

**OPINION OF RURAL WOMEN ON THE RELATIONSHIP BETWEEN
NUTRITION EXTENSION EDUCATION AND DIETARY PRACTICES IN
TUDUN WADA LOCAL GOVERNMENT AREA, KANO STATE**

BY

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Approval

This Dissertation entitled “Opinion of rural women on the relationship between Nutrition Education and Dietary Practices in Tudun Wada Local Government Area, Kano State has been examined and approved as meeting partial the requirements of the School of Postgraduate Studies for the award of Masters of Education Degree in Extension Education of Bayero University, Kano.

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Dedication

This Dissertation is dedicated to my children, Duke and Telma and also to my sweet mum Ngo Martha Jock. God bless you all.

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I am grateful to God Almighty for sparing my life and helping me to successfully complete the this programme. My gratitude also goes to my supervisor, Mallam Mohammed Sani Bala Hassan, who tirelessly helped in correcting and making suggestions on this research work.

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List of Abbreviations and Acronyms

FAO	–	Federation of Agricultural Organisation
FSP	–	Family Support Programme
KNARDA	-	Kano State Agricultural and Rural Development Authority
NGO	–	Non – Governmental Organizations
PRA	-	Participatory Rural Appraisal
SPSS	-	Statistical Package for Social Science
UNICEF	-	United Nations Children Fund
USA	-	United States of America
WHO	–	World Health Organization

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Abstract

This research work is on the opinion of rural women on the relationship between nutrition extension education and dietary practices in Tudun Wada Local Government Area of Kano State. The general objective was to find out whether nutrition extension education programme in any way influence the choice of dietary practices among women in rural areas. Four hypotheses were formulated to guide the study. Survey design was used for the study. The population of the study consisted of 72 extension agents and 496 women who participated in the nutrition extension education. One hundred and forty two respondents were selected as sample of the study through stratified random sampling. Nutrition Extension Education for Dietary Practices Questionnaire (NEED-PQ) was used to collect data from respondents. The instrument was validated by experts and the reliability coefficient of 0.50 was obtained through test re-test method. Frequency, percentage and mean were used to find out the usefulness of the strategies used in educating the participants and Chi-square was used to answer the hypotheses. The study revealed that strategies such as the method of teaching, classroom activities, and the manner of carrying out extension programme by extension workers have a relationship with the dietary practices of women in the rural areas, hence the aggregate mean score of 2.65 obtained showed that the strategies are useful. Based on the findings of the study, it was recommended that Stakeholders such as the State and the Local governments should always review the nature of nutrition extension education given to the rural women so as to enable them to find out the most appropriate type that can suit their dietary practices and that the level of participation of rural women in nutrition extension education should be reviewed by the coordinators and the extension agents so that adequate participation will have an effect on the dietary practices of the participants. This can be achieved if each participant makes good use of the period spent at the classroom.

CHAPTER ONE

INTRODUCTION

1.1. Background to the Study

Good diet is a firm foundation for human happiness, sound health and physical performance. Individuals in different areas (urban and rural) devise and adopt ways and patterns of dietary practices. These adherence and practices of feeding may be referred to as dietary practices. Ekpeyong (2009) referred to such adherence as dietary practice or dietary behaviour. According to him, dietary practice refers to food consumption habit, choice or selection of the adopted pattern of eating by different groups of people in the community.

Meeting the dietary requirements for growth and development at this rapid growth spurt, demands adequate quantity and quality intake of food by people the world over. Good dietary practice involves eating the right combination of a variety of nutrients in their proper quantity. A number of factors influence what an individual eats or not and such factors determine the dietary habit, behaviour or practices of the people. Okafor (2010) submitted that determinants of dietary practices are those factors responsible for adoption of the nature of foods consumed. Such factors, in his view include sex, family income, environmental conditions (urban or rural), religious affiliation, availability of food items, knowledge of food values (nutrition education) and cultural significance among others.

Similarly, Ekpeyong(2009) opined that food intake depends on the dietary needs of an individual and that this varies with the growth rate and amount of work done. He stated that the World Health Organization (WHO) in 2011 added that environment (rural or urban) play a vital role in shaping the dietary practices and behaviour of people through a lifespan. Thus, women with good dietary practices showed sound social, mental, and physical personality.

Ekeh (2011) stated that women in rural areas neither possessed adequate knowledge of dietary values/nutrition education nor practice good dietary behaviour. As a result, such women in rural areas are characterized by poor health development, poor eyesight, skin blemishes, and reduced appetite, among others. It is expected that knowledge of dietary values should enable women in rural areas to know the type of foods they need to consume each day to obtain essential nutrients their body needs for proper functioning. To achieve this, sound nutrition education is required. Burma (2010) noted that women in rural areas like everyone else need to ensure good dietary practices. He suggested that where nutrition education cannot be provided through the formal school system, that nutrition extension education should be used to help women in the rural areas to examine their food intake and establish judicious dietary practices. According to Burma, the two primary aims of nutrition extension education programme are to educate the public on how nutrition affects health and how to eat a nutritious diet. It also helps to enlighten families about the relationship of diet to health and physical development. Hence, nutrition extension education is very vital, especially to the women in the rural areas.

According to Nwana (2010), knowledge about nutrition and dietary practices was low among women in rural areas in Nigeria because of some government's inability to provide nutrition extension education programme in our rural communities. He attributed malnutrition and poor health of women in the rural areas as an indicator that they lack dietary habits. In support of the above view, Ekeh (2011) stated that it was because of the numerous problems among people in the rural communities that many state governments decide to employ extension workers in order to alleviate these problems. He mentioned areas such as healthcare, agriculture, nutrition and education as some of the areas where states like Jigawa, Enugu, Kano, Osun and Kaduna excelled in extension programmes.

Food-Based Action Programme for Household Food Security and Nutrition Improvement for Kano State, Nigeria was initiated in 1996 with assistance from FAO's Technical Cooperation Programme. The Action Programme was a response to the high levels of malnutrition in the northern savannah zone of the country, as had been reported in a nutritional survey sponsored by the United Nations Children's Fund (UNICEF) in 1993. Kano State falls within the area that was found to have the highest prevalence of stunting or chronic malnutrition (51 percent) among children under five years of age (Oguntona, 2008).

Six months after the initiation of the Action Programme, the project held multi sectoral training sessions for trainers and extension workers. As the Action Programme foresees training at both pre-service and in-service levels, participants for the trainer orientation sessions were drawn from all the state-run tertiary institutes in the agriculture, health and formal and non-formal education sectors as well as from line ministries and agencies currently conducting in-service training sessions for extension workers. Extension workers' supervisors were also included. Trained extension workers comprised grassroot -level workers from all sectors involved in household food security and nutrition improvement through good dietary practices. The majority came from areas appraised during the PRA.

The training objectives were to create awareness on the inter sectoral nature of household food security and nutrition issues and to develop and strengthen skills needed during the implementation of the various components of the proposed food-based Action Programme. In addition, the extension workers' training included strengthening of their capacity to undertake participatory extension. Areas covered during training included basic and new concepts in nutrition; the household food security concept and how it is locally perceived; crop, livestock and dietary diversification; management of small animals; common forms of malnutrition in Kano

State, including their detection and monitoring; diarrhoea prevention and management; and community participatory planning and implementation of household food security and nutrition interventions. The training experts and project coordinator jointly prepared training materials.

The Action Programme on dietary diversification was developed over one year, from November 1996 to October 1997. Technical officers from virtually all government sectors participated in the programme's development, along with people from the community and the FAO team of experts. Thus, the heads of all state ministries that are represented in the State Executive Council were fully aware of the Action Programme, and approval of the Action Programme document was quick. Six different consultative stages were undertaken before presenting the plan to the State Executive Council for approval. Different segments of the Kano State society were involved, starting with participatory discussions of the problems and suggestions of remedial actions by rural communities. The information from these discussions was used in further elaboration and refinement of elements of the Action Programme by multidisciplinary teams of experts and policy-makers.

Initially, past and present programmes on dietary practices operated by government and non-governmental organizations (NGOs) in Kano State were reviewed and their strengths and weaknesses were highlighted. Programmes relevant to food and nutrition in the agriculture, health, community development and formal and informal education sectors were examined. Information systems of these programmes and the institutional capacity of the sectors, including training and research institutions, were also reviewed. After the review, supplementary information which was essential for the development of a comprehensive Action Programme using the PRA approach was quickly collected. The objectives of the PRA were set and a checklist of issues to be discussed during the PRA was developed.

The primary objectives of the PRA were to gain a better understanding of the household food security and nutrition situation, including the associations with different farming systems; to identify the potential and opportunities which had not been adequately exploited; and to recommend specific food-based interventions for implementation in the appraised area and others with similar agro-ecological characteristics.

Tudun Wada was selected on the basis of their agro-ecological features. Tudun Wada is situated in the southern part of the state and falls in the Northern Guinea ecological zone; the presence of irrigation facilities was taken into consideration in the selection of four villages per local government area appraised. A ward was appraised from each of the wards selected. It is based on this background that the researcher intends to find out the opinion of rural women on the relationship between nutrition extension education and dietary practices in Tudun Wada Local Government Area of Kano State.

1.2. Statement of the Problem

Malnutrition in Nigeria is rampant and often severe (Ekeh,2011). Nigeria, taking into consideration local customs, food production pattern, post-harvest handling of agricultural produce and the dietary need of different sexes and age groups has not being able to solve her nutritional problems. Omilola (2010), acknowledged that nutrition extension education is the most important method of combating malnutrition in developing countries, as it is possible to improve nutrients intake of individuals despite the absence of improvement in their status.

In support of the above statement, Ekeh (2011) asserted that the high level of malnutrition among Nigerians in the rural areas is attributed to poor nutritional knowledge and habit as well as other factors, which substantially influence patterns of food consumption.Samuel (2012) also pointed out that rural women have many health and nutritional problems resulting from many

factors including lack of knowledge (nutritional education) and age characteristics. Besides, nutrition education in schools is capable of exerting significant influence on knowledge of nutrition values and acceptance of healthy habits, but rural women who were not in school need nutritional extension education in order to obtain nutritional knowledge.

The major problem therefore, is how these extension programmes had impacted on the lives of people in the rural communities and to what extent their impact solved problems in our rural communities. It is based on the above, that the researcher wants to find out the opinion of rural women on the relationship between nutrition extension education and dietary practices of in Tudun Wada Local Government Area of Kano State.

1.3. Objectives of the Study

The objectives of this study are to:

- I. Identify the scope of nutrition extension education programme provided to rural women in Tudunwada Local Government Area of Kano State.
- II. Determine the level of rural women participation in the nutrition extension education programme in Tudun Wada Local Government Area of Kano State.
- III. Examine the methods used by nutrition extension workers provided to rural women in Tudun Wada Local Government Area of Kano State.
- IV. Determine the impact of nutrition extension education programme on the dietary practices of rural women in Tudun Wada Local Government Area of Kano State.

1.4 Research Questions

The study seeks to answer the following research questions:

- I. What is the scope of nutrition extension education programme provided to rural women in Tudunwada Local Government Area of Kano State?

- II. What is the level of rural women participation in the nutrition extension education programme in Tudun Wada Local Government Area of Kano State?
- III. What are the methods used by nutrition extension workers provided to rural women in Tudun Wada Local Government Area of Kano State?
- IV. What are the impact of nutrition extension education programme on the dietary practices of rural women in Tudun Wada Local Government Area of Kano State?

1.5 Research Hypotheses

The following null hypotheses are formulated for this study:

Ho₁: There is no significant relationship between the nature of nutrition extension education programme and the dietary practices of rural women in Tudun Wada Local Government Area of Kano State.

Ho₂: There is no significant relationship between the level of participation in nutrition extension education programme and the dietary practices of rural women in Tudun Wada Local Government Area of Kano State.

Ho₃: There is no significant relationship between the strategies used by nutrition extension workers and the dietary practices of rural women in Tudun Wada Local Government Area of Kano State.

Ho₄: There is no significant relationship between nutrition extension education programme and the dietary practices of rural women in Tudun Wada Local Government Area of Kano State.

1.5. Significance of the Study

The significance of this study is to make contribution to knowledge, research, policy making and extension education practice.

The study provided vital information that shaped the understanding of educational theories and practices, especially as it concerns extension education in rural areas in Nigeria. It will also enable

the policy makers and administrators to appreciate the importance of extension education in rural communities and in the formulation of policies.

