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*Source / Izvornik:* **Acta dermatovenerologica Croatica, 2018, 26, 33 - 38**

**Journal article, Published version**

**Rad u časopisu, Objavljena verzija rada (izdavačev PDF)**

*Permanent link / Trajna poveznica:* <https://um.nsk.hr/um:nbn:hr:239:031492>

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*Download date / Datum preuzimanja:* **2025-02-05**



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## Treatment of Scabies and Pediculosis in Health Education Publications and Folk Medicine of Eastern Croatia – Slavonija, Baranja, and Western Srijem County

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Received: September 1, 2017

Accepted: October 10, 2017

**ABSTRACT** Scabies and pediculosis are common parasitic infestations of the skin and hair, manifesting with intense pruritus and effectively treated with modern medications. Because of the attached social stigma linking it with poverty and poor hygiene, patients will often attempt alternative folk-based remedies before confiding in their physicians. We conducted a comprehensive bibliographical study of historic folk literature and interviewed 70 individuals experienced in everyday application of folk medicine in order to categorize available remedies and provide a modern, scientific comment on their effectiveness and dangers. Compositions containing sulfur, copper sulfate, petroleum, coal, tar, and highly alkaline soaps and washing solutions undoubtedly have scabidical and pediculicidal properties, but they are used either in high concentrations with greater possibility of intoxication and irritation or lower concentrations with questionable therapeutic benefit. These remedies, extracted from historical-cultural frameworks, are poorly adapted to modern standards and can lead to side-effects and complications. Physicians today have to be aware of the reasons their patients seek alternative remedies and know the substances and procedures they may use in self-healing, so as to be able to provide the help that may be needed if those complications occur.

**KEY WORDS:** lice infestations, scabies, traditional medicine

### INTRODUCTION

Scabies and pediculosis are common parasitic dermatoses caused by *Sarcoptes scabiei*, *Pediculus humanus*, and *Phtirus pubis* (1). Scabies affects more than 130 million people globally (2) with occurrence rates below 10% in Europe (3). Pediculosis is considered uncommon in developed countries. The leading symptom is intense pruritus accompanied by eczematization and impetiginization due to scratching. Diag-

nostics include microscopic or dermoscopic examination of skin scrapings revealing scabies mites, eggs, or fecal pellets. Live lice or lice eggs are mostly found on the seams of patients' clothes. Treatment guidelines for scabies suggest oral ivermectin with topical 5% permethrin cream or 10-25% benzyl benzoate lotion (4). Pediculosis is treated with 1% permethrin lotion or a mixture of pyrethrins and piperonyl butoxide (5).

Both parasitoses are underreported due to the social stigma associating them with poor hygiene and poverty (6). Patients are more inclined to attempt various home treatments easily found online on alternative medicine sites and forums that offer “natural” treatment deriving from ancient folk medicine. This paper provides valuable scientific insight into the self-treatment of scabies and pediculosis used in rural communities during the 19th and 20th century.

## PATIENTS AND METHODS

This comprehensive study covered the topic using two methods: historical bibliographical research from museum archives and field research using semi-structured interviews.

Bibliographical research included locating, retrieving, and evaluating relevant information (7), but also focused on correct presentation and comparative analysis of the findings. Sources of the bibliographical material were three institutions in Eastern Croatia: Museum of Slavonia in Osijek, the archive of the City Museum in Požega, and the library of the Local Museum in Slatina. The subject of this study was not professional medical literature but publications written with the purpose of general public education.

Several publication types were used: (a) folk medicine books, or originally “Ljekaruše”, a collections of recipes and instructions on treating human and animal diseases; (b) health articles in newspapers and magazines from the beginning of the 20th century; (c) folk calendars, annuals written to influence the hygiene and health habits of the rural population; (d) health advisor books, written in a practical, easy-to-understand way with science-based facts on disease causes; (e) ethnographies, books presenting empirical data on human societies and culture, also containing disease descriptions and available treatment methods.

Field research was done using qualitative ethnological methods based on semi-structured interviews. We interviewed 70 individuals, aged 65 to 95, who had no professional medical education or training but possessed experience with application of conventional procedures and recipes in everyday family life. All interviews were conducted in villages and towns of eastern Slavonia, Baranja, and Western Srijem.

## RESULTS

Bibliographical research data are presented in Table 1 and Table 2.

Field research results show all study participants associated scabies with poverty and lack of hygiene.

