



# Awareness related survey of Parthenium Dermatitis in local population visiting District Headquarter Hospital, Faisalabad, Pakistan

Fatma Hussain<sup>1\*</sup>, Muhammad Arif Mann<sup>2</sup>, Muhammad Shahid<sup>1</sup>

<sup>1</sup>Department of Biochemistry, Faculty of Sciences, University of Agriculture, Faisalabad-38040, Pakistan.

<sup>2</sup>Punjab Medical College/Dermatology Department, District Headquarter Hospital, Faisalabad-38040, Pakistan.

## Abstract

To investigate awareness about parthenium dermatitis in local population. Subjects visiting the dermatology department, District Headquarter Hospital, Faisalabad, Pakistan were questioned after informed consent from January, 2013 to June, 2014. The participants (n= 1038) included 93.16% males and had  $52.1 \pm 1.49$  years averaged age. Approximately 76.58% subjects reported the incidence of parthenium dermatitis ( $p < 0.05$ ). More than half (53.66%;  $p < 0.05$ ) of the subjects believed that plants related irritants and allergens were responsible for parthenium dermatitis and 88.72% ( $p < 0.05$ ) said that by eradicating some plants, skin irritation is minimized. According to 22% patients, parthenium dermatitis was due to dietary factors. Majority (83.42%) of the study population was of the view that parthenium dermatitis cannot lead to other diseases. Reference to self-care attitudes, 89.11% participants never checked their skin for cuts, blisters, red spots, swelling or watery nose. Knowledge (7.51%) and use (5.10%) of appropriate clothing to avoid parthenium dermatitis was quite limited. Likewise, fewer participants had knowledge (3.17%) and 0.96% used barrier creams/moisturizers. Barriers to self-care among the subjects included educational deficits, low socioeconomic status and cultural beliefs. The culturally bound beliefs, values, and preferences influenced how people interpreted healthcare messages. Parthenium dermatitis is not considered a high priority health hazard in Pakistan and therefore the development of health and safety policies to reduce its hazards should be encouraged.

**Key words:** Parthenium dermatitis, allergens, knowledge, *parthenium hysterophorus*

**Full length article** Received: 28-01-2015

Revised: 04-03-2015

Accepted: 15-05-2015

Available online: 31-05-2015

\*Corresponding Author, e-mail: \*Corresponding author's e-mail: [fatmauaf@yahoo.com](mailto:fatmauaf@yahoo.com)

## 1. Introduction

Frequent exposure to plants and plant products cause various reactions to the skin and mucosae. The skin reactions are usually dermatitis, such as irritant contact dermatitis, allergic dermatitis and a dermatitis caused by an airborne allergen [1-3]. *Parthenium hysterophorus* (PH) is noxious weed in America, Asia, Africa and Australia. PH resulted in thousands of cases of parthenium dermatitis (PD) such as skin allergy, rhinitis and irritation to eyes of the residents in the vicinity [4, 5]. PH confers many health benefits, viz remedy for skin inflammation, rheumatic pain, diarrhoea, urinary tract infections, dysentery, malaria and neuralgia [6,7,8]. The consequence of PD is considerable and impacts on an individual's quality of life. PD is a T cell-mediated immune injury and disease manifests as itchy erythematous papules, papulovesicular and plaque lesions on exposed areas of the body [9]. Genetic factors associated with susceptibility to parthenium dermatitis need to be studied [10]. Sesquiterpene lactones allergens responsible

for PD are found in the oleoresin fraction of leaf, stem, flower and pollen of PH [11, 12, 13].

To minimize the risk of disease and to improve overall health status, adaptation to certain health behaviours, adherence to prescribed treatment and specific hygienic measures are critical. There are no published reports on PH related dermatitis in the local population. The current study aims to gather information on the basic perceptions, physicians's guidance and skin care self-management attitudes of the local population regarding *parthenium* weed and PD in Faisalabad region, Pakistan.

## 2. Material and Methods

### 2.1. Study area & study population

This survey report covered one and a half year period from January, 2013 to June, 2014 and it was conducted in the dermatology department, District Headquarter Hospital (DHQ), Faisalabad, Pakistan. Participants were selected through a convenient sampling technique. Participation was

voluntary and data was collected by self-report questionnaire. PD is season related and it deteriorates during summer<sup>9</sup>, therefore two consecutive summer seasons were covered. The research protocol ethics were approved by the Institutional Graduate Studies and Research Board (GSRB) and written consent from all the participants was secured. Prior to the study, meeting with participants was held in which the objectives were explained. At the end of questioning, subjects were informed about the impact of their perceptions on their health.

## 2.2. Questionnaire design

The questionnaire was designed to be understood by most of the participants. PH and relevant dermatological terms were referred to by their most familiar names. Some names were expected to be easily identified and it was assumed that others would be recognized by participants who had been treated by a physician for the corresponding disorder. The questionnaire was developed to gain information on demographic data (age, gender, habitat, education, family history of contact dermatitis/allergy), knowledge about PD and methods of prevention, attitudes towards preventive methods, behaviours and sources of information about PD. After pre-testing the questionnaire on a convenient sample of 50 subjects, it was modified based upon responses and the survey format was finalized.

## 2.3. Measures

Questionnaire included 24 questions concentrated on (a) the basic knowledge and perceptions, (b) guidance from physicians, (c) skin care self-management attitudes regarding PH and parthenium dermatitis. Knowledge related inquiries included skin complications related to *parthenium* weed, causes of PD and treatment for PD. Regarding the therapeutic assistance, routine checkups and physician guidance about skin complications related to *parthenium* weed were assessed. Self-management attitudes of participants involved queries on skin inspection for cuts, blisters, red spots or swelling, or watery nose, hand and feet washing frequency, personnel and environmental hygiene. Finally, the questionnaires were collected, observed and summarized in form of percentage as given in the Tables 1 - 4.

## 3. Results and Discussion

Present study reports information gathered from a questionnaire survey on knowledge, awareness and behaviour of the general population in Faisalabad region, Pakistan. This study is an initiative to probe into the people's understanding of PD, physician guidance and measures necessary to prevent it. In Pakistani society, men work in outdoors whereas women have household duties. So, the participants that visited OPDs included more males than the females. Majority was rural residents and uneducated. When PD symptoms were described to the participants, a few