EFFECTIVENESS OF SOCIAL MARKETING ON KNOWLEDGE, ATTITUDE AND PRACTICE ON CHILD NUTRITION BY WOMEN IN SOUTH-WEST NIGERIA

BY

Kehinde Adesina THOMAS

B.Sc. (Ed.) (Agricultural Education), Calabar

M.Sc. (Agricultural Extension and Rural Development), Ibadan

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DEDICATION

This project work is dedicated to God the Father, the Son and the Holy Ghost who gave me the strength, wisdom, financial resources and courage for accomplishment. May His name be praised forever more.

ABSTRACT

Despite intervention programmes aimed at improving child nutrition in Nigeria, the number of children with poor nutrition has consistently increased over the years. The usual top-down management approach to execution of intervention is contributory to this problem. Social marketing, a bottom-up and effective approach to intervention, has not been well studied in Nigeria. The effectiveness of social marketing on knowledge, attitude and practice of child nutrition by women in South-West Nigeria was therefore investigated.

The study was carried out using quasi-experimental research approach and Focus Group Discussion (FGD). Two hundred and forty women were selected by systematic random sampling from ante-natal clinic in primary health centres in selected 10 local government areas in Oyo (4), Ekiti (3) and Osun state (3) based on probability proportionate sample to size with 90, 75, and 75 women interviewed from each of the states respectively. Data were collected from the two groups using structured questionnaire which included 50 points-knowledge, 17 points-practice and 5-points Likert-attitudinal scales before and after exposure to nutrition messages. In addition, one FGD each was conducted among women in each of the 10 LGAs. Fifty percent (experimental group) were exposed to nutrition messages for 12 weeks with emphasis on social marketing techniques, while the remaining served as control. Parameters assessed were women's personal characteristics, knowledge, attitude and practice with respect to child nutrition. Data were analysed using descriptive statistics, problem tree analysis, Pearson Product Moment Correlation, Chi square and t-test at $p = 0.05$.

Mean age of women was 33 ± 7.7 years, 69.6% were married, mean household size was 5.10 ± 2.4 and mean number of children under-five was 2.90 ± 1.49. Half (50.4%) were educated and majority (67.5%) engaged in petty trading. The mean monthly income was ₦20, 330 ± 17,052. At baseline, information sources included radio (75.4%) and television (54.2%). Attitude to nutrition messages revealed favourable disposition to communication

channels/promotion (53.8%), environment/ place (58.8%), nutrition messages/ product (53.0%) and abandonment of previous nutrition behavior/price (64.2%). The discussants stated that child nutrition was affected by income, cultural preference and nutritional knowledge. Post-intervention evaluation showed that the experimental group manifested an increase in knowledge from 50.4% to 90.2%, favourable attitude from 47.8% to 68.9% and nutrition practice from 58.3% to 75.5% when compared to increase in knowledge 50.6% to 57.2%, favourable attitude 48.6% to 50.4% and nutrition practice 49.7% to 52.8% of the control group. Marital status (χ^2=16.94), family size (r = 0.26), education (χ^2= 44.45), occupation (χ^2=21.00), and communication channel (r = 0.23) were significantly related to nutrition behaviour. Knowledge was significantly different in Oyo (t = 2.93) and Ekiti (t = 2.29), while attitude was significantly different in Oyo (t = 4.23) and Osun (t = 3.99) before and after exposure to nutrition messages. Respondents exhibited significant difference in nutrition behavioural (t = 2.62) before and after the intervention.

Social marketing using nutritional messages in audio, video and chart improved women's knowledge, attitude and practice of child nutrition. Adoption of the strategy for effective nutrition intervention programmes should be encouraged.

Keywords: Social marketing, Women behavioral change, Child nutrition, South-west Nigeria

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Kehinde Adesina THOMAS

CERTIFICATION

I certify that this research work was carried out by Mr. Kehinde Adesina THOMAS in the Department of Agricultural Extension and Rural Development, University of Ibadan, Nigeria.

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Supervisor
Dr. J.O Oladeji
B.Sc. (Hons.) UNN, Nsukka,
M.Sc., PhD (Ibadan).
Department of Agricultural Extension and Rural Development, University of Ibadan, Ibadan, Nigeria.

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LIST OF ACRONYMS

IDD	Iodine Deficiency Disorders
AID	Acquired Immune Deficiency Syndrome
AKIS/RD	Attitude, Knowledge and Skill for Research and Development
AMA	American Medical Association
BMI	Body Mass Index
CFN	Council on Foods and Nutrition
COM	Community Organisation Model
CSPD	Child Survival, Protection and Development
DHS	Demographic and Health Survey
F&V	Fruits and Vegetable
FGD	Focus Group Discussion
FGN	Federal Government of Nigeria
FMH	Federal Ministry of Health
FOS	Federal Office of Statistics
GDP	Gross Domestic Product
HANS	National Health and Nutrition Status Survey
HDDS	Household dietary diversity score
HIV	Human Immune Virus
LGA	Local Government Area

MGD	Millennium Development Goal
MICS	Multiple Indicator Cluster Surveys
MNPs	Micronutrient Powders
NAFDAC	National Food Drug Administration and Control
NDHS	National Demographic and Health Survey
NEST	Nigeria Environmental Study Action Team
NIDs	National immunisation days
PEM	Protein-energy malnutrition
PFV	Prospective Food Vehicles
PHC	Primary Health Centre
PPMC	Pearson Product Moment Correlation
REACH	Renewed Efforts against Childhood Hunger
SLT	Social Learning Theory
SON	Standards Organisation of Nigeria
TB	Tuberculosis
UNICEF	United Nations Children's Fund
VAD	Vitamin A Deficiency
VAF	Vitamin A fortification
W.H.O	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The concept of social marketing stemmed out of development communication. It is an approach that builds on diffusion of innovation and behavioural change models. Since 1970s, social marketing has been one of the most influential strategies in the field of development communication and it centres on behavioural change, understanding of communication as a persuasion tool and educating people in order to enhance and facilitate changes in different stages of pro-social behaviour (knowledge, attitude and practice).

According to Novelli (2000), the social marketing process is circular. This explains why input gathered through qualitative and quantitative methods is fundamental for designing intervention programmes (activities and content). Social marketing is premised on the idea of mutual exchange for a perceived benefit derivable from any intervention. It takes a consumer orientation by assuming that the success of any intervention results from an accurate evaluation of the perception and needs of the target audience, which informs the design, communication, pricing and appropriate offering. The process is consumer-driven and is an audience-centred approach which features multiple reinforcing channels of communication along with public policy and environmental changes to influence behaviour.

Andreasen, (1995) defines social marketing as the application of commercial marketing strategies which include market research, mixed media and advertising or consumer-based communication to analyse, plan, execute and evaluate programmes designed to influence the voluntary behaviours of the target audience in order to improve their personal welfare and that of the society. This submission emphasises the importance of keeping the target audience involved in need assessment, message development, refinement of messages and delivery strategies. It also involves segmentation of audience needs analysis, and use of

multiple communication channels such as television, print, interpersonal communication to reach a large number of people.

In the United States, social marketing has been extensively applied in public information campaigns were targeted at various social problems such as smoking, alcoholism, seat-belt use, drug abuse, eating habits, venereal diseases, littering and protection of forest. The Stanford Prevention Research Center (SPRC) an interdisciplinary research center involving several departments in the School of Medicine. The Center conducts problem-focused research, using observational and experimental methods, to test and disseminate disease prevention and control programs. The SPRC involves collaboration among a broad array of health professionals and social and behavioral scientists who share public health and population perspectives in planning and conducting research. The Stanford Three-Community Study of Heart Disease is frequently mentioned as one of the most fully documented applications of the use of social marketing strategies. This offers evidence that it is possible to change behaviour through the use of social marketing methodologies.

The campaign of Stanford Three-Community Study of Heart Disease included television programmes, radio programmes, newspaper advertisements, billboard messages and direct mails. In one of the towns, the media campaign was supplemented by interpersonal communication, with random groups of individuals at risk of acquiring heart diseases. Comparing the result among control and experimental communities, the research concluded that the media could be a powerful instrument of change, especially when aligned with interpersonal activities of community groups (Flora, Maccoby & Farquhar, 1989).

Social marketing has been used in developing countries like Nigeria and Ghana where interventions like condom use; breast feeding and immunisation programmes have recorded a huge success. According to Chapman (1994), early health applications of social marketing emerged as part of the international development efforts and were implemented in the third world during the 1960s and 1970s. Programmes promoting immunization, family planning,

various agricultural reforms and nutrition were conducted in numerous countries of Africa, Asia and South America.

1.1.1 Successful Nutrition Programmes Using Social Marketing Strategy

A number of programmes using social marketing approach have succeeded in improving nutritional status of the masses. Social marketing strategies involving market research, mixed media and advertising or consumer-based communication were used to facilitate adoption of better nutrition behaviour. In the Dominican Republic, the prevalence of malnutrition among 4000 rural children under the age of five fell from 12.2% to 6.9% and breast-feeding practices improved using social marketing. Feeding of newborns on demand rose from 35% in 1983-84 to 63% in 1986 (USAID, 1988).

Community nutrition education through individual counseling, print and audiovisual materials and use of mass media were among the key elements in Thailand's Nutrition and Primary Health Care Programme. This programme reduced the prevalence of severe malnutrition among children under five in rural areas from 36% in 1982 to 20% by 1989 (INPF, 1989). After a national breast-feeding campaign which was carried out in Jordan from 1988 to 1990, 94% of the women interviewed recalled that the song used in radio and television programmes elicited behavioural change towards exclusive breast- feeding among nursing mothers. The proportion who knew about the appropriate time to initiate breast-feeding rose from 41% to 74%, while the proportion having knowledge regarding delayed supplementation grew from 36% to 61%. The proportion of mothers initiating breast-feeding within six hours of birth increased from 38% to 56% (McDivitt & Ayman, 1991 and Seidel, 1992).

In Indonesia, social marketing strategy using radio, banners and outreach programmes by health workers and village health volunteers increased the proportion of young children who received vitamin A capsule from a health post from 24% to 51% in test areas (Seidel,

1992). A second project used radio announcement slots, promotional marketing activities and counseling materials for health workers to promote vitamin A-rich foods. With the use of radio spots, the daily consumption of dark-green leafy vegetables increased from 19% to 32% among pregnant women, from 14% to 33% among nursing mothers, from 10% to 21% among infants aged 5 to 12 months and from 17% to 27% among children aged 13 to 60 months (Favin & Griffiths, 1991).

In Peru, a new weaning food for children with diarrhea was developed, using recipe trials with mothers. It was promoted through radio programme, cooking demonstrations in mothers' clubs and local markets, a flip chart, a calendar and training materials for health professionals. In the test area, 80% of the women interviewed had heard of the food, 16% had tried it and 12% said that they would continue using it (Johns Hopkins University, 1990).

1.1.2 Social Marketing Characteristics

In acknowledgment of the potency of social marketing at addressing varied social and developmental issues, Chapman (1994) summarises eight sterling characteristics of social marketing after three decades of research and interventions which make it relevant for communicating pro-social and development messages:

(i) Persistence and long-term perspective: Only programmes with sustainable support and commitment have proven to have impact on diffusion of new ideas and practices, particularly in cases of complex behaviour patterns.

(ii) Segmentation of the audience is central: This ensures identification of the different needs of the target audience.

(iii) Mapping target groups is necessary.

(iv) Incentives foster motivation among all participants in interventions.

(v) The teaching of skills is fundamental to support behavioural change.

(vi) Leadership support is essential for programmes' success.

(vii) Community participation builds local awareness and ownership.

(viii) Feedback makes it possible to improve and refine programmes.

1.1.3 Social Marketing for Behavioural Change

Using social marketing for a variety of rural development projects and child malnutrition improvement in particular grew out of relatively consistent findings that extol the catalytic role of audience communication strategies in accelerating the rate of technology transfer. This is evident in the availability of relevant information on changing negative attitudes and capacity building among others. The need for knowledge and improved skills to increase food production and improved nutrition is essential in the quest for food security and poverty mitigation. Statistics shows that more than 65 million low income earners in developing countries of Asia and sub-Sahara Africa suffer from inadequate food security. This is associated with deprivation, undoubted risk of hunger and malnutrition which is a greater risk- a situation arising from deficiency in one or more nutrient essential for health. Usually, this is characterised by lack of micronutrients such as Vitamin A, Vitamin C, Iron, Calcium and Zinc; or Amino Acids, which are regarded as the building blocks of protein. Malnutrition results in a reduced ability to work and increased susceptibility to diseases depending on the nutrients lacking. For instance, inadequate Vitamin E can cause anemia and blindness, which subsequently could even result in mental retardation or death. The problem of child malnutrition will not abate if conscious effort is not made towards addressing how predisposing factors or determinants of this syndrome (Child malnutrition) could be mitigated. Therefore, knowledge of parametres that expose the population to malnutrition may have profound effects on dietary intake such as adequate access to food, education, migration and cultural influences would become imperatives.

Agriculture and nutrition are linked in many ways. People have long recognised the most obvious connection between food security and good health. This increased attention to

nutrition by the agricultural sector ensures a greater focus on the consumer as the unit of analysis could facilitate improved nutrition status, improved work capacity and productivity. It is therefore pertinent for policy makers in the agricultural sector to pay more attention to nutrition.

It is also well documented that income generation increases food consumption and improves the quality of diet for poorer households. Several patterns have emerged from research findings. As income rises, poorer households spend more on food, although proportionately less than as their income increases (Kennedy, 1989; Diskin, 1995 and Behrman, 1995). Food purchases of these households become more diverse with higher quality foods such as meat and fruits. This implies that diets become more diversified and the overall nutrient composition of the diet improves. However, it must be noted that the aforementioned submission is subject to provision of training on health and nutrition practices, particularly for women because they are primarily responsible for feeding their families (Diskin, 1995 and Marek, 1992). Corroborating this assertion, Praff, *et al* 1989) opined that, when agricultural programmes are combined with well designed health and nutrition education, using social marketing strategies, significant changes in participants' consumption behaviour are reported. For example, when gardening initiatives were used with nutrition education or training, it increased households consumption of vitamin A – rich foods and consequently child nutritional status improved.

Therefore, popularising child nutrition programmes using social marketing approach is a vital step towards enhancing the nutritional impact of agriculture intervention. This approach helps to harness the basic understanding of the most important determinant of child malnutrition. This is imperative if the current high number of malnutrition among children is to be reduced.

1.2 Statement of the Problem

Malnutrition is a complex problem with numerous political, economic, social and cultural causes. In 1992, a UNICEF causal model for under-nutrition gained widespread acceptance for its recognition of three underlying and immediate causes: food insecurity, poor health and inappropriate caring practices (UNICEF, 1992). The appropriate emphasis to address each cause varies by country and regions of a country. Severe malnutrition cannot be remedied without significant investments in distributing food, augmenting household income, or otherwise making food more available or accessible and/or improving the quality and availability of health care, while mild and moderate malnutrition can be eliminated or controlled through simple changes in dietary and food hygiene practices that are amenable to change through well-planned and executed behaviour-change strategies (UNICEF, 1992).

In Nigeria, child nutritional problem lies in mild and moderate malnutrition. Successive governments have introduced several child nutrition intervention programmes to combat child malnutrition. This includes school feeding programme, mineral fortification programme and vitamin A capsule supplement. Despite these concerted efforts, the cases of child malnutrition are on the increase. UNICEF, (2000) reported that the prevalence of malnutrition among children under 5 years of age in Nigeria is significantly higher than in most other developing countries. The major form of micronutrient malnutrition identified includes iron deficiency, vitamin 'A' deficiency and iodine deficiency disorders. The strategy used by the government has not yielded the desired results, largely due to the associated institutional rigidity and over bureaucratization, top down management style and lack of coordination or linkage with other component of Attitude, Knowledge and Skill for Research and Development (AKIS/RD), particularly research and development (Farington *et al*, 2000, Rivera, 2001 and Beckman, 2002).

To this end, there is a need for an alternative extension delivery mechanism that will ensure people's participation and tailored to peoples' needs. Social marketing as an all

inclusive approach seeks to influence social behaviour, not to the benefit of the marketer but the larger audience and the general society. The potency of social marketing strategy to influence trends in nutrition pattern among women with respect to increase in nutrition knowledge, better dietary practice and attitude for children cannot be overemphasised. It is against this background that the research attempts to determine the effectiveness of social marketing on knowledge, attitude and practice on child nutrition by women in South-western Nigeria by providing answers to the following research questions:

1. What are the socio-economic characteristics of the child bearing women?
2. What is the level of awareness of child nutritional programme/ messages by the respondents before and after social marketing intervention in the study area?
3. What are the communication channels required to make child nutritional messages available to the respondents?
4. What is the respondents' knowledge of child nutrition before and after social marketing intervention in the study area?
5. What is the respondents' attitude towards child nutrition messages before and after social marketing intervention in the study area?
6. What is the respondents' child nutrition practice before and after social marketing intervention in the study area?
7. What are the constraints associated with good dietary intake by respondents in the study area?

1.3 Objective of the Study

The general objective of the study is to determine the effectiveness of social marketing strategy in women behavioural change on child nutrition in Southwestern Nigeria.

The specific objectives of the study are to:

(i) identify the socio-economic characteristics of the child bearing women in the study area.

(ii) determine the awareness of child nutrition programme/ messages of respondents in the study area.

(iii) determine the respondents' sources of information on child nutrition

(iv) assess the respondents' level of child nutrition knowledge before and after social marketing intervention in the study area.

(v) determine respondents' attitude to child nutrition messages before and after social marketing intervention in the study area.

(vi) describe the respondents' child nutrition practice before and after social marketing intervention in the study area.

(vii) assess the effect of the social marketing intervention on the respondents' child nutrition knowledge, attitude and practice in the study area.

(viii) examine the constraints associated with good dietary intake by the respondents in the study area.

1.4 Research Hypotheses

The following hypotheses were tested:

(i) There is no significant relationship between the selected socio-economic characteristics (education, age, family size, occupations, marital status, religion and income) and child nutrition behaviour.

(ii) There is no significant relationship between awareness of child nutrition messages and child nutrition behaviour.

(iii) There is no significant relationship between respondents' information sources and child nutrition behaviour.

(iv) There is no significant difference in respondents' child nutrition knowledge before and after exposure to nutritional messages across the three states.

(v) There is no significant difference in respondents' child nutrition attitude before and after exposure to nutritional messages across the three states.

(vi) There is no significant difference in respondents' child nutrition practice before and after exposure to nutritional messages across the three states.

(vii) There is no significant difference in respondents' behavioural change (knowledge, attitude and practice) before and after exposure to nutritional messages.

1.5 Justification for the Study

The study is borne out of the concern to reduce the cases of child malnutrition in Nigeria. Despite several efforts made by Nigeria government and non-governmental organisation to combat child malnutrition, chronic vitamin and mineral deficiency, also known as 'Hidden Hunger' still poses serious health problems confronting developing nations, especially Nigeria.

The evolution of Millennium Development Goals is partly to eliminate hunger and malnutrition. This is the 8th year into the millennium and Nigeria is still far from realising the goal of food sufficiency and nutrition security, expected to be achieved by the year 2015 by the United Nations. Therefore, there is need to adopt a proven communication development initiative that will ensure behavioural changes and community participation that is consumer - driven.

Considering the foregoing therefore, the use of social marketing strategies to reduce child malnutrition will serve the following important functions. First, it will assist in providing feedback for government and non-governmental agencies to support continuing improvement of nutrition activities among women particularly on the issue of child nutrition and will serve as a guideline for dietary intake that will enhance growth and development

among children. Secondly, social marketing will help to establish the importance of child nutrition education campaign for research institutes government and non-governmental agencies to improve child nutrition and combat other related micro nutrient deficiencies among children under 5 years old in Nigeria.

Consequently, the result of this study could be used as a basis for creating a more sustainable nutrition programme by providing concrete guideline for the use of social marketing as a tool to enhance knowledge, attitude and practice of child nutrition. Results from this study will also provide information on what should be taught in future mothers' classes in order to better convey the message of nutrition across to the members of the community. It will also generate information that will provide guidance for programme planners and policy makers on how to design suitable interventions to reverse the trend of increasing child malnutrition in the Nigeria. The study will also be useful for researchers and students who will like to conduct research in social marketing with respect to agricultural extension.

1.6 Operational Definition of Terms

1) **Social Marketing:** This is the use of multiple communication channels to influence the voluntary behaviour of the target audience in order to improve their personal welfare and that of their society.
2) **Malnutrition:** Deficiency in one or more nutrients essential for health. Usually, the nutrient lacking are micronutrients such as Vitamin A, Vitamin C, Iron, Calcium, Zinc or Amino Acid- the building block of protein. Malnutrition results in anemia, blindness, mental retardation or death.
3) **Dietary Intake:** Refers to the type of food taken by individuals or household.

4) **Household:** One person who lives alone or group of persons, related or unrelated, who share food or make common provision for food and possibly other essentials for living.

5) **Nutrition Behaviour:** Constitutes knowledge, attitude and practice of nutrition habit that determines adequate food intake required for normal growth and development.

6) **Knowledge:** Refers to the factual background on which to base decisions, such as knowledge about the relationship of eating and health and about planning for healthy nutrition, using assessments and nutritional guidelines.

7) **Attitudes:** Personal perceptions for decisions, such as feeling responsible for one's own health and the health of others.

8) **Practice:** Practical basis for mastering tasks and procedures related to healthy eating, such as skills for selecting and preparing healthy meals and practising food safety.

9) **Place:** The distribution channels used to make the product available to target audience.

10) **Promotion:** This describes the appropriate communication channels to reach the target audience that will produce the desired change in behaviour.

11) **Products:** Refers to the behaviour, or nutrition/health idea that the campaign planners would like the target individuals or groups (consumers) to adopt.

12) **Price:** The cost associated with "buying" the product. Cost can involve sacrifice related to psychological wellbeing of the target audience (e.g. increased anxiety), sociality (e.g. possibility of ostracism), and economics (e.g. financial sacrifice, or time inconvenience).

13) **Nutrition education:** This involves providing consumers with the information about food and nutrients needed to make decision about what to eat to enhance growth and development.

14) **Vitamin 'A' Mineral fortification**: This describes inclusion of vitamin A mineral in food like flour and vegetable oil which is branded with an" eye" logo.

15) **Iodize salt:** This describes the inclusion of iodine in table salt in order to prevent iodine deficiency disorder (IDD) in children.

CHAPTER TWO

LITERATURE REVIEW

2.1 Evolution of Social Marketing Concept

The academic field of social marketing often traces its roots to 1952, when Wiebe asked, "Why can't you sell brotherhood like you sell soap?" The perspective did not emerge in a vacuum, however, it is built upon a foundation of influential studies in public communication campaigns carried out in the 1940's (Paisley, 1989) and on less formal description of campaigns that date as far back as Ancient Greece (Kotler and Roberto, 1989).

In his essay on the American experience with public campaigns, Paisley (1989) notes that U.S campaigns in the 1700s typically reflected the effort of committed "individual reformers" who disseminated their messages through the pulpit and printing press. He uses as an example the effort of Reverend Cotton Mather to motivate Boston citizens to become inoculated against small pox in the years 1721-1722. In contrast, Paisley notes that the campaign of the 1800s tended to be organised efforts by association of citizens. Examples include organisations formed to combat slavery, promote women's suffrage, and encourage temperance.

In the 1900s, campaigns were distinguished by their increased reliance upon the mass media, with particular reference to their utilisation of the new electronic media. Interestingly, evaluations of several of these campaigns revealed that media influence is shaped in powerful ways by interpersonal relationships (Weimann, 1994). As such, most social marketing campaigns came to include face-to-face community participation in all facets of the endeavour (Alkalay and Taplin, 1989).

2.2 What is "Social Marketing?"

A number of definitions of social marketing theory have been offered (Lefebvre & Flora, 1988). Kotler (1975) defines social marketing as "the design, implementation and

control programmes seeking to increase the acceptability of social ideas or practice in a target group. It utilizes the concepts of market segmentation, consumer research, idea configuration, communication, facilitation and incentive and exchange theory to maximise target group response". Andreasen (1995) defines social marketing as "the application of commercial marketing technology(s) to analysis, planning, excursion and evaluation of programmes designed to influence voluntary behaviour of target audience in order to improve their personal welfare and that of the society".

These and other definitions share more commonalties than distinctions. First, the "social marketing" label is typically applied to causes judged by persons in positions of power and authority to be beneficial to both individuals and society. Second, unlike commercial marketing, the agent of change does not profit financially from a campaign success. Third, the ultimate goal is to change behaviours believed to place the individual at risk, not simply increase awareness or alter attitudes. Fourth, the optimal social marketing campaign is tailored to the unique perspective, needs and experiences of the target audience, hopefully with input from respective members of the group. Fifth, social marketing strives to create a condition in the social structure that facilitates the behavioural changes promoted. Sixth and the most fundamental, however, is reliance upon commercial concepts.

2.3 Marketing Concepts

The social marketing concepts employed in information campaigns based upon social marketing approach are numerous. The '5ps' are the prominent among the social marketing concept in marketing research. . The purpose of the 5ps is to develop a message strategy that offers the consumers the optimal marketing mix of product, price, place, promotion and positioning. When applied to social marketing, these concepts can be conceived of as follows:

i. **Product**: The behaviour, or nutrition/health idea that the campaign planners would like the target individuals or groups (consumers) to adopt. The product can be an action (e.g. fat- free dairy products).

ii. **Price:** The cost associated with "buying" the product. Cost can involve sacrifice related to psychological wellbeing (e.g. increased anxiety), sociality (e.g. possibility of ostracism) and economics (e.g. financial sacrifice, or time inconvenience).

iii. **Place:** The distribution channels used to make the product available to target audience. When the product is a physical item, it must be easily obtainable by consumers. When it is an idea, it must be "socially available" supported within the consumer's social sphere. The target audience must be informed of where, when and how it can obtain the social marketing product.

iv. **Promotion:** The effort taken to ensure that the target audience is aware of the campaign. These publicity efforts should be designed to cultivate positive attitude and intentions regarding the products that pave way for behavioural change.

v. **Positioning:** The product must be positioned in such a way to maximise benefits and minimise cost. "Positioning" is a psychological construct that involves the location of the product relative to other products and activities with which it competes.

The 5Ps only begin to touch upon the marketing concept employed by the social marketer. The following concept also deserves mention (Andreasen, 1995; Kotler & Roberto, 1989, Lefebvre & Rochlin, 1997; Walsh *et al*; 1993).

Consumer Orientation: The social marketing programme is founded upon the reality (beliefs, attitudes, values, products etc) of the target audience. The consumers' involvement with the product is a primary facet of his or her orientation.

Audience Segmentation: The target population is segmented into homogenous groups that are uniquely targeted with messages tailored to their shared qualities. The social marketing product may also be modified for different target audience.

Channel Analysis: An effort is made to identify, through research, the communication channels most likely to reach the segments and the times when these individuals will be most receptive to the message.

Strategy: The strategic concepts that offer the highest probability of achieving established goals are employed throughout the planning, design and implementation of the campaign.

Process Tracking: Research and other mechanics are used to ensure that the programme is implemented as planned and to provide feedback about programme revisions that may be required.

2.4 Social Marketing versus Product Marketing

The selling of healthier behaviours and selling of products have much in common. Even so, neither health nor brotherhood can be sold like soap. Practitioners remind us that there are significant differences between social and product marketing (Flay & Burton, 1990; McCron & Budd, 1981). These differences include the following:

Promote Change: Health or nutrition campaign seeks to produce change in social behaviour. Product marketing can strive for behavioral change, but it is just as likely to attempt to activate favourable disposition. In addition, social marketing can also seek environmental and system change, something that product marketing rarely attempts to accomplish.

Expectation: Social marketing strives to change unhealthy behaviours of a larger percentage of the target audience. Product marketers are usually delighted with small increases in market share.

Salience: The attitudes and behaviours targeted by social marketers are often fundamental to the people targeted; product marketing more often than not targets less involving behaviours. As such, social marketing overcomes attitude and values that are

central to the person's identity. Product marketing typically deals with self- constructs that are more peripheral to the person's identity.

Certainty of Gratification: Social marketers promise only an increased probability that benefits (e.g. a lower risk of vitamin A) will come to a person who adopts recommended changes. It cannot be proven with certainty that the behaviour change advocated would produce a particular health outcome. In contrast, product marketers usually offer unequivocal gratification and may even provide a guarantee that benefits promised with result. The causal link between the purchase and this satisfaction is seldom in doubt.

Timing of Gratification: It may take months or years for the health benefits offered in social marketing campaigns to result. Product marketing on the other hand, offers benefits that are realised soon or immediately after purchase of the product.

Presentation: Social marketers must strive for an informational time and avoid overselling the benefits of recommended changes. With product, consumer may accept marketing, overselling and even some deceptions.

Trust: Greater trustworthiness is typically attributed to the sponsors of a social marketing campaign than to the sponsors of product marketers.

Budgetary Constraints: Social marketing usually attempts to achieve their goals with small budgets. In kind services, voluntarism and donations of other resources may add to the available resources, but the social marketer seldom matches resources available to product marketers. As a corollary, product-marketing campaigns tend to be supported by more extensive formative and summative research and more professional and extensive communication with the consumer.

2.5 Social Marketing and other Related Approaches

2.5.1 Information Campaign

The term "social marketing" and "information campaign" are often used interchangeably. For consistency, Flay & Burton (1990) define the information campaign as "an integrated series of communication activities, using multiple operations and channels, aimed at populations or large target audience, usually of long duration, with a clear purpose". Implicit in this definition is the notion of a persuasive intent, achieved through messages that have been adapted to segmented audience and communicated through strategically selected interpersonal, community and mass media channels. However, true information campaign emphasizes the communication of messages to provide awareness. Social marketing campaign also do so, but go further by creating marketing mix based on the consumer's need.

2.5.2 Media Advocacy

Social marketing focuses on changing individual behaviour through persuasive communications directed at target audience and those that influence them. In contrast, media advocacy attempts to alter public opinion in ways that will support policy initiative that promotes public health.

2.5.3 Diffusion of Innovations

The process by which innovation spreads through social systems has been given substantial attention over the decades by researchers from many disciplines, including sociology, public health, education, marketing and communication. These efforts have come to constitute an interdisciplinary area of study known as the diffusion of innovations (Rogers, 1983). An innovation can be an idea, practice, or physical object.

This research tradition has much in common with social marketing perspective. Most notably, both approaches are concerned with advancing our understanding of social change. It would be incorrect, however, to equate the two. Among the differences are the following:

- **Planning:** Social marketing is a deliberate planning and implementing interventions, while innovations can diffuse throughout a social system through planned or spontaneous means.
- **Evaluation:** Those who initiate the campaign usually for the sake of evaluating effectiveness, typically study a social marketing campaign, while those who are more interested in understanding the diffusion process than in evaluating a specific diffusion study, do not give it adequate attention.
- **Marketing Change:** Even when an innovation is diffused through planned and centralised initiatives, that innovation is not necessarily "sold" using marketing concepts and strategies.

2.6 Extension-Teaching Methods

Social marketing involves the use of multiple communication channels to promote social behaviours and consequently to obtain desired behavioural change. To achieve this goal extension teaching methods are used to convey price, product promotion and position. The understanding of extension methods appropriateness of its choice therefore will enhance effectiveness of any social marketing intervention.

