Evaluation And Treatment Of Contact Dermatitis Among Saudi Population - Cross-Sectional Study

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ABSTRACT

Objective: The main objectives of the study are to determine the frequency and clinical characteristics of contact dermatitis in the Saudi population, as well as to identify common irritants and allergens associated with the condition. The study will also assess current approaches to treatment and management.

Methods: In order to estimate the prevalence of contact dermatitis, identify risk factors that are linked to it, and assess current treatment methods at a particular moment in time, this research will use a descriptive cross-sectional survey methodology. This architecture makes it possible to get quantitative data from a wide range of Saudi citizens.

Results: The study included 362 participants. The study included 362 participants. The most frequent age among them was 18-29 years and 30-39 years (n=130, 35.9%), followed by 40-49 years (n=71, 19.6%), then 50-59 years (n=23, 6.4%). The most frequent gender among study participants was female (n=235, 64.9%), followed by male (n=127, 35.1%). The most frequent nationality is Saudi (n=306, 84.5%) and non-Saudi (n=56, 15.5%). The most frequent region among study participants was Western (n=177, 48.9 %), followed by Southern (n=77, 21.3%), then Eastern (n=55, 15.2%), and Central (n=37, 10.2%). Occupation of study participants, with most of them were Teaching (n=97, 26.8%), followed by healthcare (n=66,

18.2%), and then Housewife (n=62, 17.1%), and Student (n=58, 16%). Participants who were diagnosed with contact dermatitis by a doctor. Most of the participants answered no (n=239, 66%), followed by yes (n=123, 34%). Participants were asked, How often do you experience flare-ups? Most of the participants answered Occasionally (n=40, 32.5%), followed by Rarely and Frequently (n=32, 26%), then Constantly (n=19, 15.4%). Participants were asked Have you ever undergone patch testing to identify allergens. The majority responded No (n = 59, 48%), followed by Yes (n =45, 36.6%), then Don't know what it is (n = 19, 15.4%).

Conclusion: The study shows that contact dermatitis diagnosis is significantly related to several sociodemographic factors, as well as awareness behaviors such as knowing the difference between irritant and allergic dermatitis and reading product labels. No significant associations were found with clinical factors such as flare-ups, type of dermatitis, or daily activity limitations.

INTRODUCTION

Contact dermatitis, also know as Contact Eczema, can be seen as the inflaming of epidermis of the body (at a particular spot) where the abutting dermis is influenced by or triggered by some external agent. **[1]** Reactions of the mucous membranes like genital mucosa triggered by external agents are not included, because it cannot be considered as eczema, but on the other hand related "pathomechanisms" are engaged. Some other types of eczema, that are not the result of some external cause, are not the part of discussion in this this study like "atopic dermatitis", "idiopathic hyperkeratotic rhagadiform eczema", "idiopathic dyshidrotic eczema", or even "seborrheic eczema". **[2]**

Contact Dermatitis can be stated as common skin ailment that many of the people use to experience at time in their lifetime and provided that, unless and until, the symptoms of the same do not appear as severe or unbearable; it is generally overlooked by the people. **[3], [4]**

In a broader view, it can be identified as a part of skin, at a particular spot which appears as red, gives itchy sensation, part of skin is inflamed. It is generally got triggered by some allergic reaction, irritation itself or even with some of the other object that we come into contact in our routine life. For example, caustic based soaps, specific plants, all kinds of detergents, perfumes and even some metals. **[5], [1]**

These kind of conditions can be categorized in two segments:

a. ICD (Irritant Contact Dermatitis) this is caused due to regular exposure to objects that are harsh

b. ACD (Allergic Contact Dermatitis) caused due to late response of immune system to certain allergy causing substances.

As far as Saudi Arabia is concerned, there are many factors that are held responsible for prevalence and regular appearance of the contact Dermatitis. With the development of technology and growing modernization, a number of personal care products had hit the market and then on the other hand the growth of industries have called for a number of chemicals, mixing agent, fumes and many other related substances that can be considered as potential trigger of such a disease. Then on the other hand climate is getting hotter with every passing year and the usage of various cosmetic products is also increasing, in some of the cases henna, oud and other related substances are used that have a combined effect on the sensitivity of skin.the risk is increasing with every passing year and there is limited data available on the spread of Contact Dermatitis in the region. **[6], [7], [9]**

