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**NUTRITION PROGRAM FOR PRE-SCHOOL CHILDREN –  
AN AFRICAN EXPERIMENT**

by

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Abstract:-

About the ill-effects of malnutrition and of the inadequate early stimulation on the physical mental and social development of the pre-school children, there is enough knowledge available at the moment in the Third World to start doing something tangible for the children of the poor without any delay. We can do a lot within the existing economic order - we do not have to wait for revolutions - to start making sure that every child in the Third World is assisted and guided, so that the development, especially of his brain, is not thwarted by mal-nutrition and by the non-stimulating environment in which he lives today.

This paper is, in reality, a plea to pragmatism. The formative pre-school years, that is, between the ages of 3 and 6 years do need planned intervention by Society if we want to avoid the untoward effects of the changing pattern of family life (for example, from extended family to nuclear family) and the stress generated by urbanization, the ill effects of which on children's development are not only unavoidable but have actually been for quite a number of decades accelerating.

1. The Problem

Very many children in the Third World are malnourished in the early years of their childhood - some of them even right from the time they have been in their mother's womb, (i.e., in their intra-uterine life). This latter group produces the majority of low-birth-weight babies.

It is well known that malnutrition affects the development of all the human tissues adversely. The adverse effects of malnutrition on the development of the brain have been known to the medical profession for a number of decades now. The capability of a child to adapt himself to changing environment and circumstances from home to school, and the cognitive functions of the brain, are, for example, two areas where malnutrition in a young child leaves its ill-effects, and makes him specifically ill-equipped for progress in schooling.

Unfortunately, whereas the effects of malnutrition on the physical development of a child can be noticed without difficulty by the parents and other members of the community, the untoward effects of malnutrition on the development of the brain of the same child may not be known to the parents, and even to leaders in many communities.

Increasing numbers of children in the World, in their pre-school years, remain malnourished. When these children are mal-nourished, it is not only that their muscles and bones do not develop, the tragedy is that the development of their brains is also affected. It is not commonly appreciated that all the components of the brain of a child are almost fully developed by the time a child is four years old or so. If these children do not get adequate nutrition it has been noticed that they do not attain adequate nutrition it has been noticed that they do not attain adequate development of their brains. Even the number of cells in their brains remains less than normal, and the micro-structure of the cells is also not properly developed.

Background to the problem of inadequate development of majority of the pre-school children of the poor.

In the Third World about 25% of the population consist of pre-school children (below 6 years of age). They are especially vulnerable to malnutrition due to ignorance and poverty of their parents. These children cannot articulate for their needs and they are completely dependent on the support of others. When this vulnerability is combined with socio-economic stress factors which include not only poverty and ignorance but also susceptibility to disease because of poor resistance and because of diseases like diphtheria, cough, tetanus, measles infections of respiratory tract and diarrhoeas, the plight of this group of population becomes truly precarious. This problem was appreciated by the United Nations as long ago as 1959 when it came up with the charter of the "Declaration of the Rights of the Child". This charter stipulates, among other things, the right of the children as including maternal protection and family care and protection, adequate nutrition, healthcare and shelter, education play and recreation, social protection and special care for the physical, mental and socially handicapped children.

Lack of adequate nutrition in early childhood is unfortunately quite common among the children of the poor. It is estimated that about 60% of the children in Asia and Africa suffer from some degree of malnutrition. It is unfortunate that because it is not politically expedient the governments of the poor nations try to deliberately play down the incidence of malnutrition in their people. Whereas the effect of malnutrition on the physical health of a child is usually quite obvious and can be seen with a cursory look on the children of different social strata in our communities, unfortunately, how malnutrition affects the development of the brain is not quite known and appreciated even by the planners of our development programmes and of our health-care projects.

Protein energy malnutrition is highly prevalent in young children in all developing countries.

