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SCHOOL OF MEDICINE

The Pattern and Associated Factors of Mucocutaneous Disorders in HIV Infected Children on Highly Active Antiretroviral Therapy Attending Care and Treatment in ALERT Hospital, Addis Ababa, Ethiopia 2023: Prospective Cross-Sectional Study

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Advisor's approval sheet

This is to verify the thesis entitled "*The Pattern of Mucocutaneous Disorders in HIV Infected Children on HAART Attending Care and Treatment in ALERT Hospital, Addis Ababa, Ethiopia 2023: Prospective Cross-Sectional Study" is* submitted in partial fulfilment of the requirements for the Specialty Certificate in Dermatovenereologyto the graduate program of the school of Medicine in Addis Ababa University and has been carried out by Anteneh Bekele under our supervision.

The student has fulfilled the thesis requirements and hence here by can submit the thesis to the school.

Name of advisor: ……. Date…… Signature……..
Name of advisor: ……. Date…… Signature……..
Name of advisor: ……. Date…… Signature……..

Examiners' Approval Sheet

We, the undersigned, members of the Board of Examiners of the final open defence byAnteneh Bekele , have read and evaluate his thesis entitled "*The Pattern of Mucocutaneous Disorders in HIV Infected Children on HAART Attending Care and Treatment in ALERT Hospital, Addis Ababa, Ethiopia 2023: Prospective Cross Sectional Study*". This is to verify that the thesis has been accepted in partial fulfillment of the requirements for the Specialty Certificate in Dermatovenereology to the graduate program of the school of Medicine in Addis Ababa University

Name of internal examiner: ……Date…… Signature……..
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Abbreviations and acronyms

AHRI	Armauer Hansen Research Institute
AIDS	Acquired Immune Deficiency Syndrome
ALERT	All African Leprosy Rehabilitation and Training Center
ART	Antiretroviral therapy
CD4 +	Cluster of differentiation 4 (+)
CMV	Cytomegalovirus
EBV	Epstein-Bar virus
HAART	Highly Active Antiretroviral Therapy
HIV	Human Immunodeficiency Virus
HPV	Human papilloma virus
HSV	Herpes simplex virus
IRIS	Immune reconstitution inflammatory syndrome
IRB	Institutional Review Board
OI	Opportunistic Infections
VZV	Varicella zoster virus

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Abstract

Background: In HIV infected children, skin disorders are important as they serve as clues to diagnosis of the HIV disease. Skin is usually affected by HIV/AIDS early compared to almost all organs and systems in the body. The prevalence of skin disorders among HIV infected children is up to 90% in some studies.

Objective: The objective of this study is to determine the pattern of mucocutaneous disorders among HIV infected children attending the pediatric HAART clinic in ALERT Hospital Addis Ababa Ethiopia.

Methods: A prospective cross-sectional study was conducted to determine the pattern of mucocutaneous disorders among HIV infected children attending the pediatric HAART clinic of ALERT/AHRI Hospital, Addis Ababa, Ethiopia. A total of 128 HIV-infected participants aged less or equal to 16 years were recruited for this study. A data extraction tool was used to obtain primary data. Data was entered, cleaned, and analyzed using SPSS version 25. Descriptive analysis was used to assess basic sociodemographic characteristics and frequency of mucocutaneous disorders. Bivariate logistic regression was used to assess association. The level of significance was set at $P<0.05$ with 95% CI.

Result: The total number of study participants was 128 with a response rate of 100%. Among the total study participants, 59(46.1%) manifested infectious and infestation type of mucocutaneous disorder followed by the inflammatory type of mucocutaneous disorder 52*(*40.6%), the least being Acne and acneform17(13.3%). Infection and infestation were also commonly seen in participants who were on first line of HAART regimen. Inflammatory type of skin manifestation was seen in 86 study participants on WHO stage 2 of HIV. From the total 112 of the study participants have no treatment history for their mucocutaneous manifestation. HAART regimen was found to be significantly associated with mucocutaneous disorders($P<0.05$).

Conclusion: Infectious and infestations were highly seen among Children on HAART in this study. From infectious causes fungal infection was frequently observed. In this study, the HAART regimen was found to be significantly associated with mucocutaneous disorders.

Keywords: HIV infected children, HAART, mucocutaneous disorder

1. Introduction

1.1 Background

In the world, about 39–46 million people are affected by Immunodeficiency Virus (HIV)/ Acquired Immune Deficiency Syndrome (AIDS). Approximately two-third of the HIV infection occurs in sub-Saharan Africa with a nearly 12% of these infections occurred in children younger than 15 years of age. Globally, children under age 15 accounts for 5% of all people living with Human Immunodeficiency Virus (HIV), 10% of new HIV infections and 15% all Acquired Immune Deficiency Syndrome (AIDS) related deaths. From children aged 0-14years living with HIV i.e., of the 1.72million, 54% were received lifesaving antiretroviral therapy (ART) in 2020(1, 2).

Children with HIV infection suffer from the same common childhood illnesses as those who are not infected. The illnesses are, however, more frequent, last longer and may respond poorly to usual treatments. In advanced HIV infection, opportunistic infections can occur. Prevention and early treatment of opportunistic infections can improve the quality of life of HIV-infected children(3). Highly active Anti-retroviral Therapy, substantially decreases viral replication by doing so it reduce HIV related mortality and Morbidity, restore immune function, minimize drug related toxicity, maintain normal physical growth and neuro cognitive development, and improves quality of life(4).

Mucocutaneous disorders are more common in adults and children infected by HIV or AIDS and may affect more than 90% of patients at some stage of the illness. There is an increment in number and severity mucocutaneous lesions with declining cluster of differentiation 4 (CD4+) count.
Mucocutaneous manifestations in children can be classified in to four categories :

(I) infection and infestation
(II) inflammatory dermatoses,
(III) neoplastic conditions, and
(IV) drug-related manifestations

To mention some examples, Infection and infestation include, fungal infections like Candidiasis and dermatophytoses and systemic fungal infections including cryptococcosis, histoplasmosis, coccidioidomycosis, blastomycosis, paracoccidioidomycosis, penicilliosis and sporotrichosis, viral

infections like, Herpes simplex virus (HSV), Varicella zoster virus (VZV), Poxvirus, Human papillomavirus (HPV), Epstein-Barr virus (EBV), Cytomegalovirus (CMV)) and bacterial infections like Staphylococcal infections, Gram-negatives, Mycobacterial infections, and Syphilis), Parasitic infections like Leishmaniasis, Strongyloidiasis, Amebiasis, and infestations are also common for example Scabies. Inflammatory lesions include seborrheic dermatitis, atopic dermatitis, psoriasis, urticaria, vacuities, and aphthous ulcers. Some Neoplastic disorders Kaposi sarcoma, and non-Hodgkin lymphoma are more common in children who have HIV/AIDS compared with their healthy ones.

In one study Oral thrush (OT), pruritic papular eruption (PPE), plantar warts, Seborrheic dermatitis, Xerosis, and dermatophytosis were the most frequent lesions(5, 6).

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1.2 Statement of the problem

Children with HIV infection, as an initial symptom of presentation, may develop various refractory, severe, mucocutaneous manifestations. With the increment in pediatric HIV infection, it is important to early recognize and treat infection(2). Awareness of these manifestations would help in early diagnosis and management of HIV infection which would decrease the morbidity and improve the quality of life in such patients(6).

According to the 2019 Ethiopian Demographic and Health Survey (EDHS), the under 5 mortality is 59 deaths, with 47 infant deaths, and 33 neonatal deaths per 1000 live births. In Ethiopia, in 2017 the Prevalence of HIV among children aged 0-14 was, 0.3% in urban Ethiopia (19,000 children) but a total of around 62,000(with a range of 42,00- 84,000) children aged 0 to 14 years live with HIV. An estimated ART coverage among children as of 2016 was 35 %(around 21, 700)(7-9).