Then ignorance can be considered as one of the main reasons that are responsible for the prevalence of Contact Dermatitis. **[11], [10]** In many of the cases it has been observed that people use use to take home remedies, take lotions or herbs suggested by friends or relatives. They use to reach a physician when the situation goes out of bound and it becomes difficult for the patient to perform routine tasks in daily life. Many of the physicians and dermatologists in cities like Jeddah, Riyadh, Mecca, etc. **[7], [8]** Reported that people use to visit the doctors after trying a series of self-treatment. In many of the cases it has been observed taht people arrive in conditions taht have reached the worst case scenario. Such conditions may lead to some serious complications related to skin. **[12], [7]**

Reactive eczematous skin inflammation, known as contact dermatitis (CD), is caused by direct contact with chemicals, though it can also be caused by biologic or physical causes. Contact dermatitis can arise from exposure to an allergen, known as allergic contact dermatitis, or from irritation brought on by direct contact with a chemical, known as irritating contact dermatitis. **[13], [14]** Nearly 80% of occupational skin diseases are ICDs, making it the most prevalent type. Acute ICD is caused by a single exposure to a material, such as chemical burns from hydrofluoric acid, hydrochloric acid, or alkali; phototoxic ICD is caused by exposure to ultraviolet radiation A; and chronic ICD is caused by repeated and cumulative exposure to an irritating substance like solvents, water, soap, detergents, acid, alkali, etc. As a type I hypersensitivity, contact urticaria is characterized by an immediate but temporary localized swelling and redness on the skin following direct contact with an offending substance, such as latex, food (beans, eggs, or fish), **[15], [16]** antibiotics (penicillin, neomycin), cosmetic ingredients, or medications like benzoic acid and balsam of Peru. The type IV hypersensitivity known as contact dermatitis, which develops 24 to 48 hours after contact with substances like chromium, nickel, epoxy resin, rubber additives, etc., is also included in ACD. After being exposed to an allergen, ACD may occasionally be photoallergic and require UV light. Atopic skin continues to be the most significant risk factor in a work environment. **[17], [9]**

The mechanism underlying contact dermatitis is determined by its type. Depending on the underlying cause, ICD is characterized by mild to severe skin damage brought on by a direct, local, toxic impact on the cellular components of the skin. This results in the release of lysosomal enzymes, the lipid coating being eliminated, the keratin of the skin becoming denaturated, and an inflammatory response. **[12], [13]** The mechanism of contact urticaria can be either non-allergic (non-immunologic) or allergic (immunologic). Allergy contact urticaria is caused by an IgE mechanism, which initiates a chain of events that leads to inflammation of the skin. Vasoactive molecules are released during non-immunologic contact urticaria, causing hives by directly affecting the blood vessel wall. **[18]**

A delayed hypersensitivity reaction mediated by cells is the cause of allergic contact dermatitis. An agent or hapten joins skin protein to produce a full antigen, which starts sensitization. T lymphocytes engage with the antigen that has been processed by epidermal Langerhans cells after the antigen has been processed by the cells. Later, T cells release inflammatory mediators called lymphokines. **[19]**.

METHODS

Study design

In order to estimate the prevalence of contact dermatitis, identify risk factors that are linked to it, and assess current treatment methods at a particular moment in time, this research will

use a descriptive cross-sectional survey methodology. This architecture makes it possible to get quantitative data from a wide range of Saudi citizens.

Study approach

Numerous tertiary care hospitals and cardiology clinics spread throughout Saudi Arabia's largest cities, including Riyadh, Jeddah, Dammam, and Medina, will host the study. These centers were chosen because of their extensive diagnostic capabilities and significant patient volume.

Study population

Residents of Saudi Arabia who are at least 18 years old and have received a diagnosis of contact dermatitis (either an allergic or irritating kind) in the previous 12 months will be the target population.

Study sample

The necessary sample size is estimated to be 350–400 participants based on literature that suggests an contact dermatitis prevalence of a certain percentage and Cochran's formula for cross-sectional studies (with a 95% confidence interval and 5% margin of error).

Study tool

For the current study, a questionnaire was used as a data collection tool, which was also categorized as a study instrument.

Data collection

An organized, pre-tested questionnaire that is available in both Arabic and English will be used to gather data. Depending on the website, either an in-person or secure online form will be used to administer the questionnaire.

Sections will consist of:

- Details on the demographics: region, occupation, age, gender, and level of education
- Clinical profile: type, duration, symptoms, and recurrence of dermatitis
- History of exposure: traditional items, cosmetic use, and exposures at work and in the home
- History of treatment: compliance, results, and medical versus non-medical techniques
- Behavior and awareness: self-care routines, preventative measures, and trigger awareness

Data analysis

Data will be analyzed using **SPSS Ver. 27.0**

Ethical considerations

It will be carried out on 10% of the total respondents (about 30 respondents), and the results will be checked thereof. Further, any type of discrepancy will be removed, and the questionnaire or data sheet will be revised. A pilot study may also be conducted to state the precision level of the statistical tools and even the selection criteria of the respondents. The above-stated process will be followed throughout the pilot study, and the outcomes will be analyzed. The duration, manner, and viability will also be evaluated.

