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# Assessment of Health and Quality of Life of Children Residing in Selected Shelter Homes in Bangalore

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## ARTICLE INFO

## ABSTRACT

**Objectives**: Children needs diligent fostering to shape the future of a nation. The study was undertaken to analyze the health and quality of life (QoL) of children in selected shelter homes in Bangalore. **Materials and Methods**: It is a community-based study conducted in three shelter homes among 108 children. Health was assessed using a suitably designed form. QoL was measured using WHOQOL-BREF questionnaire. **Results**: In the study, 73 (67.59%) had below normal nutritional status. 50 (54%) had an abnormal vision, 4 (3.7%) had impaired muscle and tendon reflex. Dental caries was observed in 40 (37%) children. Tinea versicolor was observed in 21 (19.4%) children. Scabies was observed in 7 (6.48%) children. QoL was found to be highest in an environmental domain with 44.4%, followed by 43.5% in psychological domain, 37% in the physical health and 14.8% in the social relationship domain. Conclusion: The study revealed that children have health problems and low QoL. In India, health problems and low QoL among shelter home children are increasing which needs better health care policies to support the organizations before they collapse under the burden of health care issues.

## INTRODUCTION

Quality of life (QoL) is defined as the specific area in which individual views it to be vital and has the ability to enjoy life. Quality of life is viewed as a multidimensional concept which comprehends many life domains (Mathiti, 2006). In the USA, almost 7,50,000 children stay at shelter homes. Most of them enter the shelter homes with medical issues which are not adequately solved. There are multiple barricades to achieve health in these children. The health and developmental issues of these children are being neglected even at shelter homes due to the inadequacies faced in the shelter homes (Simms *et al.*, 2000).

Children are the prosperity of our nation, therefore, special attention must be given to this category. Majority of the children in shelter homes face a number of health issues which can be prevented if diagnosed and treated early (Aroor *et al.*, 2014). Consistent health care screening can improve the health and well-

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being of the children being placed at shelter homes (Simms *et al.*, 2000). Screening acts as a safety measure for sheltered children who might not have regular access to the primary care (Aroor *et al.*, 2014). Homeless children inhabit a low position on the ladder of power. Separation from their families results in lack of access to basic education and health facilities. Many literature studies have shown that these children do not relish a good quality of life (Simms *et al.*, 2000). In a study conducted by Kavaler and Swire, the health status of 668 children who had been in the shelter home for at least a year was evaluated. It was reported that almost 45% of the children had 1 or more chronic medical condition and 37% needed a referral to a specialist for further medical care and attention (Kavaler and Swire, 1983). In a study conducted by Chernoff *et al.* (1994) it was reported that among the 2419 children admitted to a shelter home in Baltimore, 92% had at least one abnormality during physical examination, disorders of the upper respiratory tract (66%), skin, (61%), lungs (7%) and extremities (6%). As a result of this screening, 535 of them were referred to specialized departments for further medical services (Chernoff *et al.*, 1994). In spite of various efforts by health care and social service professionals, the health care issues of the children at shelter homes still remain untackled. The purpose of this study is

to review the health status and the health care needs of the children placed at three selected shelter homes in Bangalore, offer practical guidelines for the caretakers who care for the children at the shelter homes and suggest areas for a further medical checkup (Simms *et al.*, 2000). Sheltered children lack the access to nutritious food compared with the housed. The prevalence of anemia among these children can be thought as a result of lack of nutritious food. Problems of acute and chronic malnutrition are also seen widely among these population. In a study conducted by Wiecha *et al.* (1991) found that anemia, growth problems and pregnancy rates are higher compared with a housed population (Wiecha *et al.*, 1991). Along with malnutrition, poor socioeconomic status and poor standards of hygiene contribute to various skin infections seen in the sheltered children. However, very little information is generated about the skin diseases of sheltered children. Various surveys of skin diseases were conducted in developing countries and have reported that skin infections are very common among the children. India being the second most populated country estimates to have at least 35% of its population under the age of 14, therefore immense interest must be showed in identifying the common skin infections among the sheltered children (Dogra and Kumar, 2003). Around 2.3 billion students suffer from disturbances in visual acuity among which only 1.8 billion have access to medical care and this leaves behind 500 million children with uncorrected visual acuity. This is, in turn, can affect the academic progress of the students. The earliest signs include redness, itching or watering of the eyes which are often neglected by the caretakers in the shelter homes due to lack of awareness and adequate healthcare facilities. It is therefore vital to find out the prevalence of such eye disorders among school going children in the shelter homes to plan out any interventional strategies' to tackle them. The significance of visual acuity screening was comprehended in the USA for the first time during the medical screening of recruits for Second World War. In India, Mukerjee *et al.* announced that a youth's career is planned depending on the visual acuity which permits early detection and treatment of disorders of visual acuity to prevent permanent damage (Datta *et al.*, 2009).

