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A SURVEY ON *DAMBUN KIFI* (SHREDDED DEHYDRATED FISH MUSCLES) PROCESSORS IN SOKOTO METROPOLIS, NIGERIA

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ABSTRACT

The study was conducted in Sokoto metropolis to assess the production pattern of shredded dehydrated fish muscles (SDFM), danbun kifi, within the selected markets and households. Sokoto metropolis was purposely chosen for the study and was stratified into different areas. 10% of the producers were used for this study. A total of 50 questionnaires were administered to producers of dambu kifi to evaluate their socioeconomic traits and production pattern of dambu kifi. Data collected were subjected to simple descriptive analysis. Majority (96%) of dambu kifi producers were females and (56.0%) of the producers were between the age bracket of 26-40 years. Sixty four percent of the producers prefer cat fish for dambu kifi production, while 28% of the producers prefer using tilapia and 4% each for mackerel and sardine. Study showed that 94% of them used whole flesh of the fish for dambu kifi production, 4% of them used the whole fish and 2% of the respondents only used tail in dambu kifi production. The profit obtained in dambu kifi business is between 11-20% by most procesors. High cost of production was the major constraints to dambu kifi production, then packaging materials, time consuming and less sales were the other constraints faced by the producers.

Keywords: dambu kifi; survey; processors; fish; constrain.

Introduction

Fish post-harvest activities within the fisheries value chain have always received less attention in rural community development programs despite them being a critical component of the livelihood structure (Kitinoja, 2016). Ward (2017) reported that, globally, fish losses are estimated to be ten to twelve million tons per year, accounting for around (10%) of the total production from capture fisheries and aquaculture. One of the main goals of the technologies is to look for processes or combined procedures to maintain good quality fish products (Magawata, 2015). After death, however, irreversible change (rigor mortis) that results in fish spoilage begins to occur however, traditional fish preservation was used to reduce the water content in the fish's body through simple drying so that the bacteria contained in the fish cannot reproduce and the processed fish produced can last longer (Siswanto *et al*., 2023). Furthermore, Food and nutrition security challenges in Nigeria have led to the development of innovation through food processing. Shredded fish as a value addition lies in the transformation of raw fish into a more convenient and versatile form that offers several benefits to consumer and

food industry. Furthermore, the value addition process increases the market value of the fish species, as the shredded form often commands a higher price compared to a whole or filleted fish. This can benefit both fish processors and fishermen by utilizing fish that may have been previously underutilized or considered less valued species. However, Shredded Dehydrated fish Muscles SDFM (*dambu Kifi*) is one of such innovation with the potential to fill the gap in national food and nutrition security. But the quality and safety assessment of processed food products are critical to the development of knowledge based on their nutrient and health benefits. Information on the pattern and production of Shredded Dehydrated Fish Muscle (*dambu kifi)* has not been well documented.

Materials and Methods

The study was conducted in Sokoto metropolis, Sokoto State, Nigeria. Sokoto metropolis was purposely chosen for the study and was stratified into different areas (Wamakko, Binji, Dange shunni, Illela, Gada, Tambuwal and Yabo). 10% of the processors were used for this study. Eight local governments were randomly selected. The processors were interviewed using snowball techniques. A total of 50 questionnaires were administered to producers of *dambun kifi*. Section A of the questionnaire seeks demographic information of the consumer (such as sex, age, marital status, education, income and production cost) and Section B seeks production patterns and information on production such as (type of fish used, method of processing, cost of production, packaging and storage). Data collected were subjected to simple descriptive analysis using the SAS (1999).

Results and Discussion

In Table 1, Majory (96%) of dambu kifi processors were females 4% were males. Forty six percent (46%) were majorly between the age bracket of 26-40, while 24% of the respondents were between 15-25 years and 30% of them being above 40 years of age.

The result confirmed the survey carried out by Omoruyi *et al*. (2016) which revealed that majority of fish processors were 40 years and above. This implies that processing and marketing activities are managed by very active individuals who have both strength and reasonable level of maturity. This is also in line with the findings of Odulate et al. (2019) who stated that age was an important factor in fisheries activities.

The results showed that 90% of the respondents were married and only 10% being single. This result is similar to findings of Abolagba et al (2008) which revealed that majority of the processors were married. High percentage of married women could be attributed to the fact that their husbands were low income earners and because of their status or responsibilities to shoulder, they had to render assistance to their husbands.