RESULTS

The study included 362 participants. The most frequent age among them was 18-29 years and 30-39 years (n=130, 35.9%), followed by 40-49 years (n=71, 19.6%), then 50-59 years (n=23, 6.4%). Figure 1 shows the age distribution among study participants. The most frequent gender among study participants was female (n=235, 64.9%), followed by male (n=127, 35.1%). Figure 2 shows the gender distribution among study participants. The most frequent

nationality is Saudi (n=306, 84.5%) and non-Saudi (n=56, 15.5%). Figure 3 shows the nationality distribution among study participants.

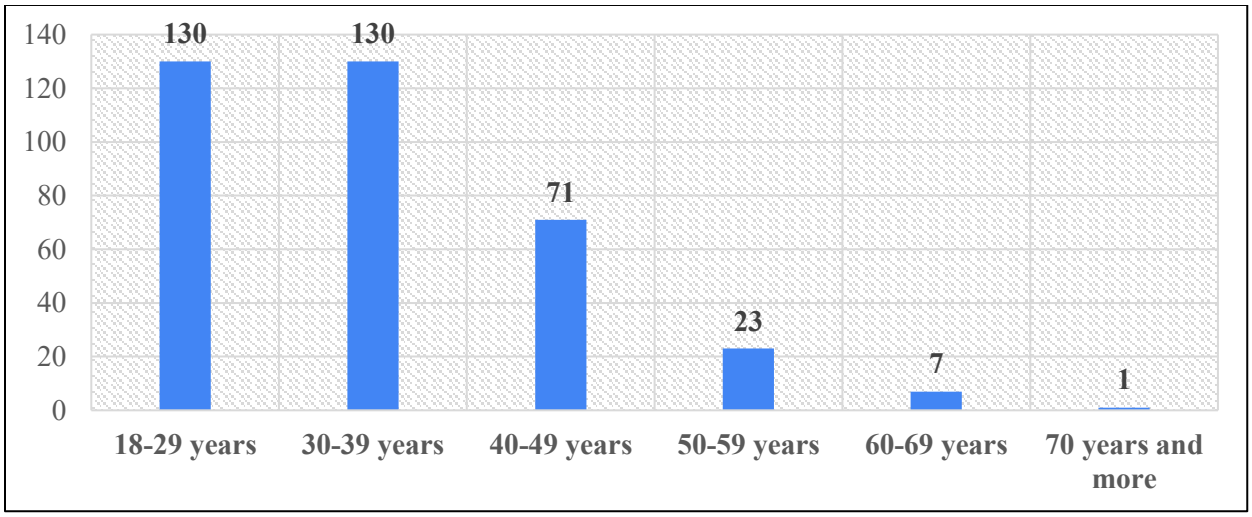

Figure 1: Age distribution among study participants

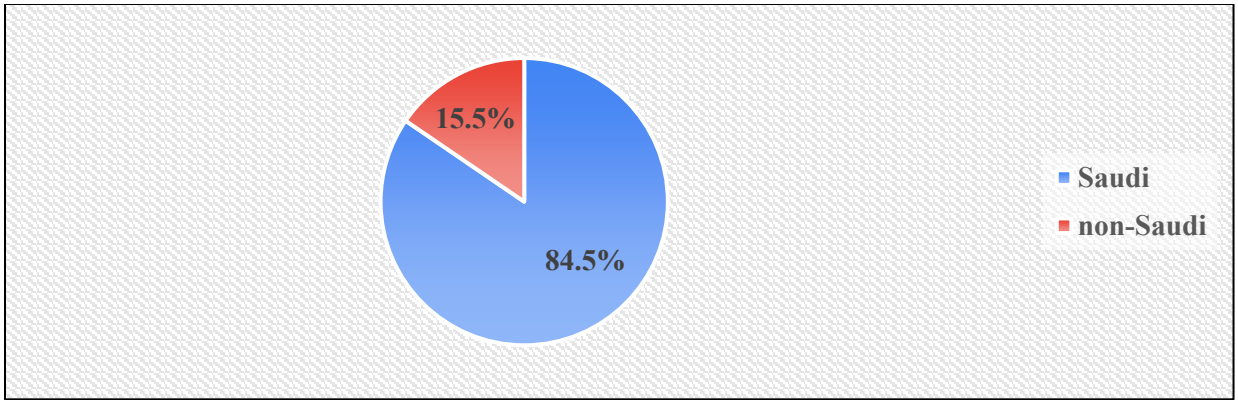