The extension-teaching methods are the tools and techniques used to create situations in which communication can take place between the rural people and the extension workers. They are the methods of extending new knowledge and skills to the rural people by drawing their attention towards them, arousing their interest and helping them to have a successful experience of the new practice. A proper understanding of these methods and their selection for a particular type of work are necessary.

2.6.1 Classification of Extension Teaching Methods

1. According to Use

One way of classifying the extension methods is according to their use and nature of contact. Based upon the nature of contact, they are divided into individual, group and mass-contact methods.

Individual-contact methods*:* Extension methods under this category provide opportunities for face-to-face or person-to-person contact between the rural people and the extension workers. These methods are very effective in teaching new skills and creating goodwill between farmers & the extension workers.

Group-contact methods*:* Under this category, the rural people or farmers are contacted in a group which usually consists of 20 to 25 persons. These groups are usually formed around a common interest. These methods also involve a face-to-face contact with the people and provide an opportunity for the exchange of ideas, for discussions on problems and technical recommendations & finally for deciding the future course of action.

Mass or community-contact methods*:* An extension worker has to approach a large number of people for disseminating new information and helping them to use it. This can be done through mass-contact methods conveniently. These methods are more useful for making people aware of the new agricultural technology quickly.

Important extension-teaching methods under these 3 categories are listed in the following chart.

Chart 1: Classification of Extension-Teaching Methods According To Their Use

Individual contacts	Group contacts	Mass contact
Farm and home visits	Method demonstration & result	Bulletins demonstration
Office calls	National demonstration leader-training	Leaflets meetings
Telephone calls	Conferences & workshops	discussion meetings and
		Circular letters and radio
Personal letters	Field trips	Television, exhibitions,
		Fairs, posters

2. **According to Form**. Extension-teaching methods are also classified according to their forms, such as written, spoken and audio-visual. Some of the important methods under each of these 3 categories are given in Chart 2.

Chart 2: Classification of extension-teaching methods according to their form

Written	Spoken	Objective or visual
Bulletins	General and special meetings	Results demonstration
Leaflets, folders, News		
Articles	Farm and home visits	Demonstration posters
Personal letters	official calls	Motion-pictures or movies or Charts
Circular letters	Telephone calls, radio	Slides and film-strip, modules, Exhibits

A brief description of some of the extension methods which are commonly used by extension workers is given below.

Farm and home visits. Farm & home visits constitute the direct or face-to-face contact by an extension worker with the farmer or the members of his family. During these visits, information is exchanged or discussed. The visits may be to get acquainted with the problems of the farmers, or to organisational purposes. Such visits provide an opportunity for a two way communication.

Result demonstration. Result demonstration is an educational test to prove the advantages of recommended practices and to demonstrate their applicability to the local condition. It is conducted by a farmer under the direct supervision of an extension worker. It is designed to

teach others, in addition to the person who conducts the demonstration. It helps the farmers to learn by seeing and doing. This method can be used to show the superiority of practices, such as the use of fertilizers, insecticides and pesticides and high yielding varieties of seeds.

Method demonstration*:* It is used to show the technique of doing things or carrying out new practices, e.g. preparing a nursery-bed, treating seed with insecticides and fungicides, line-sowing, taking a soil sample, grafting fruit trees, etc. This method is usually used for groups of people.

National demonstrations*:* National demonstrations are the "first-line demonstrations," conducted by researchers on the farmers' fields to show how production can be increased per unit of area and per unit of time. These demonstrations usually include the system of multiple cropping & the use of high-yielding varieties, along with the best package of practices. They were first initiated on a modest scale in 1965 and have now become a part of the agricultural production programme in the country.

Group discussions*:* all the farmers cannot be contacted by extension workers individually because of their large number. It is convenient & feasible to contact them in groups. This method is commonly known as group discussion. It is used to encourage and stimulate the people to learn more about the problems that concern the community through discussion. It is a good method of involving the local people in developing local leadership and in deciding on a plan of action in a democratic way.

Exhibitions: An exhibition is a systematic display of information, actual specimens, models, posters, photographs, and charts, etc in a logical sequence. It is organised for arousing the interest of the visitors in the things displayed. It is one of the best media for reaching a large number of people, especially illiterate and semi-illiterate people. Exhibitions are used for a wide range of topics, such as planning a model village, demonstrating improved irrigation practices, soil conservation methods, showing high-yielding varieties of seeds and plants, new agricultural implements and the best products of village industries.

General meetings*:* These are usually held for passing on certain information to the people for future action. Extension workers give lectures to the people on certain pre-selected items of work, such as the celebration of *Van mahotsav*, a national festival.

Campaigns: Campaigns are used to focus the attention of the people on a particular problem, e.g. rat control, village sanitation and plant protection, the production of crops and family planning. Through this method, the maximum number of farmers can be reached in the shortest possible time. It builds up community confidence and involves the people emotionally in a programme.

Tours and field days*:* Conducted tours for farmers are used to convince them and to provide them with an opportunity of seeing the results of new practices, demonstration skills, new implements etc. and to give them an idea regarding the suitability and application of these things in their own area. Such tours may also be arranged to enable the rural people to visit places and institutions connected with the problems of rural life, such as research institutions, training institutions, agricultural universities, model vilages, areas of advanced developments, leading private farms, exhibitions and agricultural and cattle fairs.

Printed matter (literature): Newspapers, magazines, bulletins, leaflets, folders, pamphlets & wall news-sheets are another set of mass media for communicating information to a large number of literate people. They are used for communicating general and specific information on a programme of technology or a practice. Small folders, leaflets and pamphlets are used to give specific recommendations about a practice, such as the use of fertilisers, vegetable cultivation, green-manuring & the growing of individual crops, e.g. wheat, barley, gram and sugarcane.

Radio: It is a mass medium of communication and can reach a large number of people at any given time involving the least expense. Extension workers use the radio for communicating information on new methods and techniques, giving timely information about the control of crop pests and diseases, weather, market news, etc. For this purpose, talks, group discussions,

folk-songs, dialogues and dramas are usually organised. There are 38 stations of All-India Radio broadcasting regular rural programmes.

Television: It is one of the most powerful media of communication. It has come into vogue only in the recent years. It combines both audio and visual impact and is very suitable for the dissemination of agricultural information. It is more useful in teaching how to do a specific job.

Motion-pictures (movies): Movies are an effective tool for arousing interest among the people, because they involve seeing, hearing and action. They are the most suitable medium for drawing bigger audience. A film show can be followed by a discussion with the villagers.

2.7 Childhood Nutrition and Malnutrition in Nigeria

The nutrition situation in Nigeria is the result of several adverse and interrelated factors (social, economic and environmental) acting in synergy. In Nigeria, there is considerable food shortage and nutrient deficiency. There was no comprehensive national estimate of the magnitude of the problem until publication in 1992 of the report of the National Demographic and Health Survey (NDHS) (FOS, 1990).

However, there have been some micro studies based on small study samples, using varying theoretical and methodological perspectives. The latter were insufficient for the purposes of policy formulation, programme development or for monitoring of any intervention programmes.

2.8 Infant and Child Feeding Patterns

A review of feeding patterns shows that, as was the case in the 1980s, there is a high prevalence of initiation of breast-feeding among Nigerian mothers. The UNICEF (Nigeria) Participatory Information Collection Survey of 1994 indicated that 97.4% of mothers were breast-feeding their babies during the first month of life (UNICEF, 1994).

However, despite this high initiation prevalence, there was a low prevalence of exclusive breast-feeding, as revealed by data from the 1990 NDHS,1 which estimated the exclusive breast-feeding rate in the first month of life to be 2.1%. Recent data from a community-based study indicate the prevalence of exclusive breast-feeding to be 12.1%. As many as 56.8% of the mothers gave water along with breast milk and about 38% gave supplements during the first month of life. These supplements included glucose, water and in a few cases, beverages and herbal drinks. Complementary foods were introduced before the age of 4 months in 50% or more of the infants (UNICEF, 1999).

2.9 Types of Malnutrition

Two main types of malnutrition have been identified in Nigerian children, viz. protein-energy malnutrition and micronutrient malnutrition.

2.9.1 Protein-energy malnutrition

Protein-energy malnutrition (PEM) among preschool children continues to be a major public health problem in Nigeria. In 1983/84, the National Health and Nutrition Status Survey (HANS) conducted by the Federal Ministry of Health estimated the prevalence of wasting (low weight for height) to be around 20% (FMH, 1983, 1984). A 1986 Demographic and Health Survey (DHS) of children aged 6 - 36 months in Ondo State, south-west Nigeria, found the prevalence of wasting to be 6.8% stunting 32.4% and underweight 28.1% (FOS, 1986). However, the DHS conducted in 1990 by the Federal Office of Statistics estimated the prevalence of wasting at 9%, stunting at 43% and underweight at 36% among preschool children. These figures are lower than the figures published in 1994 by UNICEF (Nigeria) from a 1992 survey conducted among women and children in 10 states of the federation. In that report, the prevalence of wasting was put at 10.1%, stunting 52.3% and underweight 28.3%.

2.9.2 Micronutrient malnutrition

The major forms of micronutrient malnutrition constituting a public health problem in Nigeria include iron deficiency, vitamin A deficiency and iodine deficiency disorders. Although comprehensive national prevalence data are not available for the three forms of micronutrient malnutrition, pockets of available data reflect the extent of the problem.

2.9.3 Iron deficiency anaemia

Iron deficiency is the most prevalent micronutrient deficiency in the world, affecting populations in both developed and developing countries. It is estimated that, worldwide, over 2 000 million people are at risk of iron deficiency anaemia, with the prevalence ranging between 40 and 60% in pregnant women, 20 and 40% in women of child-bearing age, and about 10% in school-age children and adult men (UNICEF,1992).

In Nigeria, the prevalence of iron deficiency anaemia is estimated at about 20 - 40% in adult women, 20 - 25% in children, and 10% in adult men (Osilesi *et al*, 1994). In selected LGAs from the four health zones in Nigeria, a prevalence of 24.9% was reported for mothers aged 15 - 45 years and 29.4% for children aged 0 - 6 years (UNICEF, 1994). In a small study in south-west Nigeria, it was reported that both iron deficiency and infections were equally important aetiological factors in the anaemia recorded in mothers and their children (Adelekan *et al*, 1994). Iron deficiency anaemia is worse in the south-west areas of the country. Some contributory factors include consumption of cereal-based diets, which are low in bio available iron, worm infestation, frequent pregnancies and haemoglobinopathies.

2.9.4 Vitamin A deficiency

Nigeria is listed by the World Health Organisation (WHO) as one of the category 1 countries with the highest risk of vitamin A deficiency (Humphrey *et al*, 1992). It is estimated that about 7 million preschool children in Nigeria suffer from vitamin A deficiency.

Vitamin A deficiency is worse in the northern areas of the country where red palm oil is not consumed as much as in the south. Available data from Ondo State in south-west

Nigeria indicate the prevalence of night blindness to be 15% in mothers and 5% in children (World Bank, 1993). These figures differ somewhat, but remain significant from the public health point of view, from values recorded in a survey of mothers and children in south-west Nigeria where only 8.5% of mother samples gave a positive history of night blindness (UNICEF, 1994). Using serum retinol concentration as the indicator of vitamin A status, only 4.2% of mothers and 1.5% of children in the south west had values < 0.70 µmol/l, indicating vitamin A deficiency. In contrast, 14.6% of mothers and 16.5% of children in the north-east zone were vitamin A deficient using the same criterion. Dietary intake of vitamin A appears to be adequate in the south, but persistent exposure to infections is the main cause of the vitamin A deficiency in children under 5 years of age in all parts of the country.16-18. Efforts directed at combating vitamin A deficiency involve periodic distribution of vitamin A capsules to children under -5 years of age. However, in a recent survey of children in this age group only 22.7% confirmed receiving vitamin A capsules in the preceding 24 months (UNICEF, 1999).

The objective of the Nigerian government is the virtual elimination of vitamin A deficiency and its consequences, including blindness, through food fortification, supplementation and dietary diversification. Recently, there has been significant progress in the fight against vitamin A deficiency in the country. Firstly, distribution of vitamin A supplements has been successfully linked with national immunisation days (NIDs) during which vitamin A supplements are administered along with polio vaccines. Secondly, three Nigerian staple foods, viz. flour, vegetable oil and sugar, have been selected for fortification with vitamin A, based on affordability, accessibility, and technical feasibility.

2.9.5 Iodine deficiency disorders (IDD)

It is estimated that as many as 25 - 35 million people in Nigeria are at risk of IDD. High prevalence rates ranging from 16% to 36% have been reported from seven states of the federation. Based on these prevalence rates, it is estimated that about 4 million children are

affected by IDD in the seven states, with approximately 1.5 - 3.5% of these children being mentally retarded as a result of IDD (World Bank, 1993). The IDD problem is concentrated in the middle belt and south-east regions of Nigeria (Ojule *et al,* 1998). This has been associated with the high consumption of cassava products in the southern parts, and to the hilly nature of the middle belt and eastern parts of the country. Current indications are that no new IDD cases are being reported, which is largely owing to the salt iodisation policy of the government. Salt iodisation legislation was enacted in 1992, requiring iodisation of salt for both human and animal consumption at the 50 ppm level. Importation of non-iodised salt into Nigeria became illegal in 1995. Recent reports indicate that currently 98% of Nigerian households consume iodised salt. Nigeria is now one of 10 countries in Africa with median urinary iodide values consistently above 100 µg/l, reflecting improvement in iodine status.

2.10 The Challenge Of Under –Nutrition

The level of child and maternal under-nutrition remains unacceptable throughout the world, with 90 per cent of the developing world's chronically undernourished (stunted) children living in Asia and Africa. Detrimental and often undetected until severe, under nutrition undermines the survival, growth and development of children and women, and it diminishes the strength and capacity of nations. Brought about by a combined lack of quality food, frequent attacks of infectious diseases and deficient care, under nutrition continues to be widely prevalent in both developing and industrialized countries, to different degrees and in different forms. Nutritional deficiencies are particularly harmful, while a woman is pregnant and during a child's first two years of life. During this period, they pose a significant threat to mothers and to children's survival, growth and development, which in turn, negatively affects children's ability to learn in school, and to work and prosper as adults.

Under nutrition greatly impedes countries' socio-economic development and potential to reduce poverty. Many of the Millennium Development Goals (MDGs) –

particularly MDG 1 (eradicate extreme poverty and hunger), MDG 4 (reduce child mortality) and MDG 5 (improve maternal health) – will not be reached unless the nutrition of women and children is prioritized in national development programmes and strategies. With persistently high levels of under-nutrition in the developing world, vital opportunities to save millions of lives are being lost, and many more children are not growing and thriving to their full potential. In terms of numbers, the bulk of the world's under-nutrition problem is localized. Twenty-four countries account for more than 80 per cent of the global burden of chronic under-nutrition, as measured by stunting (low height for age).

Although, India does not have the highest prevalence of stunted children, due to its large population, it has the greatest number of stunted children. Stunting remains a problem of greater magnitude than underweight or wasting, and it more accurately reflects nutritional deficiencies and illness that occur during the most critical periods for growth and development in early life. Most countries have stunting rates that are much higher than their underweight rates, and in some countries, more than half of children under 5 years old are stunted. Nutrition remains a low priority on the national development agendas of many countries, despite clear evidence of the consequences of nutritional deprivation in the short and long term. The reasons are multiple. Nutrition problems are often unnoticed until they reach a severe level. But mild and moderate under-nutrition is highly prevalent and carries consequences of enormous magnitude: growth impediment, impaired learning ability and, later in life, low work productivity. None of these conditions is as visible as the diseases from which the undernourished child dies. Children may appear to be healthy even when they face grave risks associated with under-nutrition. Not recognizing the urgency, policymakers may not understand how improved nutrition relates to national economic and social goals.

Table 2.1 24 Countries with the Largest Number of Children Under 5 Years Old Who Are Moderately or Severely Stunted

Rank	Country	Stunting prevalent (%)	Number of children who are stunted (thousands, 2008)	Percentage (%) of developing world total (195.1 million)
1	India	48	60,788	31.2
2	China	15	12,685	6.5
3	**Nigeria**	**41**	**10,158**	**5.3**
4	Pakistan	42	9,868	5.1
5	Indonesia	37	7,688	3.9
6	Bangladesh	43	7,219	3.7
7	Ethiopia	51	6,768	3.5
8	DMR Congo	46	5,382	2.8
9	Philippines	34	3,617	1.9
10	Tanzania	44	3,359	1.7
11	Afghanistan	59	2,910	1.5
12	Egypt	29	2,730	1.4
13	Viet Nam	36	2,619	1.3
14	Uganda	38	3,355	1.2
15	Sudan	40	2,305	1.2
16	Kenya	35	2,269	1.2
17	Yemen	58	2,154	1.1
18	Myanmar	41	1,880	1.0
19	Nepal	49	1,743	<1.0
20	Mozambique	44	1,670	<1.0
21	Madagascar	53	1,622	<1.0
22	Mexico	16	1,594	<1.0
23	Niger	47	1,473	<1.0
24	South Africa	27	1,425	<1.0

Source: Multiple Indicator Cluster Surveys (MICS), and Demographic and Health Surveys (DHS) national surveys, 2003–2008.

2.11 Current Status of Nutrition in Developing Countries

Stunting

Stunting affects approximately 195 million children under 5 years old in the developing world, or about one in three. Africa and Asia have high stunting rates – 40 per cent and 36 per cent, respectively – and more than 90 per cent of the world's stunted children live on these two continents. Of the 10 countries that contribute most to the global burden of stunting among children, 6 are in Asia. These countries all have relatively large populations: Bangladesh, China, India, Indonesia, Pakistan and the Philippines. Due to the high prevalence of stunting (48 per cent) in combination with a large population, India alone has an estimated 61 million stunted children, accounting for more than 3 out of every 10 stunted children in the developing world. More than half the children under 5 years old are stunted in nine countries, including Guatemala, whose stunting rate of 54 per cent rivals that of some of the highest prevalence countries in Africa and Asia. Of countries with available data, Afghanistan and Yemen have the highest stunting rates: 59 per cent and 58 per cent, respectively. A nation's average rate of stunting may mask disparities. For example, an analysis of disparities in Honduras indicates that children living in the poorest households or whose mothers are uneducated have almost a 50 per cent chance of being stunted, whereas on the average, throughout the country, 29 per cent of children are stunted (Republic of Honduras, 2006).

Underweight

Today, an estimated 129 million children under- 5 years old in the developing world are underweight. Ten per cent of children in the developing world are severely underweight. The prevalence of underweight among children is higher in Asia than in Africa, with rates of 27 per cent and 21 per cent, respectively. In 17 countries, underweight prevalence among children under 5 years old is greater than 30 per cent. The rates are highest in Bangladesh,

India, Timor-Leste and Yemen, with more than 40 per cent of children underweight. Some countries have low underweight prevalence but unacceptably high stunting rates. For example, in Albania, Egypt, Iraq, Mongolia, Peru and Swaziland, stunting rates are more than 25 per cent although underweight prevalence is 6 per cent or less. For national development and public health, it is important to reduce both stunting and underweight. Progress towards the reduction of underweight prevalence has been limited in Africa, with 28 per cent of children under -5 years old being underweight around 1990, compared with 25 per cent around 2008. Progress has been slightly better in Asia, with 37 per cent underweight prevalence around 1990 and 31 per cent around 2008.

Wasting

Children who suffer from wasting face a markedly increased risk of death. According to the latest available data, 13 per cent of children under 5 years old in the developing world are wasted, and 5 per cent are severely wasted (an estimated 26 million children). A number of African and Asian countries have wasting rates that exceed 15 per cent, including Bangladesh (17 per cent), India (20 per cent) and the Sudan (16 per cent). The country with the highest prevalence of wasting in the world is Timor-Leste, where 25 per cent of children under 5 years old are wasted (8 per cent severely). Out of 134 countries with available data, 32 have wasting prevalence of 10 per cent or more among children under 5 years old. At such elevated levels, wasting is considered a public health emergency requiring immediate intervention, in the form of emergency feeding programmes. Ten countries account for 60 per cent of children in the developing world who suffer from wasting. The top eight countries all have wasting prevalence of 10 per cent or higher. More than one third of the developing world's children who are wasted live in India. The burden of severe wasting is particularly high – 6 per cent or more – in countries with large populations; Indonesia, Nigeria, Pakistan and the Sudan, in addition to India, all have high rates of wasting.

Table 2.2 10 Countries with the Largest Number of Children Under 5 Years Old Who Are Wasted

	Wasting			
Country	**Moderate/ Severe Number (1,000)**	**Prevalence (%)**	**Severe Number (1,000)**	**Prevalence (%)**
India	25075	20	8105	6
Nigeria	3478	14	1751	7
Pakistan	3376	14	1403	6
Bangladesh	2908	17	485	3
Indonesia	2841	14	1295	6
Ethiopia	1625	12	573	4
DMR Congo	1183	10	509	4
Sudan	945	16	403	7
Egypt	680	7	302	3
Philippines	642	6	171	2

Source: MICS and DHS national surveys, 2003–2008.

Micronutrient deficiencies

Vitamin and mineral deficiencies are highly prevalent throughout the developing world. The status of vitamin A, iron and iodine deficiencies is highlighted below, but other deficiencies such as zinc and foliate are also common.

Vitamin A deficiency remains a significant public health challenge across Africa and Asia, and in some countries of South America. An estimated 33 per cent (190 million) of preschool-age children and 15 per cent (19 million) of pregnant women do not have enough vitamin A in their daily diet, and can be classified as vitamin A deficient. The highest prevalence and numbers are found in Africa and some parts of Asia, where more than 40 per cent of preschool-age children are estimated to be vitamin A deficient (WHO, 2009).

Iron deficiency affects about 25 per cent of the world's population, most of them children of preschool-age and women. It causes anaemia, and the highest proportions of preschool-age children suffering from anaemia are in Africa (68 per cent) (Benoist *et al*, 2008).

Iodine deficiency, unlike many other nutrition problems, affects both developed and developing countries. Although most people are now protected through the consumption of iodized salt, the proportion of the population affected by iodine deficiency is highest in Europe (52 per cent). Africa is also affected, with 42 per cent of the population assessed as deficient (Benoist et *al*, 2008).

2.12 Coverage of Interventions to Improve Nutrition

2.12.1 Infant and young child feeding

Optimal infant and young child feeding entails the initiation of breastfeeding within one hour of birth; exclusive breastfeeding for the first six months of the child's life; and continued breastfeeding for two years or more, together with safe, age-appropriate feeding of solid, semi-solid and soft foods starting at 6 months of age. While infant feeding practices need to

be strengthened overall, increasing the rates of early initiation of breastfeeding and of exclusive breastfeeding is critical to improving child survival and development. Less than 40 per cent of all infants in the developing world receive the benefits of immediate initiation of breastfeeding. Similarly, just 37 per cent of children under- 6 months of age are exclusively breastfed. Less than 60 per cent of children 6–9 months old receive solid, semi-solid or soft foods while being breastfed. In addition, the quality of the food received is often inadequate, providing insufficient protein, fat or micronutrients for optimal growth and development.

2.12.2 Exclusive breastfeeding

In the developing world, less than 40 per cent of infants under 6 months old receive the benefits of exclusive breastfeeding. The rate is particularly low in Africa, where less than one third of infants under 6 months old are exclusively breastfed. Over the past 10–15 years exclusive breastfeeding rates have increased in many countries of Africa and Asia. In the developing world as a whole, however, progress has been modest, from 33 per cent around 1995 to 37 per cent around 2008. Evidence from a variety of countries indicates that marked improvements in exclusive breastfeeding are possible if supported by effective regulatory frameworks and guidelines, and when comprehensive programmatic approaches are at scale. Exclusive breastfeeding rates are very low and stunting prevalence is high in several countries that have experienced emergencies and longer-term challenges, such as Chad, Côte d'Ivoire, Djibouti and the Niger. In these countries, urgent actions are needed to promote and support exclusive breastfeeding in order to reduce the rate of infectious diseases and ensure optimal infant nutrition.

2.12.3 Early initiation of breastfeeding

Only 39 per cent of newborns in the developing world are put to the breast within one hour of birth. The rate is especially low in Asia, at 31 per cent. There is growing evidence of the benefits to mother and child of early initiation of breastfeeding, preferably within the first

hour after birth. Early initiation of breastfeeding contributes to reducing overall neonatal mortality (Edmond, *et al*., 2008). It ensures that skin-to-skin contact is made early on, an important factor in preventing hypothermia and establishing the bond between mother and child. Early initiation of breastfeeding also reduces a mother's risk of post-partum haemorrhage, one of the leading causes of maternal mortality. Colostrum, the milk produced by the mother during the first post-partum days, provides protective antibodies and essential nutrients, acting as a first immunization for newborns, strengthening their immune system and reducing the chances of death in the neonatal period (Huffman *et al*, 2001).

In a subset of countries with available data, the low proportions of early initiation of breastfeeding contrast with substantially higher proportions of infants who are delivered by a skilled health professional and of infants whose mothers received antenatal care at least once from a skilled health professional. This gap constitutes a lost opportunity and highlights the critical need to improve the content and quality of counselling by health-care providers.

2.12.4 Complementary feeding

In the developing world, 58 per cent of infants aged 6–9 months old receive complementary foods, while continuing to be breastfed. These data do not reflect the quality of the complementary foods received. Meeting minimum standards of dietary quality is a challenge in many developing- country settings, especially in areas where household food security is poor, and it has often not been given enough emphasis. Children may not receive complementary foods at the right age (often either too early or too late), are not fed frequently enough during the day, or the quality of the food may be inadequate. New programming options are now available to meet this challenge. Complementary feeding is the most effective intervention that can significantly reduce stunting during the first two years of life (Ramakrishnan *et al*, 2009).

A comprehensive programme approach to improving complementary feeding includes counselling for caregivers on feeding and care practices on the optimal use of locally

available foods, improving access to quality foods for poor families through social protection schemes and safety nets, and the provision of micronutrients and fortified food supplements when needed. Recently adopted new indicators for infant and young child feeding (especially the 'minimum acceptable diet' indicator reflecting both frequency of feeding and dietary diversity) emphasize the importance of quality of food and allow for better assessment of complementary feeding practices.

2.12.5 Vitamin A supplementation

Vitamin A is essential for a well-functioning immune system; its deficiency increases the risk of mortality significantly. In 2008, 71 per cent of all children 6–59 months old in developing countries were fully protected against vitamin A deficiency with two doses of vitamin A. Coverage of 85 per cent for the least developed countries highlights the success of programmes in reaching the most vulnerable populations. In 2008, 22 out of 34 least developed countries with data had surpassed the 80 per cent target of full coverage of vitamin A supplementation. Service provided through integrated child health events has helped to ensure high coverage in a large number of these countries, where weak health systems would otherwise not have reached children. In 2008, integrated child health events were the most effective platform for delivery of vitamin A supplements, resulting in more than 80 per cent coverage on average (UNICEF, 2008)

Nearly three quarters of the 20 countries with the highest number of deaths among children under 5 years old achieved more than 80 per cent full coverage of vitamin A supplementation. Vitamin A supplementation coverage rates show dramatic increases in a relatively short period of time. In Africa, full coverage of vitamin A supplementation has increased fivefold since 2000, due largely to the introduction of biannual child health days, the main platform for vitamin A supplement distribution in many African countries. Importantly, coverage more than doubled in the least developed countries, rising from 41 per

cent in 2000 to 88 per cent in 2008, demonstrating that this life-saving intervention is reaching children in countries where it is most needed.

2.12.6 Universal salt iodization

Iodine deficiency can be easily prevented by ensuring that salt consumed by households is adequately iodized. The most recent data indicate that 36 countries have reached the target of at least 90 per cent of households using adequately iodized salt. This represents an increase from 21 countries in 2002, when the universal salt iodization goal was endorsed at the United Nations General Assembly Special Session on Children. Despite this significant progress, about 41 million newborns a year remain unprotected from the enduring consequences of brain damage associated with iodine deficiency. Some 72 per cent of all households in developing countries now consume adequately iodized salt. About 73 per cent of households in Asia and 60 per cent in Africa consume adequately iodized salt. Africa's relatively high rate is largely due to high coverage in two populous countries – Nigeria (with 97 per cent coverage) and the Democratic Republic of the Congo (79 per cent) – which masks the low coverage in many less populous countries of the region. Increases in excess of 30 percentage points over the past decade have occurred in 19 countries where the current levels of household consumption of adequately iodized salt exceed 70 per cent. These marked improvements are a product of a unique combination of innovative public policies, private-sector initiative and civic commitment. Thirteen of these countries have improved their coverage by more than 50 percentage points, indicating that the goal of universal salt iodization can be attained – even at the global level – if efforts are similarly strengthened among countries that are lagging.

2.12.7 Fortification of staple foods and condiments

Along with the iodization of salt, adding such vitamins and minerals as iron, zinc, vitamin A and folic acid to staple foods, complementary foods and condiments is a cost effective way to improve the vitamin and mineral intake of the overall population, including

women of reproductive age and children. As of March 2009, roughly 30 per cent of the world's wheat flour produced in large roller mills was fortified, while 57 countries had legislation or decrees mandating fortification of one or more types of flour with either iron or folic acid (Flour Fortification Initiative, 2009).

Although many foods, such as fats, oils and margarine, have been fortified for years in some countries, this approach has not yet been scaled up in many lower-income countries. Through increased efforts by various partnerships and alliances, it is expected that food fortification will continue to gain momentum.

2.12.8 Multiple micronutrient supplementation/home fortification

Among products recently developed to provide iron and other vitamins and minerals to young children and women of reproductive age, multiple micronutrient powders (MNPs) are considered particularly promising; studies have found they may reduce anaemia in young children by as much as 45 per cent (Dewey *et al*, 2009) MNP sachets contain a blend of vitamins and minerals in powdered form that can be sprinkled onto home-prepared foods, enabling families without access to commercially fortified foods to add micronutrients directly to their diets. There is emerging evidence that MNPs can contribute to improving complementary feeding practices if programmes are designed with that goal in mind (UNICEF, 2009).

2.13 Effective Interventions to Improve Nutrition

The period in the life cycle from the mother's pregnancy to the child's second birthday provides a critical window of opportunity in which interventions to improve maternal and child under-nutrition can have a positive impact on young children's prospects for survival, growth and development, especially in countries with a high burden of under-nutrition.

A package of effective nutrition interventions has widely been agreed upon by experts and programme partners. It includes interventions in three key areas:

(i) Maternal nutrition during pregnancy and lactation.

(ii) Initiation of breastfeeding within the first hour after birth, exclusive breastfeeding for the first 6 months, and continued breastfeeding up to at least 24 months of age.

(iii) Adequate complementary feeding from 6 months onward, and micronutrient interventions as needed. Successful programming in these areas will lead to marked reductions in the levels of chronic under-nutrition in young children.

Effective interventions for the treatment of severe and acute malnutrition in both emergency and non-emergency settings include the use of ready-to-use therapeutic foods and adequate treatment of complications, and, for management of moderate acute malnutrition, the use of various supplementary foods. These interventions need to be implemented at scale together with strategies to improve care and feeding practices. Given the close link between under-nutrition and infections, the implementation at scale of key interventions to prevent and treat infections will contribute to better nutrition as well as reduced mortality. Such interventions include immunization, improved hygiene and hand washing, sanitation (including the elimination of open defecation) and access to clean drinking water, use of improved oral rehydration salts and therapeutic zinc to treat diarrhoea, the prevention and treatment of malaria, and the treatment of pneumonia with antibiotics. In many countries and communities, households face periods of seasonal food shortage, or adequate nutritious food may be unavailable to families on a continual basis.