Clinically it ranges from low weight for age on one side of the spectrums to frank and ghostly appearance of kwashiorkor, marasmic kwashiorkor, and marasmus on the other side! Severe life threatening diseases often develop in malnourished children from what would have been mild infections in a normal child and failure to respond to conventional therapy is not uncommon.

Data summarised by Serim-show et al support this statement in respect of bacterial and helminthic infection (i.e. presence of worms like hookworm, roundworm, tapeworm etc. etc.). Protein like meat, eggs, chicken, fish, milk and other dairy products happen to be expensive items of daily food in the developing countries where the majority of the poor of the world live. So the deficiency of proteins is especially common and it will not be wrong to say that it is the most widespread nutritional problem amongst the poor and this has a serious effect on the development of pre-school children amongst them.

The human brain grows very fast in the womb of the mother and during the first couple of years of life. In 1-3 year old child, the brain weight has already reached 80% of its final weight, whereas the body weight comes to 20%. The cellular composition and the micro-structure of the brain cells

also matures at the same rate. Malnutrition at this vulnerable period causes a reduction not only of the brain size but also of the total number of brain cells. If in the early childhood the protein deficiency continues, as it usually does, the multiplication of cells to the normal number, remains permanently deficient. This means that we are landed with a human-being who has not got the normal number of brain cells. This child may develop his muscle and bones quite well if later on he gets better nutrition but unfortunately his brain will remain underdeveloped. This child, may appear physically quite normal when he grows up, but because of the stunted development of his brain, may have the functional capacity of his brain only partially developed. It may be only developed enough to respond to physical requirements such as food, housing, clothing, sex etc. etc., but unfortunately his higher faculties most likely will never develop to the normal level.

His sense of responsibility, compassion, emotional content of his response to social interaction and sense of self-discrimination will be imperfectly developed.

It is not difficult to visualise the irreparable damage that has already been done to the physical and mental capabilities of many members of the under privileged community in the world because of malnutrition. Studies carried out in Central America and India to assess the full impact of malnutrition on human intelligence and on the functional capacity of the brain show that children who were severely malnourished are often miserable, pathetic, irritable, disinterested in the surroundings and show many other signs of poor mental activity of similar nature. If the content and the quality of nutrition improves, the same children begin showing interest in their surroundings, their social responses become pleasant ones and they start responding to environmental stimulation.

What the national governments in the developing world have failed to take into account seriously, has been the long-term effect of malnutrition in early childhood on the brains of our adult population. Their performance at school will most likely be very much affected. Stoch and Smythe (1963) have showed that the critical period of brain growth unfortunately coincides with the age at which malnutrition also is most marked i.e. the early childhood of 2-5 years. Their case studies have shown that the average skull capacity of the malnourished ones had been 14% less than that of the controls in the community and that their I.Q. was minus 15 points. The electroencephalograms (brain-wave recordings) have abnormal pattern thereby showing that malnutrition does cause biochemical changes in the brain cells (it is interesting to note that with proper and early nutrition rehabilitation and adequate social stimulation, over a certain length of time, the electroencephalograms tend to become normal, showing the beneficial effects of nutritional and social rehabilitation). Comparison of the two groups reveal that there is greater incidence of alcoholism, illegitimacy and broken homes in the early childhood-malnourished people than there is in the controls. Other works, Cabak and Najdanvik (1965) found impaired intelligence in malnourished European children. Schrimshaw has reviewed the interplay of malnutrition, learning capacity and behaviour pattern. There is evidence that the abilities of learning, behaviour pattern and cognitive functions are retarded in children who have suffered from malnutrition in early childhood. It is certainly evident that speech develop-

ment, social development and behaviour patterns, fore example are especially affected by mulnutrition to a certain extent.

In conclusion; it has been established by medical workers that the ill-effects of malnutrition especially because of protein deficiency on the mental development in pre-school age of the children of the poor have unfortunately neither been adequately appreciated nor serious efforts have been made to prevent them. The nutrition suppl.ements in our pre-school children are necessary if we want our coming generation to develop into normal and productive citizens. This kind of welfare work should not be dished out as charity. It should be realised that investment on the correction of the nutrition status of children in pre-school age group is an essential pre-requisite, if we want the education and social welfare and upliftment p rogrammes for the children of the poor of the of the developing countries, to be rewarding.