On level of education most of the respondents had formal education (92%) with majority (70%) stopping at primary level, 20% secondary and only 2% reached tertiary level. This result is in agreement with Abolagba and Akise (2011) who stated that majority of the processors had primary education. The reason being that most of them married early and do not have the opportunity to go beyond it. The young educated school leavers are more interested in white collar jobs. Also most of the educated ones do not live in the community. Similar Study carried out by Adeyeye et al. (2005) also revealed that majority of women involved in fish processing had primary school education. They stated that education is related to employment and income which influences access to household amenities and facilities including those related to fish hygiene and environmental health.

Table 1: Socio-demographic information of *Dambu kifi* processors in Sokoto State

Parameters	Frequency	Percentage
Sex		
Male	02	04.00
Female	48	96.00
Total	50	100
Age		
15-25	12	24.00
26-40	28	56.00
Above 40	10	20.00
Total	50	100
Marital Status		
Single	05	10.00
Married	45	90.00
Total	50	100
Level of Education		
Adult education/ Qur'anic	04	08.00
Primary	35	70.00
Secondary	10	20.00
Tertiary	01	02.00
Total	50	100
Occupation		
Trading	49	98.00
Civil servants	01	02.00
Total	50	100
Average Monthly income		
1,000-20,000	03	06.00
21,000-40,000	09	18.00
41,000-60,000	19	38.00
Above 60,000	19	38.00
Total	50	100

Source: field survey, 2024

Ninety-eight percent (98%) of *dambu kifi* producers are traders and petty business owners while only (2%) being civil servants. The results showed that the processors (76%) earn between #41,000- #60,000 and above monthly, with only 6% of them earning between #1000- #20,000 monthly (Table 2). Engagement in other occupations was necessary in order to augment their income especially during the period of low catch and unsteady market prices. It could also be attributed to the fact that fish processing could

be conveniently done alongside with other domestic activities. This result confirms the survey of other authors who categorized processing of fish as female business dominated by economically active ages (Abolagba and Odiko, 2016).

The perception of *dambu kifi* producers results are presented in Table 2a,2b and 2c. The results showed that majority (64.0%) of the producers prefer cat fish for *dambu kifi* production, while (28%) of the processors prefer using tilapia and 4% each for mackerel and sardine. This may be as a result of the abundance of tilapia in the water body and considered as a high value species and of a great interest to farmers FAO, (2014).

Most of the respondents (72%) produced *dambu Kifi* on weekly basis and about (28%) of the were producing on daily basis, this might be due to the nature of their markets as most have to produce and take to shops, it's not something they produce and finish daily. Also dambu kifi had long shelf life one can produce and keep without spoilage till next production circle.

The producers, (94%) of them used whole flesh of the fish for *dambu kifi* production, 4% of them used the whole fish and 2% of the respondents only used tail in *dambu kifi* production. Like dambu nama which was normally prepared with de-boned meat, dambu kifi follow similar procedure only the flesh were used when preparing this product.

The findings of the study showed that all (100%) of the respondents suggested that, to produce *dambu kifi*, one needs fish, oil, onions, spices, seasonings and salts. Almost all the producers use these ingredients while preparing dambu kifi, though some add pepper to their taste and the quantity varies depends on the taste of the producer.

Majority of the respondents (44%) said the cost of producing 1kg of *dambu kifi* is above ₦6000, while (40%) were of the opinion that with ₦4100-6000, a kg of *dambu Kifi* can be produced. Vegetable oil (50%) was the major oil used by *dambu kifi* processors in Sokoto metropolis, followed by groundnut oil (30%) and soy oil (20%). This might be so as vegetable oil is the most available oil in the markets, easy to find and contain low cholesterol. Most dambu kifi were separately shallow fried in hot oil immediately after the shredded fish has been mixed with *yaji* spice.

Twenty to thirty (20-30cl) of oil is needed to produce a Kg of *dambu kifi* by most of the respondents (32%), 28% feels 11-20% of oil will be adequate to produce a kg of *dambu kifi*. The results further showed that 2% of the respondents were of the opinion that to produce *dambu kifi* one needs more than 50 cl of oil. Oil used in frying dambu kifi depends on producers preference, but too much oil might render the product rancid when stored for long period of time.

The profit obtained in *dambu kifi* business is between 11-20% by most processors (34%), 21-30 by 32% of the respondents and 20% of the respondents feel the highest you get is between 0-10%. Majority (76%) of the respondents had less than 5kg production capacity, 14% of the respondents can produce 5-10kg weekly and only 2% can produce 16-20Kg of *dambu kifi* at a go.