This study will serve as a reference material to all the extension education teachers/workers, especially in the area of providing nutrition education through extension programme to people in the rural communities. Other researchers will also find this study as a reference material in carrying out researches on the same or somewhat related topic.

This study will enable the Ministries of Education both at the federal and state levels, to appreciate the impact of extension education programme in rural community development in Nigeria. It will also enable the ministries to promote and encourage studies and research works from extension education programme in our universities.

1.6. Scope and Delimitation of the Study

The scope of this study covered Tudun Wada A, B, Yaryasa, Karefa and Nata'ala wards in Tudun Wada Local Government Area of Kano State. This is because it is among the local government areas where nutrition education programmes is taking place. This study is delimited to the scope of nutrition extension education programme provided to rural women, the level of rural women participation in the nutrition extension education programme, the methods used by nutrition extension workers provided to rural women and the impact of nutrition extension education programme on the dietary practices of rural women in Tudun wada Local Government Area

1.7. Operational Definition of Terms

For the purpose of this study, the following operational definitions are put forward:

Diet: The food that a person consumes in order to improve on his health and physical fitness.

Dietary practices: The way and manner people select what they eat based on the nutritional content of the food.

Extension Education: Imparting and acquiring knowledge and skills through the increase of the scope or application of the system.

Nutrition: The process of absorbing nutrients from food and processing them in the body in order to keep healthy or to grow.

Nutrition Extension Education: This refers to individual or group education sessions and the sharing of information and educational materials on nutrition

Women Participation: This refers to involvement of rural women of Tun dun Wada Local Government Area in sharing of information on nutrition.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter reviewed related literature to the research study. Materials collected from different secondary sources were reviewed under the following sub-headings:

- 2.1. Theoretical Framework of the Study.
- 2.2. Conceptual Framework of the Study.
- 2.3. Approaches to Education extension.
- 2.4. Nutrition Education Extension.
- 2.5. Components or Phases of Nutrition Education.
- 2.6. Nature of Nutrition Extension Programme in Kano State
- 2.7. Effectiveness of Nutrition Education Extension.
- 2.8. Determinants of Nutritional Status of Rural Nigerian Women.
- 2.9. Nutritional Situation in Rural Areas in Nigeria and there Consequences.
- 2.10. Religion and Dietary Practices.
- 2.11. Negative Dietary Practices.
- 2.12. Empirical Studies.
- 2.13. Summary and uniqueness of the study.

2.1. Theoretical Framework of the Study

The study was premised on the transformative learning theory. Mezirow, (2004) who is the proponent of transformative learning theory stated that transformative learning for emancipation education is the business of all extension education. This psychological approach to adult learning developed by Mezirow in 1978 inspired many in the women's movement and focuses on deep changes in how adults see themselves and their world (Mezirow, 2000). Mezirow defines transformative learning as the process by which we transform our taken-for-granted frames of reference (meaning perspectives, habits of mind, mind-sets) to make them more inclusive, discriminating, open, emotionally capable of change,

and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide actions (Mezirow, 2000).

Simply, transformative learning replaces a point of view or mind-set with one that is more developed or matures (Merriam, 2004). The goal of this learning theory is learner empowerment through critical reflection for a more participatory learning society (Cranton, 1994). This theory suggests a triggering event catalyzes the transformative learning process. This learning process requires thinking deeply about assumptions that change due to the triggering event. The learner constructs new meaning of their experience from the new context created by the triggering event and through conversation - teaching and learning between the participants (the rural women) and the extension agents with others to assess and justify their assumptions. This transformative process results in reflective action from changes in life experience (Mezirow, 2000).

Mezirow suggests a 10-step process for transformative learning (Mezirow, 2000):

1. Experience a disorienting dilemma.
2. Undergo self-examination.
3. Conduct a deep assessment of personal role assumptions and alienation created by new roles.
4. Share and analyze personal discontent and similar experiences with others.
5. Explore options for new ways of acting – adopting a new dietary practice.
6. Build competence and self-confidence in new roles.
7. Plan a course of action.
8. Acquire knowledge and skills for action.
9. Try new roles and assess feedback.
10. Reintegrate into society with a new perspective – a new dietary practices.

Transformative learning theory implications for Extension include the following:

Interdisciplinary problem solving could more fully guide Extension's transformation rather than just dissemination of content or a single discipline approach to problem solving. The theory shows the dynamic power of group transformation for change (Hart in Mezirow, 2004). Hence, the rural women as a group that need nutritional transformation. Personal transformation experienced in a group may catalyze organizational change more effectively than change initiated or catalyzed by an organization's leaders. Group transformation can build strong identity and solidarity across organizational units and levels in a turbulent environment (Franz, 2005).

This theory validates the role of the Extension worker as a helper and facilitator of learning rather than just a teacher of information learning (Baumgartner, 2001). This helping role is becoming more central to Extension's niche in solving complex public problems.

Transformative learning theory includes applied and participatory research, consistent with Extension's transformation to support more democratic learning environments through knowledge co-creation among faculty, field staff, and stakeholders. The theory reinforces autonomy with accountability as transformed learners commit to monitoring progress with each other. This commitment to accountability supports organizational transformation to better communicate the public value of Extension education (Franz, 2005).

2.2. Conceptual Framework of the Study

Various Scientists have defined the term "Extension" according to their interest, experience and training. This term was first used in a customary way in U.S.A. Afterwards it was used by many countries. Extension education is used in various fields, such as Agriculture, Animal Husbandry, Dairy, Veterinary, Health, Home Science, Industry, Cooperative and Forestry

Legans in Baumgartner (2001) defined Extension education as an applied science consisting of content derived from research, accumulated field experiences, and relevant

principles drawn from the behavioural science synthesized with useful technology into a body of philosophy, principles, content, and methods focused on the problems of out of school education for adults and youth. In other words it is the process of teaching moral people how to live better by learning ways that improve their farm, home and community institutions.

According to Horton in Franz (2005) Extension work is an out of school system of education in which adult and young people learn by doing with partnership between the Government and the people, which provides service and education designed to meet the people with fundamental objective of development of the people. It is a programme and a process of helping village people to help themselves, increase their production and to raise their general standard of living. Extension has now developed into a full-fledged discipline, having its own philosophy, objectives, principles, methods, and techniques which must be understood by every development worker and others connected with development. Franz(2005) maintained that the principles of extension philosophy are: the individual is supreme in a democracy; the home is the fundamental unit in a civilization; the family is the first training group of the human race; and the foundation of any permanent civilization must rest on the partnership of man.

The extension system includes all public, private, and non government development institutions that transfer, mobilize, and educate people, as distinct from a service or a single institution that, traditionally, provides advice only. After reviewing a number of efforts to define or characterize extension, it is helpful to see extension as both a system and the set of functions performed by that system to induce voluntary change among people for development. A set of functions of extension includes: transferring technology in multiple directions for sustainable development; transferring management to mobilize and organize developmental activities by all communities; transferring capacity to educate, build human resources and capacity building of all stakeholders, market intelligence, management, and in negotiating financial, input, and market

services.

An Extension Education Learning System is a dynamic, non-formal system for developing and implementing programs. The system consists of numerous complementary and interactive components, each contributing to the success of the total system. The individual components are the organization's mission; situation analysis; target audiences; needs assessment; program objectives; content; learning strategies; and the non-formal learning system, which includes inputs, evaluation and adjustment. Key supporting components of inputs include experience, reinforcement, and integration. Other components vital to the total system include collaboration with learner groups and learner motivation.

2.3. Approaches to Education extension

In practice, extension organizations everywhere pursue the overall goals of technology transfer and human resource development, though within organization this is a mix of objectives and within each country there, is a mix of organizational patterns. Oguntona (2008) stated that Technology transfer has a focus on production and technical efficiency and has been predominant in recent years while human resource development has focused more on institutional building, organization work, leadership development, increasing farmer knowledge and social change. These two premises have led to a wide variety of approaches to extension. A well-recognized categorization of extension approaches is the one by Ogunyinka (2003), who examined eight approaches to extension. These include: the general agricultural extension approach, commodity specialized approach, training and visit approach, the agricultural extension participatory approach, project approach, farming systems development approach, cost sharing approach and the educational institution approach. An alternate classification by Nagel in Ogunyinka (2003) differentiates between approaches that at least in principle, target all persons in

rural areas engaged in farming and those that purposely select clientele according to specific criteria. The general clientele approach is offered by Ministry-based Extension (in most countries) and Cooperative Extension in the United States.

Anderson and Feder in Oguntona(2005) prefer to focus on specific formats or approaches to extension that have appeared in the last three decades as an attempt to overcome some of the weakness inherent in the public extension systems of recent decades. These include Training and Visit (T & V), decentralization, privatized extension and Farmer Field Schools (FFS). In contrast he distinguished between a variety of public sector reform strategies supporting the new paradigm market-driven and income-generation, According to this distinction, market reforms encompass four major reform strategies. These include: revision of public sector systems; pluralism, cost recovery and total privatization.

2.4. Nutrition Education Extension

Nutrition education extension refers to individual or group education sessions and the sharing of information and educational materials on nutrition. Nutrition education involves teaching the client about the importance of nutrition, providing educational materials that reinforce messages about healthy eating, teaching adolescents skills essential for making dietary change, and providing information on how to sustain behavior change. Information gathered during nutrition screening or assessment will provide the necessary information on which nutrition issues need to be addressed during nutrition education training sessions. The goals of nutrition education are to help participants and their families:

- Improve their health status,
- Understand the strong relationship between nutrition and health,
- Improve their food choices and eating habits, and

- Prevent nutrition-related health problems.

As the relationships among diet, health, and disease prevention have become dearer, nutrition education and the promotion of healthy eating behaviors and lifestyles continue to receive increased attention. In its broadest sense, nutrition education according to Hanns in Baumgatner (2001) is "any combination of educational strategies designed to facilitate voluntary adoption of food choices and other food- and nutrition related behaviors conducive to health and well-being; ... it is delivered through multiple venues and involves activities at the individual, community, and policy levels. This definition recognizes that many factors influence behavior; successful nutrition education uses a systematic approach and strategies that include a variety of activities to help the target group make behaviour changes. The importance of nutrition education to development is common knowledge to nutritionists' extension agents worldwide. Health is directly related to nutrition.

Health-sustaining diets do not just happen, but must be planned. Understanding basic concepts of good nutrition practices is essential to healthy eating practices. The core elements of Nutrition Extension services are to promote food security, food safety, dietary quality, and food resource management and shopping behaviors. McGuire (2012) reported that low socioeconomic status results in health disparities that begin before conception, because the "health of the fetus is so closely linked to the health of the mother's Nutrition Extension program focuses on women with young children, women of child-bearing age and their children. Senior citizens receiving food stamps or seniors eligible for food stamps are a secondary audience for the nutrition education program.

Clients often enter nutrition education programme at the person temptation stage. They are often not aware of the potential health risks associated with poor eating habits and have not thought about making dietary changes. The initial goal of nutrition education extension

programme therefore, will be to increase the client's awareness of risks associated with current eating habits. In situations such as the diagnosis of diabetes mellitus, client may be aware of the need to change dietary habits but may show resistance toward change. Identifying potential barriers to change and providing small, achievable goals along with concrete strategies to facilitate necessary dietary modifications are often the initial stages of nutrition education.

A variety of methods of nutrition education are used successfully with clients in rural/urban areas. Individuals learn in variety of ways and each individual responds differently to various methods of education. In general, clientele learn best when they are actively involved in nutrition education.

2.5. Components or Phases of Nutrition Education

Nutrition education can be considered as having three essential phases or components. This components or phase was examined by Nagel in McGuire (2012) as follows:

1. A motivational phase, where the goal is to increase awareness and enhance motivation of the intended audience. Here the focus is on why to make changes.
2. An action phase, where the goal is to facilitate the ability to take action. Here the focus is on how to make changes.
3. An environmental phase where nutrition educators work with policymakers and others to promote environmental supports for action. Each component needs to be based on appropriate theory and research.