A lot has been known regarding mucocutaneous disorders in adults living with HIV. According to the knowledge of the researcher, there are few data regarding prevalence and patterns of mucocutaneous disorders among HIV infected children in Ethiopia. Concluding from adult prevalence is difficult because a mucocutaneous lesion varies among the two age groups.

1.3 Significance of the study

This proposed study will generate local evidence regarding the pattern of mucocutaneous disorders commonly seen in HIV infected children at ALERT/AHRI hospital as no such study was done in this setup before. This study will help as a baseline study for another study in this area in the future locally or nationwide. Furthermore, this study will provide evidence that will help in different intervention strategies together with similar studies that have been conducted so far in other setups.

2. Literature Review

2.1 Introduction to mucocutaneous disease in HIV infected Children

HIV-1 and HIV-2 are cytopathic lentiviruses (genus *Lentivirus*) belonging to the family *Retroviridae*. The commonest one is HIV-1and it has three distinct genetic groups worldwide: M (major), O (outlier), and N (new). Group M viruses are the most prevalent worldwide. Based on specific criteria for children, adolescents, and adults established by the Centers for Disease Control and Prevention, AIDS is the name given to an advanced stage of HIV infection(10).

Vertical transmission is the main root of transmission of HIV in children. The risk of transmission occurring before or during birth is 15-25% if there is no intervention. Breastfeeding increases the risk by 5-20% which adds up to a total of 20-45%(11).

Early diagnosis, prophylaxis, and aggressive treatment of opportunistic infections (OIs) prolong survival. For most HIV-associated OIs, the risk of infection is correlated with the patient's degree of immunosuppression. HAART often results in a dramatic increase in the CD4+ lymphocyte count and a decrease in the risk of opportunistic infections. Common OIs in childrenincludePneumocystiscarinii pneumonia, chronic and recurrent mucosal and esophageal candidiasis, cytomegalovirus infections, non-tuberculous mycobacteria, Cryptosporidium enteritis, herpes zoster, and mucocutaneous herpes simplex virus (12).

Skin disorders are commonly seen in HIV-infected patients, and they may be the first presentation of HIV disease. This skin manifestation differs from the non-infected individual since multiple skin conditions occur in one patient, unusual presentations of common conditions are witnessed that are difficult to recognize and the conditions may be recalcitrant to treatment(13).

2.2 Risk factors for the development of mucocutaneous disorders in HIV infected children

Usually, early cutaneous manifestation occurs after 2-4 weeks of HIV contamination called "Acute retroviral syndrome" which presents with generalized morbilliform exanthem(5).

The spectrum of skin disorders in HIV-infected children depends on the immunologic stage of the child which is reflected by the CD4 count, the concurrent use of HAART, and the pattern of endemic infections. Decreasing immunity is associated with an increased number and severity of skin diseases. The advent of HAART reduces the occurrence of Kaposi's sarcoma, Eosinophilic folliculitis, oral thrush, dermatophyte infection, herpes simplex virus infection, molluscum contagiosum, and oral hairy leukoplakia. However, the restoration of immunity may cause a flare-up of herpes zoster as immune reconstitution inflammatory syndrome (IRIS). HIV-infected patients are more likely than the general population to suffer from adverse drug reactions.HAART carries the risk of causing mucocutaneous adverse reactions. One of the commonly encountered skin problems in the HAART era is protease inhibitor (PI)-induced lipodystrophy which patients present with loss of buccal fat, thinning of extremities and buttocks, central adiposity dorsocervical fat pad ("buffalo hump") and gynaecomastia(13,14).

Furthermore, the common triggers of drug eruptions among children who suffer from HIV/AIDS include co-trimoxazole, ampicillin, and nevirapine(5). HIV infected children differ in disease expression and progression. Most children who acquired the disease from the mother will display features of the infection within as early as 6 months of life. Whereas some remain asymptomatic till the age of 8-10 years(11).

2.3 Classification, clinical feature and treatment

Mucocutaneous manifestations in children can be classified into four main categories: infectious and infestation, inflammatory dermatoses, neoplastic conditions, and drug-related disorders. Some literatures also classify them into five by adding Nutritional deficiencies and Miscellaneous disorders which cannot be classified into the four categories and merging the drug-related disorders in the inflammatory disorders classification (6,11). In this research paper, we use the four-classification system for ease of simplicity.

2.3.1 Infection and infestations

Fungal infections

Mucocutaneous candidiasis is one of the most common dermatologic manifestations in HIV-infected children typically presents as friable white plaques on the oral mucosa (pseudomembranous form). Dermatophytosis occurs frequently in HIV-infected children, most often after the years. The scalp, feet, and nails are often affected. Disseminated fungal infections like that of disseminated cryptococcosis and histoplasmosis may involve the skin in approximately 10% of cases. Cutaneous cryptococcosis can present with a variety of lesions, including umbilicated papules and nodules (i.e. molluscum-like). Rarely disseminated coccidiomycosis, aspergillosis, and sporotrichosis may occur in children with HIV disease. According to SeyedNaser et al, candidiasis incidence correlates with CD4+ cell counts Systemic involvement with these fungi usually occurs when the CD4+ counts fall below 250 cells/mm3.(5,12).

Bacterial infections

The most common bacterial infection in HIV-infected patients is caused by staphylococcus aureus with usual manifestations of folliculitis, impetigo, furunculosis, and cellulitis.Bacillary angiomatosis, caused by thespirochetesBartonellahenselaeorB. Quintana occurs rarely. Mycobacterial infection within the skin may manifest as reddish-brown papules, nodules, and plaques, as well as abscesses and ulcers (12,15).

Viral infections

Chronic or progressive herpetic skin lesions are observed occasionally in HIV-infected children, although, unlike varicella-zoster virus infections in these patients, herpes simplex infections much less commonly cause disseminated disease (10). Human papillomavirus infections like widespread flat warts, and condylomata acuminate are common. Warts can be single but usually are multiple. Extensive anogenital warts, very resistant to treatment, have also been observed. A more persistent Molluscum contagiosum infection often involves atypical areas, such as the face and neck, and tends to be more confluent and occasionally extremely numerous. In addition, giant lesions (>1 cm) and unusual features occur without severe CD4 cell depletion. Measles runs a more severe course in HIV-infected children, with estimated fatality rates of 40-70% due to a higher rate of measles giant cell

pneumonia. Oral hairy leukoplakia, characterized by discrete, whitish patches with parallel vertical ridges on the lateral border of the tongue occurs rarely in HIV-infected children(11,16).

Infestations

Scabies is common in HIV-infected children. Severe immunodeficiency may be a risk factor for developing Norwegian scabies. Presentations may vary from classic crusted papules to severe hyperkeratotic, crusted, and pruritic dermatitis and could involve sites not usually affected like as ears, face, and scalp(5, 12).

2.3.2 Inflammatory disorders

Eczema was the most common inflammatory dermatosis, which included pityriasis alba, atopic dermatitis, lip-lick dermatitis, and pompholyx. Exaggerated insect bite reaction was the second most common inflammatory dermatosis followed by post-inflammatory hyperpigmentation and xerosis(6).

Seborrheic dermatitis occurs in 85% of HIV patients and it might be the only manifestation initially. There is usually bacterial superinfection and severity is inversely related to CD4 count and may progress to erythroderma. Drug eruptions occur in greater frequency ranging from insignificant dermatitis to life-threatening conditions like toxic epidermal necrosis (17). Atopic dermatitis may be particularly severe in HIV infected children, especially in those with AIDS. Lesions appear as they do in the absence of HIV infection, poorly demarcated, erythematous, lichenified, scaly plaques in flexural areas. Diaper dermatitis can often be severe in HIV-infected infants (12).