Figure 2: Gender distribution among study participants

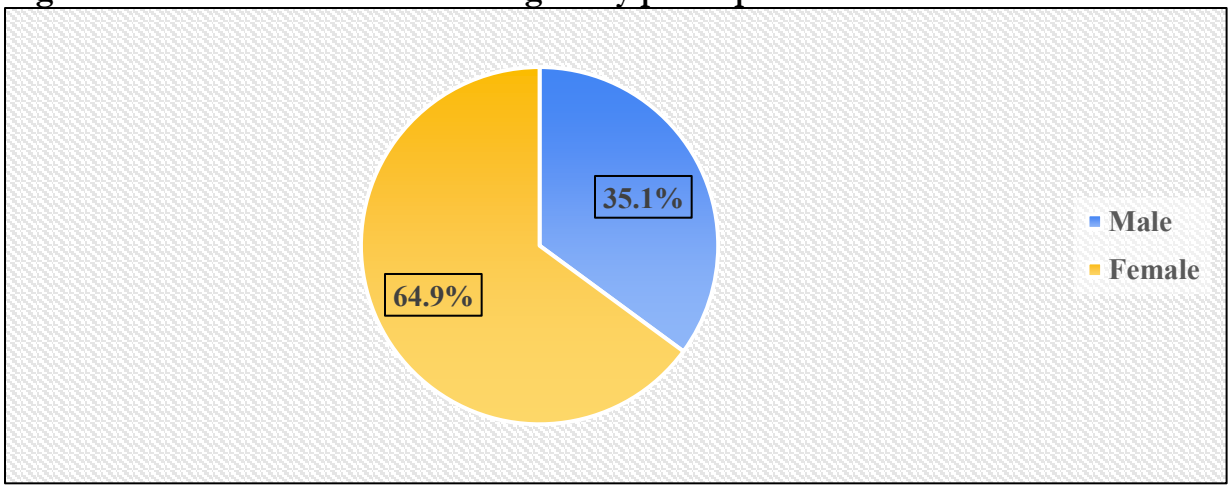

Figure 3: Nationality distribution among study participants

The most frequent region among study participants was Western (n=177, 48.9 %), followed by Southern (n=77, 21.3%), then Eastern (n=55, 15.2%), and Central (n=37, 10.2%). Figure 4 shows the region among study participants.

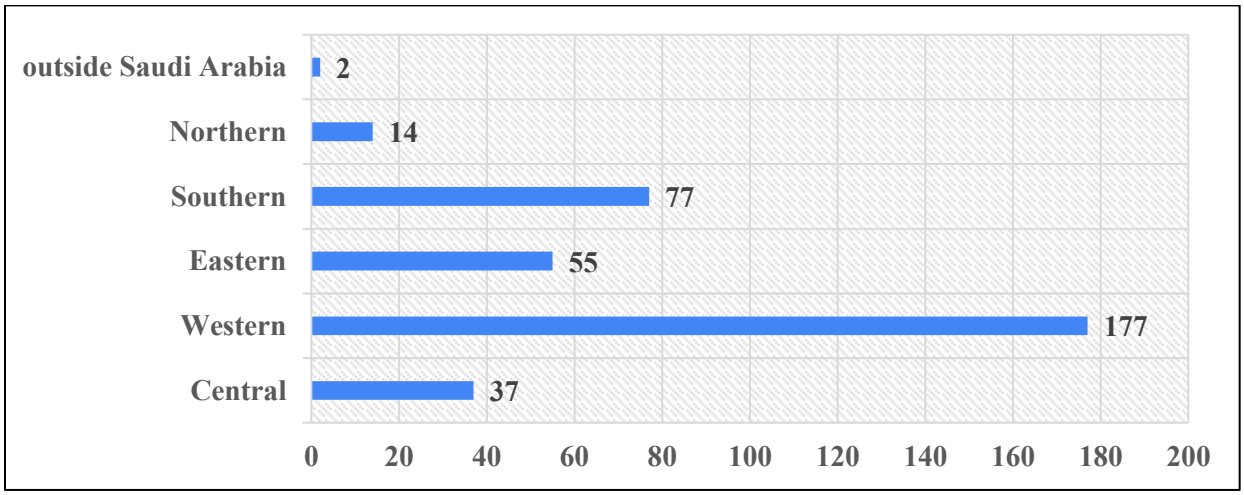

Figure 4: Region among study participants

Occupation of study participants, with most of them were Teaching (n=97, 26.8%), followed by healthcare (n=66, 18.2%), and then Housewife (n=62, 17.1%), and Student (n=58, 16%). The occupation among study participants is shown in Figure 5.