It has also been demonstrated that there is impaired cell-mediated immunity and a decreased inflammatory response in malnourished individuals and their complement system is also; adversely affected.

Their serum immunoglobulin levels may be normal; or even increased in such subjects especially those with kwahsior-kor, the IgM levels are low renderring them susceptible to life threatening infections.

Thus a malnourished child is burdened with multiple pathological conditions which can make his recovery from ordinary ailments of childhood very difficult.

Up to the age of two years the child is mainly confined to the four walls of his house; his ability to move from one place to another is not fully developed. But the moment he learns to walk and becomes an explorer in the words of Prof. Bwibo, he ventures out of the house to play with other children. Thus during the age of 2-4 years a child gets exposed to the various infections diseases present in his locality. If a child is malnourished his resistance to infection is low because of the decreased level of immunity as described above, and so one can imagine the danger and the deleterious effect on his well-being; he usually remains sick.

To give our children proper immunity against diseases and the power to resist infection, it is necessary that we should see that they have been properly nourished. It is once again an essential investment and a pre-requisite to having a healthy, normal and productive generation follow us.

In other words, the case has been argued for a particular kind of vulnerabi- lity of the developing brain to growth restriction during its growth spurt period, and for a special variant of this growth restriction which is likely to be much less common, but often more severe, during a separate, still earlier stage of brain growth when neuronal multiplication is occurring. (Prof. Nimrod Bwibo, Prof. of Paediatrics, Nairobi, University and Principal of College of Health Services of Kenya)

None of the demonstrable physical consequences of growth restriction of this time would be of any significance if they had no behavioural or functional consequences; but evidence for the latter has accumulated and is now compelling. In spite of the academic handicap of our ignorance of the physical basis of higher mental functions, there seems little doubt that functional mental development does have an important physical basis in the brain, and that the development of its functional capacity can be significantly spoiled by poor nutritional conditions during certain growth periods. None of this denies the supreme contribution of the non-nutritional, less tangible environment of the growing foetus and baby within the family, the relative importance of which is now beginning even to be measured. The achievement as regards the mental development may be considered to be the algebraic sum of positives and negatives in the total developmental environment. The demonstration that the human brain growth spurt is much more postnatal than was formerly thought, creates a new opportunity to ensure our imperative and important positive contribution, by actively promoting good bodily growth with adequate feeding at the time when this most important organ is passing through its own vulnerable period of growth.

Every child needs the following services from the community to attain adequate physical, mental and social development:-

1. Nutrition
2. Health Care, and
3. Education and information

The parents today in the developing countries have themselves suffered from lack of proper nutrition, and from the absence of health-care (in the form of immunization etc. etc.) in their childhood. They are not fully conscious of the importance of these two services, but education to them appears a great blessing. Anybody in their village who had been educated has been able to make a good living. So they want their children to be educated. Any man, for example, in Kenya who is working - even as a messenger - spends anything up to 60 to 70% of his income on the education of his children - EDUCATION IS THE GREATEST SOCIAL DEMAND today amongst the poor of the Third World. It must be appreciated that nutrition and health-care of the pre-school children generally do not have the same kind of importance in parents' minds. One has to be realistic, pragmatic and practical and should not underestimate the significance of this important fact. It is only education of their children which can be rewardingly used as a rallying point to induce parents to cooperate in efforts to ensure their adequate physical, mental and social development.

2. An Appropriate Solution - Nutrition Implementation through Yusufu Schools

There is more than enough information with us at the moment on the relation of young-child nutrition and the mental development to actually start work straight away. We should aim at transferring the food available in the world today to the hungry stomachs of young children ..... and we should do this within the existing economic order. We cannot afford to wait for revolutions to take place. Yusuf Schools of physical, mental and social development of pre-school children are a plea to pragmatism; an effort to face the

practical realities of today; not to disregard them but to accept them and to study them and to work within the limitations imposed by them.