2.3.3 Neoplastic disorders

Kaposi's sarcoma-associated with human herpes virus 8, is uncommon in HIV-infected children from the USA and Western Europe. However, in sub-Saharan Africa (especially in Uganda, Zimbabwe, and Zambia), it is endemic. Similar to adults, Karposi sarcoma in children presents as violaceous patches, plaques, papules, nodules, and tumors (12).

2.3.4 HAART-related disorders

The introduction of HAART in 1996 radically led to a dramatic reduction in mortality in HIV patients. A combination drug regimen includes 2 nucleoside reverse transcriptase inhibitors (NRTI), with at least 1 third drug, generally a protease inhibitor (PI) or anon-nucleoside reverse transcriptase inhibitor (NNRTI). Antiretroviral therapy alone was able to control infections and processes that had previously been refractory to treatment including oral candidiasis, molluscum contagiosum, cryptosporidiasis/microsporidiasis, and infection by Mycobacterium avium complex, progressive multifocal leukoencephalopathy, Kaposi sarcoma, and lymphoma. HAART has generally been associated with 3 main cutaneous effects: lipodystrophy syndrome, retinoid-like effect, and immune reconstitution dermatosis(18).

2.4 Dermatological manifestation based on CD4 count

Skin manifestation in HIV patients depends on CD4 counts. In a CD4 > 500: acute retroviral syndromes, Oral hairy leukoplakia, Seborrhic dermatitis, Psoriasis, and karposi sarcoma are common. In a CD4 count between 200 and 500: Oral thrush, herpes zoster, herpes simplex, refractory psoriasis, hypersensitivity to Nevirapine, and tinea infections are seen. When the CD4 is 100-200: disseminated herpes simplex, refractory seborrhoeic dermatitis, eosinophillic folliculitis, PPE, Mollusucmcontagiosum, and extensive karposi sarcoma are commonly seen. In CD4 <100: unhealing and large herpes simplex, cutaneous crptococcus, giant molluscum, disseminated cytomegalovirus, and acquired ichthyosis are seen (13).

2.5 Magnitude and pattern of mucocutaneous manifestations

A study conducted by Emadi SN et al states that during their illness, the majority of the HIV-infected children are prone to develop at least one type of dermatologic disorder. Unusual anatomical sites, disseminated skin lesions, increased frequency and severity, unexplained clinical presentation, rapid onset, and finally, treatment failure are characteristics of skin conditions in HIV/AIDS children (19).

A descriptive cross-sectional study conducted in TikurAnbesa Specialized Hospital, Ethiopia on Two hundred seventy HIV-infected children revealed out of these females 51.5% and males 48.5%. Most of the children 196/270 (72.6%) were suffering from one or more mucocutaneous disorders. The most prevalent mucocutaneous disorders were infectious dermatosis. Overall, mucocutaneous disorders were more prevalent in the advanced stages of HIV disease. Two or more mucocutaneous disorders were found in moderate and severe immunosuppression. Seventy-three percent of the HIV-infected children with mucocutaneous disorders were already on HAART(20).

A hospital-based cross-sectional study was conducted among 125 children living with HIV/AIDS in Hawassa, Ethiopia, which revealed 72 (57.6%) of the children were males and 97 (77.6%) were in the age range of 10–14 years. 90 (72%) of participants had different kinds of skin problems. Among those who had one kind of common skin infection, 53 (42.4%) were males. Viral skin infections which account for 48 (53.3%), were the leading cause of skin infections followed by 43 (47.8%), 33(36.7%), and 22 (24.7%) fungal infections, and inflammatory and bacterial skin infections respectively. Among all children who were taking ART, only 2.4% of the children had skin-related side effects (2).

A Study conducted in Ethiopia among children living in an orphanage states the commonest skin disorder identified in the study was MolluscumContagiosum(21%), followed by Verruca Vulgaris and plane warts (21).

A study done in the West African population about Mucocutaneous manifestation of pediatric human immune deficiency virus/acquired immune deficiency syndrome (HIV/AIDS) about degree of immunosuppression: found a prevalence of 64% mucocutaneous disorders infections and infestations were the commonest category of skin disorder(22). Another study in Lagos state, Nigeria by Osinaike, et al. also reported a high prevalence of skin disorders among HIV infected children with 83.0% of the studied participants having mucocutaneous manifestations (23).

A Similar higher prevalence of skin disorders among HIV infected children was reported by Lowe, et al. in Zimbabwe. In this cross-sectional study of Skin disease among human immunodeficiency virus-infected adolescents in Zimbabwe, the magnitude was found to be 88.0% and the commonest skin manifestation was infections and infestations (24).

A hospital-based study in India on the Pattern of mucocutaneous manifestations in 85 HIV infected children states the commonest skin manifestation was infectious dermatosis (25).

In a prospective cross-sectional study conducted in India on 100 HIV-infected children the prevalence of cutaneous manifestation in our study was found to be 82% among the HIV-infected children. In which, inflammatory disorders (58%) were more common, followed by nail disorders (40%), infectious dermatoses, (36%), and drug-related conditions (23%). Among the individual disorders, diffuse pigmentation of nails (24%) was the most common condition and zidovudine was the most commonly implicated drug in 22% of children(6).

According to a study in Thailand on Mucocutaneous findings in pediatric AIDS-related to the degree of immunosuppression, the prevalence of the mucocutaneous disorder in severe, moderate, and no evidence of immunosuppression was 62%, 43%, and 20% respectively (26).

There is a great discrepancy in the magnitude of mucocutaneous manifestation of pediatric human immune deficiency virus/acquired immune deficiency syndrome (HIV/AIDS). A cross-sectional study on the magnitude of skin disorders among HIV-infected children in Rome, Italy found a higher prevalence of skin disorders among HIV-infected children up to 89.5% (27).

3. Objectives

3.1 General objectives

To determine the pattern of mucocutaneous disorders and associated factors commonly seen in HIV infected children attending HAART at ALERT Hospital, Addis Ababa, Ethiopia, 2023.

3.2 Specific objectives

To determine the pattern of mucocutaneous disorders commonly seen in HIV infected children attending HAART at ALERTHospital, Addis Ababa, Ethiopia, 2023.

To determine factors associated with mucocutaneous manifestations in HIV infected children attending HAART at ALERTHospital, Addis Ababa, Ethiopia, 2023.

4. Methodology

4.1 Study area

ALERT is located at KolfeKeranio sub-city, Addis Ababa, Ethiopia. ALERT's activities focus on the rehabilitation of leprosy patients, training programs on leprosy for personnel from around the world, and leprosy control. The hospital currently provides a wide range of services in various departments including dermatology, emergency services, gynecology and obstetrics, pediatrics, HIV treatment, orthopedics, and plastic surgery. It also provides histopathologic study services & teaching activities by general & dermatopathologists.

4.2 Study design

A prospective cross-sectional study design with a quantitative approach was employed.

4.3 Population

4.3.1 Source population

The source population of the study was all HIV infected children attending ALERT Hospital

4.3.2 Study population

The study population was all HIV infected children on HAART atALERT Hospital.

Study Variables

Dependent variable: status of mucocutaneous disorders

Independent variables:

- · Age
- · Sex
- · Viral Load
- · WHO stage
- · Type of HAART
- · Duration on HAART
- · Duration of HIV infection
- · Comorbidities
- · Duration of dermatologic manifestation
- · Presence of other symptoms (Itching, pain, Burning sensation)
- · Treatment history

4.5 Eligibility criteria

Inclusion criteria:

All HIV infected children on HAART with mucocutaneous disorders visiting the ALERT pediatric ART clinic

Exclusion criteria:

Children with who informed assent couldn't be obtained

Children with repeat visits during the study period with the same diagnosis

Children on HAART for less than 6 months

4.6 Operational definition

Skin manifestation: In this study, mucocutaneous manifestation was defined by its clinical diagnosis or laboratory diagnosis as infection and infestation, inflammatory dermatoses, neoplastic conditions, and acne and acne form type manifestations.

