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# A study to find out nutritional status of orphan children of Agra city

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**Abstract**
The child is deemed to be an orphan, if he loses either his or her father, mother or both and is adjudged to be without any relation who can take care of him. The orphaned child has always been an object of sympathy at all times all over the world. A home or what is called the orphanage is established to provide shelter for the orphan children. The orphanage when it is designed for younger children, is called "Foundling Home", while in general, an orphanage senses as a surrogate home. It provides congenial atmosphere for the growth and development of orphans.
Orphanages has stood up to the great traditions of India, caring for those whom society leaves in the lurch. Children born out of married, unmarried mothers, abandoned and unwanted children. Orphan children are homeless and deprived of normal parental care. As a result, they are usually neglected in the society. Therefore, they are in a constant need of love, affection and care on the part of community and nation. So, it is necessary to assess their health and nutritional status.

**Keywords**: Orphan, nutritional status, orphanage, nutritional deficiency, children

## Introduction
"Children are the blooming flowers of the garden of society. Politically, socially and economically child is the seed of future national growth". Obviously, all the children possess families, for taking care of them. But unfortunately, there are some children, who have no family at all, they are known as orphans, runaways, refugees etc. These abandoned children suffer deeply from a lot of problems and disturbances arising from all sphere of life.
The child is deemed to be an orphan, if he loses either his or her father, mother or both and is adjudged to be without any relation who can take care of him. The orphaned child has always been an object of sympathy at all times all over the world. A home or what is called the orphanage is established to provide shelter for the orphan children. The orphanage when it is designed for younger children it is called "Foundling Home", while is general, an orphanage sense as a surrogate home. It provides congenial atmosphere for the growth and development of orphans. Orphanages has stood up to the great traditions of India, caring for those whom society leaves in the lurch. Children born out of married, unmarried mothers, abandoned and unwanted children. Orphan children are homeless and deprived of normal parental care. As a result, they are usually neglected in the society. Therefore, they are in a constant need of love, affection and care on the part of community and also nation. So, it is necessary to assess their Health and Nutritional status.
"Of all the children that need care, the orphaned child attracts the foremost attention of the Researcher". In India, the earliest Institution that take care of the orphans was established in Hyderabad in the year 1850 by the roman Catholic Missionaries. The orphanages were established by both religious and secular organizations. Later in 1865 an Institution for the orphan and destitute children was established. A distinction has been drawn in his connection between as orphanage and a home for delinquent children, however orphanages were supposed to admit destitute children only. Upto the year 1895, Christian Missionaries alone had realized the need of setting up orphanages. The position during the period of 1896 to 1945 was quite reverse, all the 18 Institutions established. Most of the initiative came from non-religious organizations. Among the religious organizations were Christian Missionaries, Arya Samaj, Rama Krishna Mission and other similar organizations. Now the major motive of these orphanages is to provide education and protection to these children to make them able to lead life smoothly.

Health of an individual is dependent on heredity and environmental factors, including biological, ecological, physical, social and economic factors. Among their various factors. Nutrition is the predominant one determining one's health and quality of life. Health of the individual is effected by nutritional status of that person.

Nutritional status refers to both the types and amounts of nutrients available in the body and the body's utilization of nutrients. Good nutritional status is necessary but not sufficient for optimal health. Therefore, health is much comprehensive phenomenon.

This, nutritional status indicates to the health of the person, so both are interlinked. Nutrition not only effects the health but also determines one's normal course of growth and development. Recent workers suggest that nutrition predominantly effect the physical dimensions, particularly in the rapidly growing period of early childhood and adolescence. Thus, therefore, physical growth has intimate relationship to nutritional status. The selected body measurements can, therefore, given valuable information concerning certain types of malnutrition in which body size and gross body composition are also effected.