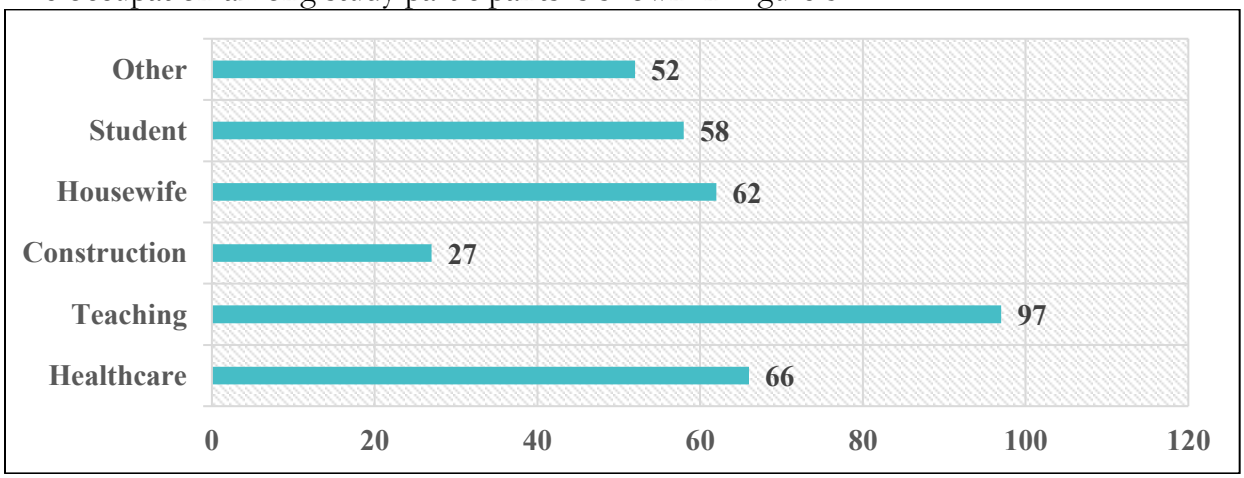

Figure 5: Occupation distribution among study participants

Participants who were diagnosed with contact dermatitis by a doctor. Most of the participants answered no (n=239, 66%), followed by yes (n=123, 34%). Figure 6 shows the frequencies of those diagnosed have contact dermatitis who visit a doctor.

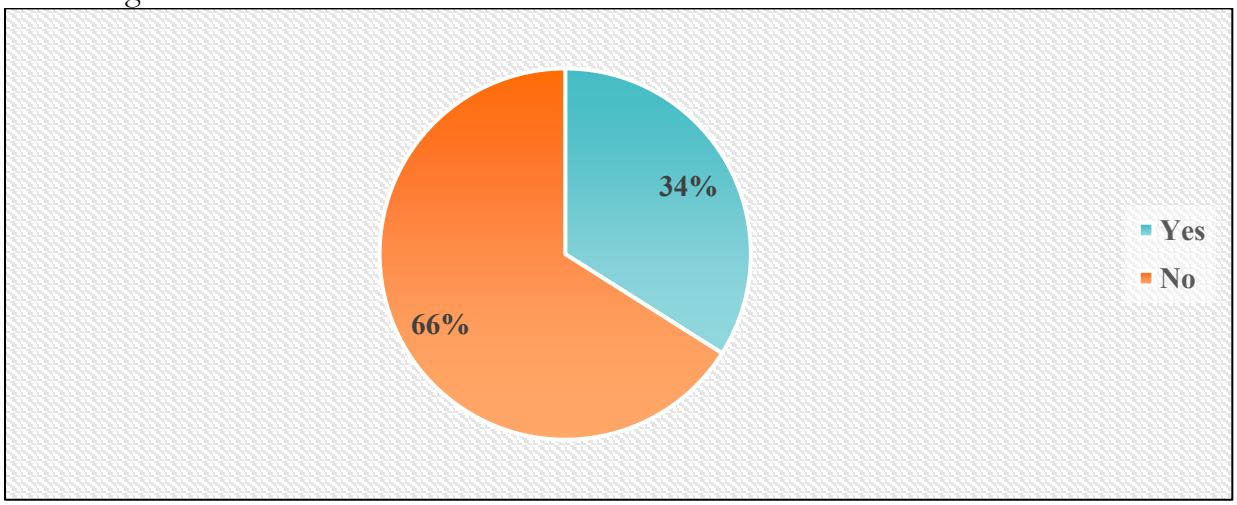

Figure 6: frequencies of the participants who were diagnosed contact dermatitis

Participants' responses to several healthcare-related questions were assessed to determine their treatment history, medication use, awareness of dermatitis causes, and lifestyle modifications. Table 1 presents the frequencies and percentages of participants who answered "Yes" or "No" to each item.