Children: In this study, a child is defined as aged less or equal to 16 years old

4.7 Sample size

The sample size is computed using the general formula for a single population proportion.

The prevalence (P) of 72.6 % among mucocutaneous disorders was taken from a descriptive cross-sectional study done in 2012 (19). With a 5% margin of error and 95% confidence interval (CI). Accordingly, the uncorrected sample size would be **333**.

Sample size (n) is determined using the following statistical formula.

$n = Z2 * (P (1 – P) / (d)2)$

$n = 1.962 \times (0.73(1 – 0.73) / 0.025) = 3.84 * (0.1971/.0025) = 303$

By adding 10% for none response the uncorrected sample size will be = **333**

d = 0.05 =margin of error between the sample and the population.

n = sample size

Z = 95% confident interval

P = prevalence rate of mucocutaneous disorders in pediatric RVI patients based on the previous study

Adjusting sample size by finite population formula (26)

Corrected sample size (n)

$$n = \frac{n_o}{1 + \frac{(n_o - 1)}{N}}$$

no=uncorrected sample size (332)

N= total population (208)

n= **<u>128</u>** (Corrected sample size)

4.8 Data collection procedure and tool

Data was collected by two year three dermatology residents using a semi-structured questionnaire. The socio-demographic and HIV-related data was collected by the trained nurses and the data on mucocutaneous manifestations was collected by two year three dermatology residents

Data was collected by a semi-structured questionnaire. The questionnaire includes Age, Sex, Viral load, Duration of HIV infection, Duration of HAART, HAART Regimen, WHO stage of HIV, other medication currently on, Comorbidities, duration of dermatologic manifestation, presence of other symptoms (Itching, pain, Burning sensation), treatment history, diagnosis of mucocutaneous disorders, and mucocutaneous manifestations

4.9 Data Quality Management

To ensure the quality of the data, training was given to the data collectors to minimize technical and observer bias. The questionnaire was translated into Amharic and retranslated back to English to ensure the accuracy of translation into the Amharic language.

Five percent of questionnaires at ALERT Hospital were pre-tested to ensure the validity and reliability of the data collection tools but the finding was not included in the final analysis.

4.10 Data analysis

Data was entered, cleaned, checked, edited, coded, and analyzed using SPSS version 25 statistical software. Descriptive analysis was used to assess basic sociodemographic characteristics and frequency of mucocutaneous disorders. Multinomial logistic regression was used to assess association even though no association was found.

The level of significance was set at $P<0.05$ with 95% CI.

4.11. Ethical consideration

Ethical approval was obtained from the institutional review board (IRB) of ALERT/AHRI. Permission was obtained from the Medical Director of ALERT Hospital. Before enrolling any of the eligible study participants; the purpose, benefits, and confidential nature of the study was clarified and discussed with the guardian of each participant. Data was collected after obtaining informed written consent and confidentiality of the information was kept by using codes instead of any personal identifiers. All positive results were reported to the clinic for appropriate treatment and the cost of treatment was covered by patients.

5. Result

5.1 Socio-demographic and clinical characteristics

The total number of study participants was 128 with a response rate of 100%. Among them 78 (60.9%) were Female. The minimum age of the respondents was 17 months old while the maximum was 16 years old. The mean age of the participants was about 13.6±3.3 SD years. For most of the participants (111(86.7%)) viral load was undetectable 80 (62.5%) of the study participants the duration of the HIV infection was >=10 years. 103 (80.5%) of the study participants were on first-line treatment in 54(42.2%) taking the "1J" regimen. Other than HAART 17(13.3%) were taking Cotrimoxazole. The majority of the participants 124(96.9%) have no comorbidity. Among the study participants, 86(67.2%) were on WHO Stage 2 of HIV **(Table 1)**.

Table 1: Socio demographic and clinical characteristics of study participants for the study the Pattern and Associated Factors of Mucocutaneous Disorders in HIV Infected Children on HAARTat ALERT Hospital, Addis Ababa, Ethiopia, 2023

Variables	**Category**	**Frequency(N)**	**Percentage (%)**
Age-group	0-4 years	5	3.9
	5-9 Years	9	7
	10-16 Years	114	89.1
Sex	Female	78	60.9
	Male	50	39.1
Viral load	undetectable	111	86.7
	<999 Copies	5	3.9
	>=1000 Copies	12	9.4
Duration of HIV infection	0-4 years	25	19.5
	5-10 years	23	18.0
	>=10 years	80	62.5
HAART Regimen	4I	38	29.7

	4J	11	8.6
	1J	54	42.2
	2H	12	9.4
	5M	5	3.9
	2I	4	3.1
	5J	2	1.6
	2F	1	0.8
	6E	1	0.8
HAART Regimen the Child is Taking	First line	103	80.5
	Second line	24	18.8
	Third line	1	0.8
Duration of HAART	0-4 years	26	20.3
	5-10 years	24	18.8
	>=10 years	78	60.9
Other Medication currently on	Yes, Cotrimoxazole	17	13.3
	Yes, INH for TB prophylaxis	5	3.9
	Yes, Others	7	5.5
	No	99	77.3
Comorbid disease	Yes	4	3.1
	No	124	96.9
WHO stage of HIV	Stage 1	41	32.0
	Stage 2	86	67.2
	Stage 3	1	0.8

5.2 Pattern of mucocutaneous disorders

Among the total study participants, 59(46.1%) manifested infectious and infestation type of mucocutaneous disorder followed by an inflammatory type of mucocutaneous disorder 52*(*40.6%), the least being Acne and acneform 17(13.3%). From infection and infestation, the commonest disorder was Fungal infection 31(52.5%) followed by Viral Infection 22 (37.3%) the least type being bacterial and infestation each accounting for 3(5.1%)**(Figure 1).**

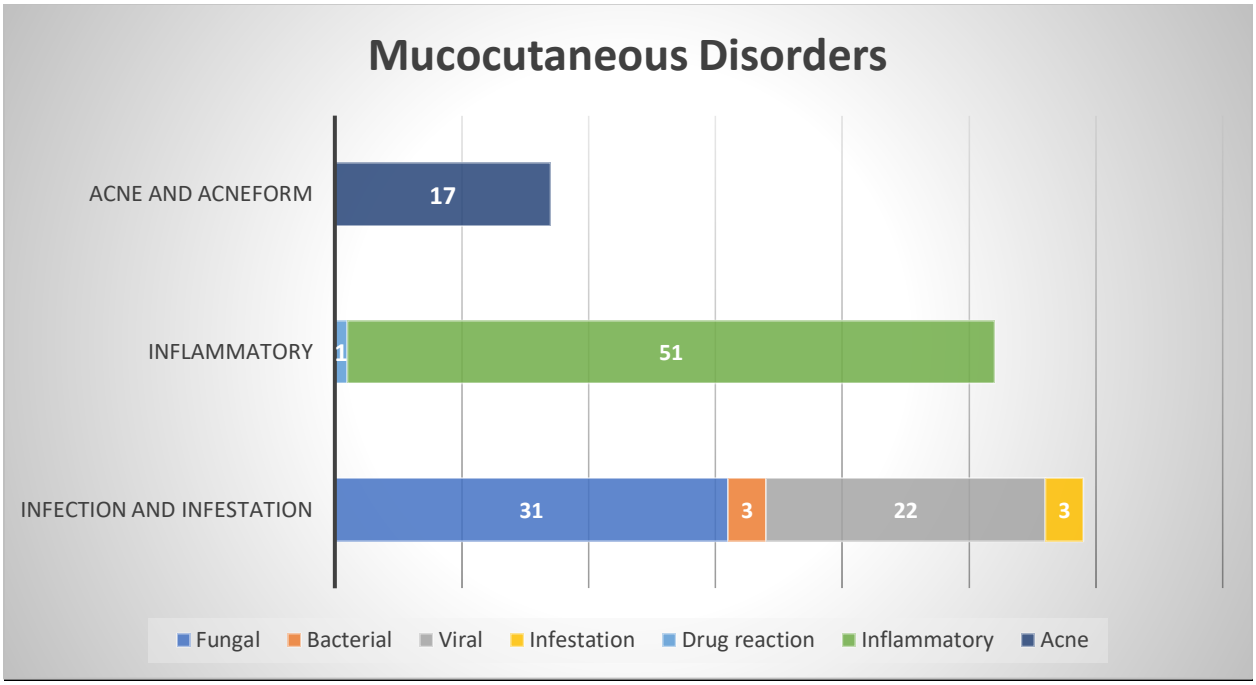

Figure 1: Frequency of mucocutaneous disorders for the Study of Pattern and Associated Factors of Mucocutaneous Disorders in HIV Infected Children on HAAR at ALERT Hospital, Addis Ababa, Ethiopia, 2023