Therefore, nutrition is an interviewing variable effecting health at one end and growth at another. Thus, nutritional assessment becomes much of importance to detect health, growth and nutritional status of the children. Nutritional assessment aids in identifying (i) over malnutrition (ii) convert nutritional deficiencies (iii) individual's risk of developing diseases related to nutrition and (iv) determining dietary supplements to be provided to individual to assist them in overcoming nutritional problems.

**Clinical examinations**

Clinical examination is an essential feature of nutritional surveys. It has always been an important practical method for assessing the nutritional status of a community. Since there ultimate objective is to assess the level of health of an individual. It is also the simplest method of ascertaining the nutritional status of a group of individuals.

There are a number of physical signs, some specific and many nonspecific, known to be associated with states of malnutrition. While varying in different parts of the world, the following signs are likely to occur in the children-pale conjunctiva, caries, fluorosis and anaemia etc. In the present study, an attempt is made to find out the health and nutritional status of orphan children, examine, clinically and experimentally.

**Statement of the problem**

The selected problem for the present study is stated as – "A study to find out the nutritional status of orphan children of Agra city".

**Objectives of the study**

1. The study the profile of orphan children run by different organizations in Agra City
2. To assess the health & nutritional status of the orphan children by clinical examination and its association with anaemia.
3. To compare the nutritional status among the orphan children of various orphanages and with the normal children of Agra.

**Methodology**

**The study area**

The present study was carried out in all the three orphanages situated in the Agra city.

In Agra city, only three orphanages are existing. First, one is being run by Ram Krishna Mission society is situated at nearby Trans Yamuna Bridge, the second one by the Government of India at Idgah colony and the third is governed by Christian Missionary at Pratappura Crossing. Investigator studied of all 100 orphan children available there, comprising of both sex and different age groups.

**Selection of tools**

There are various tools which were used by the investigator for obtaining the useful data. The tools, selected for the present study, some of them were self made like - schedule, which includes general information while others were standard tools such as Haemoglobinometer. The blood haemoglobin level was estimated of all children by Sahli's method in the presence of physician. For detection of anaemia WHO (1989) criteria was taken.

**Clinical assessment and haemoglobin estimation**

**Table 1:** Sex wise distribution of nutritional deficiency signs among the children of various orphanages

| Various Orphanages | Children | No. of Cases | Pallor Conjunctiva | | Koilonychia | | Dental caries | | Dry & Rough Hair | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | No. | % | No. | % | No. | % | No. | % |
| Orphanage-1 | Male | 40 | 22 | 55.0 | 3 | 7.50 | 18 | 45.00 | 3 | 7.50 |
| | Female | 25 | 16 | 64.00 | 5 | 20.00 | 8 | 32.00 | 7 | 280 |
| | t | | 0.737 | | 1.25 | | 1.06 | | 227 | |
| | p | | .> 0.05 | | > 0.05 | | > 0.05 | | > 0.05 | |
| Orphanage-2 | Male | 8 | 3 | 37.50 | 2 | 25.00 | 5 | 6250 | - | - |
| | Female | 12 | 6 | 50.00 | 2 | 16.67 | 4 | 33.33 | - | - |
| | t | | 0.568 | | 0.443 | | 1.34 | | - | |
| | p | | >0.05 | | > 0.05 | | > 0.05 | | - | |
| Orphanage-3 | Male | 5 | 1 | 20.0 | - | - | 2 | 40.0 | - | - |
| | Female | 10 | 3 | 30.0 | - | - | 3 | 30 | - | - |
| | t | | 0.606 | | - | | 217 | | - | |
| | p | | >0.05 | | - | | <0.05 | | - | |
| Total | Male | 53 | 26 | 49.06 | 5 | 9.40 | 25 | 47.16 | 3 | 5.66 |
| | Female | 47 | 25 | 53.19 | 7 | 14.80 | 15 | 31.91 | 7 | 14.89 |
| | t | | 0.410 | | 0.830 | | 1.168 | | 2786 | |
| | P | | > 0.05 | | > 0.05 | | > 0.05 | | < 0.05 | |

The Table (1) reveals the nutritional deficiency signs observed in the children of various orphan ages. Prevalence of pallor conjunctiva, koilonychia nails & dry, rough & discoloured hair were more in females than males of all orphan ages. While, males showed more prevalence of dental caries than females of all orphanages. Statistically insignificant differences were observed in the prevalence of pallor conjunctiva koilonychia between male and female of orphanage-1 & 2. However, in the prevalence of dental caries difference was significant between both sex of orphanage-3.