Table 1: Participants' Responses to Healthcare-Related Questions		
Survey Item	**Yes**	**No**
Have you identified specific triggers for your dermatitis?	69 (56.1%)	54 (43.9%)
Have you ever received treatment from a healthcare provider?	70 (56.9%)	53 (43.1%)
Are you currently using any medication for dermatitis?	66 (53.7%)	57 (46.3%)
Have you experienced any side effects from the treatment?	73 (59.3%)	50 (40.7%)
Were you informed about the causes and prevention of contact dermatitis?	64 (52%)	59 (48%)
Are you aware of the difference between irritant and allergic dermatitis?	82 (66.7%)	41 (33.3%)
Have you made lifestyle changes to manage your condition?	69 (56.1%)	54 (43.9%)

Participants' most commonly reported symptoms were assessed using a multiple-response question, allowing individuals to select all symptoms that applied to them. Table 2 presents the frequencies and percentages of each reported symptom.

Table 2: Participants' Most Common Symptoms		
What are your most common symptoms?	Frequency	Percent
Itching	55	22%
Redness	54	22%
Dryness	39	16%
Cracking	30	12%
Blisters	21	9%
Swelling	19	8%
Burning sensation	27	11%

Participants were asked, How often do you experience flare-ups? Most of the participants answered Occasionally (n=40, 32.5%), followed by Rarely and Frequently (n=32, 26%), then Constantly (n=19, 15.4%).

Participants were asked Have you ever undergone patch testing to identify allergens. The majority responded No (n = 59, 48%), followed by Yes (n =45, 36.6%), then Don't know what it is (n = 19, 15.4%). Figure 7 shows the Undergone patch testing among study participants.

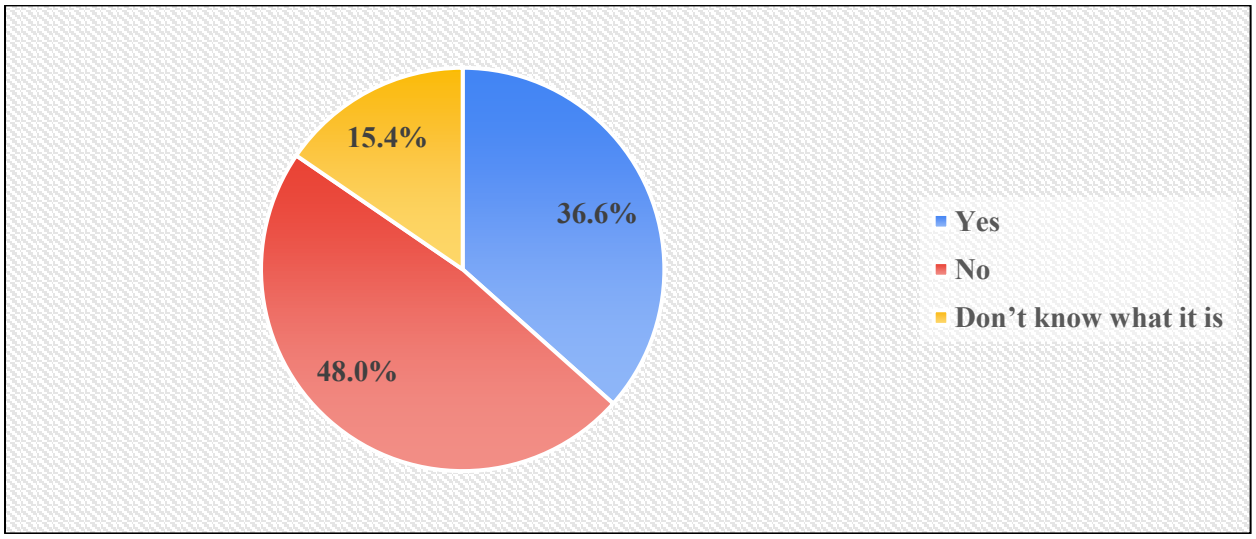

Figure 7: Undergone patch testing among study participants

CONCLUSION

The study shows that contact dermatitis diagnosis is significantly related to several sociodemographic factors, as well as awareness behaviors such as knowing the difference between irritant and allergic dermatitis and reading product labels. No significant associations were found with clinical factors such as flare-ups, type of dermatitis, or daily activity limitations.

