



Review article

A review on effect of planned teaching programme on knowledge and practices in relation to prevention and management of scabies among mothers of under five children in a selected hospital

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Abstract

Scabies is a common contagious parasitic dermatosis. Transmission of the mite *Sarcoptes scabiei* var *hominis* generally occurs by skin-to-skin contact, but with crusted scabies it may also occur through fomites, such as infected clothing or bedding. Scabies remains a public health problem, especially in developing countries, with a worldwide incidence of approximately 300 million cases each year. Prolonged skin-to-skin contact is necessary to allow the transmission of the causative mite, *Sarcoptes scabiei*. Diagnosis is usually clinical. A 2010 updated Cochrane review concluded that management of scabies is based on topical scabicides, mainly 5% permethrin. However, oral ivermectin, although not licensed in many countries, may be useful, particularly for patients who cannot tolerate or comply with topical therapy and in institutional scabies epidemics. Classic scabies presents with burrows, erythematous papules, and generalized pruritus. Clinical variants include nodular scabies and crusted scabies, also called Norwegian scabies. The diagnosis is based mainly on history and physical examination, but definitive diagnosis depends on direct visualization of the mites under microscopy. Alternative diagnostic methods include the burrow ink test, video-dermatoscopy, newly serologic tests like PCR/ELISA, and specific IGE directed toward major mite components. Treatment of scabies consists of either topical permethrin or oral ivermectin, although the optimal regimen is still unclear. The aim of this systematic review is to provide an overview of the study is to prevention and management of scabies among mothers of under five children before and after planned teaching programme.

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1. Introduction

Scabies is an ectoparasitic infestation caused by the mite *Sarcoptes scabiei* variety *hominis*, an arthropod of the order *Acarina* [1]. The name *Sarcoptes* is derived from the Greek word *sarx*, meaning flesh, and the word *koptein*, which means to smite or to cut. *Scabiei* comes from the Latin word *scabere*, which means to scratch. Aristotle was the first one to use the word *Akari*, although this was not *S. scabiei* but a mite living in the woods [2]. *S. scabiei* was first described more than 2,500 years ago, but it was not until 1687 that the causative organism was identified by Bonomo

and Cestoni using a light microscope [2]. The aim of this article is to review the latest scientific articles on the diagnosis, prevention, and treatment of scabies. Additionally, we provide a summary of the epidemiology of the disease.

2. Epidemiology

Scabies occurs worldwide and is considered a significant public health problem, especially in the developing world [3], with an incidence of 300 million cases each year [4]. It predominantly affects children living in poor and overcrowded tropical areas [3]. This preferential distribution among younger

populations is believed to reflect both increased exposure to the parasite and lack of immunity of the host. Scabies affects genders equally, and its ethnic differences are most likely related to variables such as overcrowded housing and socioeconomic and behavioral factors, rather than racial variables alone. Other risk factors include poverty, poor nutritional status, homelessness, dementia, and poor hygiene [5, 6]. Outbreaks frequently occur in institutions such as hospitals, nursing homes, prisons, and kindergarten classrooms. In 2012, Chun-Hao et al. showed that patients who were bedridden or were living in nursing homes, patients who had a higher clinical severity status before admission, or patients who had a catheter inserted (including nasogastric, urinary, or intravascular catheters) were significantly more likely to acquire scabies while institutionalized [7].

3. Incidence and prevalence of scabies among under five children

On investigation of a scabies outbreak in a kindergarten in Constance, Germany. They used a questionnaire and an observation check list among the sample (100) to assess the transmission of *Sarcoptes* mites through body contact or via fomites. Study documented that the attack rate was significantly higher in nursery. It seems that the particular pedagogical concept of the kindergarten favoured the spread of *Sarcoptes* mites [8].

A study was analysed on retrospective review of medical records on skin disease in the first two years of life in East Arnhem Land to find out the most prevalent disease present in the first two years of life among 99 children from 2001 to 2005 which revealed that 68% are present with scabies. Study concluded that Skin infections are a major reason for presentation to primary health clinics by children in the first 2 years of life [9].

An Internet-based survey was conducted on Infantile acropustulosis (IA) in internationally adopted children with an objective to demonstrate the prevalence of IA in internationally adopted children and to examine the number of doctors seen for IA before a diagnosis, the frequency of misdiagnoses, specialists most likely to make the diagnosis of IA, and features of IA among 38 young children. Internet-based survey was

posted on international adoption forums. Followed by a telephonic questionnaire. They concluded that Seventeen children (53%) of diagnosed as scabies which shows that scabies is prevalent among all over the world [10].

