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TOPICAL AGENTS USED BY HOUSEWIVES AS FIRST AID BURNS IN SLEMAN DISTRICT YOGYAKARTA INDONESIA

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Abstract

Burns are the most potential type of injury experienced by housewives. The use of topical agents for first aid burns that are inappropriate or not standardized can worsen the condition. This purpose of this study was to determine the used of topical first aid agents for burns to housewives. This was a descriptive observational study, included 84 respondents were selected using simple random sampling technique with the criteria of housewives who are still actively doing activities in the kitchen, as well as other household activities. Questionnaire was used to collecting the data. The data was analysis descriptively. The average age of respondents was 43.63 years (SD 11.46), most burns occurred while cooking 61 (73.5%), the most common cause was exposure to hot oil 54 (64.3%), the highest frequency was less than 5 times a year 50 (60.2%), most suffered injuries in the hand area of 49 (59%), with the most injuries being 1-3 cm 42 (50.6%), the wound condition was mostly 58 (69.9%), and recovered well, with little trace of 65 (78.3%). The most risky household activity is cooking 69 (82.1%). Nearly all 82 respondents (97.6%) practiced the use of topical agents for burns, with the most use being toothpaste 34 (41.5%), while the herbs commonly used were Aloe vera, as many as 19 (23.2%). There is still the practice of using topical agents for burns that have not been standardize /not quite right on housewives in the Sleman district.

Keywords: *Topical Agent; Housewife; Burns*

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1. Introduction

Burns are injuries to the deeper layers of the skin or tissue caused by exposure to chemicals, electricity, friction, radiation, or radioactivity. Injuries that occur can be classified into first degree if it affects the epidermis only, second degree shallow if it affects the superfacial papillary dermis, second degree if it involves the reticular dermis, third degree if damage to the inner or outer layers of the skin, and fourth degree if damage to the muscles, ligaments , tendons, nerves, blood vessels, and bones (Toussaint, J & Singer, A. J., 2014).

Burns are a major cause of mortality and morbidity in countries with lower middle economic levels. Burns cause 7.1 million injuries, as well as 18 million inability to perform daily activities, and 265 thousand deaths each year worldwide (World Health Organization, 2014). Deaths due to burns in Indonesia alone reach 195 thousand deaths each year. Cipto Mangunkusumo Hospital receives more than 130 patients every year from all regions in Indonesia (Kementerian Kesehatan Republik Indonesia, 2014).

Data on the incidence of burns in Indonesia from 2013-2015 shows that 68.8% occurred at the age of more than 18 years, mostly concerning the non-working group 82.3%, and most types were burns due to fire 70.8% (Wardhana et al., 2017). Most cases of burns occur in the extremity area, with the most frequent occurrence in the household, especially in the kitchen, and in the middle to lower socioeconomic groups. Specifically, cases of burns due to stove fires occur in women aged 20-29 years, while burns due to electricity are more common in men (Rybarczyk et al., 2017).

Ministry of Health data in 2014 shows that Yogyakarta ranks 8th out of 33 provinces according to the place of injury, namely at home with a percentage of 37.2%. The incidence of burns was 0.7%, where women had a higher risk of burns which was 0.8% compared to men by 0.6%. Burns occur in many productive ages. Studi by (He, S., et al., 2017) show that more than 50% of burns incidents are experienced by women aged 25 to 60 years, many of these injuries occur in the kitchen while cooking with fatal burns rates of 38.2 / 1.000.000 people and the morbidity rate is 727.5 / 1.000.000 people.

Preliminary studies at the Yogyakarta Provincial Health Office found that approximately

150 women were admitted to various hospitals in Yogyakarta due to burns in 2018. More detailed data related to the distribution of areas with the most burn injuries were not available. Ambarketawang Village has the highest number of housewives in Gamping, which is 491 housewives. The results of interviews with 10 housewives who actively cook in the kitchen, found that 9 mothers used toothpaste, 1 mother used ice, from 9 housewives was used toothpaste there were 2 people said used honey, 2 housewives used papaya sap and 1 person used soy sauce, and shuck. The burns caused by hot oil splashes, hot water, and exposed to an iron.

Burns can have serious impacts and complications depending on the location of the burn, the condition of body tissues, and the severity of the burn (Perera, M. M. N., Nanayakkarawasam, P. P., & Katulanda, P., 2015). Local impacts that can occur include fluid loss, damage to skin integrity, contractures, and scarring. The most frequent systemic effects on burns are hypovolemia shock and infection (Rowan, M.P., et al., 2015).

Providing the right first aid in the event of a burn can increase the outcome in the event of a burn (Graham, H.E., et al., 2012). Management of topical agents that can be given to burns is an agent containing silver/silver sulfadiazine (Masood et al., 2018).

