Skill Training Module for Processing of Tiger Nuts Milk by Pregnant Women in Akwa Ibom State

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Abstract

The study determined the skill training module for processing of tiger nuts milk and flour by pregnant women, for their nutritional health care and for self employment. Eight research questions and eight null hypotheses were developed. The study covered Akwa Ibom State. Simple random sampling technique and was used to select a sample size of 207 out of 237 population used of respondents. Two sets of structured questionnaires, divided into 9 Sections (A - I) were used for data collection. Two hundred and seven copies of the instrument were completed and returned Research question were analyzed using mean and standard deviation while all the null hypothesis were tested using Analysis of variance (ANOVA) at 0.05 level of significance. The questionnaire was face validated by three experts the overall internal consistency of the instrument yielded a reliability coefficient of (r) .782. The findings revealed that 9 training modules used in processing tiger nuts milk and flour were all needed pregnant women. The ANOVA results revealed no significant difference in the mean rating of the respondents Home Economic experts, Dietician and food technologist regarding the training modules packaged for pregnant women in processing tiger nuts milk and flours. It was Recommendations that Akwa Ibom State Hospital Management Board should integrate the identified and packaged training modules into their workshops and seminars for midwives to facilitates the training of pregnant women in tiger nut milk and flour.

Keywords*: Skills Processing, Training Module, Tiger Nuts Milk, Pregnant Women*

Introduction

Food is the basic necessity of life. Its importance is seen in the fact that it is the basis of life's sustenance, in terms of quantity and quality and also is a key to health and productive life. The importance of food is also seen in the fact that it accounts for a substantial part of a typical Akwa Ibomite household budget. Various foods serve as important vehicle for taking nutrients into the body and bringing about good health, hence, the need for pregnant women

to be in adequately fed. The measure of the quality of any food taken, depends upon various classes of food combined in appropriate proportions to ensure a balanced food intake.

Pregnancy is the period that requires proper combination of a variety of foods for adequate intake of necessary nutrients. Conception and subsequent weeks afterwards is the time when it is most critical and may be vulnerable, as it is the time when the organs and systems develop within. The energy used to create the systems comes from the energy and nutrients in the mother's blood circulatory system. This is the reason for correct nutrient intake during pregnancy.

During the early stages of pregnancy when the placenta is not yet finally formed, there is no mechanism to protect the embryo from the deficiencies which may be inherent in the mother's blood stream, thus it is crucial that an adequate amount of nutrients is consumed as asserted by Isong (2013) . There are still cases that a good number of pregnant women eat food that contain little nutrients which make them feel dull with empty calories, as asserted by Isong (2013) but will not provide her or the unborn baby with useful nutrients as a result of lack of nutrient among pregnant women. Diet related diseases are increasingly recognized in Akwa Ibom State. (Hospital Management Board, 2014)

Consuming food with empty calories results in diseases such as iron deficiency, diabetes, hemorrhoids, acute respiratory infections, vitamin A deficiency, vitamin D deficiency, listeria. (Isong, 2013) All these deficiencies cause complications like, still birth, pregnant women' mortality, low birth we 1 niscarriages, premature delivery, heart failure, liver failure, blood loss during labour and others. It may cause long term problems on the baby such as weak immune system, low level of stamina and energy, greater risk of contracting illnesses. Mortality due to diet related cases in pregnant women accounted to 58% of the total maternal mortality in the world. (Approximately,62 million die each year) (Rita, 2009).