In order to see that every child in the Third World gets the opportunity of receiving proper nutrition, elementary health care and education during the important and formative years of early childhood, it is necessary that we should attract them by starting some affordable, accessible and acceptable nuclei of education in every village, in the form of nursery schools, Quraan schools, Bible schools and day care centres. We can give any name which is acceptable and attractive to the parents in a particular area. It is surprising how quickly the parents bring their children to such schools. It is, in reality, up to us whether we make them into socially effective and productive citizens of tomorrow, or we ruin their lives with our neglect, incorrect priorities and wrong approaches.

These schools have to be organised and maintained, at least in the beginning, by the community; no Government in the Third World is rich enough to provide nursery school facilities for every child in their nation. It is important that before this project is launched in a particular area, the national Government be taken into confidence and be assured that the idea is not to cause financial embarrassment to them. An experiment has been done in Kenya for the past twelve (12) years, and it has been found that by starting Yusufu schools we can easily give a good start to the children of the poor in the developing countries.

#### Special Features of Yusufu Schools

1. There is no capital outlay available to start building such institutions in stone and cement, in any part of the Third World. We have to start our Centres of physical, mental and social development, of our children i.e., the Yusufu Schools, with no capital expenditure.
2. All the mosques, churches and community halls are only used for limited periods in a day, and if the authorities looking after these buildings are approached by the parents in a proper manner, it is not difficult to get permission to start Yusufu schools in the above mentioned places.
3. Where such places do not exist, it is quite easy to erect structures with mud, grass and pieces of wood (just as people erect their homesteads) covered with thatched roofs or with corrugated iron sheets provided by the community. There is no furniture required, other than one chair for the teacher and a blackboard on the wall. The children should sit on clean mats made by the mothers, from local materials, such as sisal or ordinary straw.

Starting the Yusufu Schools will provide nuclei for the organisation of mothers and other women in the villages for their-own development as well. They will start talking about their problems, problems of water supply, firewood, family planning, poor incomes etc etc.

4. There should be a Mothers' Committee organised in the village to run such schools. It is the watchful eyes of the mothers which will ensure the proper involvement of the teacher and avoid any wastage of food.

5. At about 10.00 o'clock in the morning, porridge, or any other suitable nutrition supplement, should be prepared with local cereals, water and sugar, and wherever possible, milk should be added to it. This porridge should be dished out to every child in clean cups brought from home by the children themselves.
6. Multi-vitamin tablets, (which are available in boxes of 1,000, for less than two pounds), should be distributed along with the porridge at least thrice a week.
7. Yusufu Schools will play a pioneering role in introducing drinking of clean water, construction of suitable latrines, emphasizing personal hygiene and concern for the environment, by not cutting down trees and planting more of them. (Every child should be encouraged to plant one tree every year, and should be taught and encouraged to look after it).
8. Early stimulation of young infants by their mothers is an important step towards achieving satisfactory development of a growing child. It is necessary, for example, that the mother should be talking to, looking at, and cuddling the baby while she is breast-feeding it. This promotes the general development of the infant in many ways. Even if the baby is for some reason bottle-fed, it is wrong to just prop the bottle on a pillow and leave the child to feed itself. A baby will not feed itself adequately if it does not get the loving attention, especially from its mother.

The stimulation of the mother in response to her showering her affection on the baby is another important factor, which over and above helping to improve the quality of milk available to the baby, also has a wholesome effect on the well-being of the mother as a whole.

Similarly the early stimulation of the young pre-school child (i.e., between the ages of 3 and 6), is extremely important if the child's adequate rate of development and growth is to be secured.