A survey was conducted on prevalence of scabies and head lice among children in welfare home in Pula Pinang, Malaysia among 120 children. Results showed that prevalence rate of scabies was 31% and for head lice infestation was 49%. Scabies was more commonly seen in boys (50%) than girls (16%) [11].

A survey was carried out on Facts, fiction, and figures of the *Sarcoptes scabiei* infection inferred that scabies, an ectoparasitic skin disease caused by the mite *Sarcoptes scabiei* variety *hominis*, is estimated to infect over 300 million humans worldwide [12].

A survey was analysed on frequency of scabies in Iraq in a dermatology clinic among 1,194 patients. During the study period, 132 [1.1%] patients with scabies were identified about 91% of cases were younger than 45 years. Study concluded that prevalence of scabies was high in a dermatology clinic, and prisoners were identified as high-risk group [13].

A survey was carried out on Prevalence of skin disorders in school children in Ibadan, southwest Nigeria among 1415 students. Study displayed that Pyoderma, ringworm infection and scabies accounted for 0.6%, 1.0% and 1.1% of diseases respectively [14].

A retrospective study was conducted on the spectrum of skin disease among Indian children with the objective of evaluating the epidemiologic features of pediatric dermatoses at New Delhi among children less than 12 years of age with a size of 32,341 concluded that Most of the disease was seen in the 1- to 5-year age group (44.94%). The most common skin diseases were infections and infestations (47.15%) and out of that scabies has accounted for (21.54%) [15].

A survey was carried out on common skin problems presented that dermatological problems manifesting as primary and secondary cutaneous complaints constitute at least 30% of all outpatient visits to a

pediatrician and 30% of all visits to dermatologists involve patients of pediatric age group. In short he wound up that Common dermatological problems in India are mainly infestations such as pediculosis capitis, scabies [16].

A retrospective study of skin diseases in children less than 13 years old was performed at the referral Pediatric Dermatology Clinic at Thailand. In analysis it was observed that in children, eczematous dermatitis was the most common (41.2%), followed by skin infections (21.9%) [17].

Scabies and head-lice infestations in different environmental conditions of lower Silesia, Poland Compared external parasitic infestations among inhabitants of Legnica, Wałbrzych, and Wrocław districts, in the Lower Silesia region of Poland displayed a direct relationship between the high incidence of scabies and low standard ecological indices, as well as social economic setting of the communities. It was observed that the highest mean incidences of scabies per 100,000 people (80 and 46) were noted, respectively, in the Legnica and Wałbrzych districts, compared to only 7.9 in the Wrocław district [18].

4. Classification, prevention and management of scabies

A retrospective study was conducted on Skin diseases in Greek and immigrant children in Athens, with the aim to characterize the spectrum of skin diseases affecting children in Greece with age group of 0-12 years who were examined and diagnosed with dermatoses at the outpatient clinic of a university dermatological hospital between December 2005 and August 2007. This study documents Immigrants had an increased risk for bacterial infections and scabies [19].

Control strategies for endemic childhood scabies developed a network-dependent Monte-Carlo model of the scabies contagion, with the dual aims of gaining insight into its dynamics, and in determining the effects of various treatment strategies. Research demonstrated that creating a community-specific model allows for the determination of an effective treatment protocol that can satisfy any pre-defined target prevalence [20].

A quasi experimental research was carried on clinical and parasitological study on scabies in Sirte, Libya with an aim to determine the risk factors, clinical and parasitological skin lesion features and effective drug regimens among 200 dermatology patients. Sample were assessed with the help of detailed questionnaire, dermatological skin examination, parasitological skin scraping test (SST), burrow ink test (BIT), drug administration and follow up. Study disclosed that females 59%, children 37.5% and military personnel 18% of immigrant families were particularly prone to scabies infestation. They concluded that effective risk factors included overcrowding, bed sharing, low hygienic and education levels. Topical permethrin proved more effective than precipitated sulphur with cure rates of 100% and 85.3% in 21% and 75% of cases, respectively. Ivermectin was 100% effective in 4% of cases [21].

An epidemiologic population-based analysis was conducted on Incidence of childhood dermatoses in India among 390 boys and 310 girls among children below 14 years in the western part of India. Study exhibited that the most common dermatoses found were of infectious etiology (38.43%) in which impetigo (11.13%) and pyoderma (8.9%) was the most common. In infectious etiology, incidence of scabies was 5.32%. Many of these dermatoses can be controlled by proper environmental sanitation, improving nutrition, awareness among parents and children, and preventing overcrowding [22].