Only 16 people remembered having it in childhood. Those old enough to remember World War II associated the rise in scabies with military presence in the village. Participants expressed astonishment and disbelief over the fact that scabies infections are still present today with the availability of modern hygiene facilities. The majority clearly differentiated pruritus and *the itch* (scabies) – *the itch* is distinguished by itching being worsened at night, specifically on the abdomen and between fingers. Study participants were aware that scabies infestation is easily transmitted, especially in the same household, and recalled it being treated it with a yellow, sulfuric ointment from a pharmacy or a mixture of a yellow powder and pig fat that they would mix themselves. They did not recall whether family members who did not exhibit symptoms were treated.

Lice infestation was not considered as shameful as scabies (some claim lice prefer clean hair), and all study participants admit to having head lice at least once. Similarly, those old enough to remember World War II associate it with military presence in the village. They were not surprised that lice infestation is still frequent today and consider it easily treatable with modern medicine. They did not differentiate body louses from other insects found in clothing (fleas, bedbugs) and did not differentiate the symptoms – itching at the injection site. Participants did not associate lice with other diseases and were unaware of lice being able to transmit other infectious diseases. Avoiding contact with those affected and good hygiene (boiling clothes in large boilers, washing clothes in water ashes were boiled in, and washing the body with homemade soap) was enough to prevent lice infection. Some remember school children (in the period following World War II) having their hair powdered in school, regardless of having head lice. At home, they would soak their head in petroleum, wrap it a linen cloth overnight, wash it off in the morning in water ashes were boiled in, and comb through the hair, repeating the process if live lice were found. Four study participants had their hair cut in childhood because of lice and remember it as traumatic and stigmatizing.

## DISCUSSION

Treatment of scabies and pediculosis is easy on paper, yet difficult in practice. People today are frustrated with these diagnoses and still perceive them as a stigma of dirt and poverty. While interviewing our target group, the majority of subjects denied having scabies but could still clearly differentiate pruritus and *the itch* (scabies) – *the itch* being distinguished by itching being worsened at night, specifically on the abdomen and between fingers. Such a detailed

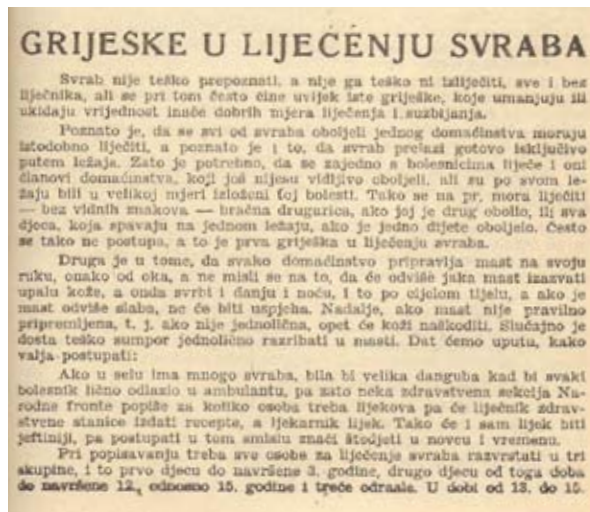
**Table 1.** Bibliographical data on scabies treatment

Publication	Date	Treatment and advice
Folk medicine manuscripts		
"Luićeva lekaruša" (14)	18 <sup>th</sup> century	- frequently washing in own urine or wool-soaked water - applying melted oil resin or a mixture of sulfur and old pig fat
"Plehanska ljekaruša" (11)	19 <sup>th</sup> century	- tetterwort ( <i>Chelidonium majus</i> ) plant juice mixed with salt and urine is applied on skin - ammonium chloride salt, sulfur, soot, water in which ashes have been boiled, schnapps and oil mixture is applied to skin creases every other day - sulphur, oil, salt lemon juice, and gunpowder mixture applied heated every other day on skin creases for three days, then washed off with water ashes were boiled in, and a change of clean clothes.
Various newspapers and magazines		
	Early 20 <sup>th</sup> century	pharmacy-made remedies such as balsam of Peru or sulfur
Health advisors		
"Kućni liječnik" A. Lobmayer (15)	1913	Offers three different recipes for treating scabies and advises applying them twice daily for three days and repeating if necessary: - sulfur 10 grams (g), balsam of Peru 10 g, grease base 80 g - sulfur 5 g, grease base 40 g, storax water solution 20 g, sulfuric dust 20 g, chalk 20 g, green soap 40 g, pig fat 40 g - storax water solution 5 g, olive oil 5 g Describes an alternative treatment by heating a wooden stick (often a handle of a wooden stirring spoon) almost to the point of burning and pressing it on the skin area affected by itch
"Pelagićev narodni učitelj" (9)	1879	- remedies made with plants, pig fat, lime and sulfur - instructions on washing and boiling clothes - importance of treating the entire family
"Liječnica u kući" J. Springer (10)	1926	- describes the parasite's biology and common symptoms of infestation, accentuates possible complications such as secondary pyodermitis
"Priručnik za zdravstveni odgoj seoske ženske omladine" (16)	1952	- mixture of 1 part sulfur and 3 parts melted pig fat applied for three days - importance of disinfecting clothes and bedding by boiling them as opposed to washing in warm water.
Etnographies		
"Otok", Josip Lovretić (17)	1897	- water tobacco was boiled in - tar - sulfur - water ashes were boiled in - mixture of old pig fat, copper sulphate powder, gunpowder and chicken feces - eggwhites mixed with chicken, turkey, duck and goose feces - mixture of sulphur and pig fat - suggests washing in water where walnut leaves or walnut tree ashes were boiled or washing in a stream, noting that treating scabies by any means mentioned should be done before sunrise or after sunset.
Monography "Toliški kraj" (18)	late 19 <sup>th</sup> , early 20 <sup>th</sup> century	- recognizes ponds and swamps as places of origin - describes ease of transmission from person to person noting "it's enough to sit on a warm chair the infested person was sitting on"