A study about using topical agents in the first treatment of burns shows that traditional medicines such as honey (69.9%) and toothpaste (53.7%) are still used (Kattan, A.E., et al., 2016). A study conducted in developing countries, there are also people were used raw eggs (12, 5%), water lavage (29, 2%), pap in (9, 5%) and other ingredients (48, 8%) (Fadeyibi, I.O., et al., 2015). In addition, there are also those who use honey, a mixture of gum and goat hair, and tanic acid spray (Masood et al., 2018). Until now, not all traditional topical agents have been scientifically validated about the benefits and safety to be given in burn cases.

2. Materials and Methods

This was a descriptive observational study, conducted at Ambarketawang Village, Sleman District, Yogykarta, included 84 respondents were selected using simple random sampling technique with the criteria of housewives who are still actively doing activities in the kitchen, as well as other household activities. Questionnaire with closed and open combination question types was used to collecting the data. Data analysis was performed descriptively used mean, standard deviation, frequency and percentage.

3. Results and discussion

Respondent characteristics

Respondent characteristics described in this study include: respondent's age, employment status, and educational history. This can be described in the following table. Based on table I it is known that the average age of respondents in this study was 43.63 years.

Table 1. Age characteristics of the study subjects

Characteristics	Normality test (*Kolmogorov-Smirnov*)	Mean	Standar Deviation (SD)
Age (y)	.053	43.63	11.46

Table 2. Employment Status and Educational History

Characteristics	Frequency	Percentage
Employment Status		
1. unemployment	52	61.9
2. work:	32	38.1
a. Dress maker	1	3.1
b. Clerk	1	3.1
c. Farmer	3	9.4
d. Teacher	1	3.1
e. Trader	5	15.6
f. Enterpreneur	9	28.1
g. Cosmeic	1	3.1
h. Baby Sitter	3	9.4
i. Hospitality	1	3.1
j. Washing	3	9.4
laborer	3	9.4
k. House hold assistant	1	3.1
l. Civil servants		
Educational History		
1. Uneducated	4	4.8
2. primary school	23	27.4
3. Junior high school	21	25
4. Senior High School	27	32.1
5. Higher education	9	10.7

Table II shows that the majority of respondents were not working as many as 52 respondents (61.9%), while for those who worked, the most occupational categories were entrepreneurs, and traders. Most respondents had a history of low education, totaling 23 (27.4%) primary school education.

The results of this study are supported by the findings of 34 cases of burns in Egypt, that the majority of burns occurred in women (52.9%), with an average age of 40.4 years, 58.8% occurred in rural areas, most experienced by married women (50%), with a low educational history (41.2%), and housewives (50%) (Abd Elalem et al., 2018).

Age and sex are related to the incidence of burns. Lack of education and employment makes a person work in challenging areas thereby increasing the incidence of burns (Amakobe & Moronge, 2016).

Women and in the adult age range do household chores which makes them more vulnerable

to exposure to burn sources, especially fire A higher level of education makes a person more aware, responsible behavior, has more knowledge in carrying out safety practices. Therefore, burns are often found in people with low education. A low economic status makes a person in a low standard of living too, so that he will be exposed to risky behavior (Tasgaonkar VG et al., 2016). Job status, area of burns, cause of burns, and level of education have a relationship with burn outcome (P <0.05) (Gatea et al., 2019).

History of burns

Based on table 3, it can be seen that almost all respondents, 83 (98.8%) had experienced burns, when burns were mostly during cooking 61 (73.5%), the highest frequency of burns was less than 5 times in a year 50 (60.2%), most of them suffered burns in the hand area of 49 (59%), with the most burn area was 1-3 cm 42 (50.6%), burn conditions were mostly 58 months (69.9%), and the current wound condition mostly recovered well, with only a small trace of 65 (78.3%).

A similar study in India of 390 respondents burns found mostly experienced by women (59%), activities as housewives are the most (35.9%), so 84.6% of burns occur at home. Most of the wound area is less than 25% (49.2%) (Krishnamurthy et al., 2018).

In line with this research, a study in Pakistan also found that respondent burns area was 2-61% and did not exceed 20% if the cause was hot fluid. There were 5 patients who had a history of previous burns, and most of the respondents had burns on the face, feet and hands. Most respondents (23) suffered first degree burns and most respondents (32) recovered well (Qureshi et al., 2017).