Inflammatory disorder was most commonly seen in age group of 10-16 years (49(43.0%)). Infection and infestation were seen more on female participants 38(48.7%). Infection and infestation were also commonly seen on participants who are on first line of HAART regimen. Inflammatory type of skin manifestation was seen on 86(100%) of study participants on WHO stage 2 of HIV. Infection and infestation were commonin 29(50.9%) of the study participants, the duration of infection and infestation were between 1-6 months. 112 (87.5%) of the study participants has no treatment history for their mucocutaneous manifestation (Table 2).

Table 2: Pattern of Mucocutaneous Disorders for the Study of Pattern and Associated Factors of Mucocutaneous Disorders in HIV Infected Children on HAART at ALERT Hospital, Addis Ababa, Ethiopia, 2023

Variable	**Category**	**Group of Dermatological diagnosis**		
		Infection and Infestation Frequency (%)	**Inflammatory Frequency (%)**	**Acne and Acneiform Frequency (%)**
Age	0-4 years	3(60)	2(40)	0
	5-9 Years	8(88.9)	1(11.1)	0
	10-16 Years	48(42.1)	49(43.0)	17(13.3)
Sex	Female	38(48.7)	33(42.3)	7(9.0)
	Male	21(42.0)	19(38.0)	10(20.0)
Viral load	0 copy	49(44.1)	45(40.5)	17(15.3)
	1-999 Copies	3(60.0)	2(40.0)	0
	>=1000 Copies	7(58.3)	5(41.7)	0
HAART Regimen	First line	45(43.7)	43(41.7)	15(14.6)
	Second line	13(54.2)	9(37.5%)	2(8.3)
	Third line	1(100)	0	0
Duration of HAART	0-4 years	13(50.0)	8(30.8)	5(19.2)
	5-10 years	10(41.7)	11(45.8)	3(12.5)
	>=10 years	36(46.2)	33(42.3)	9(11.5)
WHO stage of HIV	Stage 1	41(100)	0	0
	Stage 2	0	86(100)	0
	Stage 3	0	0	1(100)
Comorbidities	Yes	2(50)	2(50)	0
	No	57(46.0)	50(40.3)	17(13.7)
Duration of Dermatologic Manifestation	<1 month	10 (71.4)	4(28.6)	0
	1-6 month	29 (50.9)	23(40.4)	5(8.8)
	7-12 month	7 (33.3)	8(38.1)	6(28.6)
	> 1 year	13(36.1)	17(47.2)	6(16.7)
Presence of other symptoms (Itching, pain, Burning sen	Yes	32(43.2)	36(48.6)	6(8.1)
	No	27(50.0)	16(29.6)	11(20.4)
Treatment History	Yes	9(56.2)	6(37.5)	1(6.2)
	No	50(44.6)	46(41.1)	16(14.3)

Of 128 children, 30(23.4%) had multiple skin conditions and were therefore counted more than once. From which Seborrhic Dermatitis was the commonest in 21.9% followed by Acne vulgaris and P.alaba in 13.3% and 12.5% respectively **(Figure 2)**. The least common mucocutaneous conditions accounting for 0.8% each were molluscum contagiosum, lipodystrophy, chronic urticaria, herpes zoster, folliculitis, maculopapular drug eruption, oropharyngeal candidacies, and herpes labials.

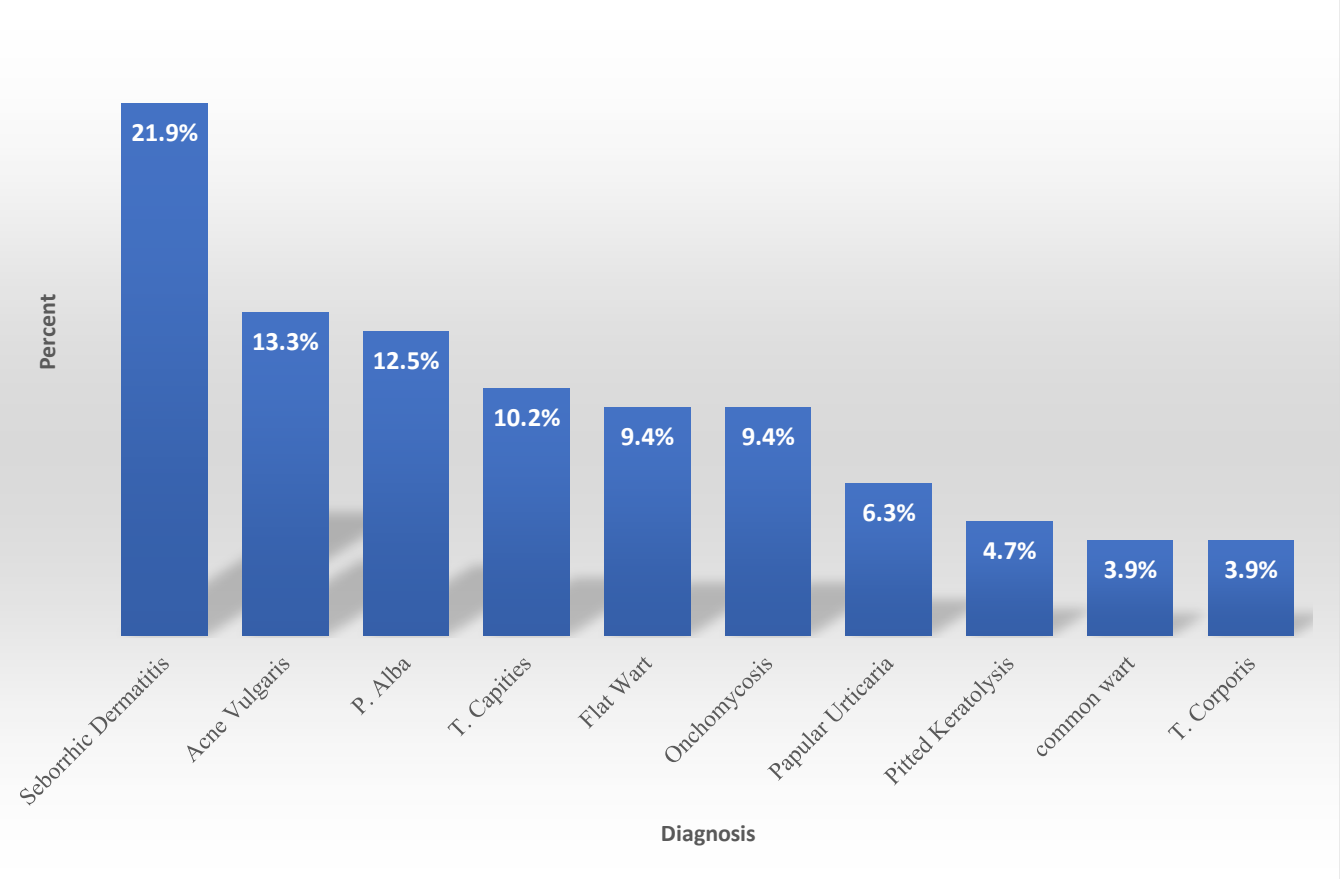

Figure 2: Diagnosis of mucocutaneous disorders for the Study of Pattern and Associated Factors of Mucocutaneous Disorders in HIV Infected Children on HAART at ALERT Hospital, Addis Ababa, Ethiopia, 2023