description of symptoms is inconsistent with claims of never having scabies. Although participants claimed they heard about it from others, it is very likely they are unwilling to admit to having it because of the associated stigma.

Epidemiological treatment that involves disease reporting and visiting households is an additional

social trauma. It is perceived as a sort of health police that can ruin a family's social image. Given the incidence (and popularity) of allergic diseases today, our patients sooner insist on allergies as the primary cause of itching, ignoring scabies and actually extending and complicating the treatment. Thus fast and accurate confirmation of diagnosis is of great



**Figure 1.** Mistakes in scabies treatment, Folk calendar, year 1948.

importance but is still not readily available in all health care centers (8).

In the past, scabies and pediculosis treatment was hard to implement. Households were larger, and hygienic standards lower. There were no laundries, bath-

room or running water to make disinfecting beds, bathing, and washing hair, clothing, and bedding accessible to everyone (9). The primary motivation was preventing complications that included spreading of exanthematic typhus or potentially fatal piodermisation as there were no antibiotics (10). Today, the subjective symptom of pruritus is the basic stimulus for treatment. Complications are seldom seen. But while the hygienic standards today are far superior than in the past, treatment attempts still end up unsuccessful due to application errors that were described as early as 1948., as shown in an excerpt from a folk calendar (Figure 1).

Modern physicians have to be aware of the reasons their patients choose alternative remedies. It is important to be informed about the substances and procedures they can use in self-healing. The fact is that folk medicine was once used as a necessity, and today it is used as a choice. The remedies of folk medicine extracted from the historical-cultural frameworks or a wrongly chosen medication or procedure are a possible cause of side-effects and complications such as contact irritation, allergic reactions and intoxication.

Folk medicines are usually divided according to their origin into plant, animal, mineral, and unclean

**Table 2.** Bibliographical data on pediculosis treatment

Folk medicine manuscripts		
"Luićeva lekaruša" (14)	18th century	Head or pubic lice can be eliminated by one of four ways: - using burning horse's hoof to fumigate clothes and later wash them in soap - applying a mixture of mercury, mulled wine and rockfool plant ( <i>Saxifraga</i> ) - applying wormwood ( <i>Artemisia absinthium</i> ) tea - applying a mixture of butter, comminuted seeds of Chinese lantern plant ( <i>Physalis alkekengi</i> ) and spindle tree plant ( <i>Euonymus europaeus</i> ).
Health advisors		
"Kućni liječnik" by A. Lobmayer (15)	1913	- advises cutting the hair short, using "lice powder" and soaking it in a mixture of oil and vinegar. - for body lice, recommends applying grey ointment containing mercury ( <i>Quecksilbersalbe</i> ) twice daily for two days.
"Narodna čitanka o zdravlju" (19)	1933	- connects lice infestation and typhus fever - describes clothing disinfection and disinfection procedures - disinfection device – a large barrel with a perforated bottom placed on a boiler used for laundry steaming, also referred to as a "partisan barrel" (Figure 3)
"Higijena za srednje i stručne škole i za samoobrazovanje" (20)	n/a	- highlights the need for treatment to match the life-cycle stage of lice - soaking the scalp with petroleum for 6-12 hours, followed by rinsing hair in a water where ashes were boiled, repeating the procedure in 5 days - petroleum and olive oil mixture for pubic lice - details how to eliminate lice from clothing without damaging the fabric - putting wool into a bread oven with the temperature around 70 degrees Celsius.
Priručnik za zdravstveni odgoj seoske ženske omladine (16)	1952	- petroleum for body lice - mercurial ointments for pubic and armpit lice - DDT powder as an alternative The products should be applied and washed off the next day.