A study was carried out on skin disorders, including pyoderma, scabies, and tinea infections. Study concluded that skin disorders cannot be differentiated by ethnicity or socioeconomic status but, in high-prevalence areas, poverty and overcrowded living conditions are important underlying social determinants. Each is transmitted primarily through direct skin-to-skin contact [23].

In an open, non-comparative study in Nigeria On effectiveness of aloe Vera in scabies treatment among 30 patients. Sixteen patients were treated with Aloe Vera and 14 patients had benzyl benzoate lotion. Itching was still present in 3 patients in the benzyl benzoate group and in 2 patients in the Aloe Vera group after 2 courses of treatment. Study displayed

that Aloe Vera gel is as effective as benzyl benzoate in the treatment of scabies [24].

A retrospective analysis was conducted on Skin disorders and disease profile of poverty: analysis of medical records in northern Ethiopia aimed at describing skin disease patterns among 31721 patients. Study documented that 50% of samples sought hospital service because of scabies. They found that the most common and readily treatable skin diseases are related to household crowding and lack of hygiene i.e. the 'disease profile of poverty' and, in general, to health inequalities [25].

In a repeated cross-sectional study on epidemiology of scabies in an impoverished community in rural Brazil: presence and severity of disease are associated with poor living conditions and illiteracy. It was based on two door-to-door surveys. One survey was carried out in the rainy season, the other in the dry season. The highest prevalence (18.2%) was observed in children younger than 4 years. They concluded that risk factors are young age, presence of many children in the household, illiteracy, low family income, poor housing, sharing clothes and towels, and irregular use of shower. Study documented that poor living conditions and a low level of education are main reason of scabies [26].

A community-based survey was conducted on Socio-demographic characteristics of children infested with scabies in densely populated communities of residential madrasahs (Islamic education institutes) in Dhaka, Bangladesh with an objective to study the socio-economic profile, water-sanitation facilities, personal hygiene and living conditions of these children [27]. Direct interviews were used to collect the data and clinical check up was performed in all children. It was observed that total 492 children who received clinical check-ups; 92.5% were boys 63.4% of fathers and 98.5% of mothers were either illiterate or had only received primary education, 55.1% of fathers were in low-paid laboring jobs, and 99% of mothers were housewives. Of the 98% of children who had scabies, 71% had been re-infected (96% during the winter). Seventy-four percent of children were living in poorly ventilated buildings with overcrowded sleeping arrangements. They had poor personal

hygiene: 21% shared towels; 8% shared undergarments; 30% shared bed linen; and 81% kept their used clothes on a communal line or shelf. Sanitation was also poor: 39% bathed infrequently, although 97% carried out mandatory ablution. Most children (61%) washed their clothes (including undergarments) two or three times a fortnight, 35% did so every 2-3 days, and 3.7% washed their clothes on alternative days. Disease severity and re-infection were associated with infrequent washing of clothes and bed linen, overcrowded sleeping arrangements and infrequent bathing with soap. This was further related to household income .

An experimental study on interventions for treating scabies was held with an objective to evaluate topical and systemic drugs for treating scabies. Study presented that topical permethrin appeared more effective than oral ivermectin, topical crotamiton, and topical lindane. Permethrin also appeared more effective in reducing itch persistence than either crotamiton or lindane. No significant difference was detected in the number of treatment failures between crotamiton and lindane, lindane and sulfur, benzyl benzoate and sulfur, and benzyl benzoate and natural synergized pyrethrins. All were topical treatments. Study concluded that topical permethrin appears to be the most effective treatment for scabies [28].

A study was carried out on Clinical features and associated morbidity of scabies in a rural community in Alagoas, Brazil with an objective to describe the clinical characteristics of scabies and the associated morbidity in an impoverished rural community in northeast Brazil. A door-to-door survey was made to examine, first at the end of the rainy season, and a second time in the dry season 4 months later results showed that total, 2005 individuals were examined. In the rainy season, 102 of the 1015 persons examined were infested with scabies [10.0%; 95% confidence interval (CI) 8.3–12.1%], in the dry season 94 out of 990 persons (9.5%; 95% CI 7.8–11.5%), thus giving an overall prevalence of 9.8%, Table 1. The median age of the patients was 8 years (range 0–79 years). Study concluded that Scabies is associated with considerable morbidity in this endemic community [29].

