice in Ndop. It is also be possible that, different results be obtained if the research site, method, techniques and tools were changed. Therefore, a future research on culture and rice production in another area may be North Cameroon can give different results. In a like manner it can equally be an opportunity to have new findings so as to do a comparative study with the realities found in Ndop.

Further research

Further research can be done in the area of smallholders' as a means for food security and cultural practices on of rice production in Ndop.

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