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The Ethiopian SORT IT Course

High levels of scabies and malnutrition amongst orphans referred to a hospital in Addis Ababa, Ethiopia

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Abstract

Introduction: Orphans are at high risk for neglected tropical diseases (NTDs) and other comorbidities such as malnutrition. We investigated how many orphans suffered from scabies, other NTDs and malnutrition.

Methodology: A descriptive study using medical records of orphans referred to a teaching hospital in Addis Ababa, Ethiopia from December 2014 to December 2018 was done. Files documenting NTDs were reviewed in detail for age, referral diagnosis, and nutritional status. Nutritional assessment was done using the WHO Standard growth curve, classifying children as stunted (height for age Z score < -2SD or wasted (weight for length Z score < -2SD).

Results: Of the 852 orphans referred, 23.1% (196/852) was diagnosed with scabies, amongst which 28.1% (55/196) had multiple episodes. The median age (interquartile range) of the children with scabies was 3 (2-5) months. 85.2% (169/196) of the orphans with scabies were stunted and /or wasted. No other NTDs were reported. All of the scabies cases identified were not documented in the referral letter of the orphanage.

Conclusions: There is ongoing transmission of scabies among children in the orphanage. Amongst orphans with scabies, an alarmingly high percentage was malnourished. Referrals from orphanages may provide an opportunity to detect NTDs and this is being missed.

Key words: Congregate settings; scabies; vulnerable populations; integrated approach; Ethiopia; operational research.

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Introduction

Neglected Tropical Diseases (NTDs) are a diverse group of diseases that occur abundantly in tropical and subtropical countries, mainly affecting people living in impoverished conditions [1]. More than one billion people suffer from one or more NTDs worldwide [2]. Despite the considerable burden of these diseases, they have largely been ignored in global health planning until recently [3]. People affected by these diseases tend to have a multitude of problems related to exposure to different risk factors [4].

Understanding the geographic spread and co-existence of NTD sharing related risk factors is fundamental for effective control and treatment [5].For example, trachoma, soil-transmitted helminth, and scabies which are all related to close contact, sanitation, and water scarcity can be prevented with similar strategies (WASH) [5,6]. As these diseases tend to occur amongst the poorest of the poor, they may suffer from malnutrition as well [7].

Congregate settings like orphanages, dormitories, and prisons are often overcrowded, with inadequate water supplies, poor hygienic and sanitation practices, meager household infrastructure and limited access to health services [8]. Data on the magnitude and types of NTDs in congregate settings are scarce, however, reports of infectious diseases from such settings indicate that the risk of transmission may be increased up to 100 times fold [9].

Ethiopia has numerous orphanages serving about 5 million orphans [10]. Recently, an increase in the incidence of scabies cases was observed at one of the largest governmental orphanages in Addis Ababa. The problem was controlled with the support of the nearby tertiary hospital and points to the significance of the disease in such settings. After observing the increased

number of scabies cases coming to the hospital from the orphanage, we planned to investigate the burden of NTDs among the orphans, and whether they co-exist with other NTDs or malnutrition.

Methodology

Design

This is a descriptive study using retrospective data collected from orphans referred for different medical reasons to a tertiary hospital in Addis Ababa, Ethiopia.

General Setting

Ethiopia is the second-most populous country of the continent [11], and its capital city is Addis Ababa. Infectious diseases account for about 60-80% of the health problems in the country [12]. Due to repeated civil wars, a high prevalence of HIV, poverty, and displacements, the number of orphans is high and still increasing [13].The national NTD road map outlines several efforts for control and eradication of NTDs such as scabies using a mass ivermectin treatment administration at schools or during outbreaks [14]. However, such interventions are not consistently implemented in congregate settings.

Specific setting

The study was conducted at Yekatit 12 Hospital Medical College among orphans referred from the nearby orphanage for different medical reasons. The orphanage is one of the largest and oldest orphanages in Addis Ababa and hosts about 450 orphans with an age range of one day to seven years. Due to continuous adoptions being done, the turnover of children is high, and most children at the orphanage are below the age of two years. There are four nurses and about 20 other volunteer caregivers permanently working in the center. Basic health care is provided at the orphanage, including scabies management. However, the mass drug administration campaigns focused on school children do not extend to the orphanage.

Sick children from the orphanage are identified and referred to the hospital by the nurses with a referral sheet. At the hospital, the orphans are re-evaluated by medical doctors and receive free medical service. Nutritional assessment is routinely conducted at the hospital for all children less than five years. The final diagnosis is recorded in the Health Management Information System (HMIS) with a unique medical record number.