This situation needs to be addressed in order to ensure adequate maternal nutrition and complementary feeding for infants and young children, as well as to sustain reduction in under-nutrition over the long term. Interventions include measures to improve agricultural production and increase food availability through social protection schemes and food

distribution programmes. Some of these preventive actions should begin in adolescence, before the woman becomes pregnant, and continue after the child reaches 24 months of age. Many of these interventions endeavour to change behaviour and will depend on the successful implementation of large-scale communication strategies.

Adequate nutrition is also of key importance for children more than 2 years old, and interventions such as vitamin A supplementation, zinc treatment for diarrhoea, management of acute malnutrition, and communication and counselling on the prevention of both under-nutrition and overweight are also crucial for these children

2.14 Underlying Causes of Under-nutrition: Poverty, Disparities and Other Social Factors

Poverty, inequity, low maternal education and women's social status are among the underlying factors that need to be taken into consideration and addressed in order to reduce under-nutrition in a sustained manner.

Poverty

The relationship between poverty and nutrition is two-sided: Economic growth, when it contributes to lowering the prevalence of poverty and food insecurity, can also lead to reduced under-nutrition, albeit at a slow pace (Haddad *et al*, 2002) Nutrition is one of the key elements for human capital formation, which in turn represents one of the fundamental drivers of economic growth (Hunt and Joseph, 1996). But economic growth does not necessarily translate to better and equitable outcomes for all individuals in society, and the nutritional status of a population does not always depend on national development, prosperity or economic growth.

Maternal and child nutrition is the result of a wide variety of factors, reflecting the quality of public health systems, caring practices in households and communities, society's ability to deal with poverty, food insecurity for disadvantaged groups, the capacities of social

justice and welfare systems, and the effectiveness of broader economic and social policies. Nutrition status can therefore, be improved even when economic growth remains limited (Jolly and Richard 1996). In fact, addressing under-nutrition helps to halt the intergenerational transmission of poverty.

Equity

Equity issues are important when assessing progress on nutrition globally. Analysing disparities in equity can lead to a better understanding of the causes of under-nutrition, and it can help identify and target interventions for the most vulnerable populations within a country or region as part of a multi-sectoral nutrition strategy.

Although a number of countries have made progress combating child under-nutrition, closer scrutiny, using an 'equity lens' reveals large inequities. The Pluri national State of Bolivia, for example, halved stunting prevalence among children under 5 years old between 1989 and 2003, but children in the poorest households are nearly six times as likely to be stunted as children in the richest households. In Peru, children in the poorest households are 11 times more likely to be stunted than children in the richest households (UNICEF, 2004).

The relationship between stunting and wealth varies significantly across countries. In India and Nigeria, children in the richest households are at a distinct advantage compared to children in other households. This contrasts with Ethiopia, where stunting is widespread – even among children living in the wealthiest households, the prevalence of stunting is high, at 40 per cent – and in Egypt, where stunting prevalence is remarkably similar in all wealth quintiles. Children in rural areas in the developing world are almost twice as likely to be underweight as children in urban areas.

Gender and social norms

An analysis of nutrition indicators at the global level reveals negligible differences between boys and girls under 5 years old. Similarly, programme coverage and practice data that are disaggregated by sex reveal no significant differences on the basis of gender. But

further disaggregation of data from some countries indicates there might be differences in the feeding and care of girls compared to boys, presumably stemming from power relations and social norms that perpetuate discriminatory attitudes and practices. Data in some countries point to the possible effects, such as Bangladeshi boys being significantly taller relative to their age than girls (Dancer et al, 2008). In sub-Saharan Africa, on the other hand, boys are more likely to be stunted than girls (Wamani *et al*, 2007)

Maternal education

Significant disparity in nutritional status also exists in terms of mothers' education and literacy. A number of studies and analyses have found a significant association between low maternal literacy and poor nutrition status of young children. An analysis of survey data from 17 developing countries, for example, confirms a positive association between maternal education and nutritional status in children 3–23 months old, although a large part of these associations is the result of education's strong link to household economics (Cleland *et al*, 1988) A study in Pakistan revealed that the majority of infants with signs of under-nutrition had mothers with virtually no schooling. The study also observed that the introduction of complementary foods for infants at an appropriate age (6 months) improved when mothers were educated (Liaqat *et al*, 2007)

Women's social status

In many developing countries, the low status of women is considered to be one of the primary determinants of under-nutrition across the life cycle. Women's low status can result in their own health outcomes being compromised, which in turn can lead to lower infant birth weight and may affect the quality of infant care and nutrition. A study in India showed that women with higher autonomy (indicated by access to money and freedom to choose to go to the market) were significantly less likely to have a stunted child when compared with their peers who had less autonomy (Shroff, *et al*, 2009)

2.15 Factors for Good Nutrition Programming

Effective programming – based on adequate policies and regulatory frameworks, strong management and functioning service delivery systems, and backed by sufficient resources – is also imperative to achieve a high coverage of service delivery and to effect widespread change in community and household behaviours and practices. Experience shows that it is entirely feasible to scale up nutrition programmes and achieve marked improvements in caring behaviour and practices, especially when there is strong government leadership and broad supporting partnerships. Over the past 5–10 years, for example, 16 countries have recorded gains of 20 percentage points or more in exclusive breastfeeding rates. Many of these countries face serious development challenges, as well as emergency situations. The implementation of large-scale programmes in these countries was based on national policies and often guided by the WHO-UNICEF Global Strategy for Infant and Young Child Feeding. Country programmes included the adoption and implementation of national legislation on the International Code of Marketing of Breast milk Substitutes and subsequent World Health Assembly resolutions, as well as maternity protection for working women. Further actions included ensuring that breastfeeding was initiated in maternity facilities (and that no infant formula was given in the facilities), building health worker capacity to offer counselling on infant and young child feeding, and mother-to-mother support groups in the community. These actions were accompanied by communication strategies to promote breastfeeding, using multiple channels and messages tailored to the local context (WHO, 2008).

The recent global initiative on community-based treatment of severe acute malnutrition is an excellent example of partnership among many organizations working together to reach children with life-saving services not available to them before. A total of 42 countries in Africa, Asia and the Middle East, including countries facing chronic or acute emergencies, have finalized or drafted integrated guidelines and action plans for scale-up and integration within the regular health system (UNICEF, 2009).

Guidance on planning and implementation has been provided by international partners, and health-worker capacity has been strengthened. In parallel, the production and distribution of therapeutic products has drastically increased, particularly for ready-to-use therapeutic food (UNICEF, 2009)

While prioritizing the acceleration of programmes to provide treatment for children with severe acute malnutrition, it is also important to implement actions to prevent it – including measures to expand infant and young child feeding, improve health care and hygiene conditions, and promote food security. In many countries, integrated child health events have proved effective in delivering vitamin A. This approach – which employs good planning, capacity strengthening and the pooling of resources – allows for wide coverage of a package of interventions in situations where delivery through routine health services is limited.

2.16 Programme Success Factors

1. **Situation analysis:** The starting point in the design of programmes should always be the analysis of the local nutrition situation and its determinants, including household food security, poverty and social issues. This analysis should form the basis for appropriate national policies, adequate legislative frameworks and strategies that ensure the best use of local resources. Policy guidance and technical documentation on international norms already established can facilitate policy design and choice of implementation strategy.

2. **Political commitment and partnership:** Strong and clear government ownership, leadership and commitment are keys to the success of any nutrition programme. Nutrition often falls within the mandate of several departments, so programmes require clear roles and responsibilities; similar clarity and well coordinated support is required from the international community. The Renewed Efforts against Childhood Hunger and Under-nutrition (REACH) initiative provides a good example of inter-agency collaboration and partnerships to improve nutrition.

3. **Linkages with other sectors:** The packages of nutrition interventions described in this report need to be implemented in conjunction with relevant health and water/sanitation interventions – particularly those addressing treatment and prevention of the major childhood illnesses closely associated with Under-nutrition (diarrhoea, pneumonia, malaria, measles, and HIV and AIDS). Better household food security, through strengthened agricultural and social protection programmes, is essential to sustain efforts to improve nutrition.

4. **Capacity-building:** Early initiation of breastfeeding and exclusive breastfeeding can be effectively promoted using various channels at all levels of the primary-health-care system, including antenatal care clinics and traditional birth attendants; home visits by community health workers; immunization and weighing sessions, and sick child consultations; and services to prevent mother-to-child transmission of HIV and provide paediatric AIDS treatment. For health workers to do this work effectively, the reach and coverage of the health system needs to be reviewed, opportunities identified, and knowledge and skills updated and strengthened. Capacity building is therefore critical to the success of nutrition programmes.

5. **Communication and community:** Experience shows that effective large-scale communication campaigns and community involvement are key conditions for programmes that seek to improve child care and nutrition and promote behavioural change. Regular support and counselling of caregivers at the community level in a comprehensive manner, with messages on feeding, care, hygiene, and disease prevention and treatment, can lead to positive outcomes. For this purpose, many countries successfully rely on community-based volunteers who work closely with official service providers. Strong emphasis on quality implementation of planned activities at the community level includes supportive supervision and continuous monitoring and evaluation with feedback mechanisms. The notion of communities as passive recipients of services is no longer valid; they are active agents for

identifying and addressing gaps, assuming responsibilities and ensuring that adequate nutrition is provided for all.

6. **Corporate social responsibility:** The involvement of the private sector can ensure the availability of appropriate and affordable products such as high quality foods for complementary feeding and supplementary feeding, and micronutrient-fortified staple foods and supplements. This is an important strategy that can both improve access to quality foods and lead to increased local production. With its extensive access to populations, the private sector also has a role in encouraging behaviour change that promotes healthy lifestyles and good nutrition. In this way, corporate social responsibility can help improve child and maternal nutrition. It is critical that companies comply with the International Code of Marketing of Breast milk Substitutes and all relevant standards.

7. **Resources:** Nutrition programmes are usually severely under-resourced, despite evidence of their effectiveness. The Copenhagen Consensus in 2008 (Horton *et al*, 2008), for example, listed nutrition interventions among the most cost effective actions to tackle some of the world's most pressing challenges. According to the Copenhagen Consensus, a global investment of US$60 million per year for vitamin A and zinc supplementation would yield a return in benefits of US$1 billion. The programme 'A Good Start in Life' in Peru documented a significant reduction in stunting at an annual cost of about US$117 per child (Lechtig *et al*, 2009). The REACH initiative is estimated to need about US$36 per child per year to implement an integrated programme with cost effective interventions (Boston Consulting Group, 2008) Although the cost of programmes will vary widely between countries, depending on many local conditions, these figures provide an indication of the resources required.

2.17 Global Trends in Social Marketing Applications

2.17.1 The Stanford Heart Disease Prevention Programme

Maccoby and his colleagues at Stanford University sought to test the power of mass communication to inform and motivate people to change behaviours that lead to cardiovascular diseases (Maccoby *et al*, 1977). Their aim was to influence people to stop smoking, eat better food, keep their weight down, exercise regularly, and avoid stress and high blood pressure. The researchers recognised that interpersonal interventions (such as lectures and visits to clinics) and personal communications are the most effective means of stimulating people to adopt healthy habits. However, they did not have enough funds to employ skilled trainers to conduct full-scale interpersonal interventions. Therefore, they decided to try the mass media approach for empirical validation. They identified three comparable small-sized California communities with population of 1,200 – 1,500 named Tracy, Gilroy and Watsonville. Tracy received no media treatment and Gilroy was exposed to a variety of television and radio slots, newspaper advertisements, articles, billboards and direct mail. In Watsonville, messages were placed in newspapers, and a group of residents who were at high risk of developing cardiovascular disease also received face-to-face interpersonal interventions.

The experiment was carried out over a three-year period. The researchers were pleased to find that the mass media messages produced positive changes in dietary behaviour and exercise. However, when these messages were supplemented by personal interventions, the combination led even more people to stop smoking and control their weight.

2.17.2 Oral Dehydration Campaign in Philippines.

The campaign to introduce oral dehydration therapy in the Philippines sought to control a major cause of infant mortality and morbidity through diarrhea (Rohde & Fabricant, 1984). Other approaches such as intravenous solution, antibiotics, and anti diarrhea medications, are known to be expensive, less effective and medically contradicted some

times. This also may call for access to hospital facilities that are usually unavailable to people in rural areas.

The social marketing team decided to run a focus group discussion with mothers to find out what they know about infant diarrhea and dehydration, what they typically thought of doing in these cases and what their reactions would be to using the oral dehydration product. The focus group discussion yielded some eye-opening revelations. Mothers learn how to mix the salt-sugar solutions, which at the end of the exercise saved many children who could have died.

2.17.3 Social Marketing of Vitamin A in Three Asian Countries

The Philippine's programme was launched in late 1988 and evaluated in April 1990. Pre and post-intervention surveys in Antique Province where intervention was most intense, found that all active signs of exophthalmia, except for corneal ulcers (which increased from one to two) among target age children had decreased significantly. The overall prevalence of exophthalmia decreased from 3.7% - 1.0%. There was an increase in the number of high-risk children having received a Vitamin A capsule in the last six months from 3% - 30%.

Mothers' knowledge related to Vitamin A deficiency increased very significantly. The Bangladesh programme was launched in March 1990 and evaluated slightly after one year. Findings showed a significant increase from 24% - 42% of children between 6 to 72 months old who consumed Vitamin it foods daily.

The Indonesian programme was completed and evaluated in June 1989, after 20months of activities. The programme demonstrated the value of mass media e.g. radio and outdoor promotions in shifting attitudes and behaviours. In the evaluation of the survey, 42% of the mothers claimed to have heard the radio spots, 70% observed posters and 44% the billboards. In all, their attitudinal changes were consistent with the following increase in daily consumption of Vitamin A. Pregnant mothers from 19% - 32%, nursing mothers from

14% - 33%, 5 to 12 months old children from 10% - 21% and 13 – 60months old children 17% - 27% (Richard and Michael, 1997).

2.18 A Review of the Effectiveness of Social Marketing Nutrition Interventions

In recent years, attention has turned to social marketing as a promising approach for behavioural change. It is increasingly being advocated as a core public health strategy particularly for influencing voluntary lifestyle behaviours such as smoking, drinking, drug use and diet (CDC, 2005). The UK Government 2004 White Paper on Public Health recommends that social marketing is used to make behaviour that harms health less attractive, and to encourage behaviour that improves health (Department of Health 2004).

The National Social Marketing Strategy for Health, led by the National Consumer Council and the Department of Health has been established to "help realise the full potential of effective social marketing in contributing to national and local efforts to improve health and reduce health inequalities". (NCC/DH) 'Realising the Potential of Effective Social Marketing' 2005). Although, social marketing has been used to inform interventions for about 30 years, there have been few reviews in literature of its effectiveness in general as a health behavioural change approach.

A systematic review which met all six benchmark criteria for a social marketing intervention is a must (Andreasen, 2001). It stipulates that eligible interventions had to provide evidence of Andreasen's Social Marketing Benchmark Criteria.

2.19 Nutrition Interventions – Overview of Study Characteristics and Results

The following are the overview of nutrition interventions using social marketing strategy. The review is meant to ascertain the extent to which intervention adhere to the six benchmark criteria.

1. **Intervention Name:** '5-a-day' School Intervention

Authors: Thackeray 2002 Neiger & Thackeray 2002

Participants & Setting: Inner-city school children and their parents

Study Design: Quasi-experiment

Intervention: School-based intervention comprising school-wide events, communications and food service changes. Intervention is based on the "SMART" model (Social Marketing and Response Tool). No other behaviour change models or theories were mentioned.

Social Marketing Characteristics:

a. Behaviour change goals: Intervention sought to increase fruit and vegetable consumption.

b. Consumer research: Campaign was based on formative research needs assessment (100 individual interviews & six focus groups. Interventions were pre-tested with the target audience.

c. Segmentation and targeting: Inner-city middles-school children in 7-8th grade.

d. Marketing mix: Eight-week intervention comprised school-wide events (e.g. assembly, contests), communications (e.g.) posters) & food service modifications in the cafeteria. It also included a parent component comprising cooking classes, newsletters & parent-teacher conference (with recipes & food samples).

e. Exchange: Intervention included a contest at the end of programme & a 'cafeteria celebration'. The programme emphasized the benefits of eating fruit & vegetables & the presentation of fruit & vegetables in the cafeteria was improved to make them more appealing.

f. Competition: Formative research identified barriers to fruit & vegetable consumption (e.g. students chose pizza line in cafeteria because it was faster) which were addressed through the social marketing strategy.

Outcome Measures & Results:

High quality fruits and vegetable intake: mixed/moderate effect

Fruits and vegetable knowledge: positive effect

Self efficacy and choice of fruit and vegetables: mixed/moderate effect

2. Intervention Name: '5-a-day' Achievement Badge for Urban Boy Scouts

Authors: Baranowski 2002

Participants & Setting: African American Boy Scouts aged 9-18 years

Study Design: Randomised controlled trial

Intervention: Troop-based educational sessions and additional camping sessions to train Scouts in self-control and food preparation. No specific behaviour change models or theories are mentioned

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to increase consumption of fruit, 100% juice and vegetables.

b. Consumer research: Focus group research was undertaken with scouts and their parents to inform the design of the intervention

c. Segmentation and targeting: African American boy scouts. Printed materials were designed to cope with low literacy.

d. Marketing mix: Intervention comparised eight weekly troop sessions & two camping sessions. Scouts were trained in 'asking activities', self-control, & recipes, plus a series of badge-activities (e.g. Food preparation)

e. Exchange: Intervention sought to increase preferences for fruit, juice and vegetables by associating them with 'fun'. Boys received an achievement badge if they achieved all their dietary change goals. 'Door prizes' were provided to encourage parent participation.

f. Competition: Formative research identified environmental factors that limit fruit & vegetable consumption. The intervention included self-control such as self monitoring.

Outcome Measures & Results:

Medium quality fruits and vegetable intake: positive effect

Various psychosocial for fruits and vegetable (preferences, asking behaviours, availability and accessibility): positive effect.

3. Intervention Name: GEMS Pilot Study Memphis

Authors: Beech 2003

Participants & Setting: Overweight African American girls aged 8-10 years

Study Design: Randomised controlled trial

Intervention: Interactive educational sessions focusing on knowledge and behaviour change skills. Intervention was guided by social cognitive theory, family systems theory and "theoretical and empirical evidence supporting the use of a family-based approached to obesity prevention in children".

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to tackle obesity by promoting healthy eating (e.g. reducing consumption of sweetened beverages, increasing fruit and vegetable consumption).

b. Consumer research: GEMS programmes were developed based in 'extensive formative assessments' (e.g. focus groups).

c. Segmentation and targeting: Pre-teen African American girls & their families. The programmes were cultural relevant.

d. Marketing mix: Intervention components varied across the three sites but generally consisted of child targeted programmes (group sessions and activities)

and parent programmes plus events (including taste-testing). One programme included a summer camp.

e. Exchange: Intervention used incentives/small gifts

f. Competition: Recognised potential influence of family members & peers on diet. Programmes also included messages about food moderation & sought to displace the consumption of high fat foods.

Outcome Measures & Results:

Medium quality fruits and vegetable intake: mixed/moderate effect

Fat intake: mixed/moderate effect

Consumption of 'unhealthy' food: mixed/moderate effect

Nutritional knowledge: positive effect

High and low fat food practices/reported availability: no change BMI: No change.

4. Intervention Name: GEMS Pilot Study Minnesota

Authors: Story 2003

Participants & Setting: Overweight African American girls aged 8-10 years

Study Design: Randomised controlled trial

Intervention: Interactive educational sessions focusing on knowledge and behaviour change skills. Intervention was guided by social cognitive theory, family systems theory and "theoretical and empirical evidence supporting the use of a family-based approached to obesity prevention in children".

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to tackle obesity by promoting healthy eating (e.g. reducing consumption of sweetened beverages, increasing fruit and vegetable consumption).

b. Consumer research: GEMS programmes were developed based on 'extensive formative assessments' 9e.g. focus group)

c. Segmentation and targeting: Pre-teen African American girls & their families. The programmes were culturally relevant and tailored.

d. Marketing mix: Intervention components varied across the three sites but generally consisted of child targeted programmes (group sessions and activities) & parent programmes plus events (including taste-testing). One programme included a summer camp.

e. Exchange: Intervention used incentives/small gifts.

f. Competition: Recognised potential influence of family members & peers on diet. Programmes also included messages about food moderation & sought to displace the consumption of high fat foods.

Outcome Measures & Results:

Medium quality fruits and vegetables intake: negative effect

Fat intake: mixed/moderate effect

Consumption of 'unhealthy' foods: mixed/moderate effect

Healthy eating intentions: positive effect Parental encouragement: no change

Reported availability of high fat foods: Positive effect BMI: No change.

5. Intervention Name: GEMS Pilot Study Texas

Authors: Baranowski, 2002

Participants & Setting: Overweight African American girls aged 8-10 years

Study Design: Randomised controlled trial

Intervention: Interactive educational sessions focusing on knowledge and behaviour change skills. Intervention was guided by social cognitive theory, family systems theory and "theoretical and empirical evidence supporting the use of a family-based approached to obesity prevention in children".

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to tackle obesity by promoting healthy eating (e.g. reducing consumption of sweetened beverages, increasing fruit and vegetable consumption).

b. Consumer research: GEMS programmes were developed based on 'extensive formative assessments' (e.g focus groups).

c. Segmentation and targeting: Pre-teen African American girls & their families. The programmes were culturally revelation/tailored.

d. Marketing mix: Intervention components varied across the tree sites but generally consisted of child targeted programmes (group sessions and activities) & parent programmes plus events (including taste-testing). One programme included a summer camp.

e. Exchange: Intervention used incentives/small gifts.

f. Conpetition: Recognised potential influence of family members & peers on diet. Programmes also included messages about food moderation & sought to displace the consumption of high fat foods.

Outcome Measures & Results:

Medium quality fruits and vegetable intake: mixed/moderate effect

Fat intake: mixed/moderate effect

Consumption of 'unhealthy' foods: mixed/moderate effect

BMI: Mixed/moderate effect.

6. Intervention Name: Black Churches United for Better Health Project

Authors: Campbell, 1999

Participants & Setting: African American Church members

Study Design: Randomised controlled trial

Intervention: Church-based intervention based on an ecological model of change including tailored bulletins, printed materials, educational sessions, increased availability of fruit and vegetables at church functions. The intervention is based on an ecological model of change.

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to increase fruit and vegetable consumption by at least 0.5 daily servings.

b. Consumer research: Focus groups, pastor interviews and ongoing feedback from church members were used to inform the design of the programme and messages.

c. Segmentation and targeting: Rural African American church members. Individualized feedback to motivate behaviour change.

d. Marketing mix: Multi-component intervention, based on an ecological model of change, comprised tailored bulletins, printed materials, gardening activities, educational sessions, the provision of cookbooks and recipe tasting, serving more fruit and vegetables at church functions, involvement of lay health advisors, the establishment of community coalitions, pastor support, Grocer-vendor involvement & church initiated activities.

e. Exchange: Churches were given funding plus a 'small discretionary amount' for their participation. Intervention was designed around spiritual themes & coupons were distributed through vendors.

f. Competition: Several activities designed to help people overcome barriers to bahaviour change (e.g. The educational sessions and cooking classes all addressed enabling factors).

Outcome Measures & Results:

Medium quality fruits and vegetable intake: positive effect

Fruits and vegetable knowledge: positive effect

Fruits and vegetable stage of change: positive effect

Fruits and vegetable self efficacy: Positive effect.

7. Intervention Name: Eat Smart

Authors: Delichatsios, 2001

Participants & Setting: Adult Primary care patients

Study Design: Randomised controlled trial

Intervention: Primary care-based intervention tailored educational materials, physician endorsement and motivational counseling. Motivational counseling and TTM

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to increase fruit and vegetable consumption, decrease red and processed meat consumption, and replace whole-fat dairy products with low-fat products. Specific targets were set.

b. Consumer research: Initial dietary assessment was by a survey used to develop tailored educational materials.

c. Segmentation and targeting: Adult primary care patients. The intervention was individually tailored (matched to Stage of Change)

d. Marketing mix: Multifaceted preventive nutrition intervention that included tailored educational materials, a low-intensity physician endorsement (incl. triaging) and motivational counseling by telephone.

e. Exchange: Interview style was designed to enhance motivation for change and encouraged participants to set goals.

f. Competition: Intervention sought to encourage individuals to reduce their consumption of processed food and substitute whole-fat with low-fat products. It also sought to address people's ambivalence about behavioural change.

Outcome Measures & Results:

Medium Quality fruits and vegetable intake: positive effect

Fruits and vegetable stage of change: no change

Fat intake: positive effect Fat stage of change: positive effect

Intake of healthy foods: mixed/moderate effect.

8. Intervention Name: Minnesota Heart Health Programme (MHHP)

Authors: Luepker 1994 Klder et al 1995

Participants & Setting: Selected groups within three Midwest US communities

Study Design: Quasi experiment

Intervention: Community-based intervention comprising mass communications, direct education through primary care settings, professional education, school-based programmes and other community activities. Intervention draws upon Social learning theory, persuasive communications theory and models for involvement of community leaders and institutions.

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to reduce the risk of cardiovascular disease (CVD) by improving eating, smoking and exercise behaviours. In terms of nutrition, specific goals were set out relating to fat intake and fruit and vegetable consumption.

b. Consumer research: Intervention components were based on different formative work (e.g. telephone survey of parents, needs assessment surveys with students).

c. Segmentation and targeting: Different community sub-segments were targeted included school students & health professionals.

d. Marketing mix: Community-wide intervention programme comprised educational programmes for different community sub-segments. It also included a general awareness campaign, CVD screening, nutrition labeling at supermarkets, training for teachers & the involvement of retailers and restaurateurs.

e. Exchange: Intervention included 'economic incentives' & the school programme employed goal setting with 'direct reinforcement'. Participants were provided with participation points & 'score cards'.

f. Competition: Schools programmes included teaching students the skills to resist pressures, to engage in 'healthy compromising bahaviours', & involved analyzing barriers to healthy eating that exist within the school environment.

Outcome Measures & Results:

Medium quality salting bahaviour: positive effect

Blood pressure, BMI, cholesterol: no change.

9. Intervention Name: Social Marketing for Public Health Employees

Authors: Neiger, 2001

Participants & Setting: Public health employees

Study Design: Quasi experiment

Intervention: Worksite intervention comprising communications, environmental changes including improvements in the availability of healthy foods at work, and other activities. Intervention is based on the Stages of Change model.

Social Marketing Characteristics:

a. Behaviour change goal: The intervention sought to increase fruit and vegetable consumption (and physical activity levels)

b. Consumer research: Comprehensive formative research was undertaken, including an interest survey, focus groups, in-depth interviews. Activities & messages were pre-tested with employees.

c. Segmentation and targeting: Public health employees (in preparation stage).

d. Marketing mix: The intervention comprised: (i) communications and promotions, including posters, public announcements & emails: (ii) environmental changes

including improvements in the range of fruit & vegetables available; (iii) ongoing activities including a challenge; & (iv) onetime events include a recipe tasting contest, picnic, etc.

e. Exchange: Winners of the challenge (to increase fruit and vegetable consumption) won one hour of administrative leave. Recipe contests with prizes, 'pat on the back' closing ceremony which recognized 'success stories'.

f. Competition: Formative research was used to identify perceived barriers & threats related to fruit & vegetable consumption (e.g. lack of social support and interaction). Activities were developed to increase self-efficacy & decrease barriers.

Outcome Measures & Results:

Medium Quality fruits and vegetable intake: positive effect

Fruits and vegetable stage of change: mixed/moderate effect

Self efficacy for eating more fruits and vegetable: positive effect

Perceived social for healthy lifestyles: positive effect.

10. Intervention Name: Body & Soul

Authors: Resnicow, 2004

Participants & Setting: African American church members

Study Design: Randomised controlled trial

Intervention: Church-based intervention comprising policy changes, taste testing, distribution of 'self-help' materials, motivational interviewing and training for lay church members. The intervention was based on an earlier programme that used an "ecological model"

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to increase fruit and vegetable consumption.

b. Consumer research: This intervention is comprehensively based on 'Eat for Life' & 'United for Better Health' (interventions undertaken by the same author) in which the intervention components had been 'rigorously tested'.

c. Segmentation and targeting: African American church members.

d. Marketing mix: The intervention comprised church-wide activities (which include establishing a project, making policy changes, taste-testing distribution of self-help materials, training for lay church members & motivational interviewing).

e. Exchange: The motivational interviewing was client centred, & explored the benefits of behaviour change and 'potential untapped sources of motivation'.

f. Competition: The motivational interviewing aspect of the intervention sought to solve barriers to behaviour change & help individuals recognise the positives & negatives of current behaviour.

Outcome Measures & Results

Medium quality fruits and vegetable intake: positive

Effect of Self efficacy and intrinsic and extrinsic motivation to eat fruits and vegetable: positive

Effect of Fat intake: positive effect

11. Intervention Name: Middle-School Physical Activity and Nutrition Study (MSPAN)

Authors: Sallis, 2003

Participants & Setting: Middle school children and their parents

Study Design: Randomised cross-over design

Intervention: School-based intervention comprising media and changes to school food service and policies. The intervention is based on an ecological model of health behaviour.

Social Marketing Characteristics:

a. Behaviour change goal: Intervention was designed to reduce the fat intake of school children.

b. Consumer research: Baseline data was used to inform the development of the intervention strategy.

c. Segmentation and targeting: Middle-school children.

d. Marketing mix: Nutrition intervention component targeted: (i) the availability of protection or harmful products (e.g. reducing store operation hours, reducing fat content of school meals); (ii) physical structures or characteristics of products (e.g. packaging of low fat foods); and (iii) school structures and policies (e.g. establishment of a policy group, newsletters and contests). Media and cultural messages were also distributed through posters and signs, etc.

e. Exchange: Contests and raffle tickets were part of the nutrition intervention.

f. Competition: Strategy sought to reduce the availability of less healthy food products through, for example, reducing school store operating hours, reducing the fat content of school meals, encouraging students to substitute high fat for low fat lunches, etc.

Outcome Measures & Results:

Medium quality Fat intake: no change

Parental avoidance of fat in family meals: no change

BMI: mixed/moderate effect.

12. Name: Social Marketing Vitamin A – Rich Foods.

Authors: Smitasiri, 1994

Participants & Setting: Pregnant and Lactating women and mothers with pre-school age children

Study Design: Quasi – experiment

Intervention: Community-based intervention comprising a food resource plan (e.g. an agricultural promotional program), a health service plan and an educational/communications plan. The intervention utilizes four overall frameworks: behaviour analysis combined with nutritional anthropology, media advocacy and social marketing. Social marketing is described as the programme's main operation approach.

Social Marketing Characteristics:

1. Behaviour change goal: Intervention sought to improve vitamin A – related knowledge, attitudes & behaviours (including dietary intake of Vitamin A rich foods).
2. Consumer research: Fairly comprehensive formative research (comprising indepth interviews and focus groups) & pre-testing were undertaken.
3. Segmentation and targeting: Population segments with low Vitamin A intakes. Four different target groups were defined.
4. Marketing mix: Intervention comprised nutrition education/communication, PR with key organizations, the distribution of Vitamin-A foods, training, counseling & cooking demonstrations.
5. Exchange: Strategy considered how to motivate people & create demand based on perceived needs. The theoretical basis of the intervention emphasized importance of stressing the perceived benefits.
6. Competition: Considered Rothschild's factors which may cause a social marketing campaign to fail.