Currently, in Akwa Ibom State there are still a good number of registered pregnant women who have diet related illness. These Women eat foods that contain little or poor nutrients. They are filled with empty calories that do not provide any nutrients to them and their unborn babies. Diet-related diseases in pregnant women increasingly are recognized in Akwa Ibom State. (Hospital Management Board,2014). These diseases include: Iron deficiency, acute respiratory infections, Anemia, Vitamin A deficiency, Vitamin D deficiency

Hemorrhoids, listeria and diabetes. All these deficiencies cause complications which may result in still birth, maternal mortality, low birth weight, miscarriages, premature delivery, heart failure, liver failure and blood loss during labour. It may even have long term problems on the baby like weak immune system, greater risk of contracting illness. Thus it is important that pregnant women should eat balanced diet in the entire course of pregnancy. Thus exploring other sources of providing balanced diet would form new interventions in pregnant women nutritional health care services.

However, pregnant women do not know how to process tiger nut milk and flour to solve the problems of diet related disease. Tiger nut contain all the classes of essential nutrients such as protein, carbohydrates, fats, vitamin and minerals, but the pregnant women do not have the skills to process tiger nut milk and flour. Due to high cost of balanced diet in Akwa Ibom State, it is expedient to source for the locally available stuffs that are rich, cheap and accessible at least to the poor rural mothers and pregnant women and children. Tiger nut has been identified and recognized as such plant but the problem lies in the ability to process the nuts into its constituent products such as milk and flour for pregnant women and others. It is therefore imperative to determine the skills training modules for pregnant women in processing tiger nuts milk and flour in Akwa Ibom State.

A module is explained by Olaitan and Ali (1997) as a unit of related skills arranged sequentially to be used in teaching a group of learners within a given time. A module represents a training package arranged in units of related skills used for transferring skills to the trainees in specified enterprise area. Modules lend themselves to training in bits and reduce training periods (Onuka, 2006). The training objectives, contents and methodology are represented at a glance in a concise form for the trainer and trainees to ensure that they are participating effectively in the training programme. It is expected that the correct use of modules for tiger nut, milk and flour processing are bound to make training effective.

Purpose of the Study

The main purpose of the study was to determine the skills training modules for processing of tiger nuts (*Cyperusesculentus*) milk by pregnant women in Akwa Ibom State. Specifically, the study sought to answer the following four research questions:

1. What are the skills training modules in soaking of tiger nuts milk by pregnant women?

2. What are the skills training modules in grinding of tiger nuts milk by pregnant women?

3. What are the skills training modules in sieving of tiger nuts milk by pregnant women?

4. What are the skills training modules in packaging of tiger nuts milk by pregnant women?

Methodology

A survey research design was used for the study and it was carried out in Akwa Ibom State. The population of the consisted of 237 Home Economic experts, food technologist and dieticians in Akwa Ibom State. A sample size of 207 individuals were selected, using simple random sampling technique. Skill training modules for processing of tiger nut milk was developed by David (2015) for data collection. The skill training modules for processing of tiger nut milk which contained 30 and has coefficient of rehabilitee of .78.

The data generated from the study were analyzed using mean, standard deviaton in answers all the research questions while analysis of variance (ANOVA) was used in testing for null hypotheses at 0.05 level of significance.

Data Analysis and Results.

Research Question 1: Data in research question 1 is presented in Table 1.

Table 1 Module A – Soaking module for tiger nuts milk   N=207

Modules S/N	Modules items	$\overline{X}$	SD	Remark
Modules A	**Soaking skills in tiger nuts milk processing enterprise. (17 items)**			
A_1	Buying yellow tiger nuts(fleshy nuts)	3.87	.62	Highly Needed
A_2	Get a clean bowl	3.64	.59	Highly Needed
A_3	Measure accurately 5 cups of tiger nuts	3.75	.68	Highly Needed
A_4	Put the measured tiger nuts into a bowl	3.86	.73	Highly Needed
A_5	Pour the clean water into the measured tiger nuts.	4.22	.77	Highly Needed
A_6	Wash tiger nuts thoroughly with two hands.	4.19	.75	Highly Needed
A_7	Remove the washed tiger nuts into another clean bowl.	4.15	.73	Highly Needed
A_8	Add clean water and wash again until all the dirt is removed.	4.28	.60	Highly Needed