Table 3. History of burns

Characteristics	Frequency	Percentage
History of burns		
a. ever	83	98.8
b. never yet	1	1.2
Total	84	100
Activity related burns		
a. Coocing	61	73.5
b. Ironing	8	9.6
c. Motorcycle exhaust	1	1.2
d. Ironing and coocking	10	12
e. Burning trush	1	1.2
f. Contact with electricity	2	2.4
Total	83	100
The frequency of burns in a year		
a. < 5 times	50	60.2
b. 5-10 times	25	30.2
c. >10 times	8	9.6
Total	83	100
Parts of the body that suffered burns		
a. Hand	49	59
b. Foot	10	12
c. Neck	2	2.4
d. Hand and foot	16	19.3
e. Hand and face	4	4.8
f. Hand and neck	1	1.2
g. Hand, foot, and face	1	1.2
Total	83	100
extensive burns		
a. < 1 cm	27	32.5
b. 1-3 cm	42	50.6
c. >3 cm	14	16.9
Total	83	100
Bullae		
a. No	25	30.1
b. Yes	58	69.9
Total	83	100
Current burn condition	65	78.3
a. Recovered well, just a little scar	16	19.3
b. Leaving ugly scars and rough	1	1.2
c. Worsen	1	1.2
d. still wet		
Total	83	100

Local material used as a topical medication for burns

Based on the table, it is known that almost all 82 respondents (97.6%) had the practice of using topical agents for burns, the topical agents commonly used in the practice of handling burns were toothpaste, 34 (41.5%), while The most commonly used herbal plant is aloe vera, as many as 19 (23.2%).

In this study it was found that drugs that were purchased from pharmacies/doctors commonly used were burn ointment, iodine, bioplasenton, wasp oil, thrombopop, body lotion, and ondansentron, while the herbal plants/substances used were ink, grated cassava, and grated cassava, and eggwhites.

The results of this study are in line with previous findings, a study of 729 respondents found that the substances most often used in first aid burns were coconut oil (44%), antiseptic cream (25%), and toothpaste (22%) (Pathak et al., 2018). Some household products that are often used are toothpaste, butter, ink, sugar water, soy sauce, oil, honey, eggs, mashed potatoes, and ice (Graham, H.E., et al., 2012). Topical agents commonly used in traditional medicine in Iran include: cold water, rose water, malva, coriander, egg white, sandalwood, and betel (Vafaei & Abdollahzadeh, 2016).

Aloe vera has anti-inflammatory, anti-fungal, anti-bacterial, anti-septic, moisturizing, analgesic, and has the ability to induce collagen (Tummalapalli, M., et al., 2016). Aloe vera plants can be used as

herbal medicines for third-degree burns because they contain anthraquinones, vitamins, enzymes, lignin, saponins, salicylic acid, and amino acids. Turmeric can also be used to treat partial thickness burns because it contains curcumin, turmeric oil, 1,7-bis, 6-hepta-diene-3, 5-dione, protein, fat, vitamin AB, and C. Black cumin contains fixed oils, sugars, resins, alkaloids, flavonoids, sterols, tannins, saponins, and essential oils so that they can be used to treat second-degree burns and full thickness (Kaushik et al., 2013).

Table 4. Local material used as a topical medication for burns

Topical Agent Used	Frequency	Percentage
Topical Agent Used	82	97.6
Yes	2	2.4
No		
Total	84	100
Type of topical agent	34	41.5
a. Tooth paste	1	1.2
b. Tooth paste and aloe vera		
c. Tooth paste and medication from a doctor / pharmacy	2	2.4
d. Tooth paste and eggwhite	1	1.2
e. Tooth paste, aloe vera, and grated cassava	1	1.2
f. Aloe vera	19	23.2
g. Aloe vera and medication from a doctor / pharmacy	1	1.2
h. Honey	3	3.7
i. Medication from a doctor / pharmacy (burn ointment, iodine, bioplacenton, wasp oil, thrombopop, body lotion, ondansentron)	15	18.3
j. Medicines / herbs (ink, grated cassava, eggwhite)	5	6.1
Total	82	100

Research shows that the use of black cumin cream (50% NS oil + 50% cold cream) plus silver sulfadiazine can heal wounds better than using cold cream (12.5% spermacetin + 12% white wax + 56% paraffin liquid + 0.5% borate of soda + 19% distilled water) with p value <0.001. Some topical agents that have antimicrobial effects include: silver nitrate, sulfamylon and a combination of sulfonamide and SSD. SSD is a standard topical agent for burns (Yaman, I., et al., 2010).

The use of adhesive materials such as creams, lotions, oils, and other dressing materials is not recommended. The use of these materials makes it difficult to understand and realize the depth and degree of burns, as well as causing great pain when dressing changes. Traditional treatments for burns are still widely applied in parts of the world, including: ink, soy sauce, vegetable oil, toothpaste, honey, eggs, butter, African methods (mud, burnt snail shells, urine, and cow dung), and licking the area wounds (Ceran et al., 2017). Case study research on 5 patients showed that the use of black shoe polish as a topical burn wound made it difficult to understand and realize the depth and degree of burns, as well as causing severe pain in the surgical procedure, and leaving tattoo marks on the wound because the polish can easily penetrate the skin which is intact and burning (Ceran et al., 2017).