Outcome Measures & Results: Medium quality Fat intake: mixed/moderate

Effect Intake of healthy foods: positive

Effect of Knowledge and attitudes towards Vitamin-A rich foods: positive effect.

13. **Intervention Name:** Environmental and Educational Nutrition Programmes in the Netherlands

Authors: Steenhuis, 2004

Participants & Setting: Supermarket shoppers

Study Design: Randomised controlled trial

Intervention: Supermarket-based intervention comprising labeling of healthy foods, increasing the range of healthy foods available, brochures and a 'self-help' manual. No specific behaviour change models were mentioned.

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to reduce fat intake and increase fruit and vegetable intake.

b. Consumer research: Programmes were based on the outcomes of a pilot study which involved semi-structured interviews with worksite & supermarket representatives. The programme materials were pre-tested.

c. Segmentation and targeting: Supermarket shoppers & employees (through worksite cafeterias).

d. Marketing mix: The education programme comprised the following (some were optional for supermarkets): posters, brochures, recipe cards, self-help manuals, badges). The labeling programme comprised: drawing attention to low fat products & increasing the range of healthy food at worksites.

e. Exchange: The nutrition education programmes could include a contest with questions about healthy nutrition. Recognizes need to build support from social network, family etc.

f. Competition: The environmental intervention addressed self-efficacy for eating more fruits and vegetable consuming less fat, as well as 'personal awareness of consumption levels'. Discussion of environmental strategies mentioned reducing barriers/increasing opportunities and mentions that this might involve prohibiting/limiting less healthy options.

Outcome Measures & Results: Medium quality Fat intake: no change

Self efficacy to reduce fat intake: no change.

14. Intervention Name: Low Fat Milk Campaign

Authors: Wechsler, 1998

Participants & Setting: Latino elementary school children

Study Design: Quasi-experiment

Intervention: School-based intervention including communications, taste testing product trials, and sales promotions and incentives. Intervention is based on a number of techniques used in social marketing campaigns

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to increase consumption of low fat milk

b. Consumer research: Counseling, questions at educational sessions and informal discussions with residents provided insights to develop campaign materials. Printed campaign materials were pre-tested with the target group.

c. Segmentation and targeting: Latina mothers of children between the ages of 2 and 12 years. Materials were culturally appropriate (e.g. activities were delivered by Latinos) and produced in both Spanish and English.

d. Marketing Mix: Community-wide intervention comprised communications (posters, flyers, radio, press releases, PSAs, etc) plus presentations, taste tests, media publicity, distribution of discount coupons for supermarkets. School intervention was described as a multi-faceted social marketing campaign featuring product positioning, celebrity endorsements, ('Low fat Lucy'), product trials (taste test), 'teaser' advertising, point-of-sales promotion incentives and products (e.g. fridge magnets), a slogan and persuasion through entertainment.

e. Exchange: Community campaign included contest to collect low fat milk labels. The school intervention included a 'Low fat Lucy Puzzle Contest' with t-shirts for prizes.

f. Competition: Intervention involved convincing institutions (including schools) to offer only low fat milk.

Outcome Measures & Results:

Medium quality Intake of healthy foods: positive effect

15. Intervention Name: New Moves

Authors: Neumark Sztainer, 2003

Participants & Setting: Adolescent girls in aged 14-16 (with a focus on overweight/obese girls and those "at risk" of becoming overweight)

Study Design: Randomised controlled trial

Intervention: Intervention is based on social cognitive theory

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to influence eating behaviours

b. Consumer research: Intervention based on comprehensive needs assessment including indepth interviews, focus groups and a survey.

c. Segmentation and targeting: Overweight/obese adolescent girls (& those at risk of being overweight).

d. Marketing mix: Nutritional 'guidance' (including curricula and practical activities like preparing healthy snacks & role play exercises, etc).

e. Exchange: Role play used to create 'assertiveness' and the programme included discussions about 'positive female role models'.

f. Competition: Programme held out of school hours to overcome difficulties in attending. Also sought to address and overcome "barriers" to healthy eating (e.g. discussions about 'what to do in a fast food restaurant').

Outcome Measures & Results:

Medium quality fruits and vegetable intake: mixed/moderate

Effect Fast food intake: no change

Perceived benefits of healthful eating: mixed/moderate effect.

BMI: no change.

16. Intervention Name: Health Promotion Programme for Couples

Authors: Burke, 2002 and Burke et al 2004

Participants & Setting: Couples who have cohabited for less than 2 years

Study Design: Randomised controlled trial

Intervention: Programme comprised interactive group counseling sessions, or nutrition information by mail. It is based on social cognitive theory, the health belief model & the theory of reasoned action.

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to decrease intake of energy & total and saturated fat.

b. Consumer research: Programme was piloted. Focus group research resulted in 'modifications' are being made to programme.

c. Segmentation and targeting: Co habiting couples.

d. Marketing mix: Programme comprised interactive group sessions or information by mail.

e. Exchange: Promoted self-efficacy and self-reward, encouraging self-directed changes in behaviour. Stressed benefits of good nutrition & involved partners for 'social support' & as "motivators' of behaviour change.

f. Competition: Programmes highlighted costs & benefits of behaviour change & addressed 'barriers to change' (e.g. Time and stress management.

Outcome Measures & Results:

Medium quality Fat intake: positive effect

Fibre intake: mixed/moderate effect.

Sodium intake: no change

Perceived importance of barriers to dietary change: positive effect.

Dietary self efficacy: positive effect.

BMI: mixed/moderate effect. Blood pressure: mixed/moderate effect.

Total cholesterol: positive effect.

17. Intervention Name: Health Promotion Programme for Overweight Hypertensive

Authors: Burke, 2002.

Participants & Setting: Overweight, treated hypertensive aged 40-70 years.

Study Design: Randomised controlled trial.

Intervention: Group or individual counseling sessions and nutrition information by mail. It is based on social cognitive theory, the health belief model & the theory of reasoned action.

Social Marketing Characteristics:

a. Behaviour change goal: Sought to decrease intake of energy & total and saturated fat.

b. Consumer research: Programme was piloted. Focus group research resulted in 'modifications' are being made to programme.

c. Segmentation and targeting: Overweight, treated hypertensive. The programme was specifically tailored to individuals with weight problems

d. Marketing mix: Programme comprised interactive group sessions or individual counseling sessions.

e. Exchange: Promoted self-efficacy and self-reward, encouraging self-directed changes in behaviour. Stressed benefits of good nutrition & involved partners for 'social support' & as 'motivators' of behaviour change.

f. Competition: Programmes highlighted costs & benefits of behaviour change & addressed 'barriers to change' (e.g. time and stress management).

Outcome Measures & Results: Medium quality Fat intake: positive effect.

Fibre intake: mixed/moderate effect.

Sodium intake: mixed/moderate effect.

Blood pressure: positive effect.

18. Intervention Name: Food Dudes

Authors: Lowe, 2004.

Participants & Setting: Primary school children aged 4 – 11 years

Study Design: Uncontrolled before and after intervention study

Intervention: School-based intervention comprising a peer modeling video and rewards. The intervention uses peer modeling. No other behavioural models or theories are mentioned.

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to increase fruit and vegetable consumption among children.

b. Consumer research: Rewards were pilot tested in other schools.

c. Segmentation and targeting: Primary School children aged 4-11 years.

d. Marketing mix: Intervention comprised peer modeling video, rewards for behavioural improvements and, in one school, 'home packs'.

e. Exchange: Children provided with rewards including stickers, pencil cases, etc. Letters were also issued to children to provide them with praise and encouragement. Also included in the intervention was a 'food dude' prize and stickers cards relating to fruits and vegetable consumption.

f. Competition: Intervention addressed children's aversions & poor social norms, to fruits & vegetables.

Outcome Measures & Results:

Low Quality fruits and vegetable intake: positive effect

Liking for fruits and vegetable: Positive

19. Intervention Name: Go Girls

Authors: Resnicow, 2000.

Participants & Setting: Low income overweight African American girls ages 11 – 17 years.

Study Design: Uncontrolled before and after intervention study.

Intervention: Intervention based on social cognitive theory comprising educational sessions.

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to increase fruit and vegetable consumption, decrease fat intake, decrease fast food intake (& decrease television viewing & increase physical activity).

b. Consumer research: Focus group discussions undertaken the target group (plus discussions with researchers & practitioners about other intervention)

c. Segmentation and targeting: Female, low-income, overweight African American teenagers.

d. Marketing mix: Intervention comprised sessions containing the following: (i) interactive educational/behavioural activity (ii) 30 – 60 minutes of physical activity and (iii) preparation and tasting of meals.

e. Exchange: Incentives used to encourage participation (including t-shirts and cash) & a points system was used to reinforce attendance (points could be exchanged for items including hats and pens). Some also participated in a visit to a state park.

f. Competition: Participants taught strategies including substitution, moderation, & abstinence.

Outcome Measures & Results:

Low Quality Fat intake: mixed/moderate effect.

Low fat food practices: positive effect.

Nutritional knowledge: positive effect.

Perceptions of dietary changes, social support, outcome expectancies: mixed/moderate effect.

20. Intervention Names: Teens

Authors: Birnbaum, 2002 and Lytle *et al*, 2004.

Participant and Settings: Middle school students

Study design: Randomized controlled trial

Intervention: School-based intervention comprising curriculum education, peer-led sessions and changes to the school environment. The intervention School-based was based on Social Cognitive Theory.

Social Marketing Characteristics

1. Behaviour change goal: Intervention sought to increase fruit & vegetable consumption & the consumption of lower fat foods.
2. Consumer research: Extensive target group assessment was undertaken using telephone surveys, in-depth interviews & focus groups. Epidemiological evidence, nutrition surveillance data, & the published academic literature were also consulted to aid programme development.
3. Segmentation and targeting: School pupils (with particular interest in targeting multi-ethnic students from lower income households).
4. Marketing mix: Intervention used a combination of the following: (i) curriculum component (e.g. Food preparation, games, & educational sessions, 'parent packs');

   (ii) Curriculum component with the involvement of peer leaders; &,

   (iii) School environment component (e.g. increased availability & range of fruit & vegetable, taste-testing of low fat foods).
5. Exchange: Participants were provided with a booklet of ten behavioural coupons (each featuring a behavioural message). Rewards were issued for completing 10 coupons. Curriculum activity where students were awarded points based on the food groups present in their food group records.
6. Competition: Posters were developed for the school vending machines, comparing sugar and fat in snack choices plus an activity to measure out the amount of fat they eat when they go to fast food restaurants. Video addressed barriers towards healthy eating

Outcome Measures & Results

High quality fruits and vegetable intake: mixed/moderate effect

Fruits and vegetable knowledge: positive effect

Psychosocial mediators of food choice (including outcome expectations, barriers to healthy eating, subjective norms and intentions): no change

21. Intervention Names:

Authors: Pathways, *et al (*2003)

Participant and Settings: American Indian school children.

Study design: Randomized controlled trial.

Intervention: School-based intervention comprising food service changes, classroom curricula and a family component. Intervention utilizes elements of social learning theory.

Social Marketing Characteristics

a. Behaviour change goal: Intervention sought to reduce dietary fat intake through, for example, reducing the amount of fat in school meals. Specific aims were described.

b. Consumer research: The study included a 3-year feasibility phase during which intervention components were developed and tested. In addition, formative research was undertaken using both qualitative and quantitative methods.

c. Segmentation and targeting: American Indian children. The cultural heritage of the children was considered during the development of the programme.

d. Marketing mix: Intervention comprised food service changes, classroom curriculum, a family component (& a physical activity programme).

e. Exchange: The intervention included the use of a 'chip jar' to record the times that proposed guidelines were successfully implemented.

f. Competition: Risk behaviours (e.g. eating high fat foods) were identified in formative research. The intervention strategy sought to target such behaviours (e.g. the removal of high fat foods from the service line).

Outcome Measures & Results

High quality Fat intake: mixed/moderate effect

Food choice intentions and self efficacy to eat healthy foods: positive effect

BMI: no change.

22. Intervention Names: Maryland WIC Food for Life Program.

Authors: Havas, (2003)

Participant and Settings: Low-income women.

Study design: Randomized controlled trial.

Intervention: Programme comprising monthly-led educational sessions, direct mail and telephone calls by trained peer educators. The intervention is based on the Stages of Change model and Social Learning Theory.

Social Marketing Characteristics

a. Behaviour change goal: Intervention sought to increase fruit and vegetable consumption and fibre consumption, and decrease fat consumption.

b. Consumer research: Formative research (focus groups & central intercept interviews) were undertaken.

c. Segmentation and targeting: Women enrolled in the WIC programme. Intervention components were culturally sensitive' and tailored to Stage of Change.

d. Marketing mix: Intervention comprised monthly peer-led educational sessions for six month intervention. Peer Educators made reminder telephone calls & mailed out educational pamphlets. It also included a 'kickoff fair' focusing on eating behaviour e.g. blind tasting.

e. Exchange: 'Behaviour reinforcing incentives' were used. Key reasons to attend sessions emphasized in personalised mail-outs.

f. Competition: Intervention strategy considered barriers to health eating among this low income target group. Mail outs included special advice on how to reduce fat in the diet

Outcome Measures & Results

High quality fruits and vegetable intake: positive effect.

Fibre intake: positive effect.

Fat intake: positive effect.

23. Intervention Names: CATCH

Authors: Luepker (1996) Nader et al (1999) Stone et al (1996).

Participant and Settings: Elementary school children.

Study design: Randomized controlled trial.

Intervention: School-based intervention comprising both classroom Curricula and food service changes. Constructs from Organisational change and social cognitive theory guided the intervention.

Social Marketing Characteristics

a. Behaviour change goal: Intervention sought to reduce total fat, saturated fat and sodium content of food served in school cafeterias. Specific targets were set.

b. Consumer research: Overall programme was 'developed from a body of research that tested theory-based methods'. Limited empirical data influenced the design of the intervention. Food service instruments were pre tested with staff.

c. Segmentation and targeting: Multi-ethnic, Caucasian, African American and Hispanic school children. The curriculum was developed to suit children at different ages.

d. Marketing mix: Intervention comprised both classroom curricula & school environment components. The school curricula component comprised several programmes for different age groups (eg. Adventures of Hearty Heart Go for Health and FACTS for Five). Teachers were also provided with training in implementing these lessons. The school environment component ('Eat Smart') included actual changes in meal preparation & composition, taste tests for children and training for food service staff.

e. Exchange: In terms of motivation, the programme targeted anticipated outcomes of changing behaviour. Rewards, prizes & incentives are also mentioned.

f. Competition: Intervention addressed self-regulatory processes including self-monitoring as part of the education programme. Children also received training in perceptions of 'threats' and coping response processes.

Outcome Measures and Results

High quality Blood pressure, BMI and cholesterol: no change.

Fat intake: positive effect.

Nutritional knowledge: positive effect.

Dietary intentions and perceived social support for healthy eating: positive effect.

24. Intervention Names: Physical Activity and Nutrition among Adolescents

Authors: Prochaska, (2004)

Participant and Settings: Middle School Students.

Study design: Randomised controlled trial.

Intervention: School-based intervention comprising curriculum education, peer-led sessions and changes to the school environment.

Social Marketing Characteristics:

a. Behaviour change goal: Intervention sought to increase fruit & vegetable consumption & the consumption of lower fat foods.

b. Consumer research: Extensive target group assessment was undertaken using telephone surveys, in-depth interviews & focus groups. Epidemiological evidence, nutrition surveillance data, & the published academic literature were also consulted to aid programme development.

c. Segmentation and targeting: School pupils (with particular interest in targeting multi-ethnic students from lower income households).

d. Marketing mix: Intervention used a combination of the following: (i) curriculum component (e.g. Food preparation, games, & educational sessions, 'parent packs');

(ii) Curriculum component with the involvement of peer leaders; &,

(iii) School environment component (e.g. increased availability & range of fruit & vegetable, taste-testing of low fat foods)

e. Exchange: Participants were provided with a booklet of ten behavioural coupons (each featuring a behavioural message). Rewards were issued for completing 10 coupons. Curriculum activity where students were awarded points based on the food groups present in their food group records.

f. Competition: Posters were developed for the school vending machines, comparing sugar and fat in snack choices plus an activity to measure out the amount of fat they eat when they go to fast food restaurants. Video addressed barriers towards healthy eating.

Outcome Measures and Results

High quality fruits and vegetable intake: no change

25. Intervention Names: Eat for life

Authors: Resnicow, (2001)

Participant and Settings: African American church members.

Study design: Randomised controlled trial.

Intervention: Church-based intervention comprises a video, cookbook, printed education materials, '5-a-Day' promotional items and motivationaI interviewing. Counseling is based on Motivational interviewing but no specific behaviour change models are mentioned.

Social Marketing Characteristics

a. Behaviour change goal: Intervention sought to increase fruit and vegetable consumption.

b. Consumer research: Focus groups were undertaken with target audience, plus interviews with researchers & practitioners. Pre-testing of materials (e.g. video) undertaken with experts & target group.

c. Segmentation and targeting: African Americans, churchgoers. Intervention materials were designed to be 'culturally sensitive'.

d. Marketing mix: Intervention comprised an 18 minute video, a project cookbook, printed health education material, motivational interviewing, & several 'cues' with the 5 A Day message.

e. Exchange: Target group were contacted directly by the pastor to encourage involvement, & intervention was designed to motivate participation through religion which was very meaningful to the target group (e.g. Eating healthily seen as 'spiritually beneficial').

f. Competition: Motivational interviewing addressed barriers to fruit & vegetable consumption & tried to identify solution.

Outcome Measures and Results

High quality fruits and vegetable intake: positive effect.

Andreasen, (2002) identified six benchmark criteria that must be followed for a successful social marketing intervention. All these interventions have shown evidence of having met all the six social marketing benchmarking criteria. This meant that they:

I: Have a specific Behaviour Change goal.

Behaviour change goals sought by the included interventions comprised increasing actual levels of physical activity, (all of the included studies) and increasing knowledge and awareness of the importance of a recommended level of physical activity or other knowledge related outcomes.

II: Have used Consumer Research to inform the intervention.

Typical consumer research conducted by the interventions included: Community needs assessments, focus groups, pre-testing of materials and pilot tests of intervention activities.

III: Consider different Segmentation variables and Target interventions appropriately

Interventions demonstrated segmentation and targeting if the designed interventions were age-appropriate and particularly appropriate to the setting in which they were delivered. Tailored activities and materials to specific groups, such as low income, minority ethnic participants, displayed particularly high levels of physical inactivity.

IV: Demonstrate use of more than one element of the Marketing Mix.

A typical combination of marketing mix elements in a community based intervention included: Fitness classes held in community halls (product), media materials (Promotion) such as TV adverts, pamphlets stickers training of professional and other staff to give advice and training or coaching on physical activities (people).

V: Utilise the 'exchange' concept'

Consider what would motivate people to engage voluntarily with the intervention and offer them something beneficial in return (**Exchange**). The exchange could be tangible or

intangible. Examples include: Community-based programmes which emphasised the positive benefits of increased physical activity such as feeling healthier, improved appearance and increased confidence. Examples of tangible exchange include: Intra or intercommunity competitions, **rewards** for continued participation such as certificates and prizes, all of which motivate people to engage with an intervention.

VI: Utilise the 'competition' concept

Consider the appeal of competing behaviours and use strategies that seek to minimise this **Competition**. Competition strategies included: Providing childcare facilities, travel subsidies, holding fitness classes at suitable and convenient times. Emphasising the fun nature of forms of activity compared to other leisure pursuits.

2.20 Social Marketing of Vitamin 'A' Fortified Foods in Nigeria

Vitamin 'A' Deficiency (VAD) in Nigeria

Vitamin A is an essential micronutrient found in animals and in plants as a pro-vitamin called Beta – carotene. It is a fat-soluble vitamin. Its deficiency can therefore be caused by inadequate consumption of animal products, vegetables and yellow fruits like carrot etc. Similarly, deficiency can also be caused by lack of adequate fat or oil in the diet to help absorb Vitamin A from the sources mentioned above. When this occurs, VAD sets in and if prolonged, it can subsequently cause increased severity and complications of infections and disease status, partial or total blindness, growth failure and fatalities. Diseases such as measles, chronic diarrhea and acute respiratory infections are aggravated in conditions of VAD.

Nigeria has one of the highest rates of infant, child and maternal mortality in the world and VAD is a major contributory factor to this deplorable situation. The World Health Organisation (WHO) has classified Nigeria among the 34 countries in the world with serious problems of xerophthalmia and nutritional blindness. A joint Federal Government of Nigeria

(FGN)/UNICEF report released in 1994 stated the prevalence of VAD in 1993 as 9.2% in children and 7.2% in mothers. Almost a decade later, it is possible that the figure may have tripled, looking at the difficult socio-economic circumstances of the citizens since then. The general focus of this study is on providing means of alleviating health problems, which may result from malnutrition occasioned by Vitamin A deficiency (VAD).

Nigeria, being a country with an extremely low GDP, is mainly populated with low-income families hence; many in the population are characteristically malnourished with acute cases of VAD. Nigeria is obviously an ideal target country for Vitamin A fortification (VAF) campaign due to the following shared characteristics with majority of the other developing countries of the world:

(i) Low income level

(ii) Low participation in welfare and supplemental food programmes;

(iii) Exceptionally high post-neonatal mortality rates (especially in rural areas).

A natural appendage to these characteristics is the high incidence of measles fatality among under-five year old children, the main indicator of VAD problem. This problem results from a depletion of body's storage of vitamin A because either too little is present in the food that is consumed or too little Vitamin A is absorbed from foods. Rapid utilisation of Vitamin A during illness (particularly measles, diarrhea and fever) in pregnancy and lactation and growth in young children can also lead to VAD. According to UNICEF reports, VAD has caused permanent blindness to about 5,000,000 children in the developing world and millions more suffer night blindness. Diarrhea, measles and pneumonia, also common and serious illnesses in children with VAD, is a factor on 25% of young child deaths in developing countries every year. In this connection, it has been estimated that 250 million children under the age of 5 are at risk of VAD worldwide. Studies by Beaton *et al,* 1993 show a positive correlation between VAD and mortality. The FGN/UNICEF (1994) showed that the Northern part of Nigeria has a higher prevalence of VAD compared to the south.

The magnitude of the VAD problem in Nigeria, with significant regional disparities, has assumed a critical proportion coupled with high level of malnutrition. Thus, a substantial number of children have VAD and also suffer from malnutrition, which is a threat to Child Survival, Protection and Development (CSPD). Already, this has resulted in a higher level of mortality in children in Nigeria. The available data suggest that about 10 million children and 8 million mothers are presently suffering from VAD in the country. This excludes the adult male population for which no reliable national data exist (UNICEF/FOS, 1996).

2.19.1 Current Interventions to Control Vitamin A Deficiency in Nigeria

The past initiative of the Federal Government of Nigeria in collaboration with UNICEF was to make Vitamin A available to vulnerable target groups as a strategy to reduce child and maternal morbidity and mortality. Between 1994 and 1996, it distributed Vitamin A supplements to these target groups and achieved a coverage level of 65% (UNICEF/FOS, 1996). It was however, difficult to sustain this initiative due to cost constraints.

Consequently, the food fortification option was considered due to its cost effectiveness and sustainability. To this end, a consultative working group drawn from the academia, UNICEF and the Federal Office of Statistics (FOS) provisionally identified sugar, food seasonings and wheat flour/products as prospective food vehicles (PFV) for Vitamin A fortification (VAF). The result was a benchmark survey. Vegetable oil was later added to the list.

This was signed into law on 10 August, 2000 by the Honorable Minister of Industry and subsequently launched officially in December, 2000 – an action that paved way for implementation. By December 2000, the Standards Organisation of Nigeria (SON) recognised the importance of VAF and announced the mandatory fortification of these food vehicles with Vitamin A. The food vehicles are sugar, flour and vegetable oil. Other agencies of government, including the Federal Ministry of Health, NAFDAC and international

agencies like UNICEF participated fully in the development of the programme and have continued to show commitment towards its success.

Presently, all stakeholders especially manufacturers and importers of the selected food vehicles, have been sensitised to the importance of fortification with Vitamin A. Most of the flour millers in the country have begun the implementation of the programme by fortifying their products with Vitamin A.

There are three recognised intervention methods for reducing and/or eliminating VAD disorders. They are:

i. Oral supplementation, involving capsules and liquid distribution to the target population. Vitamin A supplementation is a safe intervention but it entails elaborate logistics, despite its immediate impact. It can be easily implemented on a national scale, but it may be difficult to sustain over time and may not reach children – the target that are most at risk.

   Targeted intervention is a better long-term approach especially to mothers immediately (8 weeks) post-partum in areas where deficiency exists and targeting children who are malnourished until food – based interventions are in place.

ii. Dietary diversification through consumption of foods rich in Vitamin A.

   Dietary diversification involves increasing production and availability of foods rich in the micronutrient, promoting food production and consumption at the community level. The strategy uses nutrition communication techniques through formal or informal channels to educate people on how they can improve their diet by increasing the variety consumed where possible.

iii. Food fortification involves adding Vitamin A to food vehicles such as sugar, flour, vegetable oils, particularly for consumption by groups like children, pregnant and lactating women; hence affording them regular Vitamin A intake.

In practice, it may not be possible to adhere to a single strategy option in Nigeria due to the high magnitude of the problem (UNICEF/FOS, 1996). Hence, all available strategy options and possible combinations as shown in Table 3.4 may be employed to determine the appropriate strategy mix. The merit of supplementation is that it can be employed in emergency situation but its demerit is that it could be costly and not sustainable. As for dietary diversification, it is sustainable but may not meet the immediate intended impact in terms of meeting the Vitamin A requirement of the target population of Vitamin A. It is dependent on the type of diet, method of preparation, the efficiency of the absorption in the food materials (UNICEF/FOS, 1996). This then, limits the use of the first and second strategy options (supplementation and dietary diversification), thus leaving the food fortification option as a sustainable and cost effective strategy to address the VAD Problem in Nigeria.

2.19.9 Concepts of Vitamin A Fortification (VAF) in Foods

The concept of VAF in foods is a medium term approach in areas where micronutrients are naturally not available, but industrial and commercial infrastructure is adequate. It is considered a long-term approach in developing countries because of its high degree of success in industrialized countries. Arising from the fact that it is one of the most cost-effective health interventions, the World Bank has recommended its inclusion as an essential package of public health and clinical services that governments should ensure is available to the population and should be subsidised for the poor.

It is very important that legislation and sanctions are required for enforcement. For an appropriate impact, the World Bank recommends the following:

(i) Appropriate regulatory instruments

(ii) Effective public-private partnerships

(iii) A functioning quality assurance and monitoring system.

VAF, according to development agencies like UNICEF is;

(i) Socially acceptable

(ii) May not require changes in food habits

(iii) Technically feasible; and

(iv) Low marginal cost (usually 0.5 to 2% increase in product price), which can be passed to the consumers.

Principles guiding VAF of foods as enunciated by the Council on Foods and Nutrition (CFN) of the American Medical Association (AMA) include:

(i) The intake of a nutrient considered for addition to food should be judged to be below a desirable level in the diets of a significant number of people.

(ii) The foods that would be considered should be consumed by the segment of the population in need and the added nutrient should make an important contribution to the diet.

(iii) The addition of the nutrient should not create a dietary imbalance.

(iv) The nutrient added should be stable under customary conditions of storage and use.

(v) The nutrient should be physiologically available from the food

(vi) There should be reasonable assurance that an excessive intake to a level of toxicity will not occur.

(vii) The additional cost should be reasonable for the consumer.

The levels of fortification with Vitamin A approved by the government in Nigeria is as follows

(i) Flour (Wheat and maize) - 30,000IU/kg

(ii) Vegetable Oil - 20,000IU/kg

(iii) Sugar - 25,000IU/kg

The selection of flour, vegetable oil and sugar was based on their importance in the national food market, food consumption habits and availability/geographical distribution, affordability and stability for delivery of micro nutrients to the population.

2.21 The Social Marketing Methodology

Child nutrition intervention employs a social marketing approach in planning, managing, monitoring and evaluating. The steps in this process are the following:

2.21.1 Conduct Formative Research: Qualitative research tool was used to establish a clear understanding of present attitudes, behaviour and practices of mothers and foods. This research tool also helps in providing a perspective into the attitudinal and practical obstacles (resistances) that target audiences face in undertaking consumption of vitamin- rich foods at needed levels. Existing communication channels are also probed, including contact with village-based health workers and the health system, as well as other development, cultural or religious groups. Research tools used include indepth interviews and focus group discussions.

2.21.2 Test the Strategy. Once the likely behaviours and messages are developed, they are pre- tested. Researchers visit mothers and care givers to intimate them with the information the project intended to convey and encourages them to undertake the proposed new practices for a week. Mothers and care givers are then revisited to evaluate the extent of use. The interviewer probes the extent to which mothers carried out or modified the tasks, as well as reasons for their actions, attitudes and feelings about their new experience.

2.21.3 Formulate Intervention Strategies: Based on the research results, the researcher defines the specific behaviours that are feasible for the target audience to undertake and agree on what appeals and information can overcome attitudinal resistances of mothers and care givers (or persons who strongly influence their relevant practices). Research also reveals the most acceptable method to convince mothers and care givers to take the desired actions. By this point, it should be clear if the project can limit itself to a communications intervention or if it must also address problems of availability of vitamin rich foods.

2.21.4 Produce Draft Messages, Materials and Media Plan: The researcher writes a creative media brief that outlines the target audiences and the precise behaviours to be

promoted. This is turned over to an advertising agency which takes the exact words used successfully in the household trials and adapts them to each medium of communication in exciting, culturally relevant, practical, believable and convincing ways that should ensure real behavioral change, if they reach target audiences sufficiently from credible sources.

2.21.5 Prepare Materials: All materials are drafted, then pre-tested and fine-tuned on the basis of the pre-test results. Pre-testing aims to gauge the extent to which the target groups find materials to be attractive, understandable, directed to people like them, memorable and whether would dispose them to action, and if not, why not and what suggestions intended audiences might have for improving them.

2.21.6 Finalize the Programme: The programme plan is now finalized. It includes plans for media and materials, training of interpersonal communicators or service providers, information and advocacy for the health system and beyond, monitoring and evaluation. The materials are then produced in final form and the media plan.

2.21.7 Conduct a Baseline Survey: A quantitative survey is necessary for a desirable and precise evaluation. It is repeated after the programme has run for some time, usually from 3-6 months.

2.21.8 Orientation: This includes training relevant health workers and orienting the health system and support agencies to the project.

CHAPTER THREE

CONCEPTUAL AND THEORETICAL FRAMEWORK FOR THE STUDY

3.1 Conceptual Orientation

The principal concept of this study is based on social marketing. Social marketing principles attempt to bring into focus nutrition as obtained in other development issues that have successfully adopted the strategy to elicit nutrition behavioural change. Therefore, this study seeks to establish how social marketing can be used as a strategy to enhance women and care givers' nutrition knowledge, attitude and practice for better dietary intake in order to achieve better child nutrition.