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ANNEX 1: DATA COLLECTION TOOL

Q1. Age:
a. 18-29 years
b. 30-39 years
c. 40-49 years
d. 50-59 years
e. 60-69 years
f. 70 years and more
Q2. Gender:
a. Male
b. Female
Q3. Nationality:
a. Saudi
b. non-Saudi (please specify): _____
Q4. Region:
a. Central
b. Western
c. Eastern
d. Southern
e. Northern
f. outside Saudi Arabia
Q5. Marital status:

a. Single
b. Married
Q6. Education level:
a. Primary
b. Secondary
c. Graduate
d. Masters
Q7. Occupation:
a. Healthcare
b. Teaching
c. Construction
d. Housewife
e. Student
f. Other (please specify): _____
Q8. Have you ever been diagnosed with contact dermatitis by a doctor?
a. Yes
b. No
Q9. What type of contact dermatitis were you diagnosed with?
a. Irritant
b. Allergic
c. Not sure
Q10. When were you first diagnosed?
a. Less than 6 months ago
b. 6 months – 1 year ago
c. Over 1 year ago
Q11. How often do you experience flare-ups?
a. Rarely
b. Occasionally
c. Frequently
d. Constantly
Q12. Which areas of your body are most affected? (check all that apply)
a. Hands
b. Face
c. Arms
d. Legs
e. Neck
f. Feet
g. Other: _____
Q13. What are your most common symptoms? (check all that apply)
a. Itching
b. Redness
c. Dryness
d. Cracking
e. Blisters
f. Swelling
g. Burning sensation

Q14. Have you missed work or daily activities due to your condition?
a. Yes
b. No

Exposure History

Q15. Are you regularly exposed to any of the following? (check all that apply)
a. Detergents/soaps
b. Disinfectants/alcohol-based products
c. Gloves (latex or synthetic)
d. Hair dyes or cosmetics
e. Industrial chemicals
f. Metals (e.g., nickel, jewelry)
g. Plants/herbs
h. Fragrances or perfumes
i. Henna or traditional products

Q16. Have you identified specific triggers for your dermatitis?
a. No
b. Yes (please specify): _____

Q17.Do you wear protective equipment while working (gloves, masks, etc.)?
a. Yes
b. No
c. Not applicable

Q18. Have you ever received treatment from a healthcare provider?
a. Yes
b. No

Q19. What treatment was recommended? (check all that apply)
a. Topical corticosteroids
b. Moisturizers/emollients
c. Oral antihistamines
d. Antibiotics (if infected)
e. Patch testing
f. Immunomodulators
g. Herbal/home remedies
h. Other: _____

Q20. Are you currently using any medication for dermatitis?
a. Yes
b. No

Q21.How often do you follow the treatment plan?
a. Regularly
b. Occasionally
c. Rarely

Q22. Have you experienced any side effects from the treatment?
a. No
b. Yes (please describe): _____

Q23. How effective do you find your treatment?
a. Very effective
b. Somewhat effective

c. Not effective
Q24. Were you informed about the causes and prevention of contact dermatitis?
a. Yes
b. No
Q25. Are you aware of the difference between irritant and allergic dermatitis?
a. Yes
b. No
Q26. Have you made lifestyle changes to manage your condition? (e.g., switching products, protective gear)
a. Yes
b. No
Q27. Do you read product labels before using skincare or household items?
a. Always
b. Sometimes
c. Never
Q28. Have you ever undergone patch testing to identify allergens?
a. Yes
b. No
c. Don't know what it is

APPENDIX 2: Participants' responses to scale items

Age	Frequency	Percent
18-29 years	130	35.9
30-39 years	130	35.9
40-49 years	71	19.6
50-59 years	23	6.4
60-69 years	7	1.9
70 years and more	1	0.3
Total	362	100.0

Gender	Frequency	Percent
Male	127	35.1%
Female	235	64.9%
Total	362	100.0

Nationality	Frequency	Percent
Saudi	306	84.5
non-Saudi	56	15.5
Total	362	100.0

Region	Frequency	Percent
Central	37	10.2
Western	177	48.9
Eastern	55	15.2
Southern	77	21.3
Northern	14	3.9
outside Saudi Arabia	2	0.6
Total	362	100.0

Marital status	Frequency	Percent
Single	156	43.1
Married	206	56.9
Total	362	100.0

Education level	Frequency	Percent
Primary	30	8.3
Secondary	90	24.9
Graduate	197	54.4
Masters	45	12.4
Total	362	100.0