Asthma is one of the most common diseases prevalent in the childhood. Environments in the shelter homes continue to be the triggering factors and exacerbate the asthmatic attacks. Proper identification of asthma is essential since the spectrum of presentations is wide and multiple. The high predominance of asthma among homeless children ought to be a matter of concern to health care providers. These conditions are likely to be exacerbated by the specific conditions associated with homeless shelter life. Asthma care, assuming it was formerly available, is interrupted when the housing is lost, and shelter conditions may have several asthma triggers (Grant *et al.*, 2007). Hence caretakers must be adequately summarized about the clinical presentations and first aid for the asthmatic attacks. The international study of asthma and allergy in childhood (ISSAC) developed a homogeneous method to describe asthma prevalence. When this study was implemented in three different schools in Karnataka, the results showed that the rates of asthma exacerbation were higher in the months of June and July pertaining to the rainy season. Therefore caretakers must be on alert especially during this season to avoid missing of any clinical presentation of asthma which can lead to deterioration of the health condition of the children (Narayana

*et al.*, 2010). In spite of various efforts by health care and social service professionals, the health care issues of the children at shelter homes still remain untackled. The purpose of this study is to review the health status and the health care needs of the children placed at three selected shelter homes in Bangalore, management of health issues among the residents to improve their QoL and to offer practical guidelines for the caretakers who care for the children at the shelter homes and suggest areas for further medical checkup (Simms *et al.*, 2000).

## MATERIAL AND METHODS

### Study design and setting

This is a community based observational study conducted in three selected shelter homes in Bangalore namely Angels Home, Queens Road; Ashadeep Girls Home, Queens Road, and St. Mary's Shelter Home, Cox Town. The study was conducted for a period of 6 months from November 2015 to April 2016. The data was collected using questionnaires namely WHOQOL and Non-invasive assessment of visual system and topical meeting of the optical society of America, Visual Acuity Questionnaire along with their previous medical records and by interviewing children and their caretakers. The health screening was conducted for a total of 108 children Children of either gender in the age group of 6-17 years were included and those that were excluded were children below 5 years and mentally disabled children.

### Ethical approval

This study was approved by the Institutional Ethics Committee of Ramaiah Medical College, Bangalore, Karnataka, India.

### Data analysis

The statistical software SPSS 20.0 was used for data analysis.

### Study procedure

This study was conducted among children in shelter homes to assess the quality of life, nutritional status and various health problems prevalent in children by evaluating their height, weight, Body Mass Index (BMI), auditory reflex, visual acuity, muscle and tendon reflex, dental caries, skin infections, anemia, and asthma. The study was conducted for the children in the age group of 6-17 as this is the period of active growth and any deficiency in nutrition particularly protein and energy will affect their weight, height, and BMI. The study was initiated after obtaining the permission from the authorities of shelter home. After the establishment of rapport and obtaining informed consent from the study participants, a medical file for each child was opened if not available and their general health status was recorded and updated periodically. A general health check-up for all the children was performed to pick the early signs of chronic disorders. A well-designed questionnaire was applied for recording the quality of life. Height and weight are two very important measurement indicators of protein and energy deficiency. The obesity and edema can distort the accuracy of the weight and height measurements. The heights were recorded in centimeters with height measuring stand. Teeth of all the children were examined by using a torch as

a source of light. A number of the total carious tooth was recorded. Teeth showing cavities visible by naked eye were counted. The examination of skin was done by naked eye and torch was used where needed. Visual acuity was tested using Noninvasive Assessment of the visual system and Topical Meeting of the Optical Society of America, Visual Activities Questionnaire. All these data were then analyzed to find out the various health issues faced by these children at shelter homes and their quality of life. The one-to-one interaction was carried out with children above 5 years to collect specific information about their health. Appropriate management of any childhood health problems encountered was recommended.