5.3 Factors associated with mucocutaneous disorders

After bi-variate logistic regression was done, the HAART regimen was found to be significantly associated with ($P<0.05$) mucocutaneous disorders. Children on a HAART regimen of 1J were 11 times more likely to have Acne vulgaris [COR: 11.7 (1.4, 94.0)] than those on a HAART regimen of 4I. When compared to the 4I HAART regimen, those on the 1J regimen was more protective against P.alba [COR: 0.19 (0.05, 0.76)]. Moreover, the 1J HAART regimen was more protective against T.capitis when compared with the 4I HAART regimen [COR 0.08 (0.01, 0.71)]. (**Table 3**)

Table 3: Factor associated with mucocutaneous manifestations disorders for the Study of Pattern and Associated Factors of Mucocutaneous Disorders in HIV Infected Children on HAART at ALERT Hospital, Addis Ababa, Ethiopia, 2023

Variable	Category	Group of Dermatological diagnosis								
		Seborrhic Dermatitis Frequency (%)	COR (95%CI)	Acne Vulgaris Frequency (%)	COR (95%CI)	P.Alba Frequency (%)	COR (95%CI)	T. Capititis Frequency (%)	COR (95%CI)	P-Value
Age	0-4 years	0	1	0	1	0	1	0	1	
	5-9 Years	0	0	0	0	0	0	5(55.6)	0	**>0.05**
	10-16 Years	28(24.6)	0	16(14.0)	0	15(13.2)	0	8(7.0)	0	**>0.05**
Sex	Female	18(23.1)	1	7(9.0)	1	9(11.5)	1	9(11.5)	1	
	Male	10(20.0)	0.83 (0.3,1.9)	9(18.0)	2.2 (0.7, 6.4)	6(12.0)	1.0(0.3,3.1)	4(8.0)	0.7 (0.2,2.3)	**>0.05**
Viral load	0 copy	25(22.5)	1	16(14.4)	1	14(12.6)	1	13(11.7)	1	
	1-999 Copies	2(40.0)	0.7(0.3,1.6)	0	0	0	0	0	0	**>0.05**
	>=1000 Copies	1(8.3)	0	0	0	1(8.3)	0.6 (0.07,5.2)	0	0	**>0.05**
Duration of HIV	0-4 years	3(12.0)	1	5(20.0)	1	3(12.0)	1	5(20.0)	1	
	5-10 years	5(21.7)	2.03(0.4, 9.7)	3(13.0)	0.6 (0.12, 2.8)	5(21.7)	1.4 (0.4, 6.1)	3(13.0)	0.6 (0.1, 2.8)	**>0.05**

	>=10 years	20(25.0)	2.4 (0.6, 9.1)	8(10.0)	0.4 (0.13, 1.5)	7(8.8)	0.5 (0.1, 1.7)	5(6.2)	0.3 (0.07, 1.01)	**>0.05**
HAART Regimen	First line	24(23.3)	1	14(13.6)	1	13(12.6)	1	13(12.6)	1	
	Second line	4(16.7)	0.7 (0.2, 2.1)	2(8.3)	0.6 (0.1, 2.7)	2(8.3)	0.6 (0.1, 2.9)	0	0	**>0.05**
	Third line	0	0	0	0	0	0	0	0	**>0.05**
Duration of Dermatologic Manifestation	<1 month	1(7.1)	1	0	0	2(14.3)	1	1(7.1)	1	
	1-6 month	15(26.3)	4.6 (0.6, 38)	5(8.8)	0.4 (0.1, 1.3)	5(8.8)	0.6 (0.1, 3.3)	9(15.8)	2.4 (0.3, 21)	**>0.05**
	7-12 month	4(19.0)	3.1 (0.3, 30.7)	4(19.0)	0.9 (0.2, 3.8)	1(4.8)	0.3 (0.03, 3.6)	0	0	**>0.05**
	> 1 year	8(22.2)	3.7 (0.4, 32)	7(19.4)	1	7(19.4)	1.4 (0.3, 8)	3(8.3)	1.2 (0.1, 12.4)	**>0.05**
Duration of HAART	0-4 years	3(11.5)	1	5(19.2)	1	4(15.4)	1	5(19.2)	1	
	5-10 years	6(25.0)	2.5 (0.6, 11)	3(12.5)	0.6 (0.1, 2.8)	5(20.8)	1.4 (0.3, 6.1)	3(12.5)	0.6 (0.1, 2.8)	**>0.05**
	>=10 years	19(24.4)	2.4 (0.6, 9.1)	8(10.3)	0.4 (0.1, 1.5)	6(7.7)	0.5 (0.2, 1.7)	5(6.4)	0.3 (0.07, 1.1)	**>0.05**
WHO stage of HIV	Stage 1	0	1	10(24.4)	1	9(22.0)	1	0	1	
	Stage 2	28(32.6)	0	6(7.0)	0.3 (0.1, 1.6)	6(7.0)	0.2 (0.08, 1.1)	13(15.1)	0	**>0.05**
	Stage 3	0	1	0	0	0	0	0	0	**>0.05**
	4I	31 (81.6)	1	1 (2.6)	1	9(23.7)	1	7 (18.4%)	1	

HAART Regimen	4J	10 (91)	0.5 (0.04, 4.1)	0	0	1 (9.1%)	0.32 (0.36,2.87)	5 (45.5%)	3.6 (0.8,15.6)	**P >0.05**
	1J	38 (70)	1.8 (0.7, 5.1)	13(24.1)*	11.7 (1.4,94.0)	3(5.6) *	0.19 (0.05,0.76)	1(1.9%)*	0.08 (0.01,0.71)	**P <0.05**
	2H	11 (91.7)	0.4 (0.04, 3.6)	2(16.7)	7.4 (0.67,90.1)	0	0	0	0	**P >0.05**
	5M	5 (100)	0	0	0	1(20.0)	0.8 (0.08,8.1)	19(24.4)	0	**P >0.05**
	2I	3 (75)	1.5 (0.1, 16.3)	0	0	1(20.0)	1.07 (0.09,11.6)	0	0	**P >0.05**

6. Discussion

In this study, among the total study participants, 59(46.1%) manifested infectious and infestation type of mucocutaneous disorder followed by an inflammatory type of mucocutaneous disorder 52*(*40.6%), the least being Acne and acne form17(13.3%). From infection and infestation, the commonest disorder was Fungal infection 31(52.5%) followed by Viral Infection 16(27.1%) the least type being bacterial and infestation each accounting for 3(5.1%) Aligned with this finding a descriptive cross-sectional study conducted in TikurAnbesa Specialized Hospital, Ethiopia states infectious dermatosis was the most prevalent mucocutaneous disorders but the most frequent was superficial fungal infection 102(51.8%), viral and bacterial infection occurred in 19.3% and 10.2% of patients respectively. Similarly, a cross-sectional study conducted in Zimbabwe and India has revealed the commonest skin manifestations as being infections and infestations (20,24, 25). Whereas a hospital-based cross-sectional study was conducted in Hawassa, Ethiopia, Viral skin infections account for 48 (53.3%), were the leading cause of skin infections followed by 43 (47.8%), 33(36.7%) and 22 (24.7%) fungal infections, inflammatory and bacterial skin infections respectively (2). In addition, another prospective cross-sectional study conducted in India revealed inflammatory disorders (58%) were more common, followed by nail disorders (40%), infectious dermatosis, (36%), and drug-related conditions (23%) (25). These differences might be attributed to geographical differences.