3.2 Theoretical Framework

The following theories have been considered relevant for this study:

(i) Exchange Theory

(ii) Information-Processing Paradigm

(iii) Trans-theoretical Model

(iv) Social Learning Theory (SLT)

(v) Community Organisation Model

3.2.1 Exchange Theory

This theory is based on social exchange in economic terms. It suggests that intervention involves exchange of resources. Individuals, groups and organisations have resources they are willing to exchange for perceived benefits. The explanation used in the source refers to social marketing context in which the "buyer" in this exchange is a member of the target audience. These people pay a price, such as money, time or effort when they purchase the "products". Effort related costs include inconvenience, physical and or mental tasks, social standing and comfort. It is important to identify which cost target audience members are willing to incur. In turns for the cost paid by the target audience, the "seller" or

campaign planner, provides tangible goods, such as a smoking cessation kit, intangible good, such as "health", a service such as nutrition counseling; or an idea, such as the health risk posed by a high-fat diet.

To persuade someone to take part in an exchange, the person must believe that the benefits of adopting preventive behaviour outweigh the cost of purchasing adoption. Incentives are benefits that intervention planners can offer to members of the target audience to encourage adoption of behaviour/innovation. Exchange theory encourages explicit acknowledgement of the costs and benefits of activities to be promoted in a campaign and effort to minimise costs and maximise benefits.

3.2.2 Information Processing Paradigm

This approach suggests that the impact of a persuasive communication is mediated by three message processing phases: attention to the message, comprehension of its propositions and acceptance of the content. Variations in communication sources, messages, channels, receivers and target behaviours impact the persuasion process by affecting attention, comprehension and/or message acceptance. Thus, if one wished to understand the effects of variables such as communicator trustworthiness, fear appeals, and receiver intelligence, one would need to explore how each of these variables affects, for better or worse, attention, comprehension and message acceptance.

McGuire built upon this simple idea in a series of essays (e.g., McGuire, 1968, 1972). As shown in Figure 3.1 below, McGuire has identified twelve discernible steps in the processing of persuasive communications. A person must be exposed to a message, attend to it, take enough interest to process it further, comprehend the message (learning what), acquire taught skills (learning how), yield to the message (attitude change), store the message content and/or the new attitudinal position in memory.

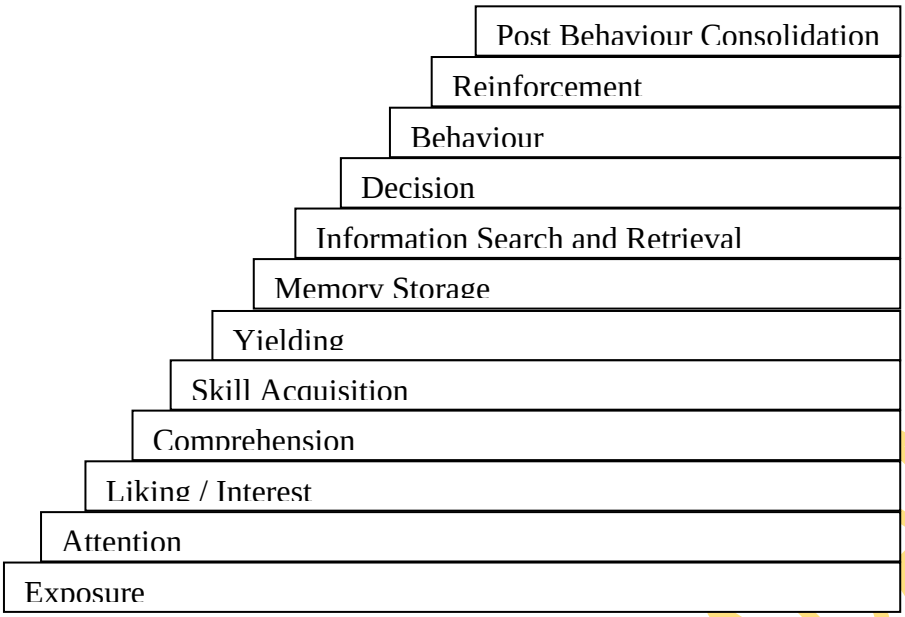

Figure 3.1: The information processing paradigm.

Source: McGuire, 1968, 1972.

The model can guide message design by giving us a way to think about how our decisions regarding spokespersons, message strategies, communication channels and the likes may affect the outcomes of the campaign.

3.2.3 Trans-theoretical Model

Prochaska & DiClemente (1983, 1984, and 1985) advanced the Trans-theoretical Model, also widely known as "stages of change theory," in the early 1980s to describe the discrete phases people move through in efforts to adopt healthier lifestyles. The model has been applied to a number of health issues, including smoking cessation, drug abuse treatment and prevention, weight control and adoption of safer sex practices. The "trans-theoretical" in the model's name reflects the authors' efforts to draw upon the strengths of other theories of change.

As shown in Figure 3.2, the model identifies six phases of change through which an individual progresses. In the first stage, pre-contemplation, the person does not intend to take action in the near term.

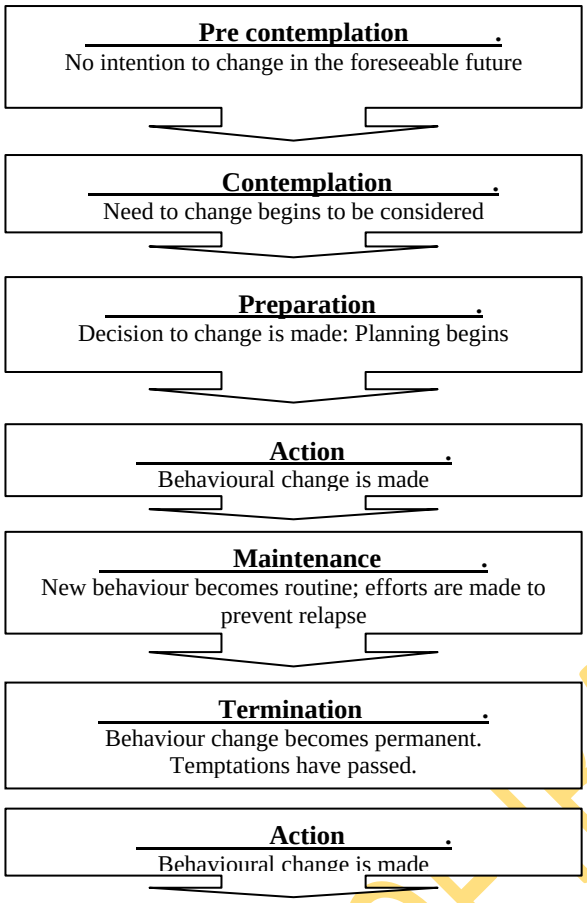

Figure 3.2 Trans-theoretical Model

Source: Prochaska & DiClemente, 1983, 1984, and 1985

This absence of an intention to change may reflect the person's lack of knowledge of the consequences of a particular behaviour, demoralisation as a result of past failures to change and a perceived or actual inability to adopt recommended behavioural changes. Thus, among the group of individuals at this state, some are uninformed, others are informed but unmotivated and still others may be actively resistant to health promotion efforts.

3.2.4 Social Learning Theory

Social Learning Theory (SLT) provides psychosocial conceptual framework for understanding the reciprocal relationship among behaviour, personal factors and the environment. The theory has evolved dramatically since its introduction nearly 60years ago (Miller and Dollard, 1941), due in large part to the contributions of Albert Bandura (1962, 1969, 1986). Behaviour occurs in the contest of an objective environment that is both physical and social in nature. The environment can affect a person's behaviour with or

without that individual's awareness. For instance, a person's intake of dietary fat may be shaped by the physical environment (e.g. its widespread presence in processed food and the efforts of friends, family, colleagues and the like (e.g. the social support of one's spouse in effort to reduce dietary fat).

The SLT theory identifies several important considerations for the effective design of social marketing campaigns and also offers a process for understanding the impact of such efforts. For instance, SLT tells us that we need to consider how the environment can be shaped to increase the probability of success. SLT also tells us that we need to change a person's expectancies to prompt adoption of the target behaviour.

3.2.5 Community Organisation Model

The Community Organisation Model (COM) is a process that public health and health communication professionals use to help community identify common problems and goals and then plan and execute strategies to reach those goals (Minkler, 1990). Because health related problems occur in community settings, the community should be involved in finding solutions (Labonte, 1990).

Rothman & Tropman (1987) identified three methods of community organisation that are critical in communication. These are social planning, locality development, and social action.

Social Planning: Is purely a task-oriented method that stresses rational problems solving, usually by outside effort to address community problems. Experts gathered facts about the community problems and recommendations for the most effective course of action are then developed. Community organisations are usually directly involved in helping to solve problems and the health educator - communicator serves as fact – gatherer, implements the programme, and facilitates dialogue, while locality development involves a process-oriented mechanism that tries to build a sense of group identity and community. This approach stresses cooperation and the health educator assumes the role of coordinator or

enabler, teaching values and problem solving skills. On the other hand, social action is a task and process – oriented approach that attempts to increase the problem–solving abilities of the community members. With better problem–solving skills, communities can make concrete changes and correct the balance of power between disadvantaged groups.

Mechanism for effective community organisation stresses the involvement of the community members in all phases of the programme. Community organisation model places great value on transferring ownership of project activities to the community by recruiting and training community leaders, adapting programme initiative based on input from the community and recruiting organisational sponsors to sustain the programme activities performed by care givers that affect nutrient intake, health, cognitive and psychosocial development of the child.

Explanation of the Framework and how the model Works

The framework shown in Fig 3.3 represents the schematic representation of how independent variable, intervening variable and dependent variable are interrelated. The independent variables are made up of socio-economic characteristics (age, religion, family size, occupation) which have a direct influence on family/household dietary practice and social marketing activities and consequently on the dependent variable (nutrition behaviour change) of knowledge, attitude and practice of nutrition habit to improve dietary intake of vitamins, protein, minerals, fat and oil and carbohydrate. However, the intervening variables (environmental influence, cultural preference and community influence) are likely to have impact on the dependent variable, though this will not be measured because it is outside the researchers' control. All the elements of intervening variables are presumed to directly or indirectly influence household dietary intake, which is an index of improved child nutrition.

According to Novelli (2000), social marketing is premised on the idea of mutual exchange between agencies and community. On this threshold, it is envisaged that the

respondents' socio-economic characteristics will have direct impact on food security, food safety, family/household dietary intake and their interaction with social marketing activities. Consequently, knowledge, attitude and practice of child nutrition habits to improve dietary intake required for a child's growth and development will also be affected.

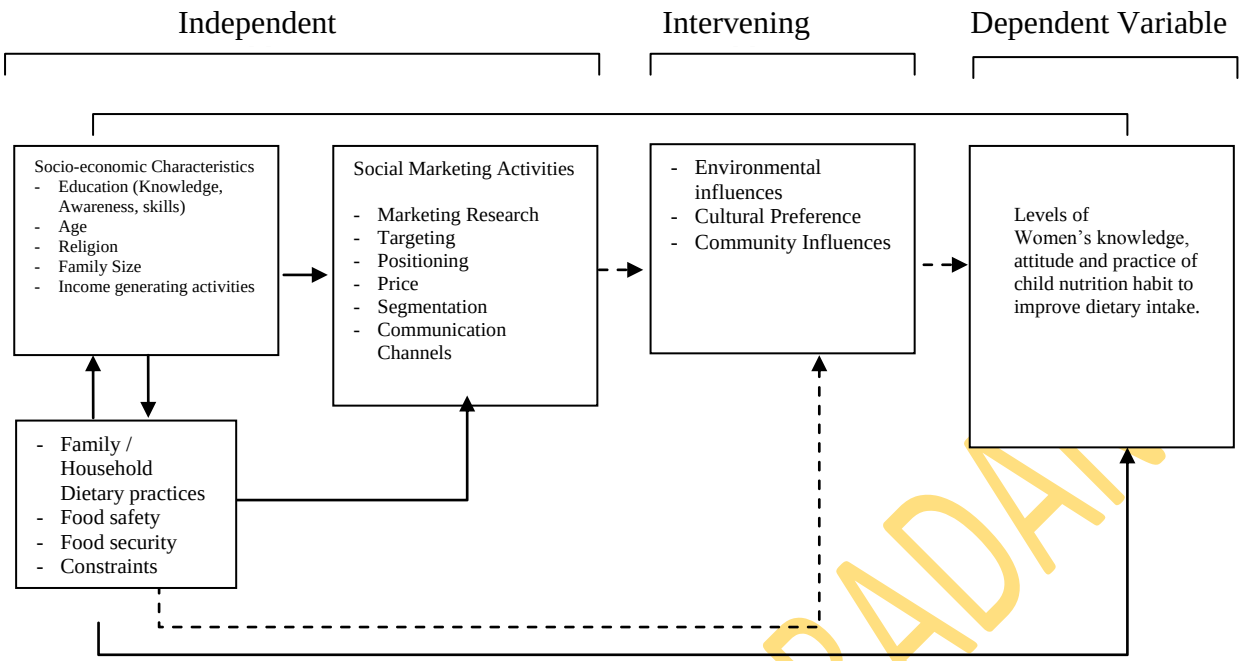

Figure 3.3 Framework for Social Marketing on Knowledge, Attitude and Practice of Child Nutrition by Women

CHAPTER FOUR

METHODOLOGY

This section describes the research methodology used in conducting this study. It also discusses the research procedures, measurement of variable and method of data analysis.

4.1 Study Area

The study was carried out in southwestern part of Nigeria. The southwestern zone lies between latitudes 5^0N and 9^0N with an area of 114, 271 square kilometres. This comprises Oyo, Ogun, Ondo, Osun, Ekiti, Edo, Delta and Lagos states. This is approximately 22% of Nigeria. This area covers about 114,271km^2 (approximately 12% of Nigeria's total land area). It is bounded in the North by Kwara and Kogi states, in the East by Rivers and Niger states, in the South by Atlantic Ocean and in the West by republic of Benin. The 2006 census put the population of southwestern zone at 21,974,678 (National Population Commission (NPC, 2006). Figure 4.1 below shows the study area within Nigeria and Africa context.

4.1.1 Climatic and Vegetation

Southwestern Nigeria is predominantly an agrarian area with rainforest and derived savanna vegetation. Agriculture is the major source of livelihood of the inhabitants of the zone. Common tree crops in the area include cocoa, oil palm and cashew, while arable crops such as yam, cassava, maize and rice also thrive well in the zone. The vegetation of this zone is mainly dictated by rainfall pattern which ranges from 1,300mm annual mean in Oyo and Osun states to 1,900mm in Delta and Edo states. The vegetation zone includes mangrove, rain forest and derived savannah.

4.1.2 Socio-cultural Profile

The dominant indigenous language of the South-western Nigeria is Yoruba with about 250 individual tribal languages. However, since the coming of the British and the introduction of mission schools in southern Nigeria, English has become the language common to most

people in the area regardless of ethnicity. In the south, the Oyo Empire grew to become the most powerful Yoruba society during the sixteenth century. Along the coast, the Edo people established the Benin Empire.

Western influences, especially in urban centers, have transformed South-western Nigeria eating habits in many ways. City dwellers are familiar with the canned, frozen, and pre-packaged foods found in most Western-style supermarkets. However, supermarkets and restaurants often are too expensive for the average Nigerian; thus only the wealthy can afford to eat like Westerners. Most urban South-western Nigerians seem to combine traditional cuisine with a little of Western-style foods and conveniences. Rural communities tend to stick more with traditional foods and preparation techniques.

There are three types of marriage in South-western Nigeria today: religious marriage, civil marriage, and traditional marriage. A South-western Nigeria couple may decide to take part in one or all of these marriages. The majority of Nigerian families are very large by Western standards. Many Nigerian men take more than one wife. In some ethnic groups, the greater the number of children, the greater a man's social status.

Age is greatly respected in South-western Nigeria. Socially, greetings are of the utmost importance. Prostrating and a long list of well wishes for a counterpart's family and good health are expected when meeting someone. This is often true even if you have seen that person a short time earlier.

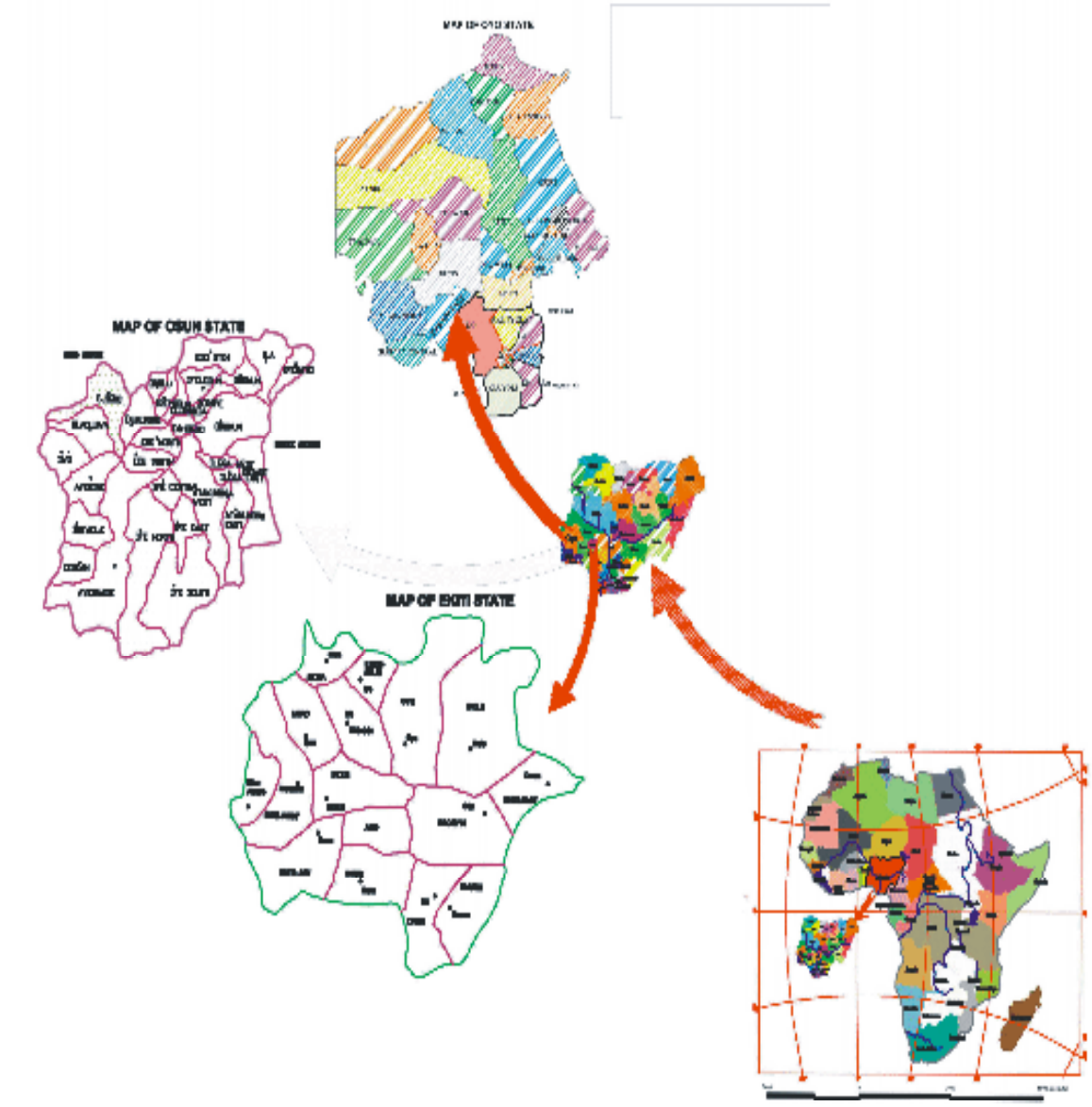

Figure 4.1 Study Area within Nigeria and Africa context

4.2 Research Design

Quasi experimental research was used. Baseline data on knowledge, attitude and practice of nutrition were obtained prior to the intervention for the experimental and control groups while social marketing intervention was introduced to the experimental group only. This was carried out by developing nutrition messages based on their preferred communication channels obtained during the focus group discussion. Nutrition messages in audio, video and chart were used for Oyo, Osun and Ekiti states respectively. Data were then collected after 12weeks from both groups to assess the effectiveness of the social marketing intervention introduced to elicit change in nutrition behaviour.

4.3 Study Population

Women of child bearing age with at least one child who registered at primary health centre for ante natal care in the study area constitute the population for the study. Women within the existing structure of the primary health centre were used in order to capture the same respondents during the post intervention evaluation.

4.4 Sampling Procedure and Sample Size

Multi-stage sampling technique was used to draw the sample for the study. From the six states in the southwest; three states (Oyo, Ekiti and Osun) that have severe child malnutrition (UNICEF, 2006) were purposively selected. Purposive sampling was use based on available and functioning primary health centre to select four LGAs from the 33 LGAs in Oyo State, three LGAs from Osun with 30 LGAs and three LGAs from the 16 LGAs in Ekiti States. A sampling frame of women who registered for ante natal at the primary health centre domicile in the selected LGAs was developed and systematic random sampling technique was used to select 50% of the average attendance of women at clinic days (240 women) based on probability proportionate sample to size with 90, 75, and 75 women interviewed from each of the states respectively as distributed in the table 4.1 below.

Table 4.1 Sampling Procedure and Sample Size

State	Number of LGAs	LGAs Sampled	Primary health centre selected	Average attendance @ clinic day	Sampled women 50%
Oyo	33	Kajola	Ilero	49	25
		Iddo	Iddo	51	25
		Oyo East	Oke Apo Oyo	39	20
		Ibarapa East	Eruwa	41	20
Ekiti	16	Ado Ekiti	Ado Ekiti	49	25
		Ijero	Ikoro Ekiti	51	25
		Ikere Ekiti	Ikere Ekiti	50	25
Osun	30	Osogbo	Osogbo	50	25
		Ife North	Ipetumodu	51	25
		Iwo	Iwo	49	25
Total		**10**	**10**	**480**	**240**

4.5 Source of Data

Data were collected from primary and secondary sources. Primary data were obtained from child bearing women with at least one child, who responded to the interview schedule. Trained enumerators were used to administer the interview schedule. Focus group discussion developed was also conducted to obtain information on respondents' nutrition behaviour, while secondary data were obtained from literature.

4.6 Instrument for Data Collection

The instrument used for data collection for the study was interview schedule. The first section obtained responses on social economic characteristics of the women. The second section elicited information on awareness of nutrition programme. This was carried out by asking the respondents to respond 'yes' or 'no' to various nutrition programme in Nigeria. A 5 point- scale of Likert-type on perception of Social Marketing statement with 42 items were developed and respondents were asked to respond to them. The third section contains 59 Nutrition Knowledge Test items, while the fourth section sought to ascertain Nutrition Practice of the respondents.

4.6.1 Reliability and Validity of the Instrument

In order to ensure that the instrument is reliable and data obtained is valid for objective interpretation of findings, the instrument was pre-tested in Ogun State. Fifty interview schedules were administered and split half method was used to analyse for the study reliability. The instrument was coded and analysed to ascertain its internal consistency. This was done using covariance matrix which resulted in correlation co-efficient of the entire instrument of r = 0.96. This value was considered high enough to make the instrument reliable.

Content and face validity of the instrument was conducted by the team of experts from the Department of Agricultural Extension and Rural Development, Department of Public Health and Department of Psychology, University Of Ibadan

4.7 Measurement of Variables

4.7.1 Dependent Variable

The dependent variable for this study is nutrition behaviour (change in nutrition knowledge, attitude and practice) to improve dietary intake of vitamins, protein, carbohydrate, fat & oil, mineral and water.

4.7.1.1 Nutrition Knowledge Test

A set of 50 knowledge-statement items was constructed, validated and administered to respondents to ascertain their nutrition knowledge. Yes or No response was used. Yes attracts '1' and No attracts '0'. The maximum score is 50 and the minimum score is 0.

1. To follow a healthy eating pattern, every single food must be low in fat. Yes / No
2. Carbohydrates provide the major source of our energy intake. Yes / No
3. Bread and rice are rich in carbohydrates. Yes / No
4. To trim fat from your diet, you must eliminate all red meat. Yes / No
5. Water leaf and tomatoes are good sources of vegetable. Yes / No
6. Orange is a good source of Vitamin C. Yes / No
7. Fish is a good source of protein. Yes / No
8. Beans is a plant protein. Yes / No
9. Margarine has fewer calories than butter. Yes / No
10. Overcooking destroys protein in food. Yes / No
11. Iodized salt is essential in meals. Yes / No
12. Vitamin A is good for eye sight. Yes / No

13. Vitamin E can be obtained from green vegetable. Yes / No

14. Water aids digestion of food. Yes / No

15. Iron deficiency causes shortage of blood. Yes / No

16. Combination of fruits and vegetables reduces malnutrition in children. Yes / No

17. Weighing children helps to know whether they are responding to feeding. Yes / No

18. Checking children's height will ascertain their response to food. Yes / No

19. Vitamin A capsule is a good source of vitamin. Yes / No

20. Egg is a complete diet. Yes / No

Yes = 1 while No =0. Maximum score = 20, Minimum score = 0. High score means better nutrition knowledge and low score means poor knowledge.

4.7.1.2 Respondents' Attitude to Nutrition Message

4.7.1.3 Social Marketing Strategies

This was measured by developing attitudinal statements that captured the social marketing mix for women which is otherwise referred to as social marketing strategies. This includes the following:

i. Marketing Research: It entails the knowledge, attitude and practice of child nutrition and dietary intake.
ii. Targeting: The population intended to reach for child nutrition and dietary intake. In this context, the targets are the women/care givers.
iii. Positioning: Communication and advertising nutritional messages will be positioned to fit each target segment/audience.
iv. Communication channels: A variety media channel such as television, radio, charts, billboard, etc. will be used.
v. Distribution channels: Means of practicing good nutrition.
vi. Publicity: Advertising and information messages.

This entails respondents' disposition to social marketing '4Ps' (Product, Price, Position & Promotion). This was measured on a 5 point- Likert scale -type of perception on social marketing statement having 42 items scored in descending order of Strongly Agreed (5

points), Agreed (4 point), Undecided (3 points), Disagreed (2 points) and Strongly Disagreed (1 point) for all positive statements and in reverse order for all negative statements. A summation of scores for each respondent was determined. However, 42 points is the minimum score, while 210 points is the maximum score. The attitudinal statements are presented in appendix 1.

4.7.1.4 Nutrition Practice

This was measured, using 17 items to ascertain the extent of practice of improved nutrition habit. A dichotomised Yes or No questions were developed. Yes = 1 and No = 0. The maximum = 17, while the minimum = 0. This was obtained by using household dietary diversity score (HDDS), household food access and HDDS indicator tabulation plan**.** High score means, better nutrition practice, while low score means poor nutrition practice.

4.7.1.5 Household Dietary Diversity Score (HDDS)

In order to collect household dietary diversity score (HDDS), the following questions were validated and asked based on the food groups:

A. Did you eat/drink any of the following during the day or at night, yesterday?

i. Milk such as tinned, powered or fresh animal milk
   Yes [ ], No [ ] if yes, how frequently? ----------
ii. Tea or Coffee Yes [ ], No [ ] if yes, how frequently? ----------
iii. Any other liquid? Yes [ ], No [ ] if yes, how frequently? ----------
iv. Bread, rice, noodle, or other food make from grams Yes [ ], No [ ] if yes, how frequently? ----------
v. Pumpkin, carrots, and sweet potatoes that is yellow inside? Yes [ ] No [ ] if yes, how frequently? ----------
vi. White potatoes, white yam, cassava or any other food made from roots? Yes [ ] No [ ] if yes, how frequently? ----------
vii. Any dark green leaf vegetables? Yes [ ] No [ ] if yes, how frequently? ----------
viii. Ripe mangoes, pawpaw, oranges, pineapple Yes [ ], No [ ] if yes, how frequently? ----------

ix. Any other fruits or vegetables? Specify……

x. Liver, Kidney, Heart or other organ meals? Yes [ ] No [ ] if yes, how frequently? ----------

xi. Any meat such as beef, pork, lamb, goat, chicken or duck? Yes [ ], No [ ] if yes, how frequent? ----------

xii. Eggs? Yes [ ], No [ ] if yes, how frequently? ----------

xiii. Fresh or dried fish or shellfish? Yes [ ], No [ ] if yes, how frequently? ----------

xiv. Any food made from beans, peas, lentils or nuts? Yes [ ] No [ ] if yes, how frequent? ----------

xv. Cheese, yogurt, or other milk product Yes [ ] No [ ] if yes, how frequently? ----------

xvi. Any oil, fats, butter, or food made with any of these? Yes [ ] No [ ] if yes, how frequently? ----------

xvii. Any sugary foods such as chocolate, sweets, candies, cakes or biscuit. Yes [ ], No [ ] if yes, how frequently? ----------

High score means better nutrition practice, while low score means poor nutrition practice. The maximum score will be 17, while the minimum score will be 0.

Household Food Access: Household food access as defined by USAID (2005) is the ability to acquire sufficient quality and quantity of food to meet all household members' nutritional requirements for productive lives. The following set of twelve-food group is used to calculate the Household Dietary Diversification Scores (HDDS).

A. Cereals	G. Fish & Sea food
B. Root & Tubers	H. Pulses/Legumes/Nuts
C. Vegetables	I. Milk & Milk products
D. Fruits	J. Oil & Fats
E. Meat, Poultry	K. Sugar/Honey
F. Eggs	L. Miscellaneous

Source: Adapted from Food and Nutrition Technical Assistance (2005).

HDDS = Total no of food groups consumed by members of the household.
Values of 'i' through 'xvii' will either be 1 or 0.

Sum (i + ii + iii … + xvii)

$$\text{X HDDS} = \frac{\text{Sum (HDDS)}}{\text{No of Households}}$$

The higher the value of HDDS, the more household food access the respondent has.

Source: Adapted from Food and Nutrition Technical Assistance (2005).

HDDS indicator Tabulation Plan

The HDDS variable is calculated by combining the disaggregated vegetable and fruits food groups to form summary food groups, first for vegetable, second for fruits and third for iron rich foods.

The vegetable groups will include any 'v' pumpkin, carrot; fruits will be any 'D' groups.

HDDS 1st step – Combine the disaggregated

Vegetable into summary vegetable (X) and fruits (Y)

Food groups X & Y will take the value of '1' if any of the disaggregated food groups were consumed.

Compute X = 0

If (v = 1 or vii = 1 or ix = 1 then X = 1

Compute Y = 0

If viii = 1 or ix = 1, then Y = 1

Sum (i + ii + iii + IV + … X + Y)

$$\textit{\% of household that consume vitamin A rich vegetable or fruits} = \frac{\textit{No. Of households with X or Y}}{\textit{Total No. Of household}} \times 100$$

Higher value indicates better nutrition practice of household consumption of vitamin A, vegetables and fruit.

4.7.2 The Independent Variables

The following independent variables were measured for the purpose of this study.

4.7.2.1 Socio-Economic Characteristics

1. **Age**: ……. Respondents to state their actual age
2. **Sex…** Male [1] Female [2]
3. **Educational attainment**
   - No Formal Education [1]

- Primary Education [2]
- Secondary Education [3]
- Tertiary Education [4]

  Others (specify) ……

4. **Income** – What is your estimated monthly income in Naira?

   < 10,000 [1], 10,000-20,000 [2], 30,000-40,000 [3],

   40, 000- 50, 000 [4], 50,000- 60,000 [5], >60,000 [6].