The *motivational* phase focuses on increasing awareness and enhancing the motivation of the intended audience. Motivation can be enhanced when the intended audience recognizes the positive outcomes (benefits) to be experienced by taking action and comes to value these outcomes. Nutrition education can also point out the risks of not taking action, explore the barriers to taking action and suggest ways to overcome the barriers. A need analysis found that

people are very aware that there are benefits to taking action - eating lots of fruits and vegetables but believe that the barriers are high. So the campaign focuses on decreasing barriers with the simple message that eating fruits and vegetables is easy. A picture of a banana is accompanied by the message, "Peel. Eat. How easy is that?" The picture of an apple states, "Wash. Eat. How easy is that." The venues for the messages are posters, bill-boards, classroom activities, and newspaper articles. These messages are designed to change beliefs about barriers and hence improve attitudes.

They also enhance people's sense of control, thus increasing their self-efficacy. This programme can also provide for opportunities for the audience to taste healthful foods prepared in delicious and tasty ways. Such experiences with foods will increase their beliefs about the positive outcomes of eating these foods. Interventions can also focus on social norms. For example, breast-feeding is very influenced by the attitudes of the culture, the woman's family, and the father of the infant. Nutrition education can help women recognize these influences and develop strategies for coping with family and culture. These motivational activities may help lead people to choose the intention to eating the foods, or carry out the Practices that are the focus of the intervention.

The *action component* focuses on facilitating the ability of the intended audience to take action. Many people will make 'intentions to adopt healthful' eating. However, acting on their intentions is very difficult. Action phase activities help people make bridge the "intention to action" gap and to actually make changes and maintain them over time. Research has shown that when people make specific action plans, they are more likely to take action. This process is often referred to as goal-setting. Here people make goals or action plans that are very specific, such as I will bring a fruit to work to eat at my morning break or I will replace my sweet dessert at dinner with fruit 3 times this week. An example is the Eat Fit program where middle school

students choose one major goal to work on, such as increasing their fruit and vegetable intake or reducing their sugar intake.

They then set specific action plans for how they will do that. They must also learn self-regulation or self-management skills so that they can manage difficult situations and develop personal habits and policies that will help them maintain healthful eating. In addition, the intended audience needs to learn food and nutrition-related knowledge and skills so that they can act on their motivations.

The *environmental component* has become increasingly recognized as extremely important. Here nutrition educators work with policymakers and others to promote environmental supports for action. Thus nutrition educators work with relevant decision-makers at the community, regional and national level to increase the availability of healthful foods at affordable prices and accessibility at places where food is selected or eaten and improve social structures, food policy in institutions and communities (and even in the agricultural sector) in order to improve people's opportunities to take healthful actions. It has been said that the healthful action should be the easy action.

2.6 Nature of Nutrition Extension Programme in Kano State

The past decade has witnessed a gradual shift in programme design and nutrition extension approaches from the top-down approach to active community involvement in problem identification and planning of interventions. While it is appreciated that the owner of the shoe knows where it pinches most, the adoption of a participatory approach in development programmes has brought with it several challenges. These include the need to modify the approach and attitude of the experts and extension workers towards the community on the one hand, and the challenge of encouraging communities to express their views openly on issues pertaining to their

development and of strengthening their analytical and planning skills on the other hand (Oguntona, 2008).

Where the community is consulted effectively, people show enthusiasm and keenness to take up new roles on their dietary practices. Experts and extension workers are learning a lot about the communities they serve and in some instances they are discovering indigenous knowledge they had not been aware of because of the previous approach to extension. Training materials to reorient experts and extension workers to participatory approaches are constantly being refined on the basis of experiences accrued. Training programmes to reorient extension workers originally trained to deliver a package or a message on dietary practices are under way in most rural areas.

It is against this background that the Food-Based Action Programme for Household Food Security and Nutrition Improvement for Kano State, Nigeria was initiated in 1996 with assistance from FAO's Technical Cooperation Programme. The Action Programme was a response to the high levels of malnutrition in the northern savannah zone of the country, as had been reported in a nutritional survey sponsored by the United Nations Children's Fund (UNICEF) in 1993. Kano State falls within the area that was found to have the highest prevalence of stunting or chronic malnutrition (51 percent) among children under five years of age (Oguntona, 2008).

Six months after the initiation of the Action Programme, the project held multisectoral training sessions for trainers and extension workers. As the Action Programme foresees training at both pre-service and in-service levels, participants for the trainer orientation sessions were drawn from all the state-run tertiary institutes in the agriculture, health and formal and non-formal education sectors as well as from line ministries and agencies currently conducting in-service training sessions for extension workers. Extension workers' supervisors were also included. Trained extension workers comprised grassroots-level workers from all sectors involved in household food

security and nutrition improvement through good dietary practices. The majority came from areas appraised during the PRA.

The training objectives were to create awareness on the intersectoral nature of household food security and nutrition issues and to develop and strengthen skills needed during the implementation of the various components of the proposed food-based Action Programme. In addition, the extension workers' training included strengthening of their capacity to undertake participatory extension.

Areas covered during training included basic and new concepts in nutrition; the household food security concept and how it is locally perceived; crop, livestock and dietary diversification; management of small animals; common forms of malnutrition in Kano State, including their detection and monitoring; diarrhoea prevention and management; and community participatory planning and implementation of household food security and nutrition interventions. The training experts and project coordinator jointly prepared training materials. These materials were used during the implementation of the training component of the Action Programme.

The Action Programme on dietary diversification was developed over one year, from November 1996 to October 1997. Technical officers from virtually all government sectors participated in the programme's development, along with people from the community and the FAO team of experts. Thus, the heads of all state ministries that are represented in the State Executive Council were fully aware of the Action Programme, and approval of the Action Programme document was quick. Six different consultative stages were undertaken before presenting the plan to the State Executive Council for approval. Different segments of the Kano State society were involved, starting with participatory discussions of the problems and suggestions of remedial actions by rural communities. The information from these discussions was used in further

elaboration and refinement of elements of the Action Programme by multidisciplinary teams of experts and policy-makers.

To facilitate the review and analysis of the household food security and nutrition situation and existing programmes and structures, FAO provided a multidisciplinary team of experts specialized in participatory rural appraisal (PRA), farming systems and agricultural extension, nutrition programmes and training, and nutrition-related health issues. This team also began some activities which laid a foundation for the implementation of the Action Programme. Multidisciplinary trainers and extension workers were trained in areas critical to effective implementation of the proposed Action Programme, including participatory extension. Training materials for use during these and future intersectoral training programmes were also developed (Omilola, 2010).

Initially, past and present programmes on dietary practices operated by government and non-governmental organizations (NGOs) in Kano State were reviewed and their strengths and weaknesses were highlighted. Programmes relevant to food and nutrition in the agriculture, health, community development and formal and informal education sectors were examined. Information systems of these programmes and the institutional capacity of the sectors, including training and research institutions, were also reviewed. After the review, supplementary information which was essential for the development of a comprehensive Action Programme using the PRA approach was quickly collected. The objectives of the PRA were set and a checklist of issues to be discussed during the PRA was developed.

The primary objectives of the PRA were to gain a better understanding of the household food security and nutrition situation, including the associations with different farming systems; to identify the potential and opportunities which had not been adequately exploited; and to

recommend specific food-based interventions for implementation in the appraised area and others with similar agro-ecological characteristics.

The appraisal was aimed at providing valuable information on the communities' perceptions of household food security and common nutrition and health-related problems. Apart from establishing the communities' opinions and views of the ways and means of improving the local situation, the appraisal aimed at establishing access to extension services, credit and marketing facilities and health information and facilities, among others.

Multidisciplinary experts and extension workers were selected from the Ministries of Agriculture, Health, Education and Community Development; the Kano State Agricultural and Rural Development Authority (KNARDA), the agency responsible for agricultural extension; and the Population Commission. After the participatory appraisal training, the participants were divided into four multidisciplinary groups of five members each. Under the guidance of a team leader and an FAO expert, each group visited a village in each of three local government areas.

The three local government areas, Tudun Wada, Warawa and Tsanyawa, were selected on the basis of their agro-ecological features. Tudun Wada is situated in the southern part of the state and falls in the Northern Guinea ecological zone; the centrally located Warawa Local Government Area falls in the Wet Sudan Savannah zone; and Tsanyawa is located in the extreme northern part of the state and falls in the dry Sudan Savannah. The presence of irrigation facilities was taken into consideration in the selection of four villages per local government area appraised. A ward was appraised from each of the wards selected.

2.7. Effectiveness of Nutrition Education Extension

Critical reviews examine its effectiveness have demonstrated that nutrition education Extension can make a significant contribution to improved dietary practices, Well-designed and effectively implemented nutrition education can motivate those participating to change dietary behaviors and provide them with the knowledge and skills to make healthy food choices in the context of their lifestyles and economic resources.

Effective nutrition education and promotion includes multiple components, this in a study conducted by Omilola (2010) include:

1. Skill building to facilitate positive behavior change;
2. Environmental and policy changes to make the healthy choice the easy choice, and
3. Integrated initiatives and social marketing to build community and social support. It helps consumer's select and consume healthy and enjoyable foods by improving awareness, skills, and motivation to take action at home, school, and work. It is ongoing, multifaceted, and disseminated through a variety of channels (outlets). It will vary 'based on target population, and take into consideration knowledge and social, health, and environmental influences. Successful interventions will use different approaches for different groups and situations.

Key components that are associated with effective nutrition education and promotion initiatives according to a research conducted by Maziya-Dixon (2009) are highlighted below.

Target specific behaviors or practices: Interventions focused on specific behaviors, like eating more fruits and vegetables, are more likely to be effective than those that focus solely on increasing knowledge about health and nutrition. This interrelationship between knowledge and behavior was highlighted in study of salad bars in elementary schools. Researchers found that in schools providing six nutrition classes students selected more fruit from the salad bar than students in schools where the salad bar was provided without any nutrition education.

Focus on the interests and motivations of targeted population: Research indicates that in developing and implementing interventions, it is important to recognize the motivations of the target audience and to develop appropriate strategies based on those

mediators. For elementary school children, preference and availability are primary motivators, meaning that nutrition education efforts should focus *on* helping children become familiar with and offering opportunities to taste healthy foods. As children become older, and in efforts aimed at adults, other mediators are important, like peer influences, behavioral choices, sense of competence and autonomy, and health outcomes.

Devote sufficient time and intensity: There appears to be a generally positive association between the intensity of the intervention and dietary improvement. Interventions with longer durations and more contact hours have been shown to result in more positive outcomes.

Deliver coherent and clearly focused curricula: Similar to the need to target specific behaviors and practices, nutrition education curricula need to focus on specific behaviors that are actionable "and are presented in an organized and sequential way.

Involve multiple components using a social ecological 'approach: An approach that uses multiple components - like classroom-based strategies, cafeteria interventions, and home and community components to focus on specific positive behaviors - is more likely to result in change.

2.8. Determinants of Nutritional Status of Rural Nigerian Women

The nutritional status of rural women is of great concern in the contemporary world, because the multiple roles played by rural women give rise to serious nutritional problems. McGuire (2012) observed that the situation is even worse in countries where societal norms and sex discrimination have forcefully subjected rural women to satisfy the nutritional needs of their families at their own expense. Rural women are, thus, vulnerable to malnutrition for social and biological reasons.

Recently, efforts have been made to improve rural women's economic independence in Nigeria by introducing Better Life for Rural Women and Family Support Programmes (FSP) to

ensure a more equitable role for rural women in the community. As in other regions, African rural women are an indispensable part of human resources for development. Their quality of life is very important for their effective participation in development.

The type of work the rural women did and the number of hours spent affected their food intake. The longer the hours of work, the higher the energy intake, and the lower the protein, iron, calcium, riboflavin and niacin intake, the lower the Body Mass Index (BMI). This also confirms earlier studies by Holmboe-Ottesen (2009) which stated that a heavy workload for rural women might lead to poorer diets not only for their children and other members of the families but also for women themselves. Types of food eaten by these rural women, especially the farmers, were mainly based on unbalanced starchy root and tuber meals, e.g. boiled cocoyam/yam, and palm oil/boiled cassava slices. Another major cause of poor diets could also be linked to low income, since it determines the quality and quantity of foods consumed.

Hence, these rural women were unable to meet their iron, niacin and riboflavin requirements. Lack of iron has often led to the high prevalence of iron-deficiency anemia among rural women. According to Ene-Obong (2011), riboflavin plus niacin decreases the incidence of esophageal cancer by 14%. Thus, deficiencies of these vitamins among Nigerian rural women may have far-reaching nutritional implications. He stated that food taboos did not have any important impact on the nutritional status of the rural women. The very fact that only a few adhered to these taboos speaks for itself. The statement by a young rural woman that “we are encouraged at health centres to eat snails, but our problem is that they are costly” also suggests that purchasing power rather than taboos is the constraint. Besides, with urbanization these bush animals are becoming very scarce. Where available, they are expensive. Ene-Obong study confirms the views of other researchers who reported that food taboos are more often breached than followed.

