THE INCIDENCE OF MARASMIC-KWASHIORKOR AMONG CHILDREN IN PORT HARCOURT, NIGERIA

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ABSTRACT

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This study deals with the incidence of Marasmic-kwashiorkor among children in Port Harcourt from the period 1994-1997. The study was undertaken at the University of Port Harcourt Teaching Hospital (UPTH), it comprised all the available data collected on the incidence of this disease from 1994-1997. Four research questions guided the study. Data collected was analyzed using frequency distribution tables, and simple percentages for the research questions. The results showed that Marasmic-kwashiorkor was significantly high among other classes of protein –energy malnutrition as well as other diseases of children in Port Harcourt. This disease also had a negative effect on the academic ability of its victims. Recommendations were made based on findings of the study.

Keywords: Marasmic-kwashiorkor, academic ability, malnutrition, UPTH, Nigeria.

INTRODUCTION

Protein is an essential part of living cells and carbohydrate, an important constituent of the body. The aim function of carbohydrate is to supply energy thus it is the man’s major source of fuel. Protein on the other hand, has long been recognized as the fundamental structural element of every cell of the body which is used as the cell functions in order to grow and maintain itself; protein is necessary for key body functions including provision of essential amino acids, development and maintenance of muscles therefore protein obviously deserves its name which is of Greek derivative meaning “of first importance”. There are two basic types of malnutrition. The first and most important is protein-energy malnutrition (also called Protein-calorie malnutrition and Protein-energy undernutrition) is the lack of enough protein (from meat and other sources) and food that provides energy (measured in calories) which all of the basic food groups provide. The second type of malnutrition which is also very important is micronutrient (vitamin and mineral) deficiency (World Hunger and Poverty Facts and Statistics 2010). Protein-energy malnutrition (PEM) is the most lethal form of malnutrition/hunger. It is basically a lack of calories and protein.

Protein-energy malnutrition is defined as a range of pathological conditions arising from coincident lack in varying proportion of proteins and calorie occurring especially in infants (Weller and Wells, 1987). Protein-energy malnutrition (PEM) can be mild, leading to underweight and growth retardation or severe, presenting as marasmus, kwashiorkor or both (marasmic-kwashiorkor). Marasmus can be defined as a severe and chronic malnutrition producing a gradual wasting of tissues owing mainly to insufficient or unassimilated energy-giving food and at times combined with protein lack, occurring especially in infants (Henderickse, 1990); it can also be described as an insufficient energy intake to match the body's requirements. As a result, the body draws on its own stores, resulting in emaciation (Scheinfeld and Mokashi, 2010). Marasmus presents with the following signs and symptoms: wasting of the muscles (emaciation), bones and joints are more prominent, the head appears disproportionately larger than the body while the skin is often dry, patchy with pigmentation. Marasmus is mainly seen in infants between the ages 6-8months and is not confined to any geographical location. According to Scheinfield & Mokashi (2010), marasmus most commonly occurs in children younger than 5 years. This period is characterized by increased energy requirements and increased susceptibility to viral and bacterial infections. Weaning (the deprivation of breast milk and the commencement of nourishment with other food) occurs during this high-risk period. Weaning is often complicated by geography, economy, hygiene, public health, culture, and dietetics.

Kwashiorkor is a condition of severe protein malnutrition occurring in children of under privileged population (Weller and Wells, 1987). In kwashiorkor, adequate carbohydrate consumption and decreased protein intake lead to decreased synthesis of visceral proteins (Scheinfield and Mokashi, 2010).It is predominantly seen in older infants and young children, and it affects both sexes. Children with Kwashiorkor are apathetic, weak and inactive. The hairs and skin changes to lightly or brownish colouration. Hepatomegaly (enlargement of the liver) occurs, ocular signs of vitamins A deficiency are common, anorexia (loss of appetite) and growth failure is also present, oedema. Marasmic-kwashiorkor is a severe form of protein-energy malnutrition.
Causes of Marasmic-Kwashiorkor Include