In all the orphanages, major nutrition al deficiencies encountered were pallor conjunctiva, koilonychia nails & dental caries. Total prevalence rate of pallor conjunctiva among the males & females were found 49.06 & 53.19%, similar results reported by Bai *et al*. (1979), 49.5 & 53.0%.

Total prevalence rate of dental caries was ranged from 31.91-47.96% between the males & females. The Table (1) reveals the nutritional deficiency signs observed in the children of various orphan ages. Prevalence of pallor conjunctiva, koilonychia nails & dry, rough & discoloured hair were more in females than males of all orphan ages. While, males showed more prevalence of dental caries than females of all orphanages. Statistically insignificant differences were observed in the prevalence of pallor conjunctiva koilonychia between male and female of orphanage-1 & 2. However, in the prevalence of dental caries difference was significant between both sex of orphanage-3.

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**Table 2:** Sex wise distribution of blood haemoglobin in the children of various orphanages

| Blood Haemoglobin Level (gm. %) | Orphanage-1 | | | | Orphanage -2 | | | | Orphanage-3 | | | | Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Male | | Female | | Male | | Female | | Male | | Female | | Male | | Female | |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % |
| Above 11 (Normal) | 8 | 34.79 | 4 | 30.77 | 4 | 50.0 | 5 | 41.67 | 4 | 80 | 5 | 50.0 | 16 | 44.44 | 14 | 40.0 |
| 10-11 (Mild Anaemia) | 6 | 26.09 | 3 | 23.08 | 2 | 25.0 | 3 | 25.0 | 1 | 20 | 3 | 30.0 | 9 | 25.0 | 9 | 25.71 |
| 7-10 (Moderate Anaemia) | 9 | 39.13 | 6 | 46.15 | 2 | 25.0 | 4 | 33.33 | - | - | 2 | 20 | 11 | 30.56 | 12 | 34.29 |
| Total | 23 | 100 | 13 | 100 | 8 | 100.0 | 12 | 100 | 5 | 100 | 10 | 100 | 36 | 100 | 35 | 100.0 |
| x2 corrected | 0.470 | | | | 0.701 | | | | 2894 | | | | 0.127 | | | |
| p | > 0.05 | | | | > 0.05 | | | | > 0.05 | | | | > 0.05 | | | |

The Table (2) highlights the sex wise distribution of haemoglobin level (anaemia) between the children (in the 6-12 years of age) of various orphanages. Females were observed more anaemic than males in the orphanage -1, 2 and 3. However, statistically differences were insignificant between males and females of orphanage -1, 2 and 3.

Total prevalence of anaemia was 45.56% & 60.0% in the boys & girls respectively. Satyanarayan *et al*. (1990) [12] reported in their study 46% anaemia in the school age boys, which is similiar to the present findings of boys.

**Table 3:** Sex wise distribution of blood haemoglobin in the adolescents of orphanage-1

| Blood Haemoglobin level (gm %) | Sex | | | |
|---|---|---|---|---|
| | Male | | Female | |
| | No. | % | No. | % |
| Above 11 (Normal) | 7 | 41.18 | 3 | 25.00 |
| 11 – 10 (Mild Anaemia) | 7 | 41.18 | 2 | 16.67 |
| 10 – 7 (Moderate Anaemia) | 3 | 17.64 | 7 | 58.33 |
| Total | 17 | 100.0 | 12 | 100.0 |
| $x^2$ corrected | 5.27 | | | |
| p | > 0.05 | | | |