5. **Religion**

   Christianity [1]

   Islam [2]

   Traditional [3]

   Others (Specify)……

6. **Family Size**: Respondents to state actual family size
7. **Sources of Information**

   TV [1], radio [2], Dailies [3], Magazines [3], Telephone [4].

   E-mails [5] Others ……..Specify.

4.7.2.2. Awareness of Nutritional Programme

Respondents were asked to respond freely to a set of questions on nutrition programme in Nigeria. 8 dichotomised items were developed to ascertain awareness of nutrition programme. Yes = 1 and No = 0. The maximum score = 8 and the minimum score = 0

Are you aware of the following nutrition programme?

1. Nutrition educational programme Yes / No
2. Vitamin A programme of the federal government Yes / No
3. Mineral fortification programme Yes / No
4. Iodized salt campaign Yes / No

5. Understands what ‘ A’ logo signifies on flour, vegetable oil, semolina, semovita etc Yes / No
6. School feeding programme Yes / No
7. UNICEF campaign on child nutrition Yes / No
8. Millennium development goal (MGD) to eradicate malnutrition by the year 2010 Yes / No

4.7.3 Focus Group Discussion

This was conducted with the women of child-bearing age with at least one child to obtain descriptive information related to the following:

1. What is the level of awareness of nutritional programme or messages of the women in the study area?
2. What are the communication channels used to make nutritional messages available to the women?
3. What is the nutrition knowledge of the women in the study area?
4. What is the attitude of the women to nutrition messages in the study area?
5. What is the nutrition practice of the women and care givers in the study area?

4.8 Social Marketing Intervention

The communication channels as obtained from the respondents for the social marketing intervention include:

- recorded nutrition messages on tapes (radio).
- nutrition messages on chart.
- recorded nutrition messages on video clips (television).
- teaching nutrition messages directly.

State	Audio	Video	Chart	Direct Teaching
Oyo	**X**			**X**
Osun		**X**		**X**
Ekiti			**X**	**X**

4.9 Data Analysis

Data were analysed, using both descriptive and inferential statistics. Descriptive statistics such as bar chart, frequency counts and percentages were used. Qualitative instrument (Focus Group Discussion) provides descriptive study for the research. The inferential statistics include Pearson Product Moment Correlation (PPMC), Chi square, and analysis of variance

4.9.1 Hypotheses analyzed and tested.

(i) Hypothesis 1: Pearson Product Moment Correlation (PPMC) and Chi square

(ii) Hypothesis 2 and 3: Pearson Product Moment Correlation (PPMC).

(iii) Hypothesis 4, 5, 6, and 7: (t-test)

CHAPTER FIVE

RESULTS AND DISCUSSION

5.1 Introduction

This chapter presents the statistical analysis of the survey data which are in text, table and diagram forms. It is divided into seven main sections which include: descriptive report of the focus group discussions, the socio-economic characteristics of the respondents, the respondents' awareness of nutrition programme, respondents' sources of information, social marketing mix, using attitudinal statements that captured social marketing 4Ps; (price, place, product and promotion), nutrition knowledge of the respondents and result of the seven hypotheses.

5.2 Importance of Baseline Survey

Before designing social marketing intervention, there is need to establish a gap of what exists before and after the intervention with respect to nutrition knowledge, attitude and practice. The baseline information obtained included data on the characteristics of respondents' awareness of nutrition programmes, social marketing mix to reveal respondents' nutrition attitude, preferred communication channel and nutrition practice. Qualitative (Focus Group Discussion) FGD and quantitative (structured interview schedule) methods were employed. This is to facilitate evaluation that will provide reliable data on women nutrition behaviour.

5.3 Descriptive Report of Respondents' Socio-economic Characteristics

This section describes the report of the socio-economic characteristics of the child-bearing women. This includes age, marital status, educational attainment, primary occupation, monthly income, religion, number of children, family size and group membership. The distribution of respondents according to socio-economic characteristics is presented in Table 5.1.

5.3.1 Age

Table 5.1 indicates that the modal class is the age range of 31 – 40 years (63.75%) with the mean age of 33years. Majority of the women are within the middle age range of 31-40years across the states. Of this number, 65.56%, 56.00% and 57.33% represent Oyo, Ekiti and Osun states respectively. This proportion revealed that most of the respondents are bearing children when is still safe for them. The percentage of old respondents (>50 years) is relatively small at about 0.42% of the total. In a related study by UNICEF (2002), it was also reported that women in their child bearing age are between 31-42 years, while very few women in this category are above 50years.

5.3.2 Marital Status

The profile of the respondents by marital status indicated in Table 5.1 shows that 69.58% of them were married, 20.00% were single parent, and 6.67% were divorced. It is imperative from the finding that the respondents have social obligation to provide their household nutrition and dietary needs. This finding agrees with the Nigeria Social Marketing effectiveness study (2006), who submitted that married people are likely to support their family with nutrition balance and dietary requirements because they consider the role as their social responsibility.

5.3.3 Educational Attainment

Table 5.1 shows that 12.92% completed primary education, 28.33% had secondary while 50.41% had tertiary education. Also, data across the state revealed that Oyo (60.00%), Ekiti (38.67%) and Osun (50.67%) had tertiary education. This shows that majority of the respondents are literate. This trend shows the effect of the Universal Free Primary Education of the 1980's and the current Universal Basic Education of the 1990s in the area of study. The advantage of this is that adoption and utilisation of ideas and technologies inherent in the nutrition intervention will be easily diffused among the respondents. It was also found in the

study of social marketing of vitamin A in Nigeria conducted by UNICEF (2002) that literacy is an essential feature for mothers to accept and use Vitamin A capsule for their children and wards.

5.3.4 Primary Occupation

The result on Table 5.1 shows the distribution of respondents by their primary occupation categories. By this distribution, more respondents were civil servants, followed by artisans, ranging from hairdressing, tailoring to agricultural produce processors. The implication is that they will be able to support their households and cater for their children by providing good and adequate nutrition required for growth and development. Their level of education provides them the opportunity to be employed into government work force as teachers, clerks, nurses, health attendants and cleaners. CTA (2006) annual report reported that empowered household has greater potentials to cater for their family than those without jobs. Osilesi, *e tal* (1994) in the study of national nutrition monitoring confirms that occupation is a determinant of good dietary intake among household in Nigerian communities. It therefore implies that occupation that generates more income is expected to facilitate households to meet dietry needs.

5.3.5 Other Income Generating Activities

The result from Table 5.1 indicates that the respondents also engaged in several other income-generating activities. These include farming, petty trading, farm produce processing and teaching. However, majority of the respondents (67.53%) were involved in petty trading when compared to other income generating activities. This is also reflected across the states; Oyo (73.33%), Ekiti (62.67%) and Osun (65.33%). Olawoye (2000) opines in a paper titled "The Economy for Sustainable Livelihood" developed for a-one-day workshop organised by Nigeria Environmental Study/Action Team (NEST) that many households engage in several

other income-generating activities in order to meet household needs. The implication of this finding is that, to meet household dietary needs, other sources of income are required.

5.3.6 Estimated Monthly Income

The respondents' profile of monthly income in table 5.1 shows across the states under investigation that barely (43.33%) earned #10,000 - #20,000 monthly and (32.08%) take home was less than #10,000 monthly. The implication of this is that income can significantly influence the dietary intake. There is high tendency for a better dietary intake when a household generates more income. Olawoye, (2003) in a keynote address delivered at the annual congress of Nigerian Rural Sociological Association titled Food Security and Rural Development in a Deregulated Economy submitted that rural households can achieve food security if they are empowered to generate more income through provision of basic amenities to sustain the rural life style

5.3.7 Religion

In terms of the respondents' religious inclination, majority of them are Christians. This is about 71.66% of the total. Islam has 15.42%, while the traditionalists constituted a mere 0.83% of the respondents. Religious belief has no influence on the nutrition dietary intake in the study area. Adeniran (2000) in a similar study of the effect of communication media on immunisation programme in Oyo State asserted that religion is not a significant feature for communication media on immunisation programme.

5.3.8 Number of Children

Table 5.1 shows that majority of the respondents (65.42%) have between 1and 3 children, (33.75%) 4-6, while only (0.84%) have between 7and 10 children. This is a clear pointer that women will need to foster more proactive nutritional intervention that will help the children to maintain and sustain good dietary intake to ensure their growth and development. UNICEF, (2006) in an evaluation of social marketing campaign of vitamin 'A'-fortified food fortification programme in Nigeria, found that families with fewer children

are more committed to their family with respect to household dietary intake. Ojule, *e tal* (1998) asserted that in a traditional southwestern Nigeria community, uncontrolled child birth is responsible for adequate consumption of minerals and vitamins which consequently results to nutrient deficiency related diseases among households. The implication is that the higher the nimber of children to cater for within an household, the greater the responsibility required to meet their dietary needs.

5.3.9 Family Size

Table 5.1 shows that the highest (52.08%) has 4-6 family size, 7-10 family size (25.83%) and 22.08% are with 1-3 family size. The mean family size is five which clearly indicate fairly high dependency ratio. This however, may be responsible for poor feeding habit considering income size and family size. The implication is that the respondents have more responsibility to make their family healthier through the provision of good dietary intake. UNICEF, (2006) in an evaluation of social marketing campaign of vitamin 'A'-fortified food fortification programme in Nigeria, found that family size of less than six are more committed to their family with respect to household dietary intake.

5.3.10 Group Membership

Table 5.1 above reveals that majority of the respondents (80.83%) claimed not to belong to any group, while (19.17%) were members of one group or the other. Among this category, (69.57%) belong to community-based association group and (30.43%) were in religious- based group. Group dynamics have been found to be instrument of change in the recent time. Wilson, (1997) corroborates this finding. He opines that membership of associations is capable of providing opportunity for socialisation among their membership; they can provide women-folk with uninterrupted channels for news, entertainment and education.

Table 5.1 Socio-economic Characteristics of Child Bearing Women

Variable Descriptions	Oyo n = 90		Ekiti n = 75		Osun n = 75		All Respondents n = 240	
Age (Years)	Freq.	%	Freq.	%	Freq.	%	Freq.	%
<20	3	3.3	2	2.7	1	1.3	6	2.5
21-30	27	30.0	22	29.3	31	41.3	80	33.3
31-40	59	65.6	51	68.0	43	57.3	153	63.8
>50	1	1.1	0	0.0	0	0.0	1	0.4
Marital Status								
Divorced	9	10.0	2	2.7	5	6.7	16	6.7
Single Parent/Separated	20	22.2	9	12.0	19	25.3	48	20.0
Widowed	3	3.3	4	5.3	2	2.7	9	3.8
Married	58	64.4	60	80.0	49	65.3	167	69.5
Education Attainment								
No formal education	2	2.2	5	6.7	3	4.0	10	4.2
Pry (uncompleted)	2	2.2	5	6.7	3	4.0	10	4.2
Pry (completed)	11	12.3	10	13.2	10	13.3	31	12.9
Secondary school	21	23.3	26	34.7	21	28.0	68	28.3
Tertiary	54	60.0	29	38.7	38	50.7	121	50.4
Primary occupation								
Trading	13	14.4	4	5.3	6	8.0	23	9.6
Artisan	29	32.2	30	40.0	31	41.3	90	37.4
Civil service	46	51.1	29	38.7	31	41.3	106	44.2
Farming	2	2.2	12	16.0	7	9.3	21	8.8
Other income generating activities								
Petty Trading	66	73.3	47	62.7	49	65.3	162	67.5
Artisan	5	5.6	3	4.0	7	9.3	15	6.3
Civil service	2	2.2	11	14.6	10	13.3	30	12.5
Teaching	16	17.8	12	16.0	6	8.0	31	12.9
Faming	1	1.1	2	2.7	3	4.0	2	0.8
Estimated monthly income (Naira)								
< 10,000	29	32.2	27	28.0	21	28.0	77	32.1
10,000 – 20,000	41	45.6	32	42.7	32	42.7	104	43.3
21,000 - 40,000	10	11.1	6	8.0	12	16.0	28	11.7
40,000 – 50,000	3	3.3	4	5.3	1	1.3	8	3.3
50,000 - 60,000	1	1.1	2	22.7	3	4.0	6	2.5
>60,000	6	6.7	4	5.3	6	8.0	17	7.1
Religion								
Christianity	71	78.9	64	85.3	41	54.7	172	71.7
Islam	19	21.1	10	13.3	33	44.0	37	15.4
Traditional	0	0.0	1	1.3	1	1.3	2	0.8
Family size								
1-3	21	23.3	13	17.3	19	25.3	53	22.1
4-6	41	45.6	45	60.0	39	48.0	125	52.1
7-10	28	31.1	17	22.7	17	22.7	62	25.8
Number of children								
1-3	69	76.7	49	65.3	39	52.0	157	65.4
4-6	21	23.3	26	34.7	34	45.3	81	33.8
7-10	0	0.0	0	0.0	2	2.7	2	0.8
Group Membership								
Yes	13	14.4	14	18.7	19	25.3	46	19.2
No	77	85.6	61	81.3	56	74.7	194	80.8
Group Types								
Association	8	61.5	10	71.4	14	73.7	32	69.6
Clubs	5	38.5	4	28.6	5	26.3	14	30.4

Source: field survey, 2009

5.4 Respondents' Sources of Information on Child Nutrition

This section describes sources of information of the child- bearing women. The distribution of respondents according sources of information on child nutrition is presented in Table 5.2.

Information on nutrition guidance, making food choices, food labelling, and other food, nutrition, health issues, and educational resources are available on print and electronic media and access to such information will go a long way to promote better dietary intake if made available to child-bearing women.

Table 5.2 shows that majority (75.42%) of the respondents are exposed more to the radio than the television which is (54.17%), telephone (22.50%), while exposure to daily newspapers, magazines, and friends was merely (10.00%) respectively. However, e-mail (5.42%), pamphlet (4.58%) and religious leaders (8.33%), while billboard and extension agents and were barely below 3.00%. It follows therefore, that awareness creation on the radio and television would have to be undertaken in many media for a successful nutrition intervention. This could be attributed to easy access to radio and television as a means of obtaining information. The process of finding information requires various skills; including being able to access and use information sources, understand information, and make decisions about what is relevant. These skills are largely based on notions of literacy, and in the realm of health and nutrition, in an applied context called health literacy.

This finding agrees with the study of social marketing of Vitamin A fortified foods in Nigeria in 2002. Olowu, (1991 & 1993), in a similar study to determine the effect of television viewing on farmers' knowledge of improved farm practices in Oyo State and audience survey of radio listening group in Osun state and it was found that radio and television are more effective for extension messages.

Table 5.2 Information sources of the respondents

Sources	Oyo n = 90				Ekiti n = 75				Osun n = 75				All respondents n = 240			
	No		Yes		No		Yes		No		Yes		No		Yes	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
TV	43	47.77	47	52.22	38	50.67	37	49.33	29	38.67	46	61.3	110	45.83	130	54.17
Radio	23	25.56	67	74.44	16	21.33	59	78.67	20	26.67	55	73.3	59	24.58	181	75.42
Dailies	81	90.00	9	10.00	68	90.67	7	9.33	67	89.33	8	10.67	216	90.00	24	10.00
magazines	79	87.78	11	12.22	71	94.67	4	5.33	66	88.00	9	12.00	216	90.00	24	10.00
Telephone	70	77.78	20	22.22	65	66.67	10	13.33	51	68.00	24	32.00	186	77.50	54	22.5
E-mail	81	90.00	9	10.00	75	100.0	0	0.00	71	94.67	4	5.33	227	94.58	13	5.42
Bill board	89	98.89	1	1.11	73	97.33	2	2.67	71	94.67	4	5.33	233	97.08	7	2.92
Pamphlets	84	93.33	6	6.67	75	100.0	0	0.00	70	93.33	5	6.67	229	95.42	11	4.58
Ext. agent	90	100.00	0	0.00	75	100.00	0	0.00	75	100.00	0	0.00	240	100.0	0	0.00
Friends	83	92.22	7	7.78	70	93.33	5	6.67	63	84.00	12	16.00	216	90.00	24	10.00
Religious leaders	87	96.67	3	3.33	71	94.67	4	5.33	62	82.67	13	17.33	220	91.67	20	8.33

Source: field survey, 2009

5.5 Respondents' Awareness of Child Nutrition Programmes / Messages

This section describes awareness of various child nutrition programmes and messages of child -bearing women. The distribution of respondents according to awareness of child nutrition programmes is presented in table 5.3.

The awareness of nutrition as shown on table 5.3 below revealed that school feeding programme was prominent (66.67%), this could result from the fact that the programme is on-going in Osun State. The level of awareness for nutrition education (52.08%), Vitamin A (49.58%), Iodized salt (57.08%), and UNICEF campaign (56.67%) were found to be fairly high. In a similar effective study for Vitamin A in Nigeria carried out by UNICEF in 2006 where increased Vitamin A awareness nationwide was used as an indicator for impact assessment, about 69% of respondents are aware of Vitamin A nationwide as against 42.28% in 2002 representing an increase of 26.72% in 3 years. UNICEF, (2006), in an evaluation of social marketing campaign of Vitamin 'A'-fortified food fortification programme in Nigeria, found that 69.04% of sampled population in the south east were aware of 'A' logo sign in flour and sugar compared to 42.28% of consumers in 2002.

Mass information and awareness programmes are needed to alert community members about the importance of health and nutrition. The nature of the food supply and people's access to it are obviously fundamental to nutritional well-being. Cultural practices and traditions influence the actual choices that people make. Nutrition education programmes, therefore, need to take account of the availability of food, people's access to food and the factors determining choice. A traditional role of nutrition education has been to increase the capacity of the household to use existing food resources to maximum advantage, particularly in relation to breast-feeding, weaning, and supplementary feeding of children, dietary practices during infectious disease, nutrition during pregnancy and lactation and food hygiene. Education on the ways to produce food at the household level and on ways to store, process, and prepare these foods has also been incorporated into many programmes.

This implies that media strategy has resulted in increasing awareness by 27%. It could be inferred therefore, that media have great potential to create awareness essential to enhance knowledge, attitude and practice of nutrition programme. More importantly, nutrition awareness campaign can promote nutritional sources that are economically viable and socially acceptable among community members in order to ensure sustainability of such nutrition programme or messages.

Table 5.3 Awareness of Nutrition Programme by the Respondents

Sources	Oyo n = 90				Ekiti n = 75				Osun n = 75				All respondents n = 240			
	No		Yes		No		Yes		No		Yes		No		Yes	
Nutrition programmes	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Nutrition education	40	44.44	50	55.56	39	52.00	36	48.00	36	48.00	39	52.00	115	47.92	125	52.08
Vitamin A Programme	40	44.44	50	55.56	51	68.00	24	32.00	30	40.00	45	60.00	121	50.42	119	49.58
Mineral fortification	64	85.33	26	28.89	59	78.67	16	21.33	50	66.67	25	33.33	173	72.08	67	27.92
Iodize salt campaign	39	43.33	51	56.67	40	53.33	35	46.67	24	32.00	51	68.00	103	42.92	13	57.08
"A" LOGO on food products	48	53.33	42	46.67	62	82.67	13	17.33	35	46.67	40	53.33	145	60.42	95	39.58
Sch. feeding programme	45	50.00	45	50.00	24	32.00	51	68.00	11	14.67	64	85.33	80	33.33	160	66.67
UNICEF Nutrition Programme	35	38.89	55	61.11	37	49.33	38	50.67	32	42.67	43	57.33	104	43.33	136	56.67
MGD & nutrition	57	63.33	33	36.67	61	81.33	14	18.67	53	70.67	22	29.33	171	71.25	69	28.75

Source: field survey, 2009

5.6 Respondents' Knowledge of Child Nutrition before and after Social Marketing Intervention

This section describes respondents' knowledge of child nutrition before and after social marketing intervention. Respondents' child nutrition was assessed using a 50-point knowledge test before and after social marketing intervention, the minimum score was zero and the maximum score was 50. The distribution of respondents on knowledge of child nutrition before and after social marketing intervention is presented in Table 5.4.

The result of respondents across the states in Table 5.4 reveals that there was a knowledge gap in nutrition with respect to dietary intake before the intervention in both experimental and control groups. About half of respondents in experimental (45.457%) and control (45.38%) across the three states scored between 0 – 10 points with a mean score of 22.76 and 20.60 respectively. However, after the intervention, the experimental group manifested an increase in child nutrition knowledge with 43.80% of the respondent scoring between 42-51 points with a mean score of 35.20, while only 2.93% of the respondents in this category scored the same point in control group with a mean score of 24.50. The implication of this finding points to the fact that prior to the intervention, there was low level of knowledge of Vitamin A rich foods, protein, minerals, fat and oil among the respondents but after their exposure to the child nutrition messages, there was an increase in respondents' knowledge of child nutrition. This suggests that social marketing intervention was effective in increasing respondents' knowledge of child nutrition. Hence, it is paramount to carry out awareness campaign in this respect particularly at the community levels. This will ensure child nutrition education at the grassroots and promotes dietary change that will accommodate consumption of vitamin rich food, thereby reducing children population afflicted by vitamin A deficiency and iodine deficiency disorders. This involves the use of multiple communication channels that will elicit better nutrition bahavioural change. UNICEF, (2006) in Nigeria Social Marketing effectiveness study revealed that in 2002 only

27.31% of Lagos respondents had knowledge of Vitamin A but after rigorous campaign through the media, their knowledge increased to 71.1% in 2006.

Adeniran (2000) in a related study in Oyo State submitted that knowledge of respondents after media campaign increased significantly. It can be deduced that a well packaged communication in social marketing intervention will enhance respondents' knowledge of nutrition and consequently better dietary intake among households.

Table 5.4 Distribution of Respondents' Child Nutrition Knowledge Before and After Social Marketing Intervention Across the states

State	Child nutrition knowledge before the intervention				Child nutrition knowledge after the intervention		
Ekiti n=75	Knowledge score	Frequency	%	Mean score	Frequency	%	Mean score
Experimental n=38	0 – 10	18	47.37		00	00.00	
	11 – 21	09	23.68		01	02.63	
	22 – 31	05	13.16	25.85	07	18.42	34.80
	32 – 41	05	13.16		11	28.95	
	42 – 51	01	02.63		19	50.00	
Control n=37	0 – 10	17	45.95		22	59.46	
	11 – 21	12	32.43		10	27.03	
	22 – 31	02	05.41	26.53	03	08.11	30.85
	32 – 41	02	05.41		01	02.70	
	42 – 51	00	00.00		01	02.70	
Osun n=75							
Experimental n=38	0 – 10	16	42.11		01	02.63	
	11 – 21	12	31.58		02	05.26	
	22 – 31	05	13.16	36.49	07	18.43	39.30
	32 – 41	03	07.89		13	34.21	
	42 – 51	02	05.26		15	39.47	
Control n= 37	0 – 10	17	45.95		18	48.65	
	11 – 21	09	24.32		10	27.03	
	22 – 31	06	16.22	35.93	06	16.22	37.36
	32 – 41	04	10.81		02	05.41	
	42 – 51	01	02.70		01	07.03	
Oyo n=90							
Experimental n=45	0 – 10	21	46.67		00	00.00	
	11 – 21	12	26.67		04	08.89	
	22 – 31	07	15.56	30.62	08	17.78	36.23
	32 – 41	03	06.67		14	31.11	
	42 – 51	02	04.44		19	42.22	
Control n=45	0 – 10	20	44.44		19	42.22	
	11 – 21	12	26.67		12	26.67	
	22 – 31	12	26.67	30.02	12	26.67	32.27
	32 – 41	01	02.22		01	02.22	
	42 – 51	00	00.00		01	02.22	
Across the three states n=240							
Experimental n=121	0 – 10	55	45.45		01	00.83	
	11 – 21	33	27.27		07	05.79	
	22 – 31	17	14.05	22.76	22	18.18	35.20
	32 – 41	11	09.09		38	31.40	
	42 – 51	05	04.13		53	43.80	
Control n=119	0 – 10	54	45.38		59	49.58	
	11 – 21	34	28.57		32	26.89	
	22 – 31	21	17.65	20.60	21	17.65	24.50
	32 – 41	09	07.56		04	03.36	
	42 – 51	01	00.84		03	02.52	

Source: field survey, 2009

5.7 Respondents' Child Nutrition Attitude before and after Social Marketing Intervention

This section describes respondents' child nutrition before and after social marketing intervention. Respondents' attitude entails disposition to social marketing '4Ps' (Product, Price, Position & Promotion). This was measured on a 5 point- Likert type scale of perception on social marketing statement. The minimum score is 42 points, while 210 points is the maximum score. The distribution of respondents according to child nutrition attitude before and after social marketing intervention is presented in Table 5.5.

The data obtained across the states in Table 5.5 reveals that before the intervention, respondents' child nutrition attitude was low in both experimental and control groups. Majority of experimental (45.46%) and control (42.86%) respondents scored between 41 and 76 points with the mean score of 121.56 and 119.7 respectively. It is clear from this result that respondents were not favourably disposed to the social marketing 4Ps which includes promotion (communication channels), product (nutrition messages), price (what they need to sacrifice to practice better nutrition) and position (distribution channels to reach the target audience). More respondents in experimental group (41.32%) scored between 185 and 220 with a mean of 137.27. However, the control group did not manifest such increase as only 3.36% scored between 185 and 220 with a mean score of 120.8. Consequently, it implies that exposure to nutrition messages experienced by the experimental group elicits favourable attitude to the social marketing mix for social behaviours with a view for behavioural change of child bearing. Corroborating this finding, Neumark-Sztainer, (2003) in social marketing intervention of adolescent girls aged 14-16 with focus on overweight/obese girls and those "at risk" of becoming overweight reported high favourable disposition to social marketing mix of price, product, position and promotion. It implies that communication intervention can influence attitude and consequently beahvioural change.

Table 5.5 Distribution of Respondents' Attitude to Child Nutrition Before and After Social Marketing Intervention Across the states

State	Child nutrition attitude before the intervention				Child nutrition attitude after the intervention		
Ekiti n=75	Score	frequency	%	Mean score	Frequency	%	Mean score
Experimental n=38	41 - 76	17	44.74		01	02.63	
	77 - 112	10	26.32		02	5.26	
	113 - 148	05	13.16	133.61	09	23.68	140.00
	149 - 184	03	07.89		10	26.32	
	185 - 220	03	07.89		16	42.11	
Control n=37	41 - 76	16	43.24		15	40.54	
	77 - 112	11	29.73		13	35.14	
	113 - 148	06	16.22	132.33	06	16.22	133.02
	149 - 184	03	8.11		02	5.41	
	185 - 220	01	2.70		01	2.71	
Osun n=75							
Experimental n=38	41 - 76	18	47.37		02	5.26	
	77 - 112	12	31.58		03	7.99	
	113 - 148	05	13.16	128.70	08	21.05	139.13
	149 - 184	03	7.90		10	26.32	
	185 - 220	00	0		15	39.47	
Control n=37	41 - 76	17	45.96		16	43.24	
	77 - 112	13	35.12		14	37.84	
	113 - 148	04	10.81	127.67	05	13.51	130.32
	149 - 184	02	5.41		01	2.70	
	185 - 220	01	2.70		01	2.70	
Oyo n=90							
Experimental n=45	41 - 76	20	44.44		01	2.22	
	77 - 112	12	26.67		03	6.67	
	113 - 148	07	15.56	124.25	10	22.22	136.28
	149 - 184	04	8.89		12	26.67	
	185 - 220	02	4.44		19	42.22	
Control n=45	41 - 76	18	40		19	42.22	
	77 - 112	13	28.89		12	26.67	
	113 - 148	07	15.56	122.55	07	15.56	124.29
	149 - 184	05	11.11		05	11.11	
	185 - 220	02	4.44		02	4.44	
Across the three states n=240							
Experimental n=121	41 - 76	55	45.46		05	4.13	
	77 - 112	34	28.10		08	6.61	
	113 - 148	16	13.22	121.56	27	22.31	137.27
	149 - 184	11	9.09		33	27.27	
	185 - 220	05	4.13		50	41.32	
Control n=119	41 - 76	51	42.86		50	42.02	
	77 - 112	37	31.09		39	32.77	
	113 - 148	17	14.29	119.7	18	15.13	120.8
	149 - 184	10	8.40		08	6.72	
	185 - 220	04	3.36		04	3.36	

Source: field survey, 2009

5.8 Respondents' Child Nutrition Practice Before and After Social Marketing Intervention.

This section describes respondents' child nutrition practice before and after social marketing intervention. This was obtained by using household dietary diversity score (HDDS), household food access and HDDS indicator tabulation plan**.** High score means, better nutrition practice, while low score means poor nutrition practice. The maximum is 17, while the minimum is zero. The respondents' distribution on child nutrition practice before and after social marketing intervention is presented in Table 5.6.

Data obtained across the states as indicated in Table 5.6 shows that respondents who scored between 0 and 4 form the majority in both experimental (52.89%) and control (49.58%) before the social marketing intervention. The intervention however, produces a change in the score obtained by the experimental group across the three states after the social marketing intervention as more than half (55.37%) of the respondents in the experimental group scored between 15 and 19 points, while only 5.88% of the respondents in the control group scored this points. This implies that the respondents exhibited poor child nutrition practice before the intervention which could be attributed to low knowledge and attitude of child nutrition. The introduction of child nutrition messages on radio, video and chart in Oyo, Osun and Ekiti states respectively have effectively improved the consumption of minerals and vitamin rich-food of the experimental group. The experimental group exhibits an increased child nutrition practice from 13.20 to 18.01 and control group from 12.60 to 13.80. This result agrees with the finding of UNICEF (2006). The study explores the use of social marketing to increase the consumption of minerals and vitamin-A- rich-food in Nigeria. The study revealed that before the intervention in 2002, the consumption of Vitamin A was only 26.4% among respondents in Maiduguri, but after rigorous campaign through radio and television programme, the consumption increase to 52 % in 2006. It implies that social marketing is potent to elicit change in nutrition practice among households.

Table 5.6 Distribution of Respondents' Child Nutrition Practice Before and After Social Marketing Intervention Across the states

State	Child nutrition practice before the intervention				Child nutrition practice after the intervention		
Ekiti n=75	Score	Frequency	%	Mean score	Frequency	%	Mean score
Experimental							
n-38	0 - 4	20	52.63		01	2.63	
	5 - 9	10	26.32		05	13.16	
	10 - 14	06	15.79	31.77	11	28.95	38.72
	15 - 19	02	2.26		21	55.26	
Control							
n=37	0 - 4	18	48.65		19	51.35	
	5 - 9	11	29.73		10	27.03	
	10 - 14	05	13.51	30.73	05	13.51	33.20
	15 - 19	03	8.11		03	8.11	
Osun n=75							
Experimental							
n=38	0 - 4	20	52.63		02	5.27	
	5 - 9	10	26.32		06	15.79	
	10 - 14	05	13.16	34.02	09	23.68	39.83
	15 - 19	03	7.89		21	55.26	
Control							
n=37	0 - 4	18	48.65		17	45.95	
	5 - 9	08	21.62		13	35.14	
	10 - 14	07	18.92	33.27	05	13.51	35.65
	15 - 19	04	10.81		02	5.40	
Oyo n=90							
Experimental							
n=45	0 - 4	24	53.33		02	4.44	
	5 - 9	14	31.11		05	11.11	
	10 - 14	06	13.33	35.76	13	28.89	38.77
	15 - 19	01	2.22		25	55.56	
Control							
n=45	0 - 4	23	51.11		22	48.89	
	5 - 9	15	33.33	34.09	16	35.56	36.43
	10 - 14	05	11.11		05	11.11	
	15 - 19	02	4.44		02	4.44	
Across the three state							
n=240							
Experimental							
n=121	0 - 4	64	52.89		05	4.13	
	5 - 9	34	28.10		16	13.22	
	10 - 14	17	14.05	28.2	33	27.27	38.0
	15 - 19	06	4.96		67	55.37	
Control							
n=119	0 - 4	59	49.58		58	48.74	
	5 - 9	34	28.57		39	32.77	
	10 - 14	17	14.29	25.6	15	12.61	27.8
	15 - 19	09	7.56		07	5.88	

Source: field survey, 2009

5.9 Changes in Respondents' Knowledge, Attitude and Practice of Child Nutrition as a Result of Social Marketing Intervention.