Ene-Obong maintained that food distribution within the households and the sacrificial tendencies of rural women have been implicated as major determinants of the nutritional status of rural women. Although the learned among them had better food distribution practices. This suggests that it is not just the quantity of food that matters but also its quality. Definitely, the learned ones among them had a better income and a more varied diet practices. The slightly higher proportion of food eaten by rural men may also be related to their higher energy needs for maintenance of weight and physical exercise.

The findings of Eno-Obong study showed that where the amount of food is small, the above practices could be harmful, since most rural women would give preference to their husbands and children. This cultural practice is prevalent in many parts of the world. Homboe-Ottesen (2009) reported that, in Sri Lanka, poor rural women took pride in being able to provide their husbands and children with satisfying and adequate meals every day even if they had to work extra hours to reduce their intake. These dietary practices had little or no effect on Nigerian rural women, since they probably had a better income and better knowledge of their food needs.

They probably could afford to cook and consume more nutritious meals. Kurz (2012) reported that girls who stay in school longer have higher self-esteem and self-confidence, because they develop social contacts outside their homes, which contribute to their self-concept and aspirations for the future. It was not surprising then that the learned among them rated themselves higher, despite the low societal rating of rural women. Increased self-esteem means that these women know their worth as individual family members and would not, therefore, work within unfavourable cultural norms. It is, therefore, not surprising to see that the learned ones among them had better nutritional status than the other groups who both show high levels of chronic energy deficiency (low BMI), low nutrient intake, and evidence of riboflavin deficiency.

2.9. Nutritional Situation in Rural Areas in Nigeria and their Consequences

Malnutrition is a devastating problem in rural areas in Nigeria, not only to its people, but also to its security and economy. Although the numbers have decreased in recent years, according to Maziya-Dixon (2004), 41 percent of our children under the age of five are still stunted, 23 percent are still underweight, and 14 percent are still wasted¹, while 12 percent of mothers are clinically undernourished. He stated that in addition to a lack of basic protein and energy, the immediate causes of malnutrition are a lack of micronutrients such as vitamin A, iodine, and iron. Almost 63 percent of rural women are anemic and 31 percent are iodine deficient, while close to 30 percent of under-fives is vitamin A deficient. Malnutrition is concentrated in the rural areas of Nigeria, as well as the northern strip, and primarily effects poor women and children. The underlying problems leading to such high levels of malnutrition include maternal malnutrition, lack of education, poor breastfeeding practices, poor dietary practices and lack of access to effective health services. Omilola (2010) stated that improving the nutrition of our people, especially rural women and children, is a cost-effective endeavour. He maintained that better-nourished citizens are more effective participants in the labour force and will undoubtedly help our nation prosper. Hence, the need to expand our fortification programs such as Nutrition Extension education as well as focus on the roles of rural women in the nutritional outcomes of their children.

Malnutrition in Nigeria is rampant and often severe. Over a quarter of all undernourished West Africans reside in Nigeria. Ogunyinka (2003) stated that nationally about 12 percent of women suffer from chronic under nutrition. There are over six million undernourished children in rural areas in Nigeria, accounting for almost 80 percent of children under 5 years. There are two main patterns of malnutrition found in children, stunting and wasting. Currently 41 percent of Nigerian children under-five suffer from stunting, and about 14 percent have wasting. Many

children stop growing properly around six months, as they stop exclusive breastfeeding.

Micronutrient deficiencies also contribute to the malnutrition of rural women and children. Vitamin A, iodine and iron remain the three most essential micronutrients for our citizens. Ogunyinka stated that almost 30 percent of children under-five are vitamin A deficient, yet only about 27 percent of Nigerian children are regularly treated with supplements. Nigeria has had success with its program to iodize salt, and in 2006, 97 percent of household salt was iodized. However, one problem we have had is that iodine and vitamin A deficiencies are not necessarily apparent in the same regions of Nigeria. This makes their delivery more difficult. One of the largest micronutrient deficiencies in Nigeria remains that of iron. Anemia in pregnant women increases the risk of maternal death as well as infant death and birth defects; yet 63 percent of Nigerian rural women are currently anemic.

There are three regions in Nigeria that represent the majority of those affected by malnutrition. The first is in southwest Nigeria, the second is the north-central portion of Nigeria (including Abuja), and the third is the northwest of Nigeria (including Kano State). Malnutrition is highest for poor and uneducated women and children in the above-mentioned rural areas. Rural areas are disproportionately affected for many reasons, including distance from markets, poor dietary practices, health and education resources, as well as access to sanitary water and refuse disposal sites. For example, Omilola (2010) stated that about 82 percent of mothers living in urban areas consume iron rich food. In contrast only around 63 percent of rural women do the same. Even more closely correlated with malnutrition is the citizen's economic status. 64 percent of Nigerians live on less than a dollar a day and it is for these people that morbidity and mortality due to malnutrition is highest.

Being poor, uneducated, living in rural areas, and being a woman are all risk factors for malnutrition. Ogunyinka (2003) stated that 60 percent of Nigerians live in rural areas and are

dependent on the local agriculture for food and employment. Over the past decade GDP per capita for agriculture has steadily declined, leading to an increased risk for malnutrition. Nutrition is also correlated with ones ethnicity. He also stated that about 22 percent of Hausa women are acutely malnourished, only nine percent of Igbo women have BMI's less than 18. This is largely due to the fact that Hausa rural women are more likely to have arranged marriages that they enter into at young ages. They are more likely to be uneducated and less likely to go to health clinics, or utilize available health services. Children who are born from malnourished mothers are less likely to be exclusively breastfed for six months with proper nutrition provided after that time.

There are massive economic and social consequences to the high rates of malnutrition in rural Nigeria. We lose millions in GDP by allowing the pernicious cycle of malnutrition to continue in our country. Due to vitamin A deficiency alone, 25 percent of our children grow up with lowered immunity, which leads to frequent illness and poor health. Illness keeps children from attending school. A lack of education directly affects a child's ability to function at his or her full capacity in the labour force as an adult. Under nutrition impairs cognitive and physical development, leading to a less productive and upward moving economy. In addition, rural women who are malnourished are more likely to give birth to and raise children who are malnourished, continuing the cycle of poverty and malnutrition. Analysis by the Micronutrient Initiative shows that unless we take effective action to prevent and control dietary practices, over 80,000 Nigerian children will die annually (Davidoff, 2012).

Davidoff suggested that although certain programs have been successful in Nigeria, they need to be expanded and reworked so that their impact is as cost-effective as possible. We must continue to expand the fortification of all wheat, maize, sugar and vegetable oils with vitamin A, as well as work to implement the double fortification of salt with iodine and iron. Fortification is

a low-cost solution that in addition to slowing malnutrition provides jobs to our people, as well as new technology. We have benefited greatly from our partnership with local and international organizations such as the Micronutrient Initiative, UNICEF and the World Health Organization. We must maintain and build upon these relationships.

In addition to fortifying basic foods, we must focus on the rural woman's role in providing nutritious food to her family and to herself through good dietary practices. In the long run, increased access to nutrition education are vital, as well as a focus on increased gender equality. In the short term, increased focus on the importance of exclusive breastfeeding and the proper introduction of healthy and sanitary foods will be essential. While mothers should be the primary targets of information about nutrition, the father and elder's roles in the communities must be respected. Sensitization projects as well as the nutrition education of fathers, mothers-in-law and grandmothers are critical as well. We have had some success, but we need to do more in order to end malnutrition and help our country advance in the world.

2.10. Religion and Dietary Practices

Since the beginning of time, dietary practices have been incorporated into the religious practices of people around the world. Some religious sects abstain, or are forbidden, from consuming certain foods and drinks; others restrict foods and drinks during their holy days; while still others associate dietary and food preparation practices with rituals of the faith. The early biblical writings, especially those found in Leviticus, Numbers, and Deuteronomy of the Old Testament (and in the Torah) outlined the dietary practices for certain groups (e.g., Christians and Jews), and many of these practices may still be found among these same groups today. Practices such as fasting (going without food and/or drink for a specified time) are described as tenets of faith by numerous religions.

2.10.1 Religious Belief Expressed as Food Customs

To understand the reasons for nutritional and dietary customs in any religion requires a brief orientation of the rationale for such practices and laws. Many religious customs and laws may also be traced to early concerns for health and safety in consuming foods or liquids. In the past, preservation techniques for food were limited. Modern conveniences such as electricity were unavailable, and the scholars of the day did not understand theories of health promotion, disease prevention, and illness as they do today.

According to Desai (2000), religious leaders of the day developed rules about the consumption of foods and drinks, and religious practices, restrictions, and laws evolved. Specific laws about what can be consumed remain in most religions today. The lack of mechanisms to refrigerate or preserve foods led to certain rituals, such as the draining of blood from slaughtered animals, while restrictions on the eating of foods known to spoil easily, such as eggs, dairy products, and meats, were devised for safety reasons.

Attention to specific eating practices, such as overeating (gluttonous behaviors), use of strong drink or oral stimulants, and vegetarian diets, were also incorporated into the doctrine of religious practice. In addition to laws about the ingestion of foods or drinks, the practice of fasting, or severely restricting intake of food and/or drink, became prevalent, and is still practiced by many religions today.

2.10.2. The Role of Fasting

Many religions incorporate some element of fasting into their religious practices. Laws regarding fasting or restricting food and drink have been described as a call to holiness by many religions. Fasting has been identified as the mechanism that allows one to improve one's body (often described as a "temple" created by God), to earn the approval of Allah or Buddha, or to understand and appreciate the sufferings of the poor.

Waibel (2012) stated that fasting has also been presented as a means to acquire the discipline required to resist temptation, as an act of atonement for sinful acts, or as the cleansing of evil from within the body. Fasting may be undertaken for several hours, at a specified time of the day (e.g., from sunrise to sunset, as practiced by modern Jews), for a specified number of hours (e.g., twelve, twenty-four, or more, as observed by Catholics or Mormons who fast on designated days), or for consecutive days, such as during the month of Ramadan for certain Muslims. Regardless of the time frame or rationale, religious groups observe the practice of fasting worldwide.

2.10.3. Health Benefits and Risks Associated with Specific Practices

Certain groups of people must necessarily be excused from fasting and restrictive practices. These groups include pregnant or nursing women; individuals with diabetes or other chronic disorders; those engaged in very strenuous work; malnourished individuals; young children; and frail elderly or disabled persons. Recognition of these exceptions has been addressed by each religious group. Most fasting practices allow certain intakes of liquid, particularly water. In fasting regimes where water is restricted, a danger of dehydration exists, and those fasting should be monitored.

Waibel (2012) stated that those who fast without liquids increase their risk of a number of health problems. Symptoms of dehydration include headache, dry mouth, nausea, fever, sleepiness, and, in extreme cases, coma. When these symptoms occur, it is important to end the fast or add water to the fast. Depending on the extent of the symptoms, ending the fast may be the only alternative. In severe dehydration cases, medical care should be sought as soon as possible to restore proper health.

Some negative health consequences have been observed as a result of fasting practices, however, especially those carried out over longer periods, such as the Muslim fast during

Ramadan. For example, excess acids can build up in the digestive system during a prolonged fast. This gastric acidity results in a sour taste in the mouth, a burning in the stomach, and other symptoms of illness.

The structure and outward appearance of each person's body is, in part, a reflection of the food and drink he or she consumes. All the organs of the body, as well as the skin, bones, muscles, and nerves, need nutrition to survive, regenerate, maintain function, and develop structural foundations. Desai (2000) pointed out that the vital organs, such as the liver, heart, brain, and kidneys, depend upon essential nutrients from food and drink to sustain life, increase strength, and improve health. Throughout life, the body constantly breaks down the food products that are ingested, using some components to rebuild the tissues that contribute to good health. Similarly, the body also disposes of the waste products of food through excretory processes or in storage centers (fat deposits, for instance) in the body.