## RESULTS

The proposed study was carried out in Angels, Ashadeep and St. Mary's shelter home for a period of six months. A total of 108 subjects were enrolled in our study.

### Distribution of gender in the study population

Among the 108 study samples, 77 (71.3%) were females and 31 (28.7%) were males.

### Age categorization among the study population

The total number of subjects involved in the study is 108. The mean age of the study sample was found to be 12 years. The average age of females was 7 years when compared to the average age of males which was 2.81 years. The age group of 6-12 and 13-16 comprised of 55 and 53 study samples respectively.

### Distribution of subjects within each age group

16 (51.61%) males and 39 (50.64%) females were in the age group of 6-12 whereas there were 15 (48.38%) males and 38 (49.35%) females in the age group of 13-16.

### Shelter homes

Out of 108 study subjects, 52 (48.1%) were from Angels shelter home, 27 (25%) were from Ashadeep and 29 (26.9%) from St. Mary's.

### BMI categorization

Among the 3 shelter homes, 35 (32.4%) were having normal nutritional status and the majority of the 73 (67.59%) were underweight.

### Frequency distribution of BMI classification among males and females

Among 31 males, 10 (32.25%) were normal, 21 (19.44%) were underweight according to the BMI classification. Among 77 females, 25 (32.46%) were found to have normal BMI, 52 (48.1%) were underweight. Among males and females, none of them was found to be overweight and obese.

### Nutritional status of children

Among 108 study subjects, 35 (32.5%) had a normal nutritional status whereas 73 (67.59%) were below normal nutritional status. The nutritional status was assessed using Jellifee's classification.

### Malnutrition status of children

According to the Jellifee's classification, among the 73 children who belonged to the category of below normal nutritional status, 35 (47.94%) were in the 1st grade of malnutrition, the 2nd grade constituted with 31 (42.4%) children, and the 3rd grade with 7 (9.58%). The malnutritional status is specified in Table 1. Majority of the boys (70.96%) had normal nutritional status, whereas the majority of girls had a 2nd degree of malnutrition. The details are specified in Table 2.

**Table 1**: Frequency distribution of malnutrition based on Jellifee's classification.

| Degree of Malnutrition | Frequency | Percentage (%) |
|---|---|---|
| 1st | 35 | 47.94 |
| 2nd | 31 | 42.4 |
| 3rd | 7 | 9.58 |
| 4th | 0 | 0 |

**Table 2**: Prevalence of malnutrition in boys and girls.

| Degree of Malnutrition | Frequency | Percentage (%) | Frequency | Percentage (%) |
|---|---|---|---|---|
| | Boys | | Girls | |
| Normal | 22 | 70.96 | 13 | 16.8 |
| 1st | 7 | 22.58 | 28 | 36.36 |
| 2nd | 2 | 6.45 | 29 | 37.66 |
| 3rd | 0 | 0 | 7 | 9.09 |
| 4th | 0 | 0 | 0 | 0 |

### Auditory reflex among the study population

Out of 108 samples, 94 (87%) were having normal auditory reflex and 14 (13%) were having an abnormal auditory reflex.

### Visual acuity among the study population

Out of 108 samples, 50 (46.29%) were having abnormal visual acuity. The details are specified in Table 3.

### Muscle and tendon reflex

Among the total population, 4 (3.7%) were having an impaired muscle reflex, 71 (65.7) were having a muscle power of 2-3 and 33 (30.6) were having a muscle power of 4-5. The details are specified in Table 4.

### Prevalence of dental caries

Out of 108 study subjects, 40 (37%) had dental carries and 68 (63%) were free from dental caries. In our study, as the age increased the prevalence of dental caries also increased. In the age group of 6-12 years, the proportion of students with dental caries was 8 (30.76%) and 18 (69.23%) were found to be normal. In the age group of 13-16 years, 32 (39.50%) had dental caries and 49 (60.49%) were found to be normal. The dental caries was more prevalent among the females (62.33%) compared to that of males (35.48%).