A_9	Put the washed tiger nuts into a strainer.	4.09	.66	Highly Needed
A_{10}	Strain the water by using a strainer	4.28	.64	Highly Needed
A_{11}	Measure clean water into a clean bowl	3.71	.59	Highly Needed
A_{12}	Put the strained tiger nuts into the water	4.21	.83	Highly Needed
A_{13}	Soak the tiger nuts for 8 hours	3.99	.67	Highly Needed
A_{14}	Remove the soaked tiger nuts into another lean bowl	3.74	.67	Highly Needed
A_{15}	Rinse it again with clean water	4.07	.74	Highly Needed
A_{16}	Strain excess water again using strainer	3.85	.71	Highly Needed
A_{17}	Pour it into a clean dry plate.	4.28	.72	Highly Needed

The data presented in Table 1 showed that the 17 items (module A) in soaking skills in tiger nut milk processing had mean value between 3.87- 4.28. Similarly, the 17 soaking items of module A all had mean value were highly needed. The standard deviation ranged from .62 - .72 which shows that the respondents were close in their opinions on skill training module for processing of tiger nut. This implies that pregnant women needed training on the items for the processing of tiger nut milk.

Research Question 2: Data for answering research question 2 is presented in Table 2

Table 2:   Module B –Grinding module for tiger nuts milk   N=207

Modules S/N	Modules items	Mean $\overline{x}$	SD	Remark
Modules B	**Grinding skills in tiger nuts milk processing (7 items)**			
B_1	Wash the blender thoroughly with clean water	4.19	.69	Highly Needed
B_2	Put the tiger nuts into a blender, a handful at a time	4.04	.71	Highly Needed
B_3	Add 500mls of water to the ground tiger nuts	4.28	.58	Highly Needed
B_4	Blend and pause for 5 seconds	4.02	.77	Highly Needed
B_5	Repeat the action of blending	4.27	.72	Highly Needed
B_6	Pour the ground tiger nuts paste into a clean bowl	3.70	.68	Highly Needed
B_7	Repeat the process until all the tiger nuts	4.21	.90	Highly Needed

are ground to a smooth paste.

The data presented in Table 2 showed that the 7 items (module B) in Grinding skills in tiger nut milk processing had mean value between 4.19 - 4.21. Similarly, the 7 Grinding items of module B all had mean value were highly needed

The standard deviation ranged from .69 - .90 which shows that the respondents were close in their opinions on skill training module for processing of tiger nut. This implies that pregnant women needed training on the items for the processing of tiger nut milk.

Research Question 3: Data for answering research question 3 is presented in Table 3

Table 3: Module C Sieving modules in tiger nuts milk. **N = 207**

Modules S/N	Modules items	Mean $\overline{x}$	SD	Remark
Modules C	**Sieving skills in tiger nuts milk processing (10 items)**			
C_1	Using a clean bowl	3.71	.77	Highly Needed
C_2	Pour the ground tiger nuts paste into a bowl	4.01	.69	Highly Needed
C_3	Pour the ground tiger nuts into a sieve	3.96	.82	Highly Needed
C_4	Using wooden spoon turn the ground tiger nuts	4.25	.64	Highly Needed
C_5	Add 200mls of water to the paste	4.03	.74	Highly Needed
C6	Scoop the paste into the sieve little at a time	4.21	.67	Highly Needed
C7	Squeeze out the milk from the chaff into a clean bowl	3.88	.69	Highly Needed
C8	Repeat the sieving process until sieving process is completed	3.78	.70	Highly Needed
C9	Boil the extracted milk for 15 minutes to kill all the bacteria that may be in the milk	3.71	.72	Highly Needed
C10	Bring it down to cool.	4.10	.81	Highly Needed

The Data presented in table 3 showed that the 10 items (module C) in Sieving skills in tiger nut milk processing had mean value above between 3.71 - 4.10. The 9 items of module C all had mean value were highly needed

The standard deviation ranged from .79 - .85 which shows that the respondents were close in their opinions on skill training module for processing of tiger nut and flour. This implies that pregnant women needed training on the items for the processing of tiger nut milk.