The Table (3) indicates the sex wise distribution of anaemia between the children in the age group of 12-18 yrs.) of orphan age -1. In present observations, anaemia was found 58.84 & 75.0% in the boys & girls respectively. Present study shows the prevalence of anaemia in adolescent girls is 75%,

**Table 4:** Sex wise relationship of pallor conjunctiva and anaemia in the children of all orphanages

| Anaemia | Male (n =S3) | | | Female (n =47) | | |
|---|---|---|---|---|---|---|
| | Total Cases of Anaemia | No. | % | Total Cases of Anaemia | No. | % |
| 10-11 gm.% Hb level (Mild) | 16 | 12 | 46.16 | 11 | 5 | 20.0 |
| 7-10 gm.% Hb level (Moderate) | 14 | 14 | 53.84 | 20 | 20 | 80.0 |
| Total | 30 | 26 | 100.0 | 31 | 25 | 100.0 |
| $x^2$ | 4.44 | | | 13.59 | | |
| p | < 0.05 | | | < 0.001 | | |

Above table (4) showed the relationship of anaemia and pallor conjunctiva children who had low Hb level they were also found anaemic. Because there was a significant relationship between pallor conjunctiva & anaemia and this relationship in male children was significant ($p < 0.05$) and in female children was highly significant ($p< 0.001$) statistically.

**Table 5:** Sex wise relationship of Koilonychia nails and anaemia in the children of all orphanages

| Anaemia | Total | Male (No. 53) | | Total | Female (No. 47) | |
|---|---|---|---|---|---|---|
| | | No. | % | | No. | % |
| 10-11 gm.% Hb level (Mild) | 16 | - | - | 11 | - | - |
| 7-10 gm.% Hb level (Moderate) | 14 | 5 | 100.0 | 20 | 7 | 100.0 |
| Total | 30 | 5 | 100.0 | 31 | 7 | 100.0 |
| $x^2$ | 6.875 | | | 4.975 | | |
| p | < 8.05 | | | < 0.05 | | |

Above table (5) indicates the relations hip of anaemia and koilonychia nails. It was observed that this relationship was positively correlated and statistically significant in male children ($p< 0.05$) and in female children ($p< 0.05$). Thus, therefore, the results confirmed that these children are anaemic.

**Table 6:** Comparison of nutritional status among the children (6-12 yrs.) of various orphanages

| Various types of Nutritional Status | Children (6-12 years) | | | | | |
|---|---|---|---|---|---|---|
| | Orphanage - 1 | | Orphanage - 2 | | Orphanage - 3 | |
| | No. | % | No. | % | No. | % |
| Normal | 8 | 22.22 | 11 | 55.0 | 10 | 66.67 |
| Moderate Malnutrition | 12 | 3333 | 8 | 44.0 | 5 | 33.37 |
| Under Nutrition | 16 | 44.45 | 1 | 5.0 | - | - |

**ANOVA**

| Various Orphanages | % corrected | P |
|---|---|---|
| 1Vs2 | 11.874 | <0.01 |
| 1Vs3 | 6.818 | <0.05 |
| 2Vs3 | 2.901 | >0.05 |

**ANOVA**

| Orphanages | $x^2$ corrected | P |
|---|---|---|
| 1Vs2 | 0.934 | >0.05 |
| 1Vs3 | 5.069 | >0.05 |
| 2Vs3 | 1.741 | >0.05 |

The table (6) highlights the comparison of nutritional status among the children of various orphanages. Children were more under nourished in orphanage - 1 as compared to orphanage - 2 & 3. However, higher percentage of children were found normal in orphanage - 3. Statistically significant differences were observed between the children of orphanage 1 Vs 2 ($p< 0.01$) & orphanage 1 Vs 3 ($p< 0.05$) while, differences were insignificant in the children of orphanage 2 Vs 3 ($p> 0.05$).