The changing pattern of life amongst the poor of the world is unavoidably affecting the traditional ways of bringing up children. The extended family system is dying out. The built-in mechanisms of the stimulation of young children with loving care of grandparents and other relatives in the traditional ways of life are fast disappearing. Urbanisation and the so-called modernisation has affected the life styles of parents, especially that of the mothers. This has deprived many children of the all-important loving care which amongst mammals is critical for their proper overall development. The powerful tide of change of to nuclear family has left small children for long hours without proper care, affection and nutrition.

We have to seriously consider introducing "planned intervention" where necessary in the bringing up of children in early childhood. Poverty and the changing agriculture-based home-economics, whereby mothers have to go; out to work, especially amongst the poor of the world, does not leave many options. When all has been said and done, one of the more practical options is to provide some kind of kindergartens which are affordable, available and acceptable. Yusufu Schools do just that.



9. Yusufu schools would provide centres for the all-important child socialisation in their respective communities. They will get introduction to the values, beliefs and practices of their parents. It is here that they will learn how to behave towards their elders and towards their playmates. They will also learn their communal songs, games and traditions.
- It is in Yusufu Schools that they will develop the capabilities of rubbing shoulders with their playmates and other members of the community.
- There should be regular refresher courses for teachers.
10. During the in-service training of teachers in Yusufu Schools of child development, there will be unique opportunities to widen the scope of information and awareness of these important members of the community. Starting from information on basic nutrition, hygiene, health care and education of children, their knowledge about citizens from other communities and other faiths will provide good foundations for national unity and solidarity.
11. Every child reaching the age of six must be encouraged to join the national primary school in the area. Yusufu school will provide the catchment for national primary schools.
12. Whereas there are many private nursery schools in every community and obviously they have been quite popular, we should make sure that Yusufu schools do not get into private hands and are not run for profit. It is our experience that private institutions for the care and education of pre-school children are usually too expensive for the average parent to send his child there or they are so substandard even in hygiene that it is risky to send any child there.

It has been estimated that by spending about one US Dollar per child per month, such nursery schools can be run, and thus give to the nation, children who would prove very good students for the national primary schools, and also for further education.

#### Nutrition Supplements

It is imperative that the nutrition programmes of these nursery schools should be specially emphasised, and whatever food is customary for children in the area, and has proved nutritious, should be served out to every child in as inexpensive a manner as possible. Any kind of nutritious food, if prepared for forty children in one place, is going to cost less per head than if the same food is prepared separately in each child's home. Also it is surprising how a child who is very fussy about taking some food from his or her parents, is quite happy to share the same food while is together with playmates and other children who appear to be enjoying it.

These children will provide new generations amongst the poor of the Third World, who will be capable of developing into as healthy and productive citizens of tomorrow as the children of the developed nations are.

The parents, if they really come to appreciate these centres for pre-school child development, should not find it difficult to pay something more per month per child, so that the teachers who acquired skills and are diligent, might be paid something more to keep them satisfied, and to encourage them not to give up the job.

### Teachers

We must admit that the remuneration offered to the teachers in these schools is rather small. Luckily, in the rural areas of the Third World, living is still very simple, and any girl or a young man who can increase the earning capacity of the family by even US\$ 10 or 15 (which in local currencies does not always mean an insignificant amount), will readily accept the job. The teacher starts work at 08.00 a.m. and goes home at 12.30 noon. In most of the rural areas, at the moment, there are very many young people who have reached secondary school, or have finished their secondary education and have been looking for jobs. Any one of them with clean and good habits, and with nothing known to his or her detriment, could do the job. It is our experience, that such a teacher can undertake to look after these children, get the nutrition supplements prepared and distributed, can play with them, and teach them the alphabet and the numericals, and make them aware of their cultural pattern, and can do many other jobs, such as testing their eye-sight, looking at their teeth, and keeping records of weights and heights.

As time goes on, depending on the resources available, these teachers can show how to make local toys, pictures; they can be shown slides and even specially prepared video cassettes if possible. During the refresher courses, the teachers must be given broad-based information, insight into the importance of nutrition health-care, learning handicaps and other simple matters pertaining to the development of children.