Table 1 Topographic distribution of lesions according to age group

SN	Localization of lesions	All (%)	Individuals infested ≤ 7 years (%)	Individuals infested > 7 years (%)	<i>P</i> -value
1	Abdomen	164 (83.7)	77 (82.8)	87 (84.5)	1.0
2	Inguinal area/medial parts of thighs	130 (66.3)	62 (66.7)	68 (66.0)	1.0
3	Axillas	122 (62.2)	67 (72.0)	55 (53.4)	0.25
4	Wrists	110 (56.1)	65 (69.9)	45 (43.7)	0.07
5	Interdigital spaces	105 (53.6)	60 (64.5)	45 (43.7)	0.14
6	Legs	100 (51.0)	56 (60.2)	44 (42.7)	0.22
7	Thorax	100 (51.0)	47 (50.5)	53 (51.5)	0.96
8	Back	99 (50.5)	51 (54.8)	48 (46.6)	0.59
9	Elbows	98 (50.0)	52 (55.9)	46 (44.7)	0.43
10	Buttocks	93 (47.4)	54 (58.1)	39 (37.7)	0.12
11	Arms	93 (47.4)	47 (50.5)	46 (44.7)	0.72
12	Hand†	66 (33.7)	42 (45.2)	24 (23.3)	0.03
13	Mamillae/perimamillar area	58 (29.6)	21 (22.6)	37 (35.9)	0.17
14	Feet	45 (23.0)	34 (36.6)	11 (10.7)	0.001
15	Genitals	33 (16.8)	26 (28.0)	7 (6.8)	0.002
16	Scalp/neck/face	6 (3.1)	9 (9.7)	1 (1.0)	0.02
17	Total	196	93	103	

*Multiple observations possible., †Other parts than the interdigital spaces and the wrists.

Scabies described that Scabies is a neglected parasitic disease and disease control requires treatment of the affected individual and all people they have been in contact with, but is often hampered by inappropriate or delayed diagnosis, poor treatment compliance, and improper use of topical compounds such as permethrin, lindane, or benzyl benzoate. The disease is strongly associated with poverty and overcrowding, and the associated stigma can ostracize affected individuals. They concluded that treatment of scabies in poor countries needs to integrate drug treatment programme with efforts to improve the socioeconomic conditions and education programme to reduce stigma [30].

islands during the treatment period were treated; just over half of them twice. On Sulufou where the census population was 743, 228 were away, 494 were treated once or twice and 21 declined or avoided treatment. Ten per cent of the children said to have scabies or possible scabies at baseline were diagnosed as having scabies or possible scabies at the next review, 4 or 5 months later. Of these possible failures, half were among the 24% of children treated topically with permethrin. On Addagege a single treatment was similarly effective although half the population had scabies before the treatment was given. Here, all ten children with scabies who were treated with ivermectin and seen again 4 months later were cured [31].