Physiological causes
Poor weaning techniques: The baby is given adult diet in a way that he cannot tolerate and digest, or the child is put off breast milk without adequate weaning/adult meals.
Afla-toxins and other industrial/environment waste
Infections and other disease like Diabetes mellitus, inflammation of the kidney (nephritis) etc

Socio-economic causes
Poverty: This is a major cause of protein-energy malnutrition, poor people cannot afford high nourishing foods especially the proteinous ones because they are expensive
Ignorance and illiteracy: Some mother do not know the nutritive contents of some common inexpensive food stuffs available in their markets hence they prefer and select diets that are not balanced. This results in poor food selection, preparation and preservation of food, poor intake of balanced diets and high affinity for a menu due to its taste instead of its nutritive value

Overpopulation: This predisposes to high cost of food and infections that later result in malnutrition

Religious/cultural causes
For example the Hindus do not eat beef while the Muslims do not eat pork. Some primitive cultures seen in under developed countries of Africa and other have some taboos that forbid children from eating foods like meat and egg with the erroneous belief that such will make them steal.
Children who are poorly nourished suffer up to 160 days of illness each year, thus poor nutrition plays a role in at least half of the 10.9 million child deaths each year--five million deaths. Under nutrition magnifies the effect of every disease, including measles and malaria. The estimated proportions of deaths in which under nutrition is an underlying cause are roughly similar for diarrhoea (61%), malaria (57%), pneumonia (52%), and measles (45%). Malnutrition can also be caused by diseases, such as the diseases that cause diarrhoea, by reducing the body's ability to convert food into usable nutrients (World Hunger and Poverty Facts and Statistics 2010). In 2000, the WHO estimated that malnourished children numbered 181.9 million (32%) in developing countries. In addition, an estimated 149.6 million children younger than 5 years are malnourished when measured in terms of weight for age (Scheinfeld and Mokashi, 2010). In a study on cerebral malaria undertaken by Olumesede, Sodeinde, Ademowo, & Walker (1997), they also observed that poor outcomes (death or recovery with neurological deficits) were commoner in the malnourished children than the well nourished children, thus they emphasized that malnourished children should receive malaria chemoprophylaxis during nutritional rehabilitation.

Malnutrition, as measured by stunting, affects 32.5 percent of children in developing countries. Geographically, more than 70 percent of malnourished children live in Asia, 26 percent in Africa and 4 percent in Latin America and the Caribbean. Under-nutrition among pregnant women in developing countries leads to 1 out of 6 infants born with low birth weight. This is not only a risk factor for neonatal deaths, but also causes learning disabilities, mental, retardation, poor health, blindness and premature death (World Hunger and Poverty Facts and Statistics, 2010). Marasmic-kwashiorkor has many negative effects on all aspects of the growing child. While studying its effects on the area of academic performance of the school age child, Henderickse (1990) observed that Marasmic-kwashiorkor leads to brain damage causing mental retardation and subsequently reduces the efficacy of the cognitive domain of the child. The prevention, control and management of this disease require the joint effort of all categories of health workers (doctors, nurses, nutritionists, social workers etc) and the counsellor. Despite the fact that there are other factors which may influence the growth and development of children, nutritionists still maintain that the health or general well-being of children depends mainly on how well they are nourished, hence the saying that “what you are is what you eat”

Statement of problem
It is said that a healthy child is the pride of the nation but unfortunately many Nigerian children are not healthy due to malnutrition. This is probably due to the fact that issues bordering on the health of the child have not been adequately addressed in spite of emphasis laid on this by UNICEF, UNESCO, WHO and other international bodies that see to the wellbeing of children. Protein-energy malnutrition (marasmic- kwashiorkor) is on the increase (Nnakwe, 1995) overpopulation in urban cities of developing countries together with other socio-cultural factors have tended to cause an increase in the incidence of Protein-energy malnutrition. These issues if not adequately handled will affect both the present health of the Nigerian child as well as their future performance, thereby reducing the country’s potential man-power and productivity.