**Table 7:** Comparison of signs of nutritional deficiency among the children of various orphanages

| Different Signs of Nutritional Deficiency | Orphanage - 1 (n=65) | | Orphanage - *2* (n=20) | | Orphanage - 3 (n = 15) | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Pallor Conjunctiva | 38 | 58.46 | 9 | 45.00 | 4 | 26.67 |
| Koilonychia | 8 | 12.30 | 4 | 20.00 | - | - |
| Dental Caries | 26 | 40.00 | 9 | 45.00 | 5 | 33.33 |

**ANOVA**

| Different Signs of Nutritional Deficiency | Orphanage - 1 Vs 2 (n=65) | | Orphanage - 1 Vs 3 (n = 20) | | Orphanage - 2 Vs 3 (n = 15) | |
|---|---|---|---|---|---|---|
| | z | P | z | P | z | P |
| Pallor Conjunctiva | 1.063 | >0.05 | 2.468 | <0.05 | 1.150 | >0.05 |
| Koilonychia | 0.855 | >0.05 | - | - | - | - |
| Dental Caries | 0.416 | >0.05 | 0.496 | >0.05 | 0.750 | >0.05 |

The table (7) shows the comparison of nutritional deficiency signs between the children of various orphanages. Prevalence of pallor conjunctiva and koilonychia were higher in the children of orphanage -1 than orphanage -2 and 3. While, prevalence of dental caries was higher in the children of orphanage -2 than the children of orphanage -1 and 3. Statistically no differences were found in all signs among the children of various orphanages except in the case of pallor conjunctiva (between the children of orphanage -1 and 3).

**Table 8:** Comparison of haemoglobin level among the children (6-12 years) of various orphanages

| Blood Haemoglobin Level (gm. %) | Children | | | | | |
|---|---|---|---|---|---|---|
| | Orphanage -1 | | Orphanage -2 | | Orphanage -3 | |
| | No. | % | No. | % | No. | % |
| Above 11 (Normal) | 12 | 33.33 | 9 | 45.00 | 9 | 60.00 |
| 10-11 (Mild Anaemia) | 9 | 25.00 | 5 | 25.00 | 4 | 26.67 |
| 7-9 (Moderate Anaemia) | 15 | 41.67 | 6 | 30.00 | 2 | 13.33 |
| Total | 36 | 100.00 | 20 | 100.00 | 15 | 100.00 |

The table (8) reveals the haemoglobin level among the children of different orphanages. Children of orphanage -1 were more anaemic in comparison to orphanage 2 and 3. However, these differences were insignificant (even at 5% level). Out of the total studied children, 53 were male and rest 47 were females. Majority of the children in orphanage-1 were studying in primary classes while in orphanage 2 & 3 most of the children were in K.G. and class first this difference may be due to the difference in mean age. The majority of the children were staying in orphanages from 7 years. Maximum children had fair general appearance.

In present investigation nutritional status was better in females than males of all orphanages. Nutritional deficiencies -pallor conjunctiva, koilonychia and dry rough & discoloured hair were prevalent more in females than males whereas, dental caries was more found in males than females. The blood haemoglobin level was there in males than females. Differences were insignificant between male and female. It was also observed that blood haemoglobin level was significantly correlated with signs and symptoms of anaemia. In orphanage 2 and 3 differences were insignificant ($p> 0.05$) in all age groups.

Children were more malnourished of orphanage -1 as compared to orphanage 2 and 3. Statistically this difference was significant between the children of orphanage 1 and 2 and orphanage 1 and 3. Nutritional deficiencies were more prevalent among the children of orphanage -1 and these children had low blood haemoglobin level as compared to orphanage 2 and 3. However, insignificant differences were found regarding the nutritional deficiencies and blood haemoglobin level among the children of various orphanages.

## Conclusion

Thus, it may be concluded here that nutritional status of the orphan children was found poor. Prevalence of malnutrition was 49% in all the orphan Children. Some signs of nutritional deficiency were also present among them. Anaemia was found 52.78 - 66.92% in all the orphan children. Further it was observed that nutritional status was better of the children belonging to the 2 and 3 as compared to orphanage 1.

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