### The Future Prospects

In underprivileged small communities where the commonest cause of slowed intrauterine growth is widespread maternal malnutrition, it is easy to show that adequate maternal nutrition will <sup>re</sup>store "normal" birth weight in the same small mother who has already borne several low-birth-weight babies. Ethnic influences on birth weight are therefore far from exclusive and should not be accepted as major ones until shown to persist in the presence of an adequate nutritional environment during pregnancy. There is accumulating evidence that good nutrition in pregnancy, which leads to higher birth-weight, also facilitates lactation in the first few months, which in turn leads to good baby growth and development, less disease and better physical and mental health and development. restore

We are now becoming aware of the widespread incidence of Maternal Depletion Syndrome, and we are hoping that the nutrition-supplements, if these can be prepared in excess, will also be distributed to the pregnant woman in the village.

After all, the nutrition of the baby starts right from its inception, and to avoid the births of low-birth-weight infants, it should be part and parcel of our activities to feed pregnant mothers where needed. It is not much to hope for the distribution of suitable iron tablets or syrup, to pregnant mothers, and to obviously anaemic-looking pre-school children. This can be undertaken without any risk.

Similarly, some introduction to the early mother and child interaction should be given to the teachers, when they can have in-service training and refresher courses. They will be able to educate and guide the mothers-to-be. Teachers are elites in their villages. Other ladies will follow their advice in personal hygiene, breast feeding, family planning, oral rehydration and immunisation of children, etc, etc.

### The Size of the Problem

It is only reasonable that in the first instance, we should have a good idea as to how big the problem is.

Almost 14% of the population in most of the developing countries consists of children between the ages of three and six. The number of these children is certainly threatening. As it is, we live within national boundaries, and the care of the pre-school children is a kind of undertaking which has to be undertaken by each nation separately. So if the awareness of the importance of the physical, mental and social development of pre-school children is recognised at national levels, the work will have to be done within national boundaries. This makes the problem more manageable.

Also the diversity of circumstances and local conditions has to be taken into consideration and the projects be designed to cater for the different communities separately in a particular nation.

Although the number of children to be catered for at national level is indeed formidable, luckily there are already resources available in every community which will go a long way in making this kind of undertaking easily feasible. For example, the existence of Mosques, Churches and Community Halls, and the willingness of the organizations looking after these places to permit the starting of Yusufu Schools, makes it at once possible to launch these projects in most of the places. Similarly, the universality of the great social demand for the education of children, provides a ready and fertile field to attract parents to co-operate in making a start. The absence of financial embarrassment to the national Governments also makes these projects readily acceptable by the national administrations. The existence of numerous international welfare organizations and their desire for involvement in the welfare of children in the Third World, coincides with and supplements the approach that the Yusufu Schools have projected.

### Examples of Specific Areas of Health-Care in Pre-School Children

Over and above the routine immunisations, recording of weight and height, examination of teeth, eyesight and hearing, there are specific areas in the health care of every community which can be identified and specially emphasised. For example, Xerophthemia is the most frequent cause of blindness in pre-school children in many of the developing countries.

It is also the pre-school children who are afflicted with it the most in the population of the Third World.

The fortification of food with Vitamin A on an industrial scale could be economically feasible. Similarly, the fortification with Vitamin A of sweets made with powdered milk and sugar should be seriously considered.

Actually, only 200,000 I.U. of Vitamin A given twice a year or four times a year to pre-school age children would prevent Xerophthalmia in the whole of the pre-school age group in any developing country. When one realises that this vitamin could be readily given even as a syrup, one wonders why it has not already been introduced. It is certainly not a question of cost.