Research questions
The following research questions guided the study
What is the frequency of occurrence of Marasmic-kwashiorkor among other classes of protein-energy malnutrition?
What is the frequency of occurrence of Marasmic-kwashiorkor among other diseases from 1994-1997at UPTH?
Is there any gender difference between victims of Marasmic-kwashiorkor? 
At what age does Marasmic-kwashiorkor occur most? 

METHODOLOGY

The setting for this study is the children’s medical ward of the University of Port Harcourt Teaching Hospital, Port Harcourt in the Rivers State of Nigeria within the years 1994-1997. This health care facility was chosen for this study because it is the tertiary health facility where cases are referred from all other health institutions within the state. The population of the study included all available records of all children admitted within the period of study which was twenty one thousand, one hundred and thirty (21130) children, the whole was used for the study.

Data collection

Approval to access the medical records of participants of the study was given by the Chief Medical Personnel in charge. The data for the study was obtained from the medical case files of the participants with the assistance of the medical personnel in charge of records. Validation of records was done by the Chief Medical Personnel in charge of records.

RESULTS

Research question 1

What is the frequency of occurrence of Marasmic-kwashiorkor among other classes of protein-energy malnutrition?

Table 1: Showing the frequency of Marasmic-kwashiorkor among various classes of protein-energy malnutrition

<table>
<thead>
<tr>
<th>Year</th>
<th>Classification of Protein-energy malnutrition</th>
<th>Total</th>
<th>Kwashiorkor</th>
<th>Marasmus</th>
<th>Marasmic-kwashiorkor</th>
<th>Underweight</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
<td>f</td>
</tr>
<tr>
<td>150</td>
<td>2.6</td>
<td>200</td>
<td>3.5</td>
<td>270</td>
<td>4.7</td>
<td>180</td>
<td>3.2</td>
</tr>
<tr>
<td>170</td>
<td>3.0</td>
<td>300</td>
<td>5.2</td>
<td>450</td>
<td>7.9</td>
<td>270</td>
<td>4.7</td>
</tr>
<tr>
<td>270</td>
<td>4.7</td>
<td>500</td>
<td>8.8</td>
<td>650</td>
<td>11.4</td>
<td>380</td>
<td>6.7</td>
</tr>
<tr>
<td>315</td>
<td>5.5</td>
<td>575</td>
<td>10.1</td>
<td>730</td>
<td>12.8</td>
<td>420</td>
<td>7.4</td>
</tr>
<tr>
<td>Total</td>
<td>905</td>
<td>15.9</td>
<td>1575</td>
<td>27.7</td>
<td>2100</td>
<td>36.9</td>
<td>1250</td>
</tr>
</tbody>
</table>

The table above shows that Marasmic-kwashiorkor has the highest frequency of occurrence yearly among the different classes of Protein-energy malnutrition

Research question 2

What is the frequency of occurrence of Marasmic-kwashiorkor among other diseases from 1994-1997 at UPTH?

Table 2: Showing the frequency of occurrence of Marasmic-kwashiorkor among other diseases from 1994-1997 at UPTH

<table>
<thead>
<tr>
<th>Year</th>
<th>Total cases of all diseases admitted 1994-1997</th>
<th>Marasmic-kwashiorkor</th>
<th>Total</th>
<th>Degree of Marasmic-kwashiorkor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>2800</td>
<td>13.2</td>
<td>270</td>
<td>1.3</td>
</tr>
<tr>
<td>1995</td>
<td>4120</td>
<td>19.5</td>
<td>450</td>
<td>2.1</td>
</tr>
<tr>
<td>1996</td>
<td>3610</td>
<td>17.1</td>
<td>650</td>
<td>3.1</td>
</tr>
<tr>
<td>1997</td>
<td>8500</td>
<td>40.2</td>
<td>730</td>
<td>3.5</td>
</tr>
<tr>
<td>Total</td>
<td>19030</td>
<td>90.1</td>
<td>2100</td>
<td>9.9</td>
</tr>
</tbody>
</table>

From the above table it can be seen that Marasmic-kwashiorkor formed 9.9% of the total number of cases admitted within the year of study (1994-1997)

Research question 3

Is there any gender difference between victims of Marasmic-kwashiorkor?
Table 3: Showing the gender differences between victims of Marasmic-kwashiorkor

<table>
<thead>
<tr>
<th>Year</th>
<th>1994-1997</th>
<th>Number of deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Male</td>
<td>1068</td>
<td>50.9</td>
</tr>
<tr>
<td>Female</td>
<td>1032</td>
<td>49.1</td>
</tr>
<tr>
<td>Total</td>
<td>2100</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4 above show that there is a relatively higher percentage of male sufferers (50.9%) of the disease than females (49.1%).