Ninety (90%) of the respondents had market for *dambu kifi*, 80% of the respondents are of the opinion that the product (*dambu kifi*) can last above 12 months without spoilage.

PET containers were mostly (48%) used by the producers for packaging *dambu Kifi*, some (36%) use Kraft paper, 12% use polythene and only 4% of the respondents uses foil paper for packaging *dambu kifi*. Mostly dambu kifi producers uses PET containers as it is easy for the buyer to see the contents, easy to fix the label and it preserves the aroma and flavour, this in conformity with the findings of Ebabhamiegbebho et al., (2013), who stated that flavor and colour are the greatest

determinants of a food product to either be accepted or rejected by the consumers.

Table 2a: Perception of *dambu kifi* processors in Sokoto State

Parameters	Frequency	Percentage
Specie of fished used for dambu kifi		
Cat fish	32	64.00
Tilapia	14	28.00
Sardine	02	04.00
Mackerel	02	04.00
Total	50	100
Production frequency of Dambu kifi		
Daily	12	24.00
Weekly	32	64.00
Fortnightly	04	08.00
Monthly	02	04.00
Total	50	100
Part of fish use in dambu kifi production		
Whole	02	04.00
Tail	01	02.00
Whole flesh	47	94.00
Total	50	100
Ingredients used for dambu kifi production		
Fish	00	0
Oil	00	0
Onions	00	0
Spices	00	0
Seasonings and salts	00	0
All of the above	50	100
Total	50	100
Cost of producing 1kg of Dambun kifi (₦)		
<1000	00	0
1,000-2,000	02	04.00
2,100-4,000	06	12.00
4,100-6,000	20	40.00
> 6000	22	44.00
Total	50	100

Source: field survey, 2024.

Table 2b: Perception of *dambu kifi* processors in Sokoto State

Parameters	Frequency	Percentage
Type of oil used in dambu kifi production		
Vegetable oil	25	50.00
Soya oil	10	20.00
Groundnut oil	15	30.00
Palm oil	00	0.00
Total	50	100
Quantity of oil (cl) used per 1kg of dambu kifi		
0-10	01	02.00
11-20	14	28.00
20-30	26	32.00
30-50	08	16.00
Above 50	01	02.00
Total	50	100
Percentage of profit obtain from business		
0-10	10	20.00
11-20	17	34.00
21-30	16	32.00
31-40	03	06.00
41-50	02	04.00
Above 50	02	04.00
Total	50	100
Production capacity (kg)		
Less than 5	38	76.00
5-10	07	14.00
11-15	02	04.00
16-20	01	02.00
Above 20	02	04.00
Total	50	100
Market availability for Dambun kifi		
Yes	45	90.00
No	05	10.00
Total	50	100

Source: field survey, 2024.

Table 2c: Perception of *dambu kifi* processors in Sokoto State

Parameters	Frequency	Percentage
Shelf life of Dambun Kifi (months)		
Less than 1	02	04.00
1-3	01	02.00
3-6	03	06.00
6-9	02	04.00
9-12	02	04.00
Above 12	40	80.00
Total	50	100
How did you package dambu Kifi		
Kraft paper	18	36.00
Aluminum foil paper	02	04.00
PET container	24	48.00
Polythene	06	12.00
Total	50	100
Quantity of dambu kifi packaged (g)		
0-250	32	64.00
251-500	09	18.00
501-750	03	06.00
751-1000	04	08.00
Above 1000	02	04.00
Total	50	100
Constraints to production		
Packaging material	10	20.00
Time consuming	07	14.00
High cost of production	31	62.00
Less market	02	04.00
Total	50	100

Source: field survey, 2024.

Majority (64%) of the processors package their product (*dambu kifi*) in 0-250g package, while only 4% package it in large containers (above 1000g).

High cost of production was the major (62) constraints to *dambu kifi* production, the packaging materials (20%) time consuming (14%) and less market (4%) were the other constraints faced by the producers. This confirmed the findings of M.S, et al.,(2021) stated that packaging forms an important part of food processing because it facilitates handling during storage and distribution within the market chain.

Conclusion and Recommendations

The study concludes that *dambu kifi* is a well-known product in the study area; the pattern and production of the dambu kifi by majority of the processors is similar with just very little differences.

Further research should to be carried out to know the strategies for optimizing hygiene in producing *dambu kifi* to enhance overall quality and shelf life thereby reducing post-harvest losses in Sokoto state.

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