In our study, most of the skin conditions were seen in female patients accounting for 78(60.9%) where as in a study conducted in Hawassa, among those who had one kind of common skin infection, 53 (42.4%) were males(2). In a TikuraNbessa study, males and females were equally infected with one or more mucocutaneous lesions (72.5% and 72.6%) respectively (20). Infectious type of skin manifestation was common between the ages of 10-14 in a study conducted by Michael E et al. whereas in our study Inflammatory disorder was most commonly seen in the age group of 10-16 years in 49(43.0%) of the participants. This difference might be attributed to the age difference of the study participants. In our study, most mucocutaneous manifestations were seen in participants who are on stage 2 of HIV accounting for 86(67.2%), whereas in a study conducted by Yichalal E et al most that are 80(29.6%) of the mucocutaneous manifestation seen in stage 3 of HIV. Similarly, in a study conducted in India most mucocutaneous manifestations were seen in 26(45.6%) of stage 3 patients (25).

The findings of this study showed, that from 128 children, 30(23.4%) had multiple skin conditions and were therefore counted more than once. Seborrheic Dermatitis was the commonest in 21.9% followed by Acne vulgaris and P.alaba in 13.3% and 12.5% respectively. The least common mucocutaneous conditions accounting for 0.8% each were molluscumcontaginosum, lipodystrophy, chronic urticaria, herpes zoster, folliculitis, maculopapular drug eruption, oesophageal candidiasis, pityriasisversi color and herpes labials. Supporting these findings a dermatologic handbook written by Kassahun DB et al, states Seborrheic dermatitis occurs in 85% of HIV patients and it might be the only manifestation initially (17). In contrast with our findings, a study conducted by Michael E et.al stated, that the most frequent infection was that is superficial fungal that is tineacapitis, occurring in 28% while and the most common inflammatory condition was PPE accounting for 60(30.6%) whereas Seborrheic dermatitis was seen in 15(7.7%) of the study participants (20). Similarly, another study conducted in Ethiopia stated the commonest skin disorder identified was MolluscumContagiosum (21%), followed by Verruca Vulgaris and plane warts (21).

In this study, the HAART regimen was found to be significantly associated with ($P<0.05$) mucocutaneous disorders. Children on the HAART regimen of 1J were 11 times more likely to have Acne vulgaris [COR: 11.7 (1.4, 94.0)] than those on the HAART regimen of 4I. When compared to the 4I HAART regimen, those on the 1J regimen was more protective against P.alba [COR: 0.19 (0.05, 0.76)]. Moreover, the 1J HAART regimen was more protective against T.capitis when compared with the 4I HAART regimen [COR 0.08 (0.01, 0.71)]. However, studies conducted at TikurAnbessa Hospital and Tanzania found no significant difference in the prevalence of mucocutaneous disorders among children on HAART (20,29).

7. Strengths and limitations of the study

Strength

This study was conducted in one of the country's largest dernatovenerology referral hospital which helps to estimate the magnitude and patterns of mucocutaneous disorders commonly seen in HIV infected children attending HAART

Limitation

Prenatal and maternal history was excluded from the study as a significant number of children live with guardians.

This study is a cross-sectional study, which doesn't enable follow-up on treatment response

Only clinical and laboratory diagnosis was used and it is not supported by additional diagnostic modalities.

8. Conclusion and Recommendations

8.1 Conclusion

In this study, infectious and infestation type of mucocutaneous disorder were the commonest type of mucocutaneous disorders seen among study participants. This was followed by inflammatory and acne and acneform type of mucocutaneous disorders. From infectious cause fungal infection was frequently observed.In this study, HAART regimen was found to be significantly associated with ($P<0.05$) mucocutaneous disorders.

8.2 Recommendations

We recommend Researchers who have an inclination towards this topic to incorporate additional diagnostic modalities, so as to improve the diagnostic accuracy of mucocutaneous disorders seen in HIV infected children.

In addition to this treatment response of the diagnosed skin conditions can be followed by future studies.

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Annex 1: Informed Consent and Information Sheet(English Version)

Addis Ababa University School of Medicine, College of Health Sciences

Subject Information Sheet

Hello,

My name is ———————————————— I am here on behalf of DrAntenehBekele, a Dermatovenerolgyspecialty certificate candidate at Addis Ababa University School of Medicine, College of Health Sciences. He has received permission from Addis Ababa University Ethical board to conduct this research. I will be explaining information regarding the study and requesting you to participate in the study.

Purpose of the study:to evaluate pattern of mucocutaneous disorders in HIV infected children on HAART attending care and treatment in ALERT hospital,

Benefit of the study: This study will enhance early recognition and treatment of mucocutaneousdiseases and hence improve quality of life of children living with HIV.

Harm of the study: The study will take your and your child time through requiring you to answer questions regarding the required information by the data collector.

Confidentiality and right of participant: Your participation on this study will only be based on your willingness .You have the right to choose not to take part in this study. If you choose to take part, you have the right to stop at any time. If you are willing to participate or refuse or decide to withdraw later, you will not be subjected to any ill-treatment. Both you and your child's medical information that is going to be accessed for this study remained confidential. Data will be documented only using codes for each participant and no names will be recorded at the time of data processing. If you agree to participate in the study, you will be asked questions regarding your socio-demographic status, HIV status of your child, follow up, CD4 count the medications your child is on and the presenting clinical manifestation.

For further clarifications you can contact the coordinator of the research- DrAntenehBekele

Phone number- + 251911757471

Informed Consent

Based on the understanding of the above information, are you willing to participate in this study?

A) Yes

B) No

If yes, please sign on the agreement form and continue to respond for the following questioners.

Respondent

Signature _____Date_____

Informed assent form

I have been told that my parents (mom or dad) have said it's okay (or, have given permission) for me to participate, if I want to, in a study about mucocutaneous disorders in HIV infected children on HAART. I know that I can stop at any time I want to and it will be okay if I want to stop.

Name _____ Date _____

Annex 2: Data collecting questioner(English Version)

Section 1: Basic Sociodemographic characteristics

No.	**Question**	Answer
101	Mothers age at the index birth(in completed years)	_____
102	Maternal education status	1. No formal education 2. Primary education 3. Secondary education 4. More than secondary education
103	Sex of the child	1. Male 2. Female
104	Age of the child	_____

Section 2: Questions regarding the HIV status of the mother and the Child

No.	**Question**	Answer
201	Time of HIV diagnosis for the mother	1 During Pregnancy 2 After giving birth 3 other specify _____
202	Time of HIV diagnosis for the mother	1. before being pregnant 2. at time of pregnancy 3. at delivery 4. at the time of breast feeding 5. not taking HAART 6. Other (specify) _____
203	When was your child diagnosed with HIV?	_____
204	Number of years on HAART?	----------
205	Which is the regimen of HAART the child is taking	
206	What other medication is the child on?(from the card)	_____

207	What is the baseline CD4 count of the child?(from the card)	_____
208	What is the current CD4 count of the child?	
209	WHO Clinical staging	1. stage 1 2. Stage2 3. Stage 3 4. stage 4
2010	baseline Viral load	
2011	Current Viral load	_____

Section 3: Mucocutaneousneous manifestations (to be filled by year 2 or 3 Resident)

No.	**Question**	Answer
301	Duration of the mucoctaneous manifestation(in days) (if more than one type of skin lesion describe for each)	
302	Did the child had treatment history	1. Yes 2. No
303	If the answer for Q 302 is yes, specify the treatment	
304	If the answer for Q 302 is yes, duration in days	
305	If Any co morbid illness specify	
306	**The mucocutaneous manifestation the child is having (could be more than one)**	

Annex3: Informed Consent and Information Sheet (Amharic version)