The restriction of, or abstention from, certain foods may have a direct impact on the health of those engaged in such practices. According to Siregar (2011), some effects have been found to be positive, as in the case of vegetarian diets, which are eaten by many Seventh-day Adventists, Hindus, Buddhists, and Rastafarians. Research results have documented a 50 percent reduction in heart disease and longer life expectancy in people who eat a well-planned vegetarian diet. There are a number of religious rationales for a vegetarian diet. According to the Book of Genesis in the Bible, humans were given a plant-based diet

Table 2.1 World Religions, Dietary Practices and Restrictions, and Rationale

Type of religion	Practice or restriction	Rationale
Buddhism	<ul style="list-style-type: none"> • Refrain from meat, vegetarian diet is desirable • Moderation in all foods • Fasting required of monks 	<ul style="list-style-type: none"> • Natural foods of the earth are considered most pure • Monks avoid all solid food after noon
Eastern Orthodox Christianity	<ul style="list-style-type: none"> • Restrictions on Meat and Fish • Fasting Selectively 	<ul style="list-style-type: none"> • Observance of Holy Days includes fasting and restrictions to increase spiritual progress
Hinduism	<ul style="list-style-type: none"> • Beef prohibited • All other meat and fish restricted or avoided • Alcohol avoided • Numerous fasting days 	<ul style="list-style-type: none"> • Cow is sacred and can't be eaten, but products of the "sacred" cow are pure and desirable • Fasting promotes spiritual growth
Islam	<ul style="list-style-type: none"> • Pork and certain birds prohibited • Alcohol prohibited • Coffee/tea/stimulants avoided • Fasting from all food and drink during specific periods 	<ul style="list-style-type: none"> • Eating is for good health • Failure to eat correctly minimizes spiritual awareness • Fasting has a cleansing effect of evil elements
Judaism	<ul style="list-style-type: none"> • Pork and shellfish prohibited • Meat and dairy at same meal prohibited • Leavened food restricted • Fasting practiced 	<ul style="list-style-type: none"> • Land animals that do not have cloven hooves and that do not chew their cud are forbidden as unclean (e.g., hare, pig, camel) • Kosher process is based upon the Torah
Mormonism	<ul style="list-style-type: none"> • Alcohol and beverages containing caffeine prohibited • Moderation in all foods • Fasting practiced 	<ul style="list-style-type: none"> • Caffeine is addictive and leads to poor physical and emotional health • Fasting is the discipline of self-control and honoring to God
Protestants	<ul style="list-style-type: none"> • Few restrictions of food or fasting observations • Moderation in eating, drinking, and exercise is promoted 	<ul style="list-style-type: none"> • God made all animal and natural products for humans' enjoyment • Gluttony and drunkenness are sins to be controlled
Rastafarianism	<ul style="list-style-type: none"> • Meat and fish restricted • Vegetarian diets only, with salts, preservatives, and condiments prohibited • Herbal drinks permitted; alcohol, coffee, and soft 	<ul style="list-style-type: none"> • Pigs and shellfish are scavengers and are unclean • Foods grown with chemicals are unnatural and prohibited • Biblical texts

Type of religion	Practice or restriction	Rationale
	drinks prohibited • Marijuana used extensively for religious and medicinal purposes	support use of herbs (marijuana and other herbs)
Roman Catholicism	• Meat restricted on certain days • Fasting practiced	• Restrictions are consistent with specified days of the church year
Seventh-day Adventist	• Pork prohibited and meat and fish avoided • Vegetarian diet is encouraged • Alcohol, coffee, and tea prohibited	• Diet satisfies practice to "honor and glorify God"

SOURCE: SIREGAR, SUSAN ROGERS (2011)

2.11. Negative Dietary Practices

Although dietary practices are highly recommended for a healthy living, but some dietary practices are considered negative because it causes damages to the body. These include:

2.11.1. Alcohol

Moderate alcohol intake is not thought to be harmful to bone. In contrast, higher levels of alcohol intake – more than two standard units of alcohol daily – are been found to produce a significant increase in the risk of hip and other osteoporotic fractures (Kanis, 2005).

Excessive alcohol intake is known to have direct detrimental effects on bone-forming cells and on the hormones which regulate calcium metabolism. In addition, chronic, heavy alcohol consumption is associated with reduced food intake (including low calcium, vitamin D and protein intakes) and overall poor nutritional status, which will in turn have adverse effects on skeletal health. Excess alcohol use also increases the risk of falling, thereby increasing the opportunity for fracture.

2.11.2. Weight loss diets and eating disorders

Being underweight is a strong risk factor for osteoporosis. Very low body weight is associated with lower peak bone mass development in the young and increased bone loss and risk

of fragility fractures in older persons. In a large data analysis of 60,000 men and women worldwide (Kanis, 2005), the risk of hip fracture almost doubled in people with a body mass index (BMI) of 20 kg/m², compared with people with a BMI of 25 kg/m².

2.11.3. Lactose maldigestion and intolerance

When people are unable to digest all the lactose they have eaten, they are said to have lactose maldigestion. It results from a deficiency in the enzyme lactase, produced in the small intestine, which is responsible for breaking down lactose into simpler sugars, which are then absorbed by the body.

Lactose maldigestion does not necessarily result in lactose intolerance. Most people with lactose maldigestion can still consume at least some lactose-containing foods without experiencing symptoms of lactose intolerance. Lactose maldigestion and intolerance are more common among Asians and Africans than among people of northern European descent, although supplementation studies in postmenopausal Chinese women demonstrated that additional milk intake was well tolerated and slowed the rate of bone loss (Lau, 2001). Lactose intolerance is a potential risk factor for bone loss and osteoporosis, due to the avoidance of dairy products and possibility of lower calcium intakes.

2.11.4. Carbonated beverages

Concerns have been raised that consumption of carbonated soft drinks, notably cola drinks, may adversely affect bone health. Although a few observational studies have shown an association between high carbonated beverage consumption and either decreased BMD or increased fracture rates (Wyshak, 2000) in teenagers, there is no convincing evidence that these drinks adversely affect bone health.

Wyshak suggested either the phosphorus content or the caffeine content of cola beverages may have a negative impact on calcium metabolism, but this has not been demonstrated in

experimental studies. He stated that phosphorus is a key constituent of bone mineral along with calcium, and there is no evidence for detrimental effects of phosphorus intake on bone health or osteoporosis risk in healthy individuals.

If there is any negative effect of carbonated beverages, it is more likely to be due to the fact that these drinks displace milk in the diet, and hence impact on calcium intake.

2.11.5. Salt

A high sodium (salt) intake promotes urinary calcium excretion, and is therefore considered to be a risk factor for bone loss. The DASH bone study showed that lowering sodium intake was beneficial for bone metabolism, but this was in the context of other dietary changes (Wigertz, 2005). In his studies in teenage girls have shown that salt loading decreased the amount of calcium taken up by the bones, apparently via a decrease in calcium absorption. One study showed a small association between sodium excretion (a measure of salt intake) and bone loss in postmenopausal women. However, he stated that there is no clear evidence that lowering sodium intakes would reduce fracture rates in populations, although there may be other public health benefits from such a strategy, primarily a reduction in population blood pressure levels which in turn could reduce the risk of stroke and cardiovascular diseases.

2.11.6. Caffeine

Caffeine is often implicated in the development of osteoporosis, but again without any convincing evidence that this is the case (Harris, 2002). He maintained that caffeine does produce a small increase in urinary calcium excretion and a very small decrease in calcium absorption, but the body appears to balance this out by reducing calcium excretion later in the day, therefore the net effect is negligible. In his studies examining the effects of caffeine on rates of bone loss in postmenopausal women showed that as long as calcium intake was sufficient (above about 800 mg/day), caffeine intake had no detrimental effects. However, if calcium intake was low, caffeine

intake equivalent to about 3 cups of brewed coffee per day was associated with more bone loss.

Fasanu (2010) carried out a study on the Assessment of dietary knowledge, practices and control in type 2 diabetes in a Nigerian teaching hospital. The descriptive survey design was adopted for the study and the population for the study comprised all the 33 type 2 diabetes patients that attended the hospital over a three month period were studied to assess knowledge of DM, dietary practice and control. Percentage perceived, correct and accurate knowledge as well as practice were used for comparative analysis. The result showed all 33 subjects had truncal obesity and needed to lose weight. This was moderately severe in 60% of subjects. About 52% received dietary advice. The latter had a significantly higher mean dietary knowledge score than those without dietary advice. Significantly higher mean knowledge scores seemed to be associated with better dietary practices and better glycaemic control. Overall, dietary practices improved significantly following diagnosis and counselling. A significant proportion of subjects increased their use of food with low glycaemic index (legumes 48.5%, cereals 90.9%) following diagnosis. The findings further emphasize the importance of structured dietary advice and dietary control in Type 2 diabetes. In settings where dieticians are scarce, physicians managing diabetic patients must be skilled in the dietary management of the condition and show commitment to it.

The present study is similar to this past study because it studied the dietary practices among a group of people. The past and the present studies were survey study and used stratified sampling technique to sample the targeted population and structured questionnaire were used to collect data from the respondents. The present and past study used both null hypotheses. On the other hand, the present study is different from the past study because the locations are not the same. While the past study location was in Ile-Ife Osun State, North-west Nigeria, the present study is in Kano State North-west Nigeria. The past study was on 33 diabetes patients while the present study was on 142 rural women and extension agents. The past study used percentile statistics only to test the three

null hypotheses used for the study, but the present study used percentile and chi square to test the five null hypotheses stated.

Anetor (2009) conducted a research study to determine the effect of Nutrition Education on the Eating Habits of Undergraduates in South-West, Nigeria. The target population of the study comprised of 436 undergraduates from two universities in the South-west Nigeria. The purposive sampling technique was used to select the two universities and a stratified random sampling technique to select 120 undergraduates. Five research questions and five null hypotheses were used for the study. A survey design was used to find out the effect of nutrition education on eating habits of the undergraduates.

Experimental research design was also used to determine the effect of nutrition education on eating habits. Participants' eating habits was assessed before nutrition education intervention by having a focused group discussion and responding to a 19-item self-developed food frequency scale (pretest). Nutrition education intervention was given to the experimental group for 8 weeks and the control group had a placebo. The effect of nutrition education on eating habits was measured immediately and 8 weeks after intervention using the pretest scale (posttest). Data analysis was employed using SPSS version 15; independent t-test, ANCOVA, using the pretest as the covariate to measure the effect of the intervention. Nutrition education significantly affected the eating habits of the participants ($p < 0.05$). The experimental group performed better by contributing a higher mean score of 61.48 while the control group contributed a mean score of 56.64. The level of study significantly affected the eating habits of the participants with students in lower level of study performing better ($p < 0.05$). Nutrition education positively modulated the eating habits of the participants. More students need to be exposed to nutrition education on eating habits because it appears to be a potent tool in forestalling the harmful effects of poor eating habits especially cancer.

The present study is similar with this past study since both were on Nutritional education and eating habits of people. five hypotheses were used in both research studies. The stratified random sampling method was used to collect the actual subjects used in both studies..

The past study was different from the present study in terms of the location of the study. The past study was conduct in South-west Nigeria while the present study was in Kano Stae North-west Nigeria. The past study was at the undergraduate level while the present study was rural women at the local government level. Although, the past study was on eating habits, the present study was on dietary practices. The past study adopted experimental research designs; the present study only adopted the descriptive survey design. Only 120 undergraduates were used in the past study while the present study used 142 rural women and extension agents.

2.12. Summary of Literature Reiew and uniqueness of the study

This chapter reviewed all the related literature collected from the secondary sources of data collection. The study adopted transformative learning theory as the theoretical framework of the study based on the fact that it is the most supportive learning theory onthe transformation of learning for which this study was based on. The basic features of transformative learning is that it is as a process by which we transform our taken-for-granted frames of reference (meaning perspectives, habits of mind, mind-sets) to make them more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide actions. The concept of extension education, nutrition and dietary practices were examined and discussed.

The chapter also examined approaches to education extension, nutrition education extension, components or phases of nutrition education, effectiveness of nutrition education extension,determinants of nutritional status of rural Nigerian women, nutritional situation in rural areas in Nigeria and there consequences, religion and dietary practices and negative dietary

practices were discussed.

Finally, two empirical studies reviewed showed that nutrition extension education programme should be encouraged especially in the rural areas for proper nutritional treatment of the people. Therefore, considering the above reviewed studies, it was noted that none of the researchers considered the impact of nutrition extension education programme on dietary practices of rural women in Tudun Wada Local Government Area of Kano State. All these gaps are what the current study intends to close.