Research Question 4: Data for answering research question 4 is presented in Table 4

Table 4: Module D Packaging modules in tiger nuts milk.   N = 207

Modules S/N	Modules items	Mean $\overline{x}$	SD	Remark
Modules D	Packaging skills in tiger nuts milk processing (6 items)			
D1	Clean bottles with tight lids.	4.11	.70	Highly Needed
D2	Sterilize the bottles via boiling for 15 minutes	4.03	.77	Highly Needed
D3	Develop attractive label e.g (sleek tiger drink)	4.22	.65	Highly Needed
D4	Pour the extracted milk into bottles with lid	4.07	.66	Highly Needed
D5	Seal the bottle	4.13	.69	Highly Needed
D6	Store in the refrigerator or store in a cool dry place. It will last for 5 days	3.68	.61	Highly Needed

The Data presented in Table 4 showed that the 6 items (module D) in Packaging skills in tiger nut milk processing had mean value above mean between 4.11-3.68. The 6 items of module D all had mean value were highly needed The standard deviation ranged from .75 - .61 which shows that the respondents were close in their opinions on skill training module for processing of tiger nut. This implies that pregnant women needed training on the items for the processing of tiger nut milk.

Discussion of the Findings

The findings of this study have been arranged and discussed according to the four research questions. The research questions are discussed as discussed.

Research question one on Table 1 the findings shows that the skill in soaking will be needed by pregnant women. While Null hypotheses indicates that there was no significance difference between in the mean rating of the respondents of home economic experts, dieticians and food technologist regarding soaking tiger nut milk. This is in line with elation and Mana (2011) who observed that planning of any farm operation should incorporate. The following management skills such as formulation of specific objective reviewing the formulated objectives periodically with changes in innovation, drawing up programme plan for the farm, selection of site for processing operations, deciding on the type of processing to adopt in his enterprise

Research Question 2 on Table 2 shows that the skill in grinding is needed by pregnant women. This findings is in consonance with the views of Sanni et-al (2005) who highlighted some steps in grinding tiger nut flour and milk to include: using clean dry blender putting the tiger nuts into blender a handful at a time blending the tiger nuts until smooth to powder. Repeating the grinding process until the nuts are properly ground. The grinding skill items were all needed in tiger nut milk.

Research Question 3 on Table 3 shows that the skill in sieving is needed by pregnant women. This findings on sieving skills as presented is in accordance with food and Agriculture Organisation Report (FAO 2002), the report stated that sieving skills needed by the food processing e.g. sieving of flour or milk for profitable products include: using of clean bowl, using of wooden spoon, using of strainer, separating the milk from the chaff or the milk from the chaff. The sieving skills were all needed in tiger nuts milk.

Research Question 4 on Table 4 shows that the skill in packaging is needed by pregnant women. This result is in line with the findings of Ahmed (2012) on packaging skill items needed agreed with the opinion of home economics experts dieticians and food technologist who identified sterilizing the bottles via boiling, using clean bottles with tiger lids, developing attractive label, sealing the milk.

Recommendations

Based on the findings and their discussion as well as conclusions the following recommendations are made:

1. The Officials of the Hospital Management Board of Akwa Ibom State should integrate the identified and packaged training modules into their workshops and seminars. This will facilitates the training of pregnant women and others interested in tiger nut milk and flour processing.

2. The pregnant women in Akwa Ibom State should be allowed access to the skill items in the training models, as identified in this study to enable them improve on their processing.

3. Nursing Educators, health workers should be patient in the task of training pregnant women for their health benefit and for entrepreneurial exploits.

4. The government of Akwa Ibom State should make the findings of this study available to the media for discrimination of the general public.

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