This section describes the effect of social marketing on the respondents' knowledge, attitude and practice of child nutrition by women. The mean score was computed for the experimental and control groups before and after the intervention. The group that has the highest mean difference is adjudged to be effective with the intervention. The respondents' effect of social marketing intervention on knowledge, attitude and practice of child nutrition distribution is presented in Tables 5.7a and 5.7b.

Data obtained in Table 5.7a below compares the performance of the experimental and the control groups in order to determine the effectiveness of the intervention. The experimental group manifested an increase in knowledge from, $\bar{x}$ = 22.76 to 35.20, favourable attitude from $\bar{x}$ =121 to 137.27, practice from $\bar{x}$ =13.2 to 16.0 and nutrition behavioural ($\bar{x}$ = 202.27 to 209.45) when compared to the control group with increase in knowledge from $\bar{x}$ = 20.6 to 24.5, attitude $\bar{x}$ = 119.7 to 120.8, practice $\bar{x}$ = 12.6 to 13.8 and nutrition behavioural ($\bar{x}$ = 201.91 to 203.83). This result implies that the intervention is effective because it was only able to produce change in the nutrition behavour of the experimental group.

The result in table 5.7b across all the states reveal that the experimental group acquired higher nutrition knowledge (90.16%), exhibits better attitude towards dietary habit (68.85%) and this is reflected in higher practice of combination of right nutrition balance over the control group (75.41%) which consequently is a factor of positive behavioural change (81.15%). In Ekiti State, the same trend was recorded, knowledge (76.32%), attitude (71.05%), practice (65.79%); Osun State (knowledge (78.95%), attitude (63.16%), practice (73.68%); and Oyo State (knowledge (91.30%), attitude (60.87%), and practice (73.91%). On

the whole, Oyo State had higher behavioural change (76.09%) over Ekiti and Osun States with (68.42%) respectively.

The implication of the result is that the use of messages on audio will go a long way to produce more impact for behavioural change in Oyo State. This result is consistent with Ojebode's (2003). He asserted that radio is a good medium of development education particularly for pro-social behaviour. Also, Olowu, (1993) in a related study of audience survey of radio listening group in Osun State, stated that higher proportion of the respondents listen more to radio due to easy access. This could be attributed to the reason why they paid better attention to the nutrition message to them on the radio. However, the use of charts in Ekiti State produce better behavioural change, this could be attributed to visible and step-by-step guideline for dietary intake. This involves seeing and hearing which promote increase in knowledge, attitude and practice of improved dietary intake of vitamins, protein, carbohydrate, fat and oil, minerals and water.

In Osun State, exposure to nutrition message on video produced some measure of behavioral change (68.42%), past studies have also found that the use of television aids increase in knowledge, attitude and practice. UNICEF, (2006) in Nigeria Social marketing effectiveness study revealed that in 2002 the consumption of vitamin A was only 26.4% among Maiduguri respondents, but after rigorous campaign through radio and television programme, the consumption increased to 52 % in 2006.

Table 5.7a Distribution of Respondents According to change in Knowledge, Attitude and Practice based on Social Marketing Intervention

States	Groups	Before (mean score) $\bar{x}_1$	After (mean score) $\bar{x}_2$	Change $\bar{x}_2 - \bar{x}_1$
Ekiti				
	Experimental			
	Attitude	133.61	140.00	+7.61
	Knowledge	25.85	34.80	+8.95
	Practice	31.77	38.72	+6.95
	Nutrition Behaviour	204.24	213.52	+11.28
	Control			
	Attitude	132.33	133.02	+0.69
	Knowledge	26.53	30.85	+4.32
	Practice	30.73	33.20	+0.47
	Nutrition Behaviour	204.40	206.22	+1.82
Osun				
	Experimental			
	Attitude	128.70	139.13	+10.43
	Knowledge	36.49	39.30	+2.81
	Practice	34.02	39.83	+4.81
	Nutrition Behaviour	205.00	212.46	+7.46
	Control			
	Attitude	127.67	130.32	+2.65
	Knowledge	35.93	37.36	+1.43
	Practice	33.27	35.65	+2.38
	Nutrition Behaviour	202.10	205.66	+3.56
Oyo				
	Experimental			
	Attitude	124.25	136.28	+12.03
	Knowledge	30.62	36.23	+5.61
	Practice	35.76	38.77	+3.01
	Nutrition Behaviour	190.64	211.30	+10.66
	Control			
	Attitude	122.55	124.29	+1.74
	Knowledge	30.02	32.27	+2.25
	Practice	34.09	36.43	+2.34
	Nutrition Behaviour	189.44	193.00	+3.56
All the states				
	Experimental			
	Attitude	121.56	137.27	+5.71
	Knowledge	22.76	35.20	+12.44
	Practice	28.2	38.0	+9.8
	Nutrition Behaviour	202.27	209.45	+7.18
	Control			
	Attitude	119.7	120.8	+1.10
	Knowledge	20.6	24.5	+3.90
	Practice	25.6	27.8	+2.2
	Nutrition Behaviour	201.91	203.83	+1.92

Source: field survey, 2009

Table 5.7b Percentage Distribution of Respondents' Change in Nutrition Knowledge, Attitude and Practice Based on Social marketing Intervention

State	Parameters	Mean	Mean and above High		Below mean Low	
			Frequency	%	Frequency	%
Oyo	**Experimental**					
	Attitude	136.28	28	60.87	18	39.13
	Knowledge	36.23	42	91.30	4	8.70
	Practice	38.77	34	73.91	12	26.09
	Nutrition behaviour	211.30	35	76.09	11	23.91
	Control					
	Attitude	124.29	17	38.64	27	61.36
	Knowledge	32.27	10	22.73	34	77.27
	Practice	36.43	14	31.82	30	68.18
	Nutrition behaviour	193.00	10	22.73	34	77.27
Osun						
	Experimental					
	Attitude	139.13	24	63.16	14	36.84
	Knowledge	39.30	30	78.95	8	21.05
	Practice	39.83	28	73.68	10	26.32
	Nutrition behaviour	212.46	26	68.42	12	31.58
	Control					
	Attitude	130.32	11	29.73	26	70.27
	Knowledge	37.36	13	35.14	24	64.86
	Practice	35.65	15	40.54	22	59.46
	Nutrition behaviour	205.66	11	29.73	26	70.27
Ekiti	**Experimental**					
	Attitude	140.00	27	71.05	11	28.95
	Knowledge	34.80	29	76.32	9	23.68
	Practice	38.72	25	65.79	13	34.21
	Nutrition behaviour	213.52	26	68.42	12	31.58
	Control					
	Attitude	133.02	12	32.43	25	67.57
	Knowledge	30.85	9	23.68	29	76.32
	Practice	33.20	10	27.03	27	72.97
	Nutrition behaviour	206.22	9	24.32	28	75.68
All State						
	Experimental					
	Attitude	137.27	84	68.85	38	31.14
	Knowledge	35.20	110	90.16	12	9.84
	Practice	38.0	92	75.41	30	24.59
	Nutrition behaviour	209.45	99	81.15	23	18.85
	Control					
	Attitude	120.8	48	40.68	70	59.32
	Knowledge	24.5	42	35.59	76	64.41
	Practice	27.8	53	44.92	65	55.08
	Nutrition behaviour	203.83	39	33.05	79	66.95

Source: field survey, 2009

5.10 Testing of Research Hypotheses

5.10.1 Hypothesis 1

There is no significant relationship between the selected socio-economic characteristics (education, age, family size, occupations, religion and income) and nutrition behaviour. The result is presented in Table 5.8

The result of analysis of in Table 5.8 indicates that some of the women's socio-economic characteristics are significantly related to their nutrition behaviour while income, religion and age are not significantly related. Education (χ^2= 44.4455, p< 0.05), family size (r = -0.25697, p<0.05), occupation (χ^2=21.1049, p<0.05) and marital status (χ^2=16.9350, p<0.05) are significantly related with their behavioral change. The implication of the result is that, education level contributes immensely to change in behavior. Caballero (2003) and Prochaska (2004) corroborated this finding where they both found that education level has potential to boost behavioural change to increase consumption of fruits, vegetables and reduced salt intake. Also, the size of family positively and significantly influences behavioral change with respect to nutrition. In a family intervention conducted by Fitzgibbon (1996) and Nader (1989), it was reported that family size is major key player in nutrition programme .On occupation; it could be deduced that the type of job can provide opportunity to learn good nutrition habit, have time to implement nutrition practice and favourably dispose to nutrition intervention. This finding agrees with Neiger (2001) in a study of the workplace of public health employees and nutrition behaviors.

Contrastingly, however, age (r =-0.05685; p>0.05), income (r =0.01141; p>0.05) and religion (χ^2=3.6462; p>0.05) are not significantly related to nutrition behaviour. The implication of this result is that age of women is not a factor that influences nutrition behaviours. This is contrary to Baranowski (2002) who reported in a study of youth intervention that age is significantly related to change in nutrition behaviors. It therefore implies that, older respondents have tendency to adopt innovation faster because of experince

On the income of respondents, it could be postulated that, the low income level does not affect good dietary intake perhaps because of abundance agricultural produce in the study area which in most cases they do not need to buy some of these produce that will supply the required vitamins and minerals. The implication of the result on religion is that, religious inclination has little or nothing to do with behavioral change with respect to nutrition, this is in consonance with Resnicow (2004) in church based nutrition programme discovered that despite their religious affiliation, respondent still have self efficacy and extrinsic motivation to consume more fruit and vegetables. It therefore implies therefore nutrition intervention targeting faith-based organization can go a long way to improve dietary intake among households.

Table 5.8 Testing of Research Hypothesis for Respondents' Socio-economic Characteristics and Nutrition Behaviour

Variables	**Statistical tool**		**r-value**	**p-value**		**Decision**
Age	PPMC		0.05685	0.3805		NS
Family size	PPMC		0.25697	0.0001		S
Income	PPMC		0.01141	0.8605		NS
		df	χ^2 Value	p-value	Contingency coefficient	
Marital status	Chi Square	8	16.9350	0.0308	0.2567	S
Religion	Chi Square	6	3.6462	0.7244	0.1223	NS
Education	Chi Square	12	44.4455	0.0001	0.3953	S
Occupation	Chi Square	8	21.1049	0.0069	0.2843	S

Source: field survey, 2009

5.10.2 Hypothesis 2

There is no significant relationship between awareness of nutritional messages and nutrition behaviour. The result is presented in Table 5.9

The result of PPMC analysis show a significant and positive relationship between awareness and respondents' nutrition behaviour ($r = 0.37185$; $p<0.05$). This indicates that awareness is a key player for a behavioural change for nutrition programme.

Nutrition education provides people with correct information on the nutritional value of foods, food quality and safety, methods of preservation, processing and handling, food preparation and eating to help them make the best choice of foods for an adequate diet. The provision of correct information is not in itself a sufficient objective to improve nutrition. Successful nutrition education goes beyond the simple accumulation of knowledge, towards positive action. A change in behaviour leading to desirable nutrition practices could include, for example, beginning to grow and eat dark-green, orange and yellow fruits and vegetables to protect the body from infectious diseases, or learning how to store maize or other food more safely to reduce nutrient losses and thereby increase household food reserves. Effective nutrition education programmes must therefore be planned and executed in such a way as to motivate beneficiaries to develop skills and confidence for the adoption of positive and lasting practices.

However, nutrition education also needs to accommodate social and technological change. Value-added foods are usually the most profitable; they are likely to be vigorously and persuasively promoted through awareness. Patterns of health and disease will change as food consumption changes. According to Steenhuis (2004) and Delichatsios (2001) in heterogeneous settings for community intervention, awareness was found to have a significant effect on nutrition programme. It is there imperative that awareness campaign of vitamin rich food will promote adequate and better dietary intake among households.

Table 5.9 Testing of Relationship between Awareness of Nutrition Messages and Nutrition Behaviour

Variable Description	N	Df	r- value	p– value	Remark
Awareness	240	238	0.37185	0.0001	S

Source: field survey, 2009

5.10.3 Hypothesis 3

There is no significant relationship between communication channels and nutrition behaviour. The result is presented in Table 5.10.

The analysis of PPMC from the Table 5.10 above shows a significant and positive relationship between communication channels and nutrition behaviour ($r = 0.2339$; $p<0.05$). It could be deduced from this finding that respondents have been paying adequate attention to the messages through the communication channels they have access to in their domain. One technique to change the dietary behaviours of a large number of people is to convey nutrition messages through various communication channels. These are organized communication activities directed at a particular population for a particular period of time to achieve a particular goal. Selecting which strategy or strategies to use depends on careful analysis of the context surrounding individual decision making, including existing patterns of communication about the behaviour and barriers to behaviour change.

Vartiainen (1995) however, in communications intervention to influence nutritional knowledge and sought to change physiological factors for multi-component community programme confirm the need to structure the channels of communication to win the attention of the intended audience for any intervention programme. Formative research conducted with the target populations shows that preference for communication channels varies across the three states. A variety of communication strategies will be required change the behaviour of the child-bearing women.

Table 5.10 Testing of Relationship between Communication Channels and Nutrition Behaviour

Variable Description	N	Df	r- value	p – value	Remark
Communication channels	240	238	0.2339	0.0007	S

Source: field survey, 2009

5.10.4: Hypothesis 4

There is no significant difference in respondents' nutritional knowledge before and after exposure to nutritional messages across the states. The result is presented in Table 5.11.

Analysis in Table 5.11 revealed a significant difference in respondents' knowledge before and after exposure to nutrition messages in Oyo ($t = 2.93$; $p<0.05$) and Ekiti ($t = -2.29$; $p<0.05$), while Osun ($t =1.30$; $p>0.05$) is not significantly different. However, considering the analysis across the three states, there was a significant difference ($t = 2.74$; $p<0.05$) before and after the intervention. The implication of this result is that the use of nutrition message in audio and chart in Oyo and Ekiti produce a change in respondents' nutrition knowledge. The use of chart in Ekiti State increase respondents' nutrition knowledge. This could be attributed to visible and step by step guide line for dietary intake, it engages seeing and hearing which promote increase in knowledge of improved dietary intake of vitamins, protein, carbohydrate, fat and oil, minerals and water.

In a related study, Havas (1998) in a 5-Day programme comprising nutrition sessions, printed materials and direct mail for low income women in Maryland USA, the intervention is based on the Stages of Change model, the result shows positive intake of fruits and vegetables. Rapid assessments, stakeholders' workshop, strategies and work plan for social marketing of vitamin A fortified foods in Nigeria submitted to UNICEF in 2006 confirmed this result. UNICEF (2006) in Nigeria Social marketing effectiveness study revealed that in 2002 only 27.31% of Lagos respondent had knowledge of vitamin A but after rigorous campaign through the media, their knowledge increase to 71.1% in 2006.

Table 5.11 Result of t-test showing the Difference between Respondents' Nutrition Knowledge before and after Exposure to Nutrition Messages across the States

Parameter	States	df	t- value	p- value	Decision
Knowledge	Oyo	1	2.93	0.0001	Significant
	Osun	1	1.30	0.1954	Not significant
	Ekiti	1	-2.29	0.0233	Significant
	Across the three states	1	2.74	0.0002	Significant

5.10.5: Hypothesis 5

There is no significant difference in respondents' nutritional attitude before and after exposure to nutritional messages across the states. The result is presented in Table 5.12.

Table 5.12 reveals that there is a significant difference in respondents' attitude to nutrition message before and after exposure to nutrition messages in Oyo ($t = 4.23$; $p < 0.05$) and Osun ($t = 3.99$; $p < 0.05$). It therefore means that nutrition messages on audio and video elicited positive respondents' attitudinal change towards good dietary intake. Contrastingly, the use of chart does not produce a significant difference before and after exposure to nutrition messages in Ekiti state ($t = -1.20$; $p > 0.05$). However, respondents' attitude across the three states revealed that there was a significant difference ($t = 2.98$; $p > 0.05$) before and after to nutrition messages. This finding is consistent with UNICEF (2006), a study in Nigeria on social marketing effectiveness. The result revealed that in 2002 the consumption of vitamin A was only 26.4% of Maiduguri respondents but after rigorous campaign through radio and television programme, the consumption increase to 52 % in 2006 due to increase in knowledge and attitude. It implies therefore that media is a powerful tool to change attitude if used correctly and purposefully for intervention programme among women.

The relationship of mother's knowledge and its effect on the nutritional status of the child, among other factors, has been investigated in many studies. Tada, (2002) discovered that one of the factors that affect the nutritional status of the children is the mothers' knowledge and perception of nutrition and mothers' food practice. It is therefore important that mothers are educated on proper nutrition so that they could cater to the growing needs and for a better nutritional status of their children.

Table 5.12 Result of t-test showing the Difference between Respondents' Nutrition attitudes before and after exposure to Nutrition Messages across the States

Parameter	States	df	t- value	p- value	Decision
Attitude	Oyo	1	4.23	0.0001	Significant
	Osun	1	3.99	0.0001	significant
	Ekiti	1	-1.20	0.2308	Not Significant
	Across the three states	1	2.98	0.0002	Significant

5.10.6: Hypothesis 6

There is no difference in respondents' nutritional practice before and after exposure to nutritional messages across the states. The result is presented in Table 5.13

Table 5.13 reveals that there is no significant difference in the respondents' nutrition practice across the state before and after exposure to nutrition messages; Oyo ($t = 1.08$; $p > 0.05$), Osun ($t = 1.30$; $p > 0.05$), Ekiti ($t = -0.79$; $p > 0.05$). Analysis across the three states also revealed that there was no significant difference ($t = 1.48$; $p > 0.05$) in the respondents' nutrition practice across the state before and after exposure to nutrition messages. The implication of the result is that, even when exposure to nutrition messages promotes knowledge acquisition and influence attitude positively, follow up is required for practice to be noticeable in any intervention programme. This result is corroborated by Resnicow (2001) in Eat for Life programme designed for Church-based population to promote intake of fruits and vitamin. Communication intervention comprises of video messages, cook book, printed education materials, '5-a-Day' promotional items and motivational interviewing. Counseling is based on motivational interviewing but no specific behavior change models are mentioned, after the programme participant recorded positive effect with many of the respondents recording higher intake of fruits and vegetable.

Also, in a related study, Prochaska (2004) physical activity and nutrition among adolescents (PACE+) conducted among middle age school students. School-based intervention comprises an interactive computer programme and a session with a health professional. Intervention was informed by TTM, SCT and the Relapse Prevention Model. At the end there was positive attitude towards better dietary intake of fruits and vitamins.

Although the participants have increased their knowledge on nutrition, their gain in information is not translated to better practices. It is a fact that transformation entails time, and change in practices is difficult but not impossible. Difficulty in changing practice is

illustrated in the study of Horodynski, (2004) who examined the low-income caregivers' knowledge, attitude, mealtime practices, and dietary intake before and after a nutritional program. Six months after the lessons, no significant change was found; although the perception about feeding their toddlers differed, knowledge was insufficient to change the eating habits.

Table 5.13 Result t-test showing the Difference between Respondents' Nutrition Practices before Exposure to Nutrition Messages across the State

Parameter	States	df	t- value	p- value	Decision
Practice	Oyo	1	1.08	0.2804	Not Significant
	Osun	1	1.30	0.1954	Not Significant
	Ekiti	1	-0.79	0.4295	Not Significant
	Across the three states	1	1.48	0.2917	Not Significant

5.10.7 Hypothesis 7

There is no significant difference in nutrition behaviour (knowledge, attitude and practice) of the respondents before and after exposure to nutritional messages across the states. The result is presented in Table 5.14.

The result in the Table 5.14 below shows that there is a significant difference in the respondents' nutrition behaviour before and after exposure to nutrition messages across the states Oyo ($t = 3.53$; $p < 0.05$), Osun ($t = 3.03$; $p < 0.05$) and Ekiti ($t = 2.70$; $p < 0.05$). This implies that knowledge, attitude and practice, which is the index of nutrition behaviour was significantly different in all the states. The reason for this result is associated with the exposure of the audience to various communication interventions to change respondents' nutrition behaviour. The social marketing intervention can be considered to be effective since the base line data revealed low in knowledge, attitude and practice but consequently changed after the respondents' were exposed to nutrition messages.

It implies therefore media as a form of communication intervention is a very effective tool for behavioral change. This finding is consistent with Olowu (1993) in a related study of audience survey of radio listening group in Osun State, he stated that higher proportion of the respondents listen more to radio due to easy access could be attributed to reason why they paid better attention to the nutrition message to them on the radio which consequently produced favourable behavioural change after the social marketing intervention.

In a related study, Lowe (2004) in a school-based intervention comprising a peer modeling video and rewards shows effectiveness of video messages to change pro-social behavior. Also, UNICEF (2006) in Nigeria Social marketing effectiveness study revealed that in 2002 the consumption of vitamin A was only 26.4% of Maiduguri respondents, but after rigorous campaign through radio and television programme, the consumption increase to 52 % in 2006.

Table 5.14 Result of t-test showing the Difference between Respondents' Nutrition Behaviour before and after Exposure to Nutrition Messages across the States

Parameter	States	df	t- value	p- value	Decision
Nutrition Behaviour	Oyo	1	3.53	0.001	Significant
	Osun	1	3.03	0.0151	Significant
	Ekiti	1	2.70	0.0447	Significant
	Across the three states	1	3.48	0.0091	Significant

5.11 Descriptive Results of Focus Group Discussion (FGD) Conducted During the Study

This section gives the descriptive results of the Focus Group Discussion (FGD) conducted during the study. This includes respondents' socio-economic characteristics profile and problem tree analysis to ascertain the constraints to adequate dietary intake.

FGDs were conducted with women who registered at the Primary Health Centre (PHC) in each of the communities selected for the study. The selection cut across rural and urban communities. In all, ten FGDs were conducted; four in Oyo State (Ilero, Eruwa, Iddo, and Oyo east), three in Osun State (Osogbo, Iwo and Ipetumodu) and three in Ekiti State (Ado-Ekiti, Ikere-Ekiti and Ikoro-Ekiti). Each FGD included 10-12 discussants randomly selected from the list of weekly attendance at the PHC.

5.11.1: Socio-economic Characteristics

Women of child bearing age constituted the population of the discussant. Conversation with the group showed that they were literate; many of them have at least secondary school education. Trading is a prominent form of income generating activity while some are government workers (clerks, teachers, health attendants or cleaners). About 2/3 of them are Christians while about 1/3 of the respondents were Muslims. The average family size was six and the major social groups were mainly religious and community based associations.

Plate 5.1 FGD in Oyo State

5.11.2: Awareness of Nutrition Programme

Awareness of school feeding programme is prominent in the study area. In all the FGDs conducted, they consider knowledge of nutrition important for mothers and acquiring skills on nutrition practices for children must be given priority in household dietary programme. The general consensus is that women should be the target when it comes to nutrition education, efforts should be made to incorporate it into the school curriculum.

5.11.3 Communication channels

There are divergent views on the preference of communication channels to convey nutrition messages. In Oyo State, used of recorded messages on radio was chosen to be most preferred while in Osun State , recorded messages on video clip (Television) was more desirable and the use of Chat was consider to be ideal in Ekiti State.

Plate 5.2 FGD at Ipetumodu Osun State

Plate 5.3 FGD in Ekiti State – Nutrition Messages on Chart

Plate 5.4 FGD in Iddo Local Government Area, Oyo State

5.11.4: Nutrition Knowledge

The quest to seek knowledge was given high premium in all the states. However, from the discussion, it is clear that before the visit many only provide food for their household without conscious effort to cater for the basic nutrient elements such as require for growth and development. The intervention provided a form of nutrition education to enhance respondents' child nutrition knowledge.

Women's education has been reported as a key factor in reducing infant and child mortality. The higher a woman's level of education, the more likely they play a greater role in child nutrition decision making and exercise her reproductive rights. Her children will tend to be better nourished and enjoy better health. Data from both the 1999 National Demographic Health Survey (NDHS) and the 1999 Multiple Indicator Cluster Surveys (MICS) reveal that lower educational levels among females was related to higher infant and under-five mortality. Both surveys highlighted female illiteracy and under-five mortality being twice as high in the northern zones than in the south of Nigeria. Similarly, rural areas had lower levels of female literacy and consequently higher under-five mortality than urban areas. The relationship between female literacy and child survival is also clearly demonstrated when looking at immunisation coverage rates and treatment of diarrhoeal illnesses. Timely and appropriate use of ORT in the treatment of diarrhoeal illnesses (the second main cause of under-five mortality after malaria) reduces mortality outcomes. The 1999 NDHS reported that the proportion of caregivers that use ORT progressively rises with levels of education. The same survey data also show that the proportion of children not immunised at all decreases from 60 percent among illiterate mothers to 24 percent among mothers with primary education, before dropping to 10 percent among mothers with secondary education.

Plate 5.5 Nutrition Officer Attending to Nursing Mothers in a Social marketing Research in Osun State

5.11.5 Nutrition Practice

The discussion reveals that the respondents take more of carbohydrate food (yam, garri, rice, bread) because of the abundance of this food in the area while attention is given to protein vitamins, fat and oil even when they are available. This habit could results into a number of problems. Foods of low quality contribute disproportionately to diet−related disease and death−continue to be traded and marketed without regard to health impact. Although mechanisms that give government greater control over dietary choices are needed, there is always the risk that such mechanisms will be hijacked to protect domestic food industries. Also, while excessive consumption of some foods (such as those high in fat) can contribute to chronic disease risk in some situations, the same foods may offer opportunities to reduce malnutrition and food insecurity in others. Balancing the various public health risks associated indiscriminate food consumption must be considered.

This condition can be addressed using the community−based model in nutrition in order to improve child nutrition practice in many areas (Heaver 2002). This approach will raise the capacity of nutrition practitioners to understand the need for and facilitate social mobilization and animation crucial to community ownership and sustainability (Maxwell 1998). Institutional constraints to effective participation, particularly in the context of no or limited decentralization of government contribute to the debate on 'scaling up' community−driven development initiatives as well as 'scaling down' government policies and decisions in order to fit the needs of communities will be realised (Marchione 1999, Gillespie 2003), principally on the key role of 'learning by doing' (Mansuri and Rao 2003). These lessons are relevant to efforts to reduce malnutrition. Given the multi-sectoral causes of malnutrition, the nutrition community is in a strong position to engage other sectors to share experiences and to learn.

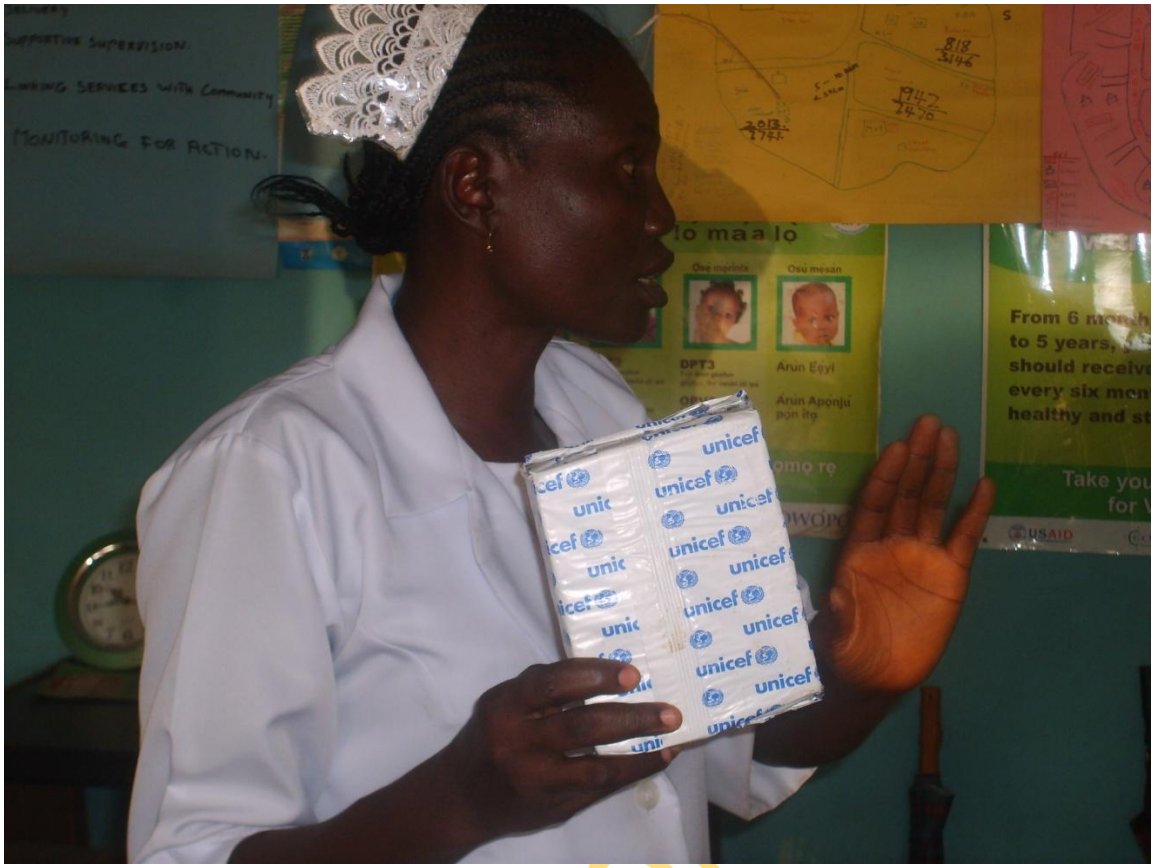

Plate 5.6 Nutrition Officer Demonstrating the need for Fortified Food in Ekiti State

Plate 5.7 Nutrition Officer Showing the need for Vegetable inclusion in Household diet in Ekiti State

5.11.6 Problem Tree Analysis

Olawoye *(*2004**)** opines that problem tree visualization will encourage participants to understand effects of a problem in terms of the causes and thereby proffer solutions or activities to overcome the problem by tackling the root of the problem. This participatory tool employed during the FGD ascertained the cause and effect of poor nutrition habit, constraint to nutrition behavioral change among women in child nutrition. The problem tree analysis revealed that poor nutrition habit/behaviour is the major problem. Many only eat to satisfy hunger without a conscious effort to understand the right combination of dietary intake and nutrition balance of protein, vitamins carbohydrate, fat and oil and mineral that can ensure child growth and development. The root causes include low income, cultural influence, poor nutritional knowledge; attitude and practice which have produced an effect of poor nutrition practice, child morbidity, child mortality, and stunted growth in children.