CHAPTER THREE

METHODOLOGY

3.0 This chapter presents the methodology adopted in the study. Under this chapter, the following subheadings were discussed:

- 3.1. The Research Design
- 3.2. The Population of the Study
- 3.3. The Sample Size and Sampling Procedure
- 3.4. Instrument for Data Collection
- 3.5. Validation of the Instrument
- 3.6. Reliability of the Study
- 3.7. Procedure for Data Collection
- 3.8. Procedure for Data Analysis

3.1. Research Design

The descriptive survey design was used for the study. This was considered suitable since data was required in their natural distribution in the population. It is defined by Dango and Ali, (1985) as a process in which a group of people or items, made up of a few members of the wider population are selected as representative of the much wider population and in which their opinion were sought through responding to data collection instrument.

According to Akpabio and Ebong (2009), this design is relevant when the researcher is required to undertake a systematic collection, analysis and presentation of data to give account of the characteristics of particular individuals, groups, or the state of events without manipulation of data as applicable in experimental studies. A similar design was successfully used by Ikorok (2007) in a related study. The survey research design was therefore considered relevant to this study as it was used to identify the scope of nutrition extension education programme provided to rural women, determine level of rural women participation in the nutrition extension education programme,

methods used and the impact of nutrition extension education programme on the dietary practices of rural women in the study area.

3.2. Population for the Study

The population for this study comprised of extension agents providing nutrition extension education and the beneficiaries of nutrition extension education in Tudun Wada Local Government Area of Kano State. According to data obtained from Women in Agriculture office of Kano State Agricultural and Rural Development Authority (KNARDA), there are four hundred and ninety-six (496) women participating in the programme and seventy-two (72) extension agents engaged in nutrition extension education programmes as providers in Tudun Wada Local Government Area of Kano State thereby making a total of five hundred and sixty eight (568) participants and providers of the nutrition extension education programme who are considered as the population for the study.

Table 3.1: Population According to Strata

S/N	Strata	Population of Respondents	Percentage of Total Population
1	Extension Agents	72	13%
2	Rural Women	496	87%
Total		568	100%

Source: Kano State Agricultural and Rural Development Authority (KNARDA, 2012).

3.3. Sample Size and Sampling Procedure

A sample of one hundred and forty-two (142) subjects were used in this study. The sample consisted of one hundred and twenty-four (124) subjects selected from the four hundred and ninety-six (496) women participating in the programmes and eighteen (18) selected from the seventy-two extension agents. Stratified sampling technique was used and 25% were selected from each stratum. The wards of the participants will represent their strata while the extension agents

stand as a stratum. This method of sampling is in line with Anikweze (2010), who stated that stratified sampling involves dividing the target population into groups that are called strata. Each stratum must have common characteristics that make them unique.

Umar (2009) stated that neither a fixed number nor fixed percentage is ideal for a sample size of any kind; rather, it is the circumstance of the study that determines what number or what percentage to be used. Hence, the researcher used 25 percent of the target population.

3.4. Instruments for Data Collection

A self-designed Nutrition Extension Education for Dietary Practices Questionnaire (NEED-PQ) was used to collect data for the study. Two sets of questionnaires were used, one for the participants (the rural women) and the other for the extension agents. The questionnaire comprised of three sections (A, B and C). Section A was on the personal data of the respondents; Section B was on the usefulness of the strategies used in teaching the participants and Section C was on the impact of nutrition extension education on the dietary practices of the rural women.

Section A of the questionnaire was designed to ascertain personal information on the authenticity of the respondents. It enabled the researcher to identify the participants and the extension agents in order to make sure that none answered more than one questionnaire. This section also enabled the researcher to identify the extension agents' academic qualification in order to make sure that they are really qualified. This section also enabled the researcher to find out the level and years of participation of the participants in Nutrition Extension Education. Section B contains five questions on the usefulness of the strategies. The format for scoring the items were as follows:

A = Very useful = 4 points

B = Useful = 3 points

C = Fairly useful = 2 points

D = Not useful = 1 point

Section C was four points rating scale based on the hypotheses. It contained 12 questions. Questions 1-3 are for hypothesis one, 4-6 are on hypothesis two, 7-9 are on hypothesis three and 10-12 are on hypothesis four. The scoring format are as follows:

A = Strongly agreed = 4 points

B = Agreed = 3 points

C = Disagreed = 2 points

D = Strongly disagreed = 1 point

3.5. Validation of the Instrument

3.5.1 Validity of the Instrument

Nutrition Extension Education for Dietary Practices Questionnaire (NEED-PQ) was submitted to the research supervisor for vetting. The researcher also gave it to two (2) experts on extension education, as well as two (2) experts on measurement and evaluation for their professional comment and amendments (where necessary) on the questionnaire. Their comments and amendments enabled the researcher to ascertain the appropriateness of the questionnaire items for the purpose it was designed. It also enabled the researcher to know the level of comprehensiveness, scope, accuracy and consistency of the questionnaire in supplying the needed data for the study. Therefore, content validity of the instrument was achieved through experts vetting. The instrument was modified based on the corrections and inputs of the experts.

3.5.2. Reliability of the Instrument

To ascertain the degree that the questionnaire is free from error in providing information about the target population and the degree that it provided repeatable and consistent results, the researcher administered the questionnaires twice within a space of two (2) weeks. A reliability coefficient of 0.50 between the first and second administration of the research instrument was achieved through

test-retest method. This was in line with Anikweze (2010) who stated that scores obtained on different occasions should be correlated to establish the degree to which the two set of scores correspond. A highly reliable test will yield similar scores on two administrations.

3.6 Procedure for Data Collection

With the help of the introductory letter from the researcher's department and the researcher's colleagues in extension education in Tudun Wada Local Government Area, the researcher personally distributed and collected the questionnaire from the respondents with the help of the extension agent. Due to the number of the participants and method of attending the training, the researcher used four (4) weeks to distribute and collect the questionnaires. The extension agent read out the questions as contained on the instrument while the responses of the rural women is taken. The extension agents participating in the programme however filled in the questionnaire and submit to the researcher.

3.7 Procedure for Data Analysis

The data collected were analyzed using Frequency, percentage and mean to analyze the data on the usefulness of strategies used in educating participants. The mean for each item was calculated based on the four (4) – point rating interval used in the study. The null hypotheses were tested using the Statistical Package for Social Science (SPSS) version 16.0 chi-square statistics (χ^2) at 0.05 level of significance.

To ease the statistical analysis, all the Very Useful and Useful were taken as “Useful” and all the Fairly Useful and Not Useful were taken as “Not Useful”.

Decision Rule: A weighted mean score of 2.50 and above was considered as useful while a weighted mean score of 2.49 and below was considered not useful with respect to the usefulness of strategies used in educating participants. This is because the mean rating of $4+3+2+1 = 10/4 = 2.50$

in testing the null hypotheses, if the calculated chi-square (χ^2) value is less than the table value the null hypothesis was accepted, while if the calculated chi-square (χ^2) value is greater than the table value, the null hypotheses were rejected.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.0 This chapter presents data analysis of the findings from data collected from participants and extension agents on the impact of Nutrition Extension Education on the dietary practices of rural women in Tudun Wada Local Government Area of Kano State. This is done with the view to find out how nutrition extension education has contributed to the choice of dietary practices of rural women.

4.1 Data Analysis

Table 4.1 Number of years in Nutrition Extension Education (Extension workers only)

Option	Frequency	Percentage (%)
1 to 5 Years	0	0
5 to 10 Years	14	78
Above 10 Years	4	22
Total	18	100

Source: Field Survey 2013

The above table showed that 14 of them representing 78% has 5 to 10 years experience in nutrition extension education while 4 of them representing 22% has above ten (10) years of experience in nutrition extension education.

4.1.2. Number of years of participation (participants only)

Table 4.2 Number of years of participation (participants only)

Option	Frequency	Percentage (%)
1 to 5 Years	23	19
5 to 10 Years	74	60
Above 10 Years	27	21
Total	124	100

Source: Field Survey 2013

The above table showed that 23 of them representing 19% has 5 to 10 years experience in nutrition extension education while 74 of them representing 60% has 5 to 10 yearswhile 27 respondents representing 21% has above ten (10) years of experience in nutrition extension education.

4.1.3. Present Highest Qualification (Extension workers only)

Table 4.3 Present Highest Qualification (Extension workers only)

Option	Frequency	Percentage (%)
B.sc/Bsc(Ed)/B.Ed	18	100
M.sc/MBA/M.Ed	0	0
Phd	0	0
Total	18	100

Source: Field Survey 2013

The above table showed that all the 18 extension workers representing 100% of the extension agents has first degree.

4.1.5 Years of Experience in Teaching (Extension workers only)

Table 4.4 Years of Experience in Teaching (Extension workers only)

Option	Frequency	Percentage (%)
1 to 5 Years	4	22
5 to 10 Years	9	50
Above 10 Years	5	28
Total	18	100

Source: Field Survey 2013

The above table showed that 4 extension workers representing 22% have 1 to 5 years of teaching experience as extension agent, 9 representing 50% has between 5 to 10 years while 5 representing 28% has above 10 years of experience. This showed that they are qualified to be used in this research work.

4.2. Analysis of Usefulness of Strategies used in Educating Participants on Dietary Practices in Nutrition Extension Education

Table 4.5 Usefulness of the Strategies to Participants

Strategies	VU	U	FU	NU	TU	TNU	TR	%U	%NU	Mean	Rating
Lecture	440	51	22	4	491	26	517	94.97	5.03	3.64	1st
Demonstration	360	87	22	12	447	34	481	92.93	7.07	3.39	2nd
Field Trip	264	108	42	19	372	61	433	85.91	14.09	3.05	3rd
Role Play	32	42	34	103	74	137	211	35.07	64.93	1.49	5th
Simulation	40	54	80	74	94	154	248	37.90	62.10	1.75	4th
Aggregate Mean Score = 2.66											

Source: Field Survey 2013

Item one in table 4.5 revealed that respondents to the usefulness of lecture method scored 440 very useful, 51 useful, 22 fairly useful and 4 not useful. The total scored useful was 491 (94.97%) as against those of not useful with scores of 26 (5.03%). In support of this, mean score

for item one was 3.64 which indicate the extent of the useful of lecture method as a strategy for educating the participants. The item is rated 1st position on the extent of usefulness.

Item two in the table 4.5 showed that respondents to the usefulness of demonstration method scored 360 very useful, 87 useful, 22 fairly useful and 12 not useful. The total scored useful was 447 (92.93%) as against 34 (7.07%) for not useful. The item has a mean score of 3.39 which indicates that the item is useful and the item is rated 2nd position on the extent of usefulness as a strategy for educating the participants.

In table 4.5, item three which was on the extent of the usefulness of field trip method as a strategy for educating the participants. In response to this item, very useful scored 264, useful scored 108 and 42 fairly useful while 19 scored not useful. The responses showed that useful scored 372 (85.91%) while not useful scored 61 (14.09%). This was supported with a mean score of 3.05 which indicates that the item is useful and occupied 3rd position on the extent of usefulness as a strategy for educating the participants.

Item four in table 4.5 sought to know the extent of usefulness of role play as a strategy for educating the participants. In response to this, very useful scored 32, useful scored 42 and 34 for fairly useful while not useful scored 103. Hence, total useful scored 74 (35.07%) while total not useful was 137 (64.93%). This was supported with a mean score of 1.49 which indicates that the item is not useful and was the 5th position on the rating scale on the extent of usefulness as a strategy for educating the participants.

Table 4.5 showed that on the usefulness of simulation method which is item five, very useful scored 40, useful scored 54, and fairly useful scored 80 while not useful scored 74. The score of 94 representing 37.90% scored useful as against not useful score of 154 representing 62.10%. The item had a mean score of 1.75 which indicates that the item is not useful and rated 4th position on the extent of usefulness as a strategy for educating the participants.

Table 4.5 revealed an aggregate mean score of 2.66 which indicates that the participants who are the respondents unanimously agreed that the various strategies used by the extension workers in educating them are very useful with lecture, demonstration and field trip which are rated first, second and third as the best strategies.

4.3 Test of Hypotheses

Four null hypotheses were raised for the study aimed at probing into the study. All the null hypotheses were tested with chi-square (χ^2) statistics at 0.05 level of significance.

4.3.1 Null Hypothesis One (1)

There is no significant relationship between the nature of nutrition extension education programme and the dietary practices of rural women in Tudun Wada Local Government Area of Kano State.