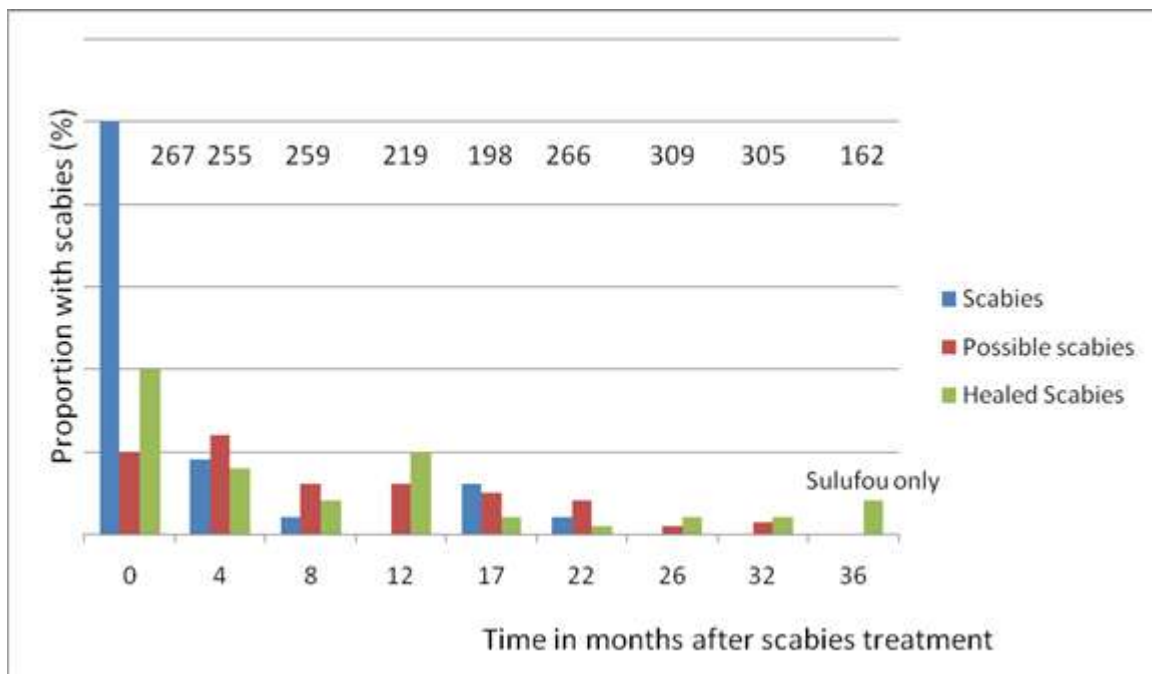


Figure 1: Number of children with scabies by approximate months after treatment

A quasi experimental study was conducted on Control of scabies, skin sores and haematuria in children in the Solomon Islands: another role for ivermectin with an objective to assess the effects of a 3-year programme aimed at controlling scabies, skin sores, streptococcal skin contamination, serology and haematuria in the island children. The prevalence of scabies fell dramatically on all the islands after treatment (Fig. 1), from a mean of 25%, 66 of 267 (95% CI, 20–30), to a steady level of less than 1%, 2 of 305 (0.7%; 95% CI, 0.1–2.2), $P < 0.001$. No adverse events were noted. Over 95% of the people who were present on the

In an experimental on Cost-benefit analysis of ivermectin, permethrin and benzyl benzoate in the management of infantile and childhood scabies. Study suggested that 5% Permethrin is an excellent substitute and has many advantages. In the opinion of the author, 5% permethrin is the best treatment for scabies in infants and young children [32].

An experimental study was conducted on Factors supporting sustainability of a community-based scabies control program which revealed that treating families in isolation will have only limited success, as reinfection frequently occurs as a result of the high levels

of movement between households and communities [33].

In Diagnosis and treatment of scabies in: rapid diagnosis and proper management limit the risk of spread states that the lesions are often more extensive in children. Crusted (hyperkeratosis) scabies, a severe and highly contagious form, mainly occurs in immune compromised patients. Atypical forms can be diagnosed by direct examination of skin scrapings for parasites. Topical treatment is based on insecticides. 5% permethrin is recommended interference textbooks. Benzyl benzoate (possibly combined with sulfiram) is poorly evaluated. Scabies can be treated more easily with ivermectin, an oral anti parasitic agent [34]. A study was conducted on an observer-blinded randomized controlled trial Ivermectin is better than benzyl benzoate for childhood scabies in developing countries with the objective to compare single dose oral ivermectin with topical benzyl benzoate [35]. One hundred and ten children aged from 6 months to 14 years were randomized to receive either ivermectin 200 micro g/kg orally or 10% benzyl benzoate topically. Follow up was at 3 weeks post-treatment. Primary outcome measures were the number of scabies lesions, the itch visual analogue score and nocturnal itch. Secondary outcome measures were the skin's reaction to treatment, Study presented that 56% got cured by Ivermectin and 44% got cured by benzyl benzoate. No serious side effects were noted with either treatment, but benzyl benzoate was more likely to produce local skin reactions. Study concluded that Ivermectin is better than benzyl benzoate for the treatment of paediatric scabies in developing countries.

Bacteria and fungi mentioned that Infections may lead to a multitude of pathological skin alterations, and A prerequisite for successful treatment is an accurate diagnosis based on the medical history, clinical presentation and the culture of pathogens. Of importance among the bacterial skin diseases in pediatrics are impetigo, scarlet fever, borreliosis and cat-scratch fever. Dermatophytoses caused by *Trichophyton* or species of *Microsporum* affect either hair-bearing skin (scalp) (tinea capitis) or non-hair-bearing skin of the face, trunk, neck and limbs (tinea corporis). In babies, infections with the yeast fungus, *Candida albicans*, often develops from diaper rash. In addition to

measles, rubella and varicella, viral dermatoses in children include herpes simplex or infections with Papillomavirus. Characteristic cutaneous alterations may also be caused by parasites, such as the scabies (itch) mite, and the head louse [36].