### Anti-Social Habits

Quite a number of children in the pre-school age group in some parts of the rural areas, and in the slums around the big cities where many of the poor of the world live; develop anti-social behaviour: they tell lies and tend to be deceitful. These traits of character could be prevented from developing in the child, if an effort is made to plan the bringing up of these children. It is true that this may not be universally required, but considering that it is in the first six years of life that the foundation is laid for character traits, it is only reasonable that if there is dislocation of the traditional cultural pattern of bringing up a child with discipline and loving care, as is commonly observed in slums for example, the other alternatives of providing nursery schools, Quran schools or Bible schools should be seriously considered. These nuclei of pre-school education and care will provide very useful places for teaching children the proper discipline of life, their traditional values, beliefs and their pattern of social behaviour. In other words, for planned intervention if considered necessary, the Yusufu Schools appear readily available.

### Importance of the First Six Years of Life

Research on childrens' overall development unanimously points to the importance of the first six years of life. This is a period of rapid growth, requiring proper health and nutritional surveillance. Progress in the psychomotor, social, emotional and cognitive fields is also \*, and justifies the implementation of stimulating programmes. All these areas of development are equally essential and children cannot fully unfold their potentialities if one or another of these areas is neglected or forgotten. Physical health is essential: without it, there can be no joyous well-being. It is a major concern particularly in developing countries, where the health of children is being constantly threatened.

These centres of child development will provide a kind of primary health care for pre-school children in every community. From infancy onwards, children may be guided to participate actively in improving their own health. This participative education, once begun, along with early learning processes, should be pursued throughout childhood. Later, when the child becomes an adult, he or she may help to improve his/her personal health and that of his/her family and teach good habits to his/her children.

The International seminar/workshop in Zagreb in 1986 on "The Intergration of Health and Diet in the Overall Development of 3 to 6 year olds" had a twofold perspective of favouring harmonious overall development through stimulation

and nutrition. The document that they produced had emphasised that pre-school education may be entirely organised around the themes of health-care and nutrition-implementation. But those of us who have worked in the field have come to realise that there has to be a slight difference in the emphasis - we can organise nutrition and health-care around education, more rewardingly. It is education which is the thread which would be woven through the various activities which planners of the development of pre-school children would use to encourage nutrition and elementary health care. This approach will secure the all-important cooperation and involvement of the parents and other members of the community. The words EDUCATION has acquired great meaning in the minds of parents of today. No longer do they want to keep their children away from any kind of schools nursery schools, Quraan nursery school, Bible schools for the young children and day-care centres are fortunately becoming very popular now.

#### Job-creation

If Yusufu Schools get the blessing of national governments and the people are advised and encouraged to start these centres of adequate development of our pre-school children, thousands of jobs can be created for the school-leavers especially for young ladies. Even those who do not finish their secondary education can be gainfully employed in Yusufu Schools.

In Kenya, for example, Yusufu Schools can create over 80,000 jobs without capital expenditure.

REFERENCES

1. Nutrition -  
A review of W.H.O Programme  
W.H.O. chronicle 26: 160, 1972.
2. Wharton B.A.  
Syndrome of Treatment in Infantile Malnutrition  
E. Afr. Med. J.43: 570, 1966.
3. W.H.O. Monogram series 57, 329, 1963  
W.H.O. Geneva, Switzerland.
4. Chandra R.C.  
Immunocompetence in Undernourished Children  
J. Pediatrics 81: 1194, 1972.
5. Watson C.E., Freosemann C.  
Immunoglobulins in Proteins Colorie Malnutrition  
Such. Dis. Child Health: 45: 282, 1970.
6. Winick, M.  
Changes in Nuclue acid and protein contents of the human  
brain during growth.  
Pead Research, Sept. 1968.
7. Stoch, M.B.: Smythe, P. M.  
Does under-nutrition during infancy inhibit brain growth  
and subsequent intellectual development?  
Archieves of diseases in Childhood, December 1963.
8. Scrim-Shaw, N.S.; Guzman, M.A.; Gordon, I.E.  
Nutrition and infection study in Guatemalan villages,  
1959-1964.
9. Paediatrics, (Second Edition) William Heimann  
Medical Books Ltd, London  
By John A. Davis, John Dobbings. Page 757 onwards.