This hypothesis was tested using the scores in appendix IV. Pearson product moment correlation was used in testing the null hypothesis

Table 4.6 Correlation for Hypothesis One (1)

Variables	n	mean	sd	df	r	Probability
Nature of nutrition extension education	142	31.10	3.655	140	0.11	.822
Dietary Practices	142	4.05	.834			

Source: Field Survey 2013

The result in table 4.6 showed that the observed (calculated) *r* value of 1.458 is less than the critical (table) value of 7.82 at 0.05 level of significance. Therefore the null hypothesis which stated that there is no significant relationship between the nature of nutrition extension education programme and the dietary practices of rural women in Tudun Wada Local Government Area of

Kano State was accepted. This implies that both extension workers and participants agreed that the nature of nutrition extension education programme that they undergo has no relationship on their dietary practices.

4.3.2 Null Hypothesis Two (2)

There is no significant relationship between the level of participation in nutrition extension education programme and the dietary practices of rural women in Tudun Wada Local Government Area of Kano State.

This hypothesis was tested using the scores in appendix IV. Pearson product moment correlation was used in testing the null hypothesis in appendix VI was summarized in table 4.7.

Table 4.7 Correlation for Hypothesis Two (2)

Variables	n	mean	sd	df	r	Probability
Level of Participation in nutrition extension education	142	21.10	3.055	140	0.08	.622
Dietary Practices	142	4.05	.834			

Source: Field Survey 2013

The result in table 4.7 showed that the observed (calculated) *r* value of 0.772 is less than the critical (table) value of 7.82 at 0.05 level of significance. Therefore the null hypothesis which stated that there is no significant relationship between the level of participation in nutrition extension education programme and the dietary practices of rural women in Tudun Wada Local Government Area of Kano State was accepted. This implies that both extension workers and participants agreed that their level of participation in nutrition extension education has no relationship on their dietary practices.

4.3.3 Null Hypothesis Three (3)

There is no significant relationship between the strategies used by nutrition extension education workers and the dietary practices of rural women in Tudun Wada Local Government Area of Kano State.

This hypothesis was tested using the scores in appendix IV. Pearson product moment correlation was used in testing the null hypothesis in appendix VII was summarized in table 4.8.

Table 4.7 Correlation for Hypothesis Three (3)

Variables	n	mean	sd	df	r	Probability
Strategies used by nutrition extension workers	142	28.10	3.255	140	0.10	.722
Dietary Practices	142	4.05	.834			

Source: Field Survey 2013

The result in table 4.8 showed that the observed (calculated) r value of 36.692 is greater than the critical (table) value of 7.82 at 0.05 level of significance. Therefore the null hypothesis which stated that there is no significant relationship between the strategies used by nutrition extension education workers and the dietary practices of rural women in Tudun Wada Local Government Area of Kano State was rejected. This implies that both extension workers and participants agreed that the strategies used by nutrition extension education workers have a relationship on their dietary practices.

4.3.4 Null Hypothesis Four (4)

There is no significant relationship between nutrition extension education programme and the dietary practices of rural women in Tudun Wada Local Government Area of Kano State.

This hypothesis was tested using the scores in appendix IV. Pearson product moment correlation was used in testing the null hypothesis in appendix VIII was summarized in table 4.9.

Table 4.7 Correlation for Hypothesis Four (4)

Variables	n	mean	sd	df	r	Probability
Nutrition extension education	142	25.10	2.853	140	0.12	.682
Dietary Practices	142	4.05	.834			

Source: Field Survey 2013

The result in table 4.9 showed that the observed (calculated) r value of 7.308 is less than the critical (table) value of 7.82 at 0.05 level of significance. Therefore the null hypothesis which stated that there is no significant relationship between nutrition extension education programme and the dietary practices of rural women in Tudun Wada Local Government Area of Kano State was accepted. This implies that both extension workers and participants agreed that nutrition extension education programme has no relationship on their dietary practices.

4.4 Summary of Findings

The findings of the study are summarized as follows:

- i) The null hypothesis that there is no significant relationship between the nature of nutrition extension education given to women in the rural areas with their dietary practices is upheld.
- ii) That the level of participation of rural women in nutrition extension education is low since they are participating merely as beneficiaries and has no relationship with the dietary practices of rural women, hence the null hypothesis is also hereby rejected.
- iii) The null hypothesis that there is no significant relationship between the strategies used by the extension agents in the provision of nutrition extension education to women in the rural areas with their dietary practices is upheld.
- iv) That there is no significant relationship between nutrition extension education as provided to rural women with the dietary practices of the rural women, hence the null hypothesis is also hereby rejected.

4.5 Discussion of Findings

This research work was to find out the impact of nutrition extension education programme on the dietary practices of rural women in Tudun Wada local government area of Kano State. In order to achieve these purpose four specific objectives were set out and four null hypotheses were formulated. Frequency, percentages and mean were used to answer the usefulness of the strategies used by the extension workers and Correlation (**r**) statistics was used to test the null hypotheses.

The study revealed that the nature of nutrition extension education given to women in the rural areas has no relationship on their dietary practices which include factors responsible for adoption of the nature of foods available, method of food storage, the eating habit of the people, how the food are prepared and how the food are consumed, as other factors can influence the dietary practices of women in the rural areas. This finding collaborated to the findings of Okafor (2010), that determinants of dietary practices are those factors responsible for adoption of the nature of foods available, method of storage, the eating habit of the people, how the food are prepared and how the food are consumed. Such factors, in his view include sex, family income, environmental conditions (urban or rural), religious affiliation, availability of food items, knowledge of food values (nutrition education) and cultural significance among others.

This study also revealed that the level of participation of rural women in nutrition extension education alone has no relationship on the dietary practices of rural women. The level of one's participation which include how many times the women attend lessons, how frequently and consistently the women participate in classroom activities does not determine the dietary practices of the rural women because many factors such as poverty, socio-economic status, culture and religion can influence the dietary practices of the rural women. This was in line with Nwana (2010), that there are many factors that can determine the dietary practices of the rural women among these factors include participating in nutrition education.

The study also revealed that the strategies such as the method of teaching adopted by the extension workers, the classroom activities used by the extension workers and the manner of carrying out the extension programme by the extension workers have a relationship with the dietary practices of women in the rural areas. This finding was supported by Ikorok (2007), that there are many strategies for nutrition extension education programme, and that each has a vital role to play in dietary practices. Oguntona (2008) also stated that strategies for nutrition education

help elderly people in the rural areas to know how to select and combine the available food items in order to achieve their dietary needs.

Finally, this study revealed that nutrition extension education programme alone has no relationship on the dietary practices of rural women. This finding was contrary to the views of Nwana (2010) that nutrition extension education is very vital and can contribute a lot in influencing the dietary practices of many people including the rural women. Also was supported by Ekpeyong (2009) that nutrition extension education is highly needed in Nigeria, especially at the grass root level if Nigeria wants to excel in nutrition and dietary management of her people.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 This chapter presents the summary, conclusion and recommendations of the study. The conclusion of the research was made based on the findings and adequate recommendations were stated.

5.1 Summary

This research work was on the impact of nutrition extension education on the dietary practices of rural women in Tudun Wada Local Government Area of Kano State. In order to carry out a perfect study, the research work was divided into five chapters. The chapter one was the introductory chapter, here the background of the study was stated, the statement of the problem was clearly highlighted, four objectives was stated, based on the objectives four null hypotheses were formulated. The significance of the study was pointed out and important terms used were properly defined.

The chapter two was the review of related literature. The transformative learning theory was adopted as the theoretical frame work for the study. All the major concepts that formed the major variables in the study were properly discussed. Empirical studies were fully highlighted and fully discussed. The chapter was summarized and the uniqueness of the study was also explained. Chapter three was the research methodology the survey design was adopted, and questionnaire was the major instrument used to collect data from the respondents. Responses from the respondents were analyzed using frequency, percentage and mean, the null hypotheses was analyzed using the Pearson product moment correlation.

Chapter four was data presentation, analysis of findings and discussions. All the data collected were presented in a tabular format with detailed discussion on each of the analysis. The major findings were highlighted and discussion on each of the findings was fully explained. Chapter five was the summary, conclusion and recommendations. The study was fully summarized, conclusion was made based on the summary and adequate recommendations were made based on the findings.

5.2 Conclusion

From the foregoing, it could be concluded that nutrition extension education programme is very useful and important in influencing the dietary practices of rural women. However, opinion differs concerning the best strategies such as the method of teaching adopted by the extension workers, the classroom activities used by the extension workers and the manner of carrying out the extension programme by the extension workers and level of participation which include how many times the women attend lessons, how frequently and consistently the women participate in classroom activities that will be required in order to achieve a good dietary practice among rural women. Some argued that to achieve a good dietary practice socio-economic status, culture, religion, etc can influence the dietary practices of rural women. They argued that poverty, level of education, abundant food supply etc must be available in order to enable proper and good dietary practices. In addition to the above, experienced nutrition extension education should be able to know the best level of participation and strategy to adopt in order to achieve good dietary practice among rural women.

Most studies have shown that nutrition extension education programme can contribute adequately in influencing the dietary practices that is, factors responsible for adoption of the nature of foods available, method of food storage, the eating habit of the people, how the food are prepared and how the food are consumed by rural women. This is because both the extension agents

and the participants has commended nutrition extension education programme especially when dietary practices are concerned.

5.3 Recommendations

Based on the findings of this research work, the following recommendations are made:

- i) Stakeholders such as the State government and the Local government should always review the nature of nutrition extension education given to the rural women so as to enable them to find out the most appropriate type that can suit the dietary practices of rural women.
- ii) The level of participation of rural women in nutrition extension education should be reviewed by the coordinators and the extension agents so that adequate participation will have an effect on the dietary practices of the participants. This can be achieved if each participant makes good use of the period spent at the classroom.
- iii) In view of the findings that strategies adopted has an influence on the dietary practices of the rural women. Those strategies that proved effective should be adopted by the extension agents and if possible upgraded to the current practices in other rural areas in Nigeria.
- iv) Since nutrition extension education alone cannot change the dietary practices of the rural women, the government at all level should try to reduce the level of poverty of the rural women so that they can be able to afford those food items that has good nutritional values for their families. Hence, the state and local government should carry out enlightenment programme in the rural areas in order to make them understand that cultural and religious belief of the people has no effect on their

dietary practices. This campaign will go a long way to enable the rural women to implement what they are taught in nutrition extension education programme.

5.4 Recommendation for Further Study

In view of the limitations of this study, and in view of the importance of having a good dietary practices among rural women, it is hereby suggested that further research should be carried out on other factors such as culture, poverty, socio-economic status, etc and how they influence the dietary practices of rural women.

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3 (1)

APPENDIX I

QUESTIONNAIRE I

**PARTICIPANTS ASSESSMENT ON THE IMPACT OF NUTRITION EXTENSION
EDUCATION PROGRAMME ON DIETARY PRACTICES OF RURAL WOMEN IN
TUDAN-WADA L.G.A OF KANO STATE**

Dear Participants,

I am a post-graduate student of Extension Education in Department of Adult and Community Services of Bayero University, Kano. This questionnaire was designed in order to enable the researcher find out the impact of Nutrition Extension Education on the dietary practices of rural women in Tudun Wada Local Government Area of Kano State. Feel free to express your candid opinion to the question as your opinion will only be used for academic purpose.

Thanks

Mary Clement Ohiani.

SECTION A

Name
(Not Compulsory).

Ward in Tudun Wada

Number of Years of Participation:

- a. 1-5 Years
- b. 5-10 years
- c. Above 10 years

SECTION B

**USEFULNESS OF STRATEGIES USED IN EDUCATING PARTICIPANTS ON
DIETARY PRACTICES IN NUTRITION EXTENSION EDUCATION**

Tick A, B, C, or D that best march your opinion on each item.

Key A = Very useful B= Useful, C= Fairly Useful D= Not Useful.

S/N	Teaching Strategies/ Methods	A	B	C	D
1	Lecture				
2	Demonstration				
3	Field Trip				
4	Role play				
5	Simulation				

SECTION C

**IMPACT OF NUTRITION EXTENSION EDUCATION ON THE DIETARY,
PRACTICES OF RURAL WOMEN.**

Tick A, B, C, D that best march your opinion on each item.