Occupation	Frequency	Percent
Healthcare	66	18.2
Teaching	97	26.8
Construction	27	7.5
Housewife	62	17.1
Student	58	16.0
Other	52	14.4
Total	362	100.0

diagnosed contact dermatitis	Frequency	Percent
Yes	124	34.3
No	238	65.7
Total	362	100.0

Which areas of your body are most affected? (check all that apply)		
Hands	32	16%
Face	43	21%
Arms	36	18%
Legs	32	16%
Neck	24	12%
Feet	30	15%
Other	4	2%

What are your most common symptoms? (check all that apply)		
Itching	55	22%
Redness	54	22%
Dryness	39	16%
Cracking	30	12%
Blisters	21	9%
Swelling	19	8%
Burning sensation	27	11%

Are you regularly exposed to any of the following? (check all that apply)		
Detergents/soaps	47	18%
Disinfectants/alcohol-based products	53	20%
Gloves (latex or synthetic)	22	8%
Hair dyes or cosmetics	30	11%
Industrial chemicals	28	11%
Metals (e.g., nickel, jewelry)	21	8%
Plants/herbs	26	10%
Fragrances or perfumes	26	10%
Henna or traditional products	11	4%
What treatment was recommended? (check all that apply)		
Topical corticosteroids	83	35.3%
Moisturizers/emollients	15	6.4%
Oral antihistamines	29	12.3%
Antibiotics (if infected)	20	8.5%
Patch testing	34	14.5%
Immunomodulators	28	11.9%
Herbal/home remedies	25	10.6%

Other	1	0.4%

Type contact dermatitis	Frequency	Percent
Irritant	35	28.5
Allergic	49	39.8
Not sure	39	31.7
Total	123	100.0

First diagnosed	Frequency	Percent
Less than 6 months ago	47	38.2
6 months – 1 year ago	35	28.5
Over 1 year ago	41	33.3
Total	123	100.0

Often experience flare-ups	Frequency	Percent
Rarely	32	26.0
Occasionally	40	32.5
Frequently	32	26.0
Constantly	19	15.4
Total	123	100.0

Missed work or daily activities	Frequency	Percent
Yes	58	47.2
No	65	52.8
Total	123	100.0

Identified specific triggers	Frequency	Percent
No	54	43.9
Yes	69	56.1
Total	123	100.0

Wear protective equipment	Frequency	Percent

No	49	39.8
Yes	52	42.3
Not applicable	22	17.9
Total	123	100.0

Received treatment healthcare provider	Frequency	Percent
Yes	70	56.9
No	53	43.1
Total	123	100.0

Medication dermatitis	Frequency	Percent
Yes	66	53.7
No	57	46.3
Total	123	100.0

Follow treatment plan	Frequency	Percent
Regularly	66	53.7
Occasionally	57	46.3
Total	123	100.0

Experienced side effects	Frequency	Percent
No	50	40.7%
Yes	73	59.3%

Effective treatment	Frequency	Percent
Very effective	72	58.5
Somewhat effective	51	41.5
Total	123	100.0

Informed about causes	Frequency	Percent
Yes	64	52.0%
No	59	48.0%
Total	123	100.0

Aware difference between irritant and allergic	Frequency	Percent
Yes	82	66.7
No	41	33.3
Total	123	100.0

Lifestyle changes	Frequency	Percent
Yes	69	56.1
No	54	43.9
Total	123	100.0

Read product labels	Frequency	Percent
Always	44	35.8
Sometimes	52	42.3
Never	27	22.0
Total	123	100.0

Undergone patch testing	Frequency	Percent
Yes	45	36.6
No	59	48.0
Don't know what it is	19	15.4
Total	123	100.0

Chi-Square:

Test Statistics								
	Age	Gender	Nationality	Region	Marital status	Education level	Occupation	Diagnosed with contact dermatitis
Chi-Square	291.370[a]	32.221[b]	172.652[b]	331.680[a]	6.906[b]	188.652[c]	42.519[a]	35.901[b]
df	5	1	1	5	1	3	5	1
Asymp. Sig.	.000	.000	.000	.000	.009	.000	.000	.000
a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 60.3.								
b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 181.0.								

c. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 90.5.

Test Statistics							
	Diagnosed	Type contact dermatitis	Often experience flare-ups	First diagnosed	Missed work or daily activities	aware.difference.between.irritant and allergic	Read product labels
Chi-Square	35.901[a]	2.537[b]	7.374[c]	1.756[b]	.398[d]	13.667[d]	7.951[b]
df	1	2	3	2	1	1	2
Asymp. Sig.	.000	.281	.061	.416	.528	.000	.019
a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 181.0.							
b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 41.0.							
c. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.8.							
d. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 61.5.							

p-value > 0.05, significant effect