The use of traditional medicine is believed to have been carried out since 1500 BC by ancient Egyptians, it is stated in Ebers Papyrus that milk has been used to treat burns. Plant and animal extracts are increasingly being used to treat burns. In the 1800s, humans believed that closing exposure to wounds with air could reduce pain and prevent wider tissue damage. Therefore, there is a belief that it can use any object that is easily accessible to close the wound in the first treatment of burns (Cuttle L, et al., 2009).

Some toothpastes do have antibacterial properties. Toothpaste containing Triclosan has the highest antibacterial effect, followed by toothpaste containing Ganoderma Lucidium and Xylitol. Whereas toothpaste containing Tea Tree Oil, Theobromine and Sodium Lauryl Sarkosinate has low antibacterial efficacy (Cakir et al., 2017), however there is no empirical evidence of its use for burns. It is possible that the use of topical toothpaste agents will actually inhibit the release of heat and deepen tissue damage.

The use of plants as medicine for burns has been used for many years and has become popular again lately. However, validation is still needed related to the therapeutic effects of various types of plants for drug burns. One validation that has been done is the use of Polyherbal ointment (PHO) consisting of Malva sylvestris extract, Solanum nigrum leaf and Rosa damascene petal oil extract (consecutive concentrations of 4.85%, 4.85%, and 33%) proved to be used as topical agents herbs for the treatment of burns due to stable physical properties, good rheological ability, and the absence of growth of pathogenic microorganisms (Fahimi et al., 2016).

Topical agents of herbal products become drugs for burns because of the mechanism they have, namely as antioxidants, anti-inflammatory, antimicrobial, cell proliferation, and angiogenic effects. Some herbal medicines have been proven, but there are many more that require further proof especially related to the toxic and allergic effects for the safety of their use (Maden et al., 2018).

Research on tribes in South India found that people used to use 46 species of plants to treat wounds such as cuts, burns, bruises, boils, open sores labor injuries, abscesses and wounds. Some of them are betel nuts, guava fruit, begonias stems and leaves, bunken stems, gewor stems, fresh pacing leaves, and so forth. However, further clinical research is needed to scientifically evaluate this widely used herbal drug to determine its possible bioactive effects (Ayyanar M & Ignacimuthu S, 2009).

Honey is better than SSD in healing superficial and partial thickness wounds (Wijesinghe, M., et al., 2009). Honey has antibacterial, analgesic, and antiparasitic properties. Honey has high osmolarity, low pH, and produces hydrogen peroxide. Honey also produces antioxidants such as flavonoids, phenolic acids to ward off free radicals, so that it can help accelerate burns recovery (El-Kased, R.F., et al., 2017).

Coconut shell liquid smoke can be used for topical burns because it has the effect of increasing fibroblasts and wound contractions. Coconut shell liquid smoke heals wounds better than the use of 10% iodine or 0.9% NaCl ($P < 0.05$). The use of povidone iodine has side effects that irritate and form brushric tissue, whereas liquid coconut shell smoke contains antioxidants (Tarawan et al., 2017). Coconut oil contains monolaurin, a form of monoglyceride from lauric acid, a short chain fatty acid that has an antibacterial effect and helps repair skin (Vaughn, A.R et al., 2018). The research cannot be equated with the use of wasp oil or body lotion for burns done by respondents in this study.

Pumpkin can be used in healing burns by counteracting free radicals and cell proliferation (Bahramsoltani, R., et al., 2017). Even so, respondents in this study used cassava grated topically, so that it cannot be compared.

The ideal topical burn agent must be stable in a wide range of temperatures, pH and not easily inactivated by blood, pus, or fluid; does not cause scarring and does not stay long in the tissue; open technique so it is easy to monitor injuries; not cytotoxic; easy to apply and easy to dispose of; does not cause anaerobic infection; and not irritating (Koshariya et al., 2018).

Sucralfate has the property of accelerating cell proliferation, is able to thicken the epidermis and dermis, anti-inflammatory, and protect the mucosa. Sucralfate is better than SDD in the formation of cell granulation (6-17 days vs 14-22 days), reepithelialization (11-22 days vs. 15-30 days), and wound healing (50-75% vs 35-50%). Sucralfate is also more minimal in the incidence of secondary infections, and also reduces pain (Koshariya et al., 2018). In this study respondents claimed to use ondansentron which is considered to have the same function as sucralfate, so this needs to be straightened out.

4. Conclusion

There was still the practice of using topical agents for burns that have not been standardize / not quite right on housewives in the Sleman district. Nurses are expected to conduct a comprehensive education program related to the first treatment of burns in the community.

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