Key A = Strongly agreed, B= Agreed, C= Strongly disagreed, D= Disagreed

S/NO	ITEMS	A	B	C	D
1.	The nature of nutrition extension education giving by extension workers is very important to the rural women.				
2.	The nature helps the rural women to know about dietary practices.				
3.	The nature of nutrition extension education adopted by extension agents has an impact on your dietary practices.				
4.	Rural women should participate in Nutrition extension education.				
5.	Participation enables you to adopt dietary practices.				
6.	The level of participation has an impact on your dietary practices.				
7.	Strategies used in nutrition extension education are important for dietary practices.				
8.	The strategies help the participant to understand dietary practices.				
9.	The strategies used by the extension agents have an impact on your choice of dietary practices.				
10.	Nutrition extension education should be given to every woman in the rural areas.				
11.	Nutrition extension education improves rural women choice of dietary practices.				
12.	Nutrition extension education has impact on rural women choice of dietary practices.				

APPENDIX II

QUESTIONNAIRE II

EXTENSION AGENTS ASSESSMENT ON THE IMPACT OF NUTRITION EXTENSION EDUCATION ON THE DIETARY PRACTICES OF RURAL WOMEN IN TUDUN WADA L.G.A OF KANO STATE.

Sir/Madam,

I am a post-graduate student of Extension Education in Department of Adult and Community Services of Bayero University, Kano. This questionnaire was designed in order to enable the researcher find out the impact of Nutrition Extension Education on the dietary practices of rural women in Tudun Wada Local Government Area of Kano State. Feel free to express your candid opinion to the question as your opinion will only be used for academic purpose.

Thanks

Mary Clement Ohiani.

SECTION A

1. Name _____
(Non Compulsory).
2. Number of years in Nutrition extension Education
 - a. 1-5 Years
 - b. 5-10 years
 - c. Above 10 years
3. Present highest qualification
 - a. B.SC/B.Sc (Ed) /B.Ed
 - b. M.Sc/MBA/M.Ed
 - c. Phd

4. Years of experience in teaching

a. 1-5 years

b. 5-10 years

c. Above 10 years

SECTION B

**USEFULNESS OF STRATEGIES USED IN EDUCATING PARTICIPANTS ON
DIETARY PRACTICES IN NUTRITION EXTENSION EDUCATION**

Tick A, B, C, or D that best match your opinion on each item.

. Key A = Very useful B= Useful, C= Fairly Useful D= Not Useful.

S/NO	ITEMS	A	B	C	D
1.	Lecture				
2.	Demonstration				
3.	Field Trip				
4.	Role Play				
5.	Simulation				

SECTION C

**IMPACT OF NUTRITION EXTENSION EDUCATION ON THE DIETARY PRACTICES
OF RURAL WOMEN**

Tick A, B, C, D that best march your opinion on each item.

Key A = Strongly agreed, B= Agreed, C= Strongly disagreed, D= Disagreed

S/NO	ITEMS	A	B	C	D
1.	The nature of nutrition extension education giving by extension workers is very important to the rural women				
2.	The nature helps the rural women to know about dietary practices.				
3.	The nature of nutrition extension education adopted by extension agents has an impact on your dietary practices.				
4.	Rural women should participate in Nutrition extension education.				
5.	Participation enables you to adopt dietary practices.				
6.	The level of participation has an impact on your dietary practices.				
7.	Strategies used in nutrition extension education are important for dietary practices.				
8.	The strategies help the participant to understand dietary practices.				
9.	The strategies used by the extension agents have an impact on your choice of dietary practices.				
10.	Nutrition extension education should be given to every woman in the rural areas.				
11.	Nutrition extension education improves rural women choice of dietary practices.				
12.	Nutrition extension education has impact on rural women choice of dietary practices.				

APPENDIX III

RESPONDENTS RESPONSE ON USEFULNESS OF STRATEGIES (SECTION B)

S/NO	ITEMS	VERY USEFUL	USEFUL	FAIRLY USEFUL	NOT USEFUL
1	Lecture	96(14)	15(2)	10(1)	3(1)
2	Demonstration	82(8)	23(6)	9(2)	10(2)
3	Field Trip	60(6)	32(40)	18(3)	14(5)
4	Role Play	6(2)	12(2)	13(4)	93(10)
5	Simulation	9(1)	16(2)	35(5)	64(10)

KEY: EXTENTION WORKERS IN BRACKET

TOTAL OF BOTH RESPONDENTS

S/NO	ITEMS	VERY USEFUL	USEFUL	FAIRLY USEFUL	NOT USEFUL
1	Lecture	110	17	11	4
2	Demonstration	90	29	11	12
3	Field Trip	66	36	21	19
4	Role Play	8	14	17	103
5	Simulation	10	18	40	74

SCORES (NUMBERS MULTIPLY BY RATING SCALE: VU=4,U=3, FU=2, NU=1)

1	Lecture	440	51	22	4
2	Demonstration	360	87	22	12
3	Field Trip	264	108	42	19
4	Role Play	32	42	34	103
5	Simulation	40	54	80	74

APPENDIX IV

RESPONDENT RESPONSE TO HYPOTHESES ITEMS (SECTION C)

Key: A = Strongly agreed, B= Agreed, C= Strongly disagreed, D= Disagreed

S/NO	ITEMS	A	B	C	D
HYPOTHESIS ONE					
1.	The nature of nutrition extension education giving by extension workers is very important to the rural women.	81(10)	27(5)	12(2)	4(1)
2.	The nature helps the rural women to know about dietary practices.	60(8)	34(5)	20(3)	10(2)
3.	The nature of nutrition extension education you adopt has an impact on the rural women dietary practices.	52(10)	50(4)	16(2)	6(2)
HYPOTHESIS TWO					
4.	All rural women should participate in Nutrition extension education.	93(14)	15(2)	10(1)	6(1)
5.	Participation will enable you to adapt to dietary practices.	64(8)	31(5)	20(3)	9(1)
6.	The level of participation has an impact on their dietary practices in the rural areas.	62(6)	30(6)	17(3)	15(1)
HYPOTHESIS THREE					
7.	Strategies should be adopted in Nutrition extension education.	81(3)	25(2)	10(2)	8(1)
8.	The strategies adopted help rural women in making choice of dietary practices.	64(2)	33(3)	19(5)	8(8)
9.	The strategies you adopt have impact on the choice of dietary practices.	62(6)	30(4)	18(3)	14(5)
HYPOTHESIS FOUR					
10.	All rural women need Nutrition extension education.	82(8)	23(6)	9(2)	10(2)
11.	Nutrition extension education helps to improves rural women choice of dietary practices.	90(12)	20(2)	8(2)	6(2)
12.	Nutrition extension education has an impact on the dietary of rural women.	96(10)	18(4)	8(2)	2(2)

APPENDIX V
CHI-SQUARE ANALYSIS OF HYPOTHESIS ONE

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Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
RESPONDENTS * CHOICE	426	100.0%	0	.0%	426	100.0%

RESPONDENTS * CHOICE Crosstabulation

		CHOICE				Total
		STRONGLY AGREE	AGREE	STRONGLY DISAGREE	DISAGREE	
PARTICIPANTS	Count	193	111	48	20	372
	Expected Count	193.0	109.2	48.0	21.8	372.0
	% within RESPONDENTS	51.9%	29.8%	12.9%	5.4%	100.0%
	% within CHOICE	87.3%	88.8%	87.3%	80.0%	87.3%
	% of Total	45.3%	26.1%	11.3%	4.7%	87.3%
EXTENSION WORKERS	Count	28	14	7	5	54
	Expected Count	28.0	15.8	7.0	3.2	54.0
	% within RESPONDENTS	51.9%	25.9%	13.0%	9.3%	100.0%
	% within CHOICE	12.7%	11.2%	12.7%	20.0%	12.7%
	% of Total	6.6%	3.3%	1.6%	1.2%	12.7%
Total	Count	221	125	55	25	426
	Expected Count	221.0	125.0	55.0	25.0	426.0
	% within RESPONDENTS	51.9%	29.3%	12.9%	5.9%	100.0%
	% within CHOICE	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	51.9%	29.3%	12.9%	5.9%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Chi-Square	1.458	3	0.692
Likelihood Ratio	1.311	3	0.726
N of Valid Cases	426		

APPENDIX VI

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Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
RESPONDENTS * CHOICE	426	100.0%	0	.0%	426	100.0%

RESPONDENTS * CHOICE Cross Tabulation

		CHOICE				Total
		STRONGLY AGREE	AGREE	STRONGLY DISAGREE	DISAGREE	
PARTICIPANTS	Count	219	76	47	30	372
	Expected Count	219.2	77.7	46.3	28.8	372.0
	% within RESPONDENTS	58.9%	20.4%	12.6%	8.1%	100.0%
	% within CHOICE	87.3%	85.4%	88.7%	90.9%	87.3%
	% of Total	51.4%	17.8%	11.0%	7.0%	87.3%
EXTENSION WORKERS	Count	32	13	6	3	54
	Expected Count	31.8	11.3	6.7	4.2	54.0
	% within RESPONDENTS	59.3%	24.1%	11.1%	5.6%	100.0%
	% within CHOICE	12.7%	14.6%	11.3%	9.1%	12.7%
	% of Total	7.5%	3.1%	1.4%	.7%	12.7%
Total	Count	251	89	53	33	426
	Expected Count	251.0	89.0	53.0	33.0	426.0
	% within RESPONDENTS	58.9%	20.9%	12.4%	7.7%	100.0%
	% within CHOICE	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	58.9%	20.9%	12.4%	7.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Chi-Square	0.772	3	0.856
Likelihood Ratio	0.799	3	0.850
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Case Processing Summary

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	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
RESPONDENTS * CHOICE	426	100.0%	0	.0%	426	100.0%

RESPONDENTS * CHOICE Cross Tabulation

		CHOICE				Total
		STRONGLY AGREE	AGREE	STRONGLY DISAGREE	DISAGREE	
PARTICIPANTS	Count	207	88	47	30	372
	Expected Count	187.7	96.1	49.8	38.4	372.0
	% within RESPONDENTS	55.6%	23.7%	12.6%	8.1%	100.0%
	% within CHOICE	96.3%	80.0%	82.5%	68.2%	87.3%
	% of Total	48.6%	20.7%	11.0%	7.0%	87.3%
EXTENSION WORKERS	Count	8	22	10	14	54
	Expected Count	27.3	13.9	7.2	5.6	54.0
	% within RESPONDENTS	14.8%	40.7%	18.5%	25.9%	100.0%
	% within CHOICE	3.7%	20.0%	17.5%	31.8%	12.7%
	% of Total	1.9%	5.2%	2.3%	3.3%	12.7%
Total	Count	215	110	57	44	426
	Expected Count	215.0	110.0	57.0	44.0	426.0
	% within RESPONDENTS	50.5%	25.8%	13.4%	10.3%	100.0%
	% within CHOICE	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	50.5%	25.8%	13.4%	10.3%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Chi-Square	36.692	3	0.000
Likelihood Ratio	37.483	3	0.000
N of Valid Cases	426		

APPENDIX VIII

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Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
RESPONDENTS * CHOICE	426	100.0%	0	.0%	426	100.0%

RESPONDENTS * CHOICE Cross Tabulation

		CHOICE				Total
		STRONGLY AGREE	AGREE	STRONGLY DISAGREE	DISAGREE	
PARTICIPANT S	Count	268	61	25	18	372
	Expected Count	260.2	63.7	27.1	21.0	372.0
	% within RESPONDENTS	72.0%	16.4%	6.7%	4.8%	100.0%
	% within CHOICE	89.9%	83.6%	80.6%	75.0%	87.3%
	% of Total	62.9%	14.3%	5.9%	4.2%	87.3%
EXTENSION WORKERS	Count	30	12	6	6	54
	Expected Count	37.8	9.3	3.9	3.0	54.0
	% within RESPONDENTS	55.6%	22.2%	11.1%	11.1%	100.0%
	% within CHOICE	10.1%	16.4%	19.4%	25.0%	12.7%
	% of Total	7.0%	2.8%	1.4%	1.4%	12.7%
Total	Count	298	73	31	24	426
	Expected Count	298.0	73.0	31.0	24.0	426.0
	% within RESPONDENTS	70.0%	17.1%	7.3%	5.6%	100.0%
	% within CHOICE	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	70.0%	17.1%	7.3%	5.6%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Chi-Square	7.308	3	0.063
Likelihood Ratio	6.591	3	0.086
N of Valid Cases	426		