### Skin diseases among the study population

The common skin infection found in our study sample was tinea versicolor (19.4%). The details are specified in Table 5.

**Table 3**: Distribution of visual functions among the study subjects.

| Visual Functions | Frequency | Percentage |
|---|---|---|
| Color discrimination | 4 | 3.7 |
| Light/Dark adaptation | 6 | 5.55 |
| Acuity/spatial vision | 7 | 6.48 |
| Depth perception | 8 | 7.4 |
| Peripheral vision | 5 | 4.62 |
| Visual search | 11 | 10.18 |
| Visual processing speed | 9 | 8.33 |

**Table 4**: Distribution of muscle and tendon grading scale among the study sample.

| Muscle Grade | Frequency | Percentage (%) |
|---|---|---|
| Impaired reflex | 4 | 3.7 |
| Grade 2-3 | 71 | 65.7 |
| Grade 4-5 | 33 | 30.6 |

Table 5: Distribution of skin diseases among the study population.

| Categories of Skin Disease | Frequency | Percentage (%) |
|---|---|---|
| Normal | 32 | 29.6 |
| Scabies | 7 | 6.48 |
| Dry skin | 19 | 17.59 |
| Acne | 19 | 17.59 |
| Tinea versicolor | 21 | 19.4 |
| Eczema | 10 | 9.3 |

**Prevalence of anemia and asthma**

Among 108 study subjects, checked for anemia 27 (25%) were anemic and 81 (75%) were nonanemic. 4 (3.7%) had asthma whereas 104 (96.3%) were free from asthma.

**Quality of life evaluation using WHOQOL questionnaire**

The quality of life of children in three shelter homes was assessed using the "World Health Organization Quality Of Life (WHOQOL)" questionnaire, which consists of 26 questions out of which two questions were excluded as it was not relevant to the age group of 6-16 years. The children's quality of life will be analyzed under five domains mainly general health, physical health, psychological, social relationship and environment and their overall quality of life will be analyzed too. Among the four domains, the environmental domain had the maximum score for quality of life with 44.4%, which was followed by psychological, physical health, overall quality and social relationship with 43.5%, 37%, 19.4%, and 14.8%, respectively.

**DISCUSSION**

The age group of our study subjects was between 6-17 years and the mean age was found to be $12.06 \pm 3.144$ years which was similar to a study conducted by Zhao *et al.* (2009) where the age group was 6-16 years and the mean age was 12.71 years (Zhao *et al.*, 2009).

The study included general health checkup for the children and assessed their quality of life. Children in shelter homes and orphanages face a lot of health problems like skin infections mainly Tinea versicolor, scabies, psoriasis, respiratory infections like common cold and asthma, anemia, ocular and auditory problems. Due to an inadequate number of caretakers, individual attention to children of smaller age is not possible leading to unhygienic practices, infectious diseases and poor oral health resulting in dental caries. Girls of the reproductive age face a lot of menstrual and gynecological problems due to unhygienic practices. Anemia is common among these girls due to menstruation problems and lack of nutritious food. Children during their developing period require an adequate amount of nutrition and balanced food, failing which they become underweight, physically inactive and may have a delay in development. Malnutrition is a common major health problem seen among children in shelter homes.

Inadequate nutrition can cause loss of concentration among children which can turn affect their academic performance. Poor health and nutritional status may distress the work capacity and intellectual functioning of the children and in turn, endanger the success of these children. Health screening is an important part of any community health program for early identification of health problems which can, in turn, improve a child's development and the ability to learn. This study aimed to identify and address the important health barricades (Aroor *et al.*, 2014).

The children included in our study are well nourished however few of them had malnutrition. In our study, the proportion of children having 1st, 2nd, and 3rd degree of malnutrition among the 73 children with below normal nutritional status was 47.94%, 42.4%, and 9.58%, respectively. Among the boys, 32.2% had 1st degree followed by 19.6% for 2nd degree, 6.4% for 3rd and 4th degree malnutrition. The malnutrition status of our study is contradictory to a study conducted by Anwar *et al.* (2006) where 15.78% and 8.35% belonged to 2nd and 3rd degree of malnutrition respectively (Wallander and Koot, 2016).