Population and data collection

Medical records of all orphans referred from the orphanage center between December 2014 and December 2018 were retrieved using the medical record numbers from the HMIS registry in the hospital. Records with a documented NTD were reviewed in detail. Three nurses trained on the data collection tool and working at the pediatric department extracted the data from the medical charts (which includes the referral sheets) onto data collection forms. The primary investigator supervised data collection and checked for completeness. Variables collected from the chart were age, sex, weight and height, and which type of NTDs were documented on the hospital record and/or on the referral sheet.

The diagnosis of scabies and other poor hygiene related NTDs was assessed using the case definitions described in Table 1.

Data analysis

Data entry and analysis was done using EpiData 3.1. Frequencies, proportions and medians and interquartile ranges were calculated. Nutritional assessment was done using the WHO growth standard curve with those having Z scores < -2SD being classified as stunted (height for age) or wasted (weight for length).

Ethical considerations

Permission for the study was obtained from the Ethical Committee of Yekatit 12 Hospital Medical College, Addis Ababa, Ethiopia and from the Union Ethics Advisory Group (EAG) (International Union against Tuberculosis and Lung Disease, Paris, France).

Table 1. Diagnosis of scabies and other poor hygiene related NTDs.

- Scabies is diagnosed clinically by detection of the typical itchy rash with predilection to the interdigital and gluteal region.
- Trachoma is diagnosed clinically by detection of inflammatory signs and eventual scarring of the inner eyelid. The scarring is caused by eyelashes turning inward to rub on the eyeball, leading to visual impairment and blindness.
- Soil transmitted helminthic infections (round worms such as hook worm, ascaris, and vermiculares, trichuris) and schistosomiasis is diagnosed using stool microscopy and visualization of the ova or parasite.
- Nutritional assessment: the WHO growth Standards curve (Z score) used for the assessment of children nutritional status using height, weight, age and upper arm circumference.

The name of the orphanage is not disclosed for confidentiality reasons.

Results

Total referrals and proportion with a diagnosis of scabies

A total of 852 orphans have been referred to Yekatit 12 Hospital Medical College from an orphanage center in Addis Ababa from December 2014 to December 2018. Of these, 196 (23.0%) had a diagnosis of scabies at least once. The number of referred children and those with scabies varied across the study years. The percentage of referred patients with scabies peaked in 2016 when it was almost 35%as shown in Figure 1.

Socio-demographics and nutritional characteristics

The median and inter-quartile range (IQR) age of the children with scabies was 3 (2 –5) months; and 113 (57.7%) were female. One hundred sixty-seven (85.2%) of the orphans who had scabies were stunted and/or wasted (Table 2).The most common reasons for referral of the children diagnosed with scabies were pneumonia and malnutrition (Table 3).

Type of NTDs and frequency of episodes

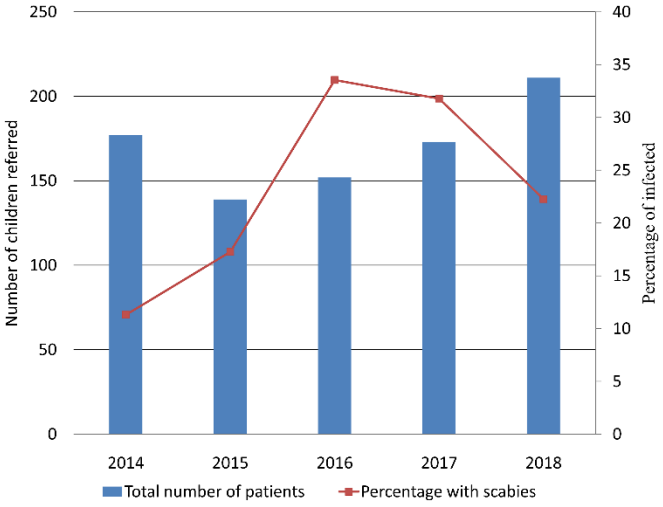
Scabies was the only NTD diagnosed amongst the orphanage children, while no other NTDs were documented or diagnosed on the hospital charts. When comparing the diagnoses on the referral sheet from the orphanage to that of the hospital, none of the scabies episodes were captured on the referral papers. The total number of scabies episodes for the 196 children was 258. Most children had only one scabies episode, but more than a quarter had multiple visits in which scabies was diagnosed (Table 4).

Table 2. Socio-demography and nutritional status of orphans with scabies at a tertiary hospital, Addis Ababa (2014-2018).