An epidemiological study was carried out on skin diseases in children in rural Kenya: long-term results of a dermatology project within the primary health care system. With the objective to assess the impact of hydrocortisone acetate 1% cream for dermatitis, gentian violet 1% solution for bacterial skin infections. Results revealed that among the communicable diseases bacterial infections declined from 12.7% to 11.3% fungal infections rose from 10.1% to 13.9% and arthropod infections (mainly scabies) remained at similar levels of 8.3% [37]. Study concluded that the prevalence of dermatoses in children in rural Africa does not only depend on treatment schemes within the primary health care system, but on the socio-economic conditions available.

5. Method of imparting knowledge

A quasi experimental, nonequivalent control group pre-test post-test was conducted with an aim of assessing the effectiveness of planned teaching programme on self-care of patients with diabetes mellitus with an objective of Identify the knowledge of patients with diabetes mellitus, assess the self-care practices by the patients with diabetes mellitus and to determine the effectiveness of the planned teaching programme on self care. It was observed that planned teaching programme was effective to improve the knowledge and self care practice of patients with diabetes [38].

A quasi experimental study was carried out on effect of planned teaching programme on knowledge, attitude and knowledge on practice of acute respiratory infections among mothers to evaluate the effectiveness of a planned teaching programme (PTP) among mothers in the experimental group at Erode [39]. The study showed that the health education imparted to the mothers had an effect on their knowledge, attitude and knowledge on practice regarding acute respiratory infections had a great potential for accelerating the awareness among the mothers on various age group.

A quasi experimental study was conducted on Effective Planned Teaching Programme on Knowledge & Practice of Basic Life Support among Students in Mangalore. With different objectives such as to assess the existing level of knowledge and practice of high school student on BLS, to develop and validate planned teaching programme (PTP) on knowledge and practice regarding basic life support, to determine the effectiveness of PTP in terms of gain in knowledge and practice scores [40]. The study presented that majority 35 (87.5%) of the students had inadequate knowledge and 40 (100%) had poor practice. The planned teaching programme facilitated them to update their knowledge and practice related to BLS. Hence the planned teaching programme was an effective teaching strategy to improve the knowledge and practice of sample on BLS.

Effectiveness of Planned Teaching Programme on Knowledge and Attitude about Complementary Feeding among Mothers of Infants with the one of the objectives of the present study was to evaluate the effectiveness of the PTP in terms [41]. The study documented that the mean post-test knowledge score was higher than the mean pretest knowledge score which showed that planned teaching programme is an acceptable method of imparting knowledge.

6. Knowledge and practices of mothers of children under five years of age regarding scabies

A cross-sectional study was conducted on Prevalence of pediculosis and scabies in preschool nursery children of Afyon, Turkey. A school-based, cross-sectional study was performed, with 1,134 children chosen for evaluation. All cases were evaluated by physical examination and a detailed, structured questionnaire. Study concluded that infestations were more frequent in children with mothers whose education levels were low [42].

A cross-sectional surveys was carried on Epidemiology and morbidity of scabies and pediculosis capitis in resource poor communities in Brazil with an objective to assess the prevalence seasonal variation and morbidity of pediculosis capitis and scabies in poor neighbor hoods. Study concluded that skin

diseases are prevalent in resource-poor communities which are indirectly associated with poor hygienic practices and low education of mothers [43].

A study on dealing with scabies described that the challenge for nurses in hospital and community settings is to recognize scabies, deal with it appropriately and to help educate those who are most vulnerable. She suggested that poor knowledge lead to wrong treatment practices of mothers of under five children which indirectly aids in harboring diseases [44].

Scabies is a frequent, contagious dermatosis. Its management is sometimes complex and updated treatment guidelines are useful [45,46] Patients and people in close physical contact with infected individuals should receive detailed information from healthcare providers, because treatment failure is often attributable to poor compliance or incorrectly carrying out instructions of prescribed therapy. Decision-making for topical or oral treatment may vary by situation. Randomized controlled trials comparing topical treatment to oral ivermectin demonstrating a high level of evidence are needed.

Scabies still remains a significant public health problem, especially in the developing world. Diagnosis of the disease is still challenging. Efforts should be made to develop a standardized, reliable, and cheap method for the diagnosis of scabies that can be affordable to underdeveloped countries, where most of the cases of scabies are seen. The ideal treatment modality is still unclear, and further research on this topic is warranted.

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