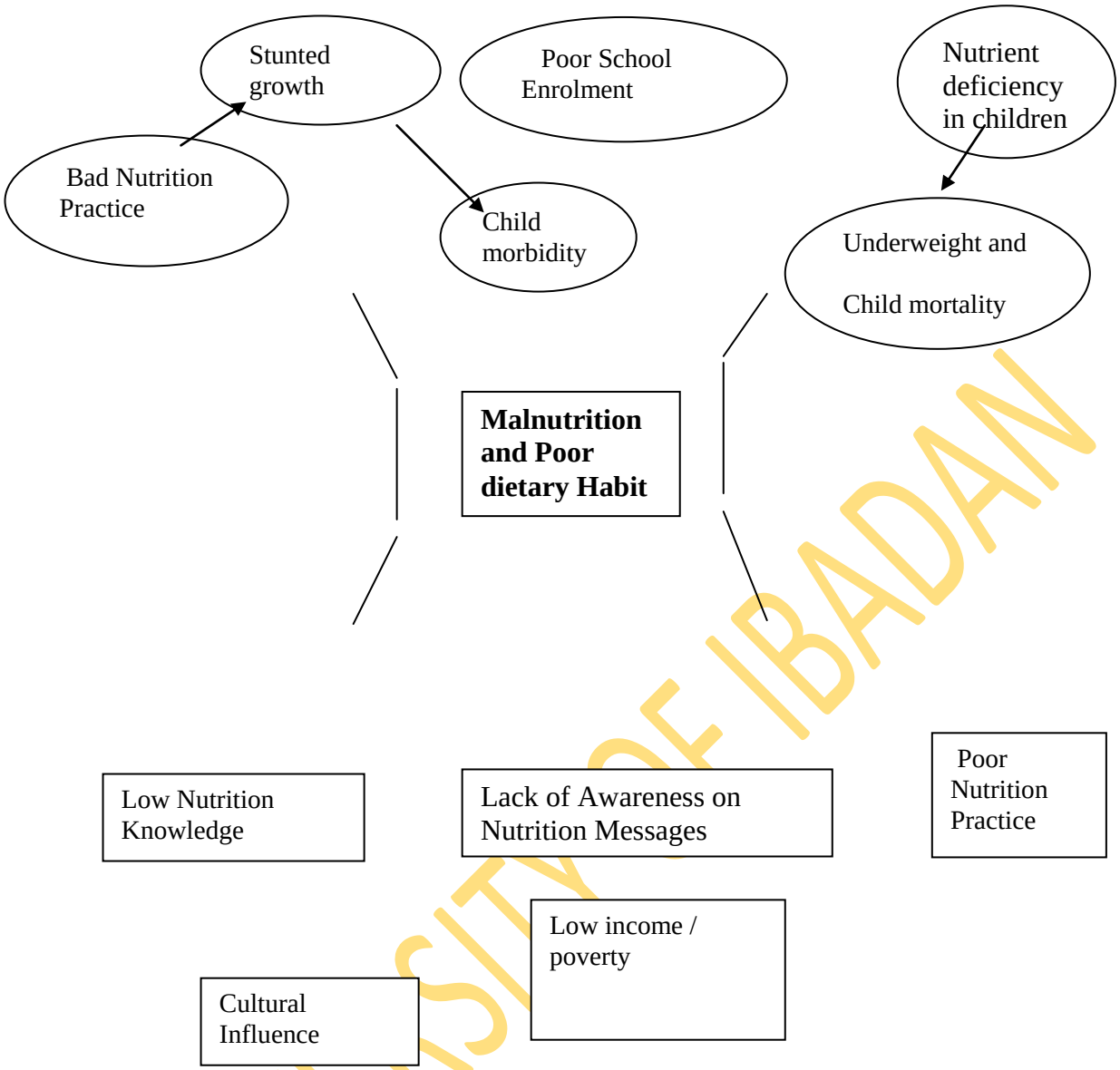

Figure 5.5 Results of Problem Tree Analysis on Causes and Consequences of Poor Nutrition behaviour

Plate 5.8 Researcher demonstrating the use of Chart in Social Marketing Intervention

Plate 5.9 Researcher Addressing Nursing mothers in a Social Marketing Study

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter presents summary, conclusion drawn from the study, recommendations based on the findings and areas for further study.

6.1 Summary

Despite intervention programmes aimed at improving child nutrition in Nigeria, the number of children with poor nutrition has consistently increased over the years. The usual top-down management approach to execution of intervention is contributory to this problem. Social marketing, a bottom-up and effective approach to intervention, has not been well studied in Nigeria. The effectiveness of social marketing on knowledge, attitude and practice of child nutrition by women in South-West Nigeria was therefore investigated.

The study was carried out using quasi-experimental research approach and Focus Group Discussion (FGD). Two hundred and forty women were selected by systematic random sampling from ante-natal clinic in primary health centres in selected 10 local government areas in Oyo (4), Ekiti (3) and Osun state (3) based on probability proportionate sample to size with 90, 75, and 75 women interviewed from each of the states respectively. Data were collected from the two groups using structured questionnaire which included 50 points-knowledge, 17 points-practice and 5-points Likert-attitudinal scales before and after exposure to nutrition messages. In addition, one FGD each was conducted among women in each of the 10 LGAs. Fifty percent (experimental group) were exposed to nutrition messages for 12 weeks with emphasis on social marketing techniques, while the remaining served as control. Parameters assessed were women's personal characteristics, knowledge, attitude and practice with respect to child nutrition.

The result shows that the modal class age range is 31 – 40 years (50.83%) with the mean age of 33years. The majority of the women are within the middle age range across the

state. The profile of the respondents by marital status shows that majority (69.58%) were married, 17.50% were single parent, and 6.67% were divorced. The implication of this finding is that the respondents are responsible for providing for their household nutrition and dietary needs.

Result on educational attainment indicated that 12.92% completed primary education, 28.33% had secondary, while 50.41% had tertiary education. This shows that majority of the respondents are literate and thus encourages adoption of improved household dietary intake.

The distribution of respondents by their primary occupation categories shows that more respondents (67.53%) were petty traders, civil servants (44.17%) followed by artisans (37.50%) ranging from hairdressing, tailoring to agricultural produce processors. The implication is that, since they are empowered, they will be able to support their household and cater for their children by providing good and adequate nutrition require for growth and development. The respondents' profile of monthly income across the states indicated that barely (35.00%) earned ₦10, 000 - ₦20, 000 monthly and (32.08%) take home less than ₦10, 000 monthly. Majority (65.83%) proclaimed Christian faith and Islam has 15.42%, while the traditionalists constituted a mere 0.83% of the sampled respondents. On family size, majority (52.08%) have 4-6 and those with 7-10 constitute mere (25.83%). The mean family size is five which clearly indicated fairly high dependency ratio. Majority (65.42%) of the respondents have between 1 and 3 children, while only (33.75%) have between 4 and 6 children. This is clear pointer for the women and caregivers the need to foster more proactive nutritional intervention that will help the children to maintain and sustain good dietary intake to ensure growth and development of their children. On group membership, majority (69.57%) belongs to community-based associations and (30.43%) were in religious-based group. Group dynamics have been found to be instrument of change in recent times.

Majority (75.42%) of the respondents are exposed more to the radio than the television (54.17%), telephone (22.50%), while exposure to daily newspapers, magazines,

and friends was merely (10.00%) respectively. It follows therefore that awareness creation with the use of radio and television would have to be undertaken in many media for a successful nutrition intervention.

Awareness of nutrition shows that school feeding programme was prominent (66.67%), nutrition education (52.08%), vitamin A (49.58%), Iodized salt (57.08%), and UNICEF campaign (56.67%) were found to be fairly high. The implication is that the intervention programme will be sustainable because of the perceived benefit they stand to gain by adoption.

The data obtained across the states reveal that before the intervention, respondents' child nutrition attitude was low in both experimental and control groups. Majority of experimental (45.46%) and control (42.86%) respondents scored between 41 and 76 points with the mean score of 121.56 and 119.7 respectively. It clear from this result that respondents were not favourably disposed to the social marketing 4Ps which includes promotion (communication channels), product (nutrition messages), price (what they need to sacrifice to practice better nutrition) and position (distribution channels to reach the target audience). More respondents in experimental group (41.32%) scored between 185 and 220 with a mean of 137.27. However, the control group did not manifest such increase as only 3.36% scored between 185 and 220 with a mean score of 120.8.

The result of respondents across the states reveal that there was a knowledge gap in nutrition with respect to dietary intake before the intervention in both experimental and control groups. About half of respondents in experimental (45.457%) and control (45.38%) across the three states scored between 0 – 10 points with a mean score of 22.76 and 20.60 respectively. However, after the intervention, the experimental group manifested an increase in child nutrition knowledge with 43.80% of the respondent scoring between 42-51 points with a mean score of 35.20, while only 2.93% of the respondents this category scored the same point in control group with a mean score of 24.50.

Data obtained across the states shows that the respondents who scored between 0 and 4 form the majority in both experimental (52.89%) and control (49.58%) before the social marketing intervention. The intervention however, produces a change in the score obtained by the experimental group across the three states after the social marketing intervention as more than half (55.37%) of the respondents in the experimental group scored between 15 and 19 points, while only 5.88% of the respondents in the control group scored this points.

The result of Chi square and PPMC indicated that some of the women's socio-economic characteristics are significantly related to their behavioral change, while income, religion and age are not significantly related. Education (χ^2 = 44.45, p< 0.05), family size (r = 0.26, p<0.05), occupation (χ^2=21.10, p<0.05) and marital status (χ^2= 16.94, p<0.05) are significantly related with their behavioral change. The implication of the result is that education level, family size, occupation and marital status contribute immensely to change in behavior.

The result of PPMC analysis shows a significant relationship between awareness and women behavioral change (r = 0.37; p<0.05). This indicates that awareness is a key player in a behavioral change for nutrition programme. The analysis of PPMC shows a significant relationship between communication channels and behavioral change (r = 0.23; P<0.05). It could be deduced from this finding that respondents have been paying adequate attention to the messages through the communication channels they have access to in their domain.

There is a significant difference in respondents' knowledge before and after exposure to nutrition messages in Oyo (t = 2.93; p<0.05) and Ekiti (t = -2.29; p<0.05), while Osun (t =1.30; p>0.05) is not significantly different. However, considering the analysis across the three states, there was a significant difference (t = 2.74; p<0.05) before and after the intervention. Also, there is a significant difference in respondents' attitude to nutrition message before and after exposure to nutrition messages in Oyo (t =4.23; p< 0.05) and Osun (t =3.99; p< 0.05). It therefore means that nutrition messages on audio and video elicited

positive respondents' attitudinal change towards good dietary intake. Contrastingly, the use of chart does not produce a significant difference before and after exposure to nutrition messages in Ekiti state ($t = -1.20$; $p > 0.05$). However, respondents' attitude across the three states revealed that there was a significant difference ($t = 2.98$; $p > 0.05$) before and after to nutrition messages.

The result in nutrition behaviour shows that there is a significant difference in the respondents' nutrition behaviour before and after exposure to nutrition messages across the states Oyo ($t = 3.53$; $p < 0.05$), Osun ($t = 3.03$; $p < 0.05$) and Ekiti ($t = 2.70$; $p < 0.05$). This implies that knowledge, attitude and practice, which is the index of nutrition behaviour was significantly different in all the states.

6.2 Conclusions

Consequent upon the empirical findings from this study, the following conclusions are drawn.

The respondents are in their productive years, the mean age of 33years clearly indicate that they are in their child bearing age. Radio and television are the most prevalent information sources used, awareness of school feeding programme and nutrition education campaign were pronounced among the respondents.

There exist a gap in nutrition knowledge, attitude knowledge and practice among child-bearing women for both experimental and control groups before the intervention. However, introduction of social marketing intervention elicited a change in nutrition behaviour (knowledge, attitude and practice) of the experimental group only.

The preferred communication channel varies across the three states (Oyo, Osun and Ekiti) under investigation. Respondents preferred nutrition message on audio, video and chart in Oyo, Osun and Ekiti states respectively. Direct teaching was used with the preferred communication channels for effective change in nutrition behaviour (knowledge, attitude and practice) of child nutrition among the child-bearing women.

Respondents were favourably disposed to the social marketing 4Ps (Price, Product, Place and Promotion). They were ready to pay a price (abandon their old nutrition practices) adopt the product (use the nutrition messages), favourably disposed to the communication channels (promotion) and the distribution channels (place). This situation analysis of respondents' nutrition behaviour serves as a road map for behavioural change. Thus, Nutrition messages channeled through social marketing strategy is a potent instrument for nutrition behavioural change among women. Comparing the performance of the experimental and the control groups in order to determine the effectiveness of the intervention, the experimental group manifested an increase in knowledge, attitude and practice.

Family size, marital status, education, occupation awareness, and communication channels are significantly related to nutrition behaviour. There is a significant difference in respondents' knowledge before and after exposure to nutrition messages in Oyo and while Osun is not significantly different from Oyo and Ekiti states. Also, there is a significant difference in respondents' attitude to nutrition message before and after exposure to nutrition messages in Oyo and Osun, Ekiti is not significantly different from Oyo and state. However, respondents' nutrition practice was not significantly different in all the states.

6.3 Recommendations

Base on the empirical findings obtained from this study the following recommendations are made.

- Designed agricultural or nutrition intervention programme should include follow up component to ensure sustainable behavioural change. This is particularly essential because the inferential result shows that there is no significant relationship between child nutrition practice and nutrition behaviour even when knowledge and attitude were significantly related. It implies therefore that if adequate follow up is carried out which is not done in this study, the child nutrition practice will be positively enhanced.

- Agricultural extension practice should explore the use of social marketing strategy for agriculture and rural development programme. Top down management approach methods have been used over the years for nutrition interventions which consequently has not produce the desired result. Social marketing, an all inclusive communication initiative is potent to produce a change child nutrition behaviour.
- Developed agricultural or nutrition messages should be packaged in more than one medium for any given intervention programme. The preference for communication channels varies across the three states. It implies therefore that preferred communication channel cannot be the same across any geographical zones.
- Government and non government agencies should establish agriculture or nutrition support centers where community members can access information that will enhance knowledge, attitude and practice in various fields. Development at the grass root can only be sustainable when people have access to information. The nutrition message was brought to the people at the primary health centers and that largely was responsible for impact witnessed after the intervention.

6.4 Area of Further Research

The following research areas can be further investigated.

1. Determinants of child nutrition behavioural change among women in nutrition intervention. Many psychological variables come into play before child nutrition behavioural change takes place in any intervention. This investigation on determinants will explore intrinsic and extrinsic features that elicit child behavioural change.
2. Mass media and interpersonal communication campaign as a social marketing strategy for nutrition intervention among women. This will investigate the extension methods as a communication campaign for child nutrition behavioural change.

3. More fundamental research is needed into the causes and processes of dietary behaviour change to inform all facets of campaign planning.

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APPENDIX 1

University of Ibadan

Faculty of Agriculture and Forestry,

Department of Agricultural Extension and Rural Development

Interview Schedule Guides for Women of Child Bearing Age with At Least One Child.

EFFECTIVE OF SOCIAL MARKETING ON KNOWLEDGE, ATTITTUDE AND PRACTICE ON CHILD NUTRITION BY WOMEN IN SOUTH WESTERN NIGERIA

SURVEY IDENTIFICATION NUMBER	
PLACE OF INTERVIEW	
LOCAL GOVERNMENT AREA	
STATE	

Dear respondent,

I am a postgraduate student from the University of Ibadan conducting a research on the above research topic. The essence is to elicit behavioural changes on child nutrition among women in your community. Please feel free to respond to the questions as it affects your nutrition habit.

The information gathered is strictly for research purpose and will be treated with utmost confidentiality. Thank you for your anticipated cooperation.

Section A

Socio-economic Characteristics

TICK ( ) APPROPRIATELY IN THE BOX PROVIDED

1. Age…
2. Marital Status: - Divorced [ ], Single Parent/Separated [ ], Widow [ ], Single [ ].
3. What is your position as a wife?: - 1st [ ], 2nd [ ], 3rd [ ], 4th [ ], 5th [ ].
4. Number of husband: - 1 [ ], 2 [ ], 3 [ ], 4 [ ], 5 [ ].
5. Highest Educational Attainment: - No formal Education [ ],
   Do not complete primary school [ ], Primary Education [ ],
   Secondary Education [ ], Tertiary Education [ ],
   Others (specify) ……
6. What is your primary occupation? ……

7. What are your other income generating activities? Civil Service [ ], Teaching [ ], Artisan [ ], Petty Trading [ ], others (Specify)…….
8. What is your estimated monthly income in Naira? < 10,000 [ ], 10,000-20,000 [ ], 30,000-40,000 [ ], 40,000-50,000 [ ], 50,000-60,000 [ ], >60,000 [ ].
9. Religion: - Christianity [ ], Islam [ ], Traditional Religion [ ].
10. Family size: [ ]
11. No of children [ ]
12. Media habit/ Sources of information: - TV [ ], Radio [ ], Dailies [ ], Magazines [ ], Telephone [ ], E-mails [ ], Bill Board [ ], Pamphlets [ ], Extension Agent [ ], Friends [ ], Religious leaders [ ], others …… (Specify).
13. Do you belong to any social group?
14. If yes, what is the name of the group? ……

Section B: - Awareness of Nutritional Programme

This section deals with awareness of nutrition programme, please respond to the questions appropriately by ticking Yes or No.

Are you aware of the following nutritional programme?

1. Nutrition educational programme- Yes/No.
2. Vitamin A programme of the Federal Government- Yes/No
3. Mineral fortification programme- Yes/No
4. Iodize salt campaign- Yes/No
5. Understands what 'A' logo signifies on flour, vegetable oil, semolina, semovita etc- Yes/No.
6. School feeding programme- Yes/No.
7. UNICEF campaign on child nutrition- Yes/No.
8. Millennium development goal (MGD) to eradicate malnutrition by the year 2015- Yes/No.

Communication Channels and Attitude Statements

The attitudinal statements in the table below are to ascertain your opinions about communication channels, Targeting and Positioning appropriate for nutrition programme. Please respond freely by ticking appropriately.

SA = Strongly Agree

A = Agree

UD = Undecided

D = Disagree

SD = Strongly Disagree

S/N	Social Marketing Mix Statements	SA	A	UD	D	SD
1	It is important to have good knowledge of nutrition as a mother.					
2	Vitamin A rich food (carrot, vegetables, oil etc) is not essential for eye sight for young and old.					
3	Vegetable consumption reduces malnutrition in children.					
4	Fruit consumption reduces malnutrition in children.					
5	Overcooking does not destroy the essential food nutrient.					
6	Iron deficiency cannot cause shortage of blood.					
7	Child's malnutrition starts with poor anti-natal care.					
8	Mineral fortification is not a solution to child's malnutrition.					
9	Ionized salt is necessary in household menu.					
10	I don't prepare meal at all because I am too busy					
11	My family does not bother on the essential food nutrient: - Vitamins, minerals, protein etc, ours is just to eat to satisfy hunger.					
12	My family relies on fast food most of the time for myself and the children.					
13	I know how to prepare meal with adequate nutrients for my household.					
14	I don't know the food that contains the essential nutrient that can prevent child malnutrition.					
15	I know how to prevent vitamin deficiency in my household					
16	I know where to source for vitamin A capsule					
17	My family practice backyard garden to take care of the essential food nutrients.					
18	My children are always sick.					
19	Weighing children occasionally help to know whether children are responding to feeding.					
20	Checking children height occasionally will help ascertain their response to food.					
21	My family does not like to take fruits.					
22	My family does not like to take vegetable					
Targeting						
23	Women are more likely to be given the responsibility of food preparation at home					
24	Men should not be taught how to cook meals for children.					
25	Children should be the one to prepare their meals.					
26	Women should be focused when it comes to nutrition education.					
27	The entire household should be involved when it comes to					

	nutrition education.					
Positioning						
28	Teaching on meal preparation should be carried out at home.					
29	Nutrition education should be based on the culture of the people.					
30	Nutrition education should be incorporated into the school curriculum.					
31	Nutrition education should not be for pregnant women alone.					
32	Household head should be the target in any nutrition education and training.					
Communication Channels						
33	I prefer learning about essential food nutrient from the television.					
34	Group discussion is more fascinating when it comes to leaning dietary intake for households.					
35	I have found TV and Radio to be most effective.					
36	I watch 'African Maggi Kitchen' and 'Olobelolоko', 'Soko Yokoto' to enhance my nutritional education.					
37	Bill boards will definitely show us the essential nutrient requirement for household.					
38	We receive nutrition education from nutrition extension agent in our household every year.					
39	I will prefer nutrition bulletin to nutrition column in the daily newspaper.					
40	Drama sketches in child nutrition will go a long way to assist our household.					
41	Telephone services through text messages will enhance our practice of good dietary intake.					
42	E-mail messages are outside our reach.					
43	Town criers should be engaged on the market day to remind the community about the importance of good dietary intake for the children.					

SECTION C

Nutrition Knowledge Test

The following are set of questions on knowledge of nutrition, please tick Yes or No as appropriate. Thanks for cooperation thus far.

1. To follow a healthy eating pattern, every single food must be low in fat. Yes / No.
2. Carbohydrates provide the major source of our energy intake. Yes / No.
3. Bread and rice are rich in carbohydrates. Yes / No.

4. To trim fat from your diet, you must eliminate all red meat. Yes / No.
5. Water leaf and Tomatoes are good sources of vegetable. Yes / No.
6. Orange is a good source of Vitamin C. Yes / No.
7. Fish is a good source of protein. Yes / No.
8. Beans are good sources of protein. Yes / No.
9. Overcooking destroys protein in food. Yes / No.
10. Iodized salt is essential in meals. Yes / No.
11. Vitamin A is good for eye sight. Yes / No.
12. Vitamin E can be obtained from green vegetable. Yes / No.
13. Water aid digestion of food. Yes / No.
14. Iron deficiency causes shortage of blood. Yes / No.
15. Combination of fruits and vegetables reduce malnutrition in children. Yes / No.
16. Weighing children helps to know whether they are responding to feeding. Yes / No.
17. Checking children's height will ascertain their response to food. Yes / No.
18. Vitamin A Capsule is a good source of vitamin. Yes / No.
19. Egg is a complete diet. Yes / No.
20. Carbohydrate protects your muscles. Yes / No.
21. Meat, fish, poultry have no carbohydrates. Yes / No.
22. Fruits, vegetables, and grains are sources of carbohydrate. Yes / No.
23. Proteins are the building blocks that grow and repair your body. Yes / No.
24. Proteins are needed not only for muscle but also for hair, skin and internal organs.
25. Protein is unique because it is the only food source of nitrogen, which is essential to all plant and animal life. Yes / No.
26. Food components which are made of protein help you resist disease and infection. Yes / No.
27. If you eat protein daily, it is supplied to your body tissue to replenish any loss and repair any injury. Yes / No.
28. For growing infants, children and teens, protein, along with sufficient calories, is necessary for growth of the entire body. Yes / No.
29. Pregnant and breast-feeding women need adequate protein for the fetus, for supporting material tissue, and for the production of breast milk after delivery. Yes / No.

30. If you have a cut, undergo surgery, or have an injury or illness, you need protein to recover and to rebuild your body. Yes / No.
31. Water dissolves with other substance and carries the nutrients and other materials around the body, making it possible for every organ to do its job. Yes / No.
32. Water helps in easy digestion of food. Yes / No.
33. Water carries waste products out of our body. Yes / No.
34. Water provides a medium in which biochemical reactions occur. Yes / No.
35. Water sends electrical messages between the cells. Yes / No.
36. Water regulates body temperature. Yes / No.
37. Water lubricates your moving parts. Yes / No.
38. You can get water from fruits and vegetables. Yes / No.
39. Lack of water leads to dryness in mouth, reduce urination, dehydration. Yes / No.
40. Fat and oil provides a source of stored energy. Yes / No.
41. Fat and oil cushions the skin. Yes / No.
42. Fat and oil acts as an insulation blanket that reduces heat loss. Yes / No
43. Fat and oil is a shock absorber that protects the organs. Yes / No.
44. Heart attack is a Risk factor when excess fat is taken. Yes / No.
45. Store food in a cool, moist place to preserve the active nutrient. Yes / No.
46. Vegetables lose Vitamin C during long storage, but not the root vegetables. Yes / No.
47. Limit exposure to air and sunlight is essential to preserve vitamins in food. Yes / No.
48. Cook food in minimal amounts of water. Yes / No.
49. Heat reduces some of the content of vitamin C in food. Yes / No.
50. Freezing of fruit ensures minimal loss of Vitamin in food. Yes / No.

SECTION D: - Nutrition Practice

The following are set of questions on Nutrition Practice, please tick Yes or No as appropriate. If Yes, indicate how frequent – Daily, 2 Days interval, weekly.

	Nutrition Practice: Did you eat/drink any of the following during the day or a night?	YES	NO	**If yes**		
				Daily	2 days interval	Weekly
1	Milk such as tinned, powered or fresh animal milk?					
2	Any beverages like Milo, Bournvita, Ovaltine, Cowbell-Choco, Peak-Choco etc.					
3	Bread, rice, noodle, or other food make from grains?					
4	Carrots, cabbage, lettuce, cucumber, sweet water melon?					
5	Potatoes, white yam or its products-yam flour?					
6	Cassava or its products – Garri, Fufu, Flour?					
7	Ripe mangoes, pawpaw, oranges, pineapple, apple or fruit juice?					
8	Any meat such as beef, pork, lamb, goat, chicken or duck?					
9	Eggs?					
10	Fresh or dried fish or shellfish?					
11	Any food made from beans, peas, lentils or nuts?					
12	Cheese, yogurt, or other milk product?					
13	Any oil like palm oil, ground nut oil is used for cooking stew and soup?					
14	Any sugary foods such as chocolate, sweets, candies, cakes or biscuit?					
15	I drink at least a cup of water before or after food.					
16	Vegetables such as Spinach, Pumpkin, Green, Ewedu, Okra, Tete etc.					

APPENDIX 2

Effectiveness of Social Marketing Knowledge, Attitude and Practice on Child Nutrition by Women in South Western Nigeria

Focus Group Discussion Guide

Name of the settlement …… Date of FGD

Name of the moderator……Name of note taker

Type of group ------- women of child bearing age and care givers

Number of participants in FGD----------

Introduction to Inform Participant of the Purpose of FGD

We would like to explain to you why we have gathered you to together today. We are conducting a Study on the Effectiveness of Social Marketing Strategy in Women Behavioural Change on Child Nutrition in South Western Nigeria. We want to ensure that while changes will likely occur in your family nutrition habit as a result of this intervention/study, so we encourage you to give us as accurate and comprehensive information as possible.

We are grateful for giving us your time to participate in this discussion. Please fell to discuss the questions among yourselves. We want everyone to participate in the discussion. There are no rights or wrong answers. We would want to record your responses so that we do not forget what you told us.

(At this point, the moderator/ note taker will introduce themselves.)

1. Give general description of the socio-economic characteristics of the caregivers (women of child bearing age with at least one child). Also consider social status of the women.
2. Investigate the state awareness of nutritional programme/ messages of the caregivers. (probe into the type of nutrition programme that exist in the community)
3. What is the communication channels used to make nutritional messages available to the women?
4. What is the nutrition knowledge of the women in the study area?
5. What is the attitude of the women to nutrition messages in the study area?

6. What is the nutrition practice of the women in the study area?
7. What are the constraints to good dietary practice?

(At this point, the respondents will be required to draw the problem tree to ascertain the root cause, and the effect of poor dietary intake with respect to their immediate environment).

Thank you and God bless you.

APPENDIX 3

JINGLE: NUTRITIONAL MESSAGE ON AUDIO AND VIDEO

Gbogbo abiamo pata,

Gbogbo eyin iya ikoko

Gbogbo eyin iya alarobo

e teti e gboro,

nitori eti inu lejo nlo,

itoju omo se pataki.

Tori awon lola wa.

Eje ka fun won lonje to peye

tori okun inu la fi ngbe tita.

Yoruba bo won ni

ohnu n ti eye ba je, leye ma gbe fo.

Ounje asaralore bi ewa, eran bi eyin, bi eja, bi edo

ki se ti omo olowo ati akowe nikan,

gbogbo wom lo nilo re,

omo ta toju loni o mbo wa toju wa lola.

Owo ta fi toju won edumare o ni fi won wa,

e se amin e.

Asa awon baba nla wa ni wipe

omode ki j'eyin nitori ole jija.

Asa pe ka gbe onje fun omo

ka wa eranti l'obe,

tabi ka fun omo leran

bi ori ekanna,

o ti di afi eyin bii egun ti fi aso.

Asa igbalode ti fidi re mule pe

awon omo gan lo nilo eran ati eyin

fun idagbasoke ara won

e je ka fun won l'eso

ka fun won l'eran ati eja,

e je won o mu miliki,

ki won o ta ponpon,

gbogbo orisirisi ounje la gbodo ma fun won karikari.

K'obi o rin won lowo loni

ki won le fehinti jeun omo lola.

Too edumare tofi won fun wa a ba wa wo won.

Ori o ni se won l'abiku,

owo t'a fi sike won,

oba mi edumare yoo pese.

Bi mo reja ma ra f'omo mi je

Bi mo reja ma ra f'omo mi je

Inu banki ni mo n pa wo si

Ojo ale mi lemi o ko

M: *Gbogbo abiyamo aye e sun mo bi*

Gbogbo eyin iya alarobo e teti beleje ke gbo mi

W: *A ti teti beleje, ki niohun to sele*

M: *Nje e mo pe o se Pataki,*

ka fun awon omo wa lonje lemeta o ke re tan lo

W: *Haa l'aye tin kan rib o se ri*

M: *E maa fi eleyun se, nitori o ni igba ti a rorin tin be nu mu, o ye ka fun awon omo*

l'ounje deedee sti t'ale o se Pataki fun awon ogo were wa omo to jeun to nilari ni yoo

dagba soke bo se ye. Yoo sile wulo fun baba ati iya ko da yoo gbe ogo orile ede gaa, sugbon o, e je ka se ohun gbogbo ni iwon tun won si, nitori pe apoju iyo o mba ounje je ni. Iwon ounje le se ara lore ni e ma fun awon omo wa je e ma sowon di je bi oloko ti ikun won o wa ri rodo rindin bi omo aja niwon tun won si ni e se gbogbo fun won.

W: *E se Olorun a ba wa wo won po*

Ise omo po 3x

Omo a ra car fun mi o

M: *Mama Tosin, ki lo fe fi awon panti wonyi se*

W: *Haa, bale mi panti boo, agolo ati ike ti mo fed a ounje si,*

M: *he, he obinrin yii, agolo to ti dogun yi, wo won awon agolo yi epo ati ororo l'oma n fi won roo*

W: *Ee de o se ewo ni f'eyan lati ko ounje sinu agolo abi ororo ati epo. Abi ororo ati epo pupa ki se ounje*

M: *Alaimokan ni o, tetile ko ko gbo mi, o le gbonje sinu agolo, sugbon iru agolo bee gbodo je eyi to mo toni toni, ki ideri re ko si dee daadaa, ike paapaa ko gbodo je eyi ti o ti lo, to ti da ounje si tele. A ko gbodo da gari sinu ike epo nitoripe ounje l'awon mejeji ike ati agolo ti aba ti ko si lara pe ka sonu, ti a balotan o gbodod do sisonu. Aya mi atata a gbodo pa ofin ilera mo, ki gbogbo ounje wa wa ni bibo nigbagbogbo ma so ile ounje di ile eru keru.*