Abnormalities in visual acuity among school going children are very common. The common visual problems noted among children are squint eye, dimness of vision, the problem of color discrimination, conjunctivitis, refractive errors and color blindness. Ocular problems can lead to decreased academic performance, ocular morbidity and increased absence from school. Childhood blindness and visual impairment may have an impact on child's development, education, future employment opportunities affecting the quality of life. Knowledge about the prevalence of visual impairment among children is important for prevention of ocular complications. In our study, it was found that 54% of the children had impaired visual acuity and 62.64% had normal vision.

The children were also checked for their muscle and tendon grading scale. This is essential to check growth, development and motor coordination. It is an important parameter to examine sensory and motor examination. Muscle power grading is done on a scale of 0-5 where 0 is complete paralysis and 5 is normal. Examination of muscle power grading help in the prediction of the localized lesion and identify the affected muscles. In our study, 3.7% had impaired reflex. Lack of dental hygiene may lead to dental caries especially in children. In a study conducted by Al-Darwish *et al.* (2014), the dental caries prevalence in school children was found to be 85% which is contradictory to our study in which the prevalence of dental caries among the study samples were 37% (Sudha *et al.*, 2005). It was observed

that dental caries was more in females compared to males which were conflicting to a study conducted by Sudha *et al.* (2005) However, there is no significant relationship between dental caries and gender. We found that, as age progress, the number of dental caries also increased. This was related to the study conducted by Al-Darwish *et al.* (2014).

Low economic standards, malnutrition, overcrowding and poor standards of hygiene are important factors accounting to skin disease in a developing country like India. The common skin infections mostly seen in children are scabies, psoriasis, eczema, Tinea versicolor, and acne. Our study findings indicated that 70.4% of the children at shelter homes were having skin infections which were opposing to the study conducted by Dogra *et al.* (2003). However Tinea versicolor was the most common skin infection seen in our study which was similar to the study conducted by Aroor *et al.* (2014).

Prevalence of anemia is a widespread nutritional problem in the world, particularly in children and women (Garg and Bhalla, 2016). It is established that anemia causes impaired growth, developmental delay, behavioral abnormalities and weakens intellectual function and school performance13. The prevalence of anemia in developing country like India tends to be three to four times more than developed countries. Anemia is most commonly seen in girls (81.48%) in our study due to menstrual problems. The overall proportion of anemia among the study population was found to be 25% and is similar to a study conducted by Achouri *et al.* (2015) where the proportion of anemic children was 16.2% (Achouri *et al.*, 2015).

Asthma is one of the most common chronic diseases of childhood. Recent reports showed wide variation (4-19%) in the prevalence of asthma in school going children from different geographic areas in India. Especially, in a place like Bangalore, the prevalence of asthma is more leading to respiratory infections like pneumonia in children. 3.7% of our study population had asthma and it is similar to a study conducted by Behl *et al.* (2010). The quality of life of children is important as an investment in the future of our society as they constitute an important group of themselves and deserve to experience well-being (Rodriguez *et al.*, 2013). In our study, there was an increased proportion of low quality of life against the high quality. The highest quality was found in the environment (44.44%) followed by psychological (43.5%), physical health (37%), overall quality (19.4%) and social relationship (14.8%). We also found that females have a higher quality of life scores compared to males but there is no significant association between gender and quality of life. (p-value > 0.05) We also found that as the grade increased, the quality of life scores also increased and there is statistical significance between grade and quality of life (p-value < 0.05).

## CONCLUSION

The study was carried out at three selected shelter homes in Bangalore and the results proved that many among them were suffering from one ailment or the other. This, in turn, has decreased their quality of life. The need has come to develop health care policies for these medically underserved children to catch up for the early signs of various chronic diseases. Clinical pharmacists too can extend their scope of activity to this community of children and help to safeguard their health and for their improved quality of life. Creation of awareness among the caretakers is essential for promoting the health of the children.

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