Characteristics	Frequency (%)
Sex	
Male	113 (57.7)
Female	83 (42.3)
Age in months, median (IQR)	3 (2-5)
Nutritional assessment at initial referral*	
Normal	29 (14.8)
Stunted	60 (30.6)
Wasted	58 (29.6)
Stunted and wasted	49 (25)

*Nutritional status defined using the WHO standard growth curve: Wasted: weight for height < -2 Z score, Stunted: height for age < -2 Z score, IQR: interquartile range.

Figure 1. Total number of orphans and the proportion with scabies at a tertiary hospital in Addis Ababa, 2014-2018.



Discussion

This study set out to explored the existence of NTDs and malnutrition in a highly vulnerable population. We found that close to a quarter of the orphans seen at the hospital in the five years had a recorded diagnosis of scabies. The malnutrition rate among these children was alarming at 85%. In contrast to our initial anticipation, no other NTD were documented, including those which share poor hygiene as a risk factor with scabies, such as

Table 3. Referral diagnosis on the referral letter among orphans diagnosed with scabies at the Tertiary Hospital (2014 - 2018), Addis Ababa, Ethiopia.

Type of referral diagnosis	Frequency (%)
Pneumonia*	101 (39)
Malnutrition	67 (26)
Acute gastroenteritis	36 (14)
Sepsis	23 (9)
Medical certificate+	10 (4)
Others#	21 (8)
Total	**258 (100)**

*Including respiratory distress, #others including (HIV = 9, Unable to feed = 4, Dehydration = 5, congenital anomalies = 3), +Orphans who visited the hospital for medical certification during the adoption.

Table 4. Scabies episodes per referred orphan at a tertiary hospital in Addis Ababa, Ethiopia (2014-2018).

Number of scabies episodes per orphan	Number of childrenN (%)
One	141 (71.6)
Two	48 (24.3)
Three	7 (4.1)
Total	**196 (100)**

trachoma and soil-transmitted helminth infections [15]. The lack of other documented NTDs may be due to different reasons. First, other NTDs may not actually be present in the orphanage. Perhaps some of the NTDs such as intestinal helminths do not occur in this young orphanage population or they could have been successfully managed at the orphanage level and thus not be present in the hospital. Alternatively, the other NTDs might have been present upon referral but may have been missed by the treating clinician (e.g. due to poor documentation in busy hospital settings). We expect this to be the case for trachoma, which is known to have a very high prevalence in children below one year of up to 50% [16].

In our study, we found alarming rates of scabies (23.6%) in orphans referred to the hospital, indicating orphanages may be hotspots of ongoing scabies transmission. A study from an orphanage in Thailand also showed a high prevalence of scabies in orphans, with 87.3% of orphans affected [17]. However, other Ethiopian studies in the general population reported a high scabies prevalence of 35% in the community in the Amhara region [18] and 5.5% among schoolchildren in southern Ethiopia [19], indicating scabies may be a more general problem in the country. However, the high rates of scabies found in Amhara led to a big campaign against scabies in that region, but so far, all campaigns have failed to include congregate settings like orphanages.

In this study, the recurrence of scabies was common among orphans and none of the scabies episodes were recognized on the referral paper. These findings indicate there is a high rate of scabies transmission in the orphanage and show there may be important gaps in the management of scabies at the center. Although an orphanage-based study would be needed to estimate the true burden of NTDs and at the center, we believe our findings justify the extension of Mass drug administration (MDA) campaigns to orphanages. Re-educating staff on transmission, diagnosis, and treatment of scabies is also advised.

Malnutrition in the orphanage also needs urgent attention by all partners, especially since the high rates of malnutrition we observed predispose to infection and reinfection of many diseases due to immunosuppression [7]. Although other studies have already shown malnutrition is common in orphans with prevalence rates of, 45.7% in Ethiopia [20] and 60.1% in Bangladesh (60.1%)[21],we found that malnutrition is even much more prevalent in our study site, and also significantly higher than the national prevalence of malnutrition among under-five children in Ethiopia (19.47%) [22].

As a retrospective design, the quality of the data available was flawed: we were only able to obtain data from the hospital on orphans that were referred from the orphanage, which means the data on the orphans is not fully representative. Additionally, within the group of referred orphans, we only collected detailed information on patients with NTDs, while in hindsight more detailed information on all referred orphans would have been interesting. Problems with data quality also make it hard to draw firm conclusions about the absence of other NTDs. Nevertheless, our data indicate that malnutrition and scabies are important problems in this orphanage which require action urgently.

Conclusion

Scabies and malnutrition were very common among orphans referred to hospital. MDA campaigns should also target congregate settings such as orphanages. In addition, neglected populations should be approached using integrated programs that combine a focus on NTDs like scabies with other poverty-related conditions such as malnutrition.

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