**Research question 4**
At what age does Marasmic-kwashiorkor occur most?

Table 3: Showing the age distribution of victims of Marasmic-kwashiorkor

<table>
<thead>
<tr>
<th>Age of children</th>
<th>1994-1997</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
</tr>
<tr>
<td>Less than 4 years</td>
<td>1428</td>
</tr>
<tr>
<td>Above 4 years</td>
<td>672</td>
</tr>
<tr>
<td>Total</td>
<td>2100</td>
</tr>
</tbody>
</table>

The table above shows that there was a higher occurrence of Marasmic-kwashiorkor amongst children of age less than 4 years (representing 68% of the total population) than those older than 4 years.

**DISCUSSION**

Research question one explored the frequency of occurrence of Marasmic-kwashiorkor among other classes of Protein-energy malnutrition, the findings revealed that Marasmic-kwashiorkor had the highest frequency of occurrence yearly among the different classes of Protein-energy malnutrition; the year 1997 recorded the highest frequency of 730 representing 12.8 of the total population for the years under study. The trend of occurrence also showed a progressive increase over the years of study, the year 1994 had the least while the year 1997 had the highest. The second research question sought to investigate the frequency of occurrence of Marasmic-kwashiorkor among other diseases from 1994-1997 at UPTH, findings from the study showed that Marasmic-kwashiorkor formed 9.9% of the total number of cases admitted within the years of study, implying that one in every ten cases was a child that had Marasmic-kwashiorkor. The research question three looked at gender difference between victims of Marasmic-kwashiorkor, the study revealed that there was a relatively higher percentage of male sufferers (50.9%) of the disease than females (49.1%). The fourth research question investigated at what age marasmic-kwashiorkor occurred most. The study revealed that there was a higher occurrence of marasmic-kwashiorkor amongst children of age less than 4 years (representing 68% of the total population) than those older than 4 years. This finding agrees with the work of Hendrickse (1990) that marasmic-kwashiorkor occurs most among children less than 4 years because most mothers begin to wean their children from 4 months to 1½ years and if adequate diet is not given as a substitute due to ignorance, illiteracy, disease/death of mother or poverty, the child becomes malnourished and the work of Scheinfeld and Mokashi (2010) who observed that marasmus most commonly occurs in children younger than 5 years.

**CONCLUSION**

It has been shown that marasmic-kwashiorkor is caused by several factors which include among others poor weaning techniques, poverty, ignorance, diseases which are predisposed by overcrowding and poor hygiene as well as some cultural/religious taboos. The incidence of this disease increased over the years of study, it has a negative impact on the life of the child, thus directing affecting his/her immediate family, the society where he/she lives and ultimately the nation.
RECOMMENDATION

Individuals and communities should be made aware of available health services and encouraged to make adequate use of them, they should also be encouraged to eat balanced diet and locally produced foods especially the sea foods which are readily available. Members of various local communities and villages should be encouraged to partake in mass health education on personal/environmental hygiene and counselling on family budgeting. Health personnel should insist on adequate training of Health Officers especially those that are deployed to rural areas and villages so that they can be equipped to educate the communities on healthy practices that will promote a better healthy living. Mothers should be taught good weaning and breast-feeding techniques and its importance so as to encourage mothers to breastfeed their young ones adequately at least for a year. Communities should be encouraged to turn out in mass for immunizations of children and mothers of childbearing age to prevent killer diseases and other diseases that can militate against proper nutrition. Government should make encourage rural farmers go into large scale agriculture accessibility to loan facilities

REFERENCES