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የጥናት ተሳታፊዎች የመረጃ ቅጽ

ጤና ይስጥልኝ እንደምን ነዎት? እኔ..... እባላለሁ የመጣሁት በአዲስ አበባዩኒቨርቲህክምናናጤናሳይንስኮሌጅ ውስጥ የቆዳና የአባላዘር ስፔሻሊስት ትምህርት በመከታተል ላይ የሚገኘውን ዶ/ር አንተነህ በቀለን ወክዬ ነው፡፡ ለዚህ ጥናት የሚሆን ፍቃድ ከአዲስ አበባ ዩኒቨርሲቲ ህክምናናጤናሳይንስኮሌጅ የስነምግባር ቦርድ አግኝቷል፡፡ በጥናቱ ላይ ተሳትፎ እንዲያደርጉ ከመጠየቆት በፊት ጥናቱን በተመለከተ በቅድሚያ የተወሰነ መረጃ እንሰጥዎታለን፡፡

የጥናቱ አላማ፡ በአለርት ሆስፒታል ክትትል እያደረጉና ፀረ ኤች.አይ.ቪ መመድሀኒት እየወሰዱ የሚገኙ ህጻናት ላይ የሚታዩ የቆዳ ችግሮችን ለመገምገም

የጥናቱ ጥቅም፡ ይሄ ጥናት የቆዳ ችግሮችን በጊዜ ለመለየትና ለማከም ይረዳል በመሆኑም በኤች.አይ.ቪ የተያዙ ህጻናትን ህይወት ያሻሽላል፡፡

የጥናቱ ጉዳት፡ ቃለመጠይቁ ከእርሶና የከልጅዎ ጊዜ ላይ ደቂቃዎችን ከመውሰዱ ውጪ ጉዳት የለውም፡፡

ሚስጥራዊነት እና የተሳታፊዎች መብት፡ የእርስዎ ተሳትፎ ሙሉ በሙሉ በፍቃደኝነት ላይ የተመሰረተ ነው።በጥናቱ ላይ ያለመሳተፍ ሙሉ መብት አለዎት። ለመሳተፉ ፈቃደኛ ከሆኑ በኋላም በፈለጉት ጊዜ ማቆም ወይም ማቋረጥ ይችላሉ በመሆኑም በጥናቱ ባለመሳተፎ የሚደርስቦት ችግር አይኖርም።በመጨረሻም ከእርሶም የምንሰበስበው መረጃ ከስምዎ ጋር አይያያዝም ስምዎት እንደማይጠቀስና ለማንም አካል ተላልፎ እንደማይሰጥ ልናረጋግጥልዎት እንወዳለን። የዚህ ጥናት ውጤት ግን ተጠርዞ እና ተዘጋጅቶ ጉዳዩ ለሚመለከታቸው የጤና ድርጅቶች ወይም ለሌሎች አካላት ሊሰጥ ይችላል ።

ለሚኖሮት ተጨማሪ ጥያቄ የጥናቱን አጥኚ ዶ/ር አንተነህ በቀለን ማነጋገር ይችላሉ፡፡

ስልክ ቁጥር፡ + 251911757471

<u>የስምምነት መጠየቂያ /ማረጋገጫ ቅጽ</u>

ከላይ በተሰጠዎት መረጃ መሰረት በጥናቱ ላይ ለመሳተፍ ፍቃደኛ ነዎት?

1.አዎ

2.አይደለሁም

መልስዎ አዎ ከሆነ እባኮትን የስምምነት መጠየቂያ ቅፁ ላይ በመፈረም በመረጃ ሰብሳቢው/ዋ ለሚቀርብሎት ጥያቄዎችን መልስ ይስጡ፡፡

የህፃናት የስምምነት ቅጽ

በእናቴ በኩል በአለርት ሆስፒታል ክትትል እያደረጉና ፀረ ኤች.አይ.ቪ መመድሀኒት እየወሰዱ የሚገኙ ህጻናት ላይ የሚታዩ የቆዳ ችግሮችን ለመገምገም የሚደረገው ጥናት ላይ ብሳተፍ ችግር እንደሌለው ተነግሮኛል (ተፈቅዶልኛል)፡፡ በማንኛውም ሰዓት ማቆም እንደምችልና ባቆምም ችግር እንደሌለውም ተነግሮኛል፡፡

ስም_____ ቀን _____

Annex 4: Data collecting questioner (Amharic version)

ቁጥር	ጥያቄ		መልስ
101	የእናት እድሜ ይሄኛውን ልጅ ስትወልድ(በሙሉ አመት)		_____
102	የእናት የትምህርት ደረጃ	ነ.	2. ምንም መደበኛ ትምህርት የላትም 3. አንደኛ ደረጃ 4. ሁለተኛ ደረጃ 5. ከሁለተኛ ደረጃ በላይ
103	የህጻኑ ፆታ	ነ.	2. ወንድ 3. ሴት
104	የህጻኑ እድሜ		_____

ክፍል 2: የህፃኑንና የእናት የኤች.አይ..ቪ ሁኔታ የሚዳስስ ጥያቄ

ቁጥር	ጥያቄ	መልስ
201	እናትየው የኤች.አይ..ቪ እንዳለባት የተመረመረችበት ጊዜ	1 በእርግዝና ወቅት 2 ከወለደች በኋላ 3 ሌላ ካለ ይገለጽ _____
202	እናትየው ፀረ የኤች.አይ..ቪ መድሀኒት የጀመረችበት ጊዜ	1. ከእርግዝና በፊት 2. በእርግዝና ወቅት 3. በወሊድ ወቅት

		4. ጡት በምታጠባበት ወቅት 5. ፀረ የኤች.አይ..ቪ መድሀኒት አልጀመረችም 6. ሌላ ካለ ይገለጽ _____
203	መቼ ነበር ልጅሽ የኤች.አይ..ቪእንዳለበት የተመረመረው?	_____
204	ፀረ የኤች.አይ..ቪ መድሀኒት የጀመረበት ጊዜ	----------
205	የትኛውን ፀረ የኤች.አይ..ቪ መድሀኒት ልጅሽ እየወሰደ እየወሰደ ያለው	
206	ልጁ በተጨማሪ እየወሰደው ያለው መድሀኒት አለ(ከካርድ ላይ)	_____
207	የልጅሽ CD4 ቁጥር አሁን ላይ ስንት ነው?(ከካርድ ላይ)	_____
208	የልጅሽ የመጀመሪያው CD4 ቁጥር ስንት ነበር	
209	የWHOክሊኒካል ደረጃው	1. ደረጃ 1 2. ደረጃ2 3. ደረጃ 3 4. ደረጃ 4
2010	የመጀመሪያው የቫይረስ ቁጥር	
2011	የአሁን የቫይረስ ቁጥር	_____

ክፍል 3: የቆዳ ችግሮች መግለጫ (በሁለተኛ ወይም በሶስተኛ ዓመት ሬሲደንት የሚሞላ)

ቁጥር	**ጥያቄ**	**መልስ**
301	የቆዳ ችግሮችየቆዳ ችግሮች ታታበት ጊዜ(በቀናት)	

	(ከአንድ በላይ የቆዳ ችግሮች ከታየ ለሁሉም ይገለፅ)	
302	ሕጻኑ ለቆዳው ችግር ህክምና አግኝቷል	1. አዎ 2. አላገኘም
303	ለጥያቄ ቁጥር 302መልሱ አዎ ከሆነ, ህክምናውን አብራሩ	
304	ለጥያቄ ቁጥር 302መልሱ አዎ ከሆነ, ለምን ያህል ጊዜ	
305	ሌሎች ተያያዥ የነንዮሽ በሽታ አለ? ካለ ይገለፅ	
306	ሕጻኑ ለቆዳው ችግር ምንድን ነው(ከአንድ በላይ ሊሆን ይችላል)	