Tap water .....	8 days+
Vaselin, white .....	50 hours
Sulphur precipitate, 8 per cent in vaselin .....	40 hours
Sulphur, colloidal, 10 per cent in vaselin <sup>1</sup> .....	15 hours
Sulphur, colloidal, 5 per cent aqueous solution <sup>2</sup> .....	5 hours
Scabicide <sup>3</sup> .....	1 hour, 5 min.
Mitigal <sup>4</sup> .....	50 min.
Balsam Peru, 8 per cent in vaselin .....	30 min.
Styrax <sup>5</sup> .....	30 min.
Creolin, 1 per cent in vaselin .....	1 hour, 10 min.
Betanaphthol, 2 per cent in vaselin .....	1 hour, 5 min.
Pyrethrum Ointment <sup>6</sup> .....	21 hours

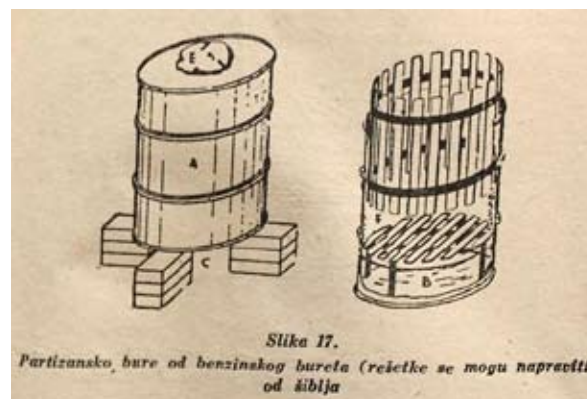
<sup>1</sup> H. K. Mulford Company, San Francisco.  
<sup>2</sup> Associated Physicians' Laboratory, San Francisco.  
<sup>3</sup> Upjohn Company.  
<sup>4</sup> Winthrop Chemical Company.  
<sup>5</sup> R Styracis Liquidii 14.  
 Ol. Olivae.  
 Spts. Vini Recti aa 20.  
 M. Sig:  
<sup>6</sup> Upsher Smith.

**Figure 2.** Scanned table of *Acarus Scabiei* survival times in various remedies as measured by Templeton HJ and Allington HV in 1936 (12).

medicine (usually human and animal urine and feces) (11). From the perspective of today's physicians, a more significant division would be into rational and irrational or magical medicines. Compositions containing sulfur, copper sulfate, petroleum, coal, tar, and highly alkaline soaps and washing solutions undoubtedly have scabidical and pediculicidal properties, experimentally measured and confirmed as early as 1936 (Figure 2) (12). Active ingredient concentrations in folk recipes are usually arbitrary and imprecise, while those written by medical practitioners are more precise. Often they were applied in doses uncomfortable for use due to irritation, and most of these formulations are obsolete today due to the possibility of intoxication. Other folk remedies are applied in smaller concentrations, making it difficult to evaluate their efficiency. Scabidical and pediculicidal properties still cannot be measured *in vitro* so the results gathered are based solely on evaluation of empirical evidence, further complicated by the possibility of reinfection.

Many of the ingredients of folk remedies have a symbolic, magical effect. It is an inseparable part of folk medicine. Chopped deer horn was a popular ingredient, as was bark of a special tree such as red maple or ash, considered remarkable because of its size, distinctiveness and lone growth that often attracted lightning strikes (13).

The failure of treatment is almost never mentioned in written sources, so only empirically proven



**Figure 3.** "Partisan barrel" used for laundry steaming.

drugs remain as part of the oral folk heritage. Their efficacy is promised by folk medicine practitioners who are provided with unconditional trust from their patients, as opposed to expectations from academic medicine where a guarantee of effectiveness and harmlessness is required.

## CONCLUSION

Folk medicine was conditioned by historical, ethnological, and environmental frameworks. With globalization, these frameworks changed considerably. The remedies of folk medicine, when extracted from their historical-cultural frameworks, can lead to side-effects and complications. Physicians today have to be aware of the reasons why their patients seek alternative remedies. It is important to know the substances and procedures they may use in self-healing, making it easier to establish good cooperation and provide the help that may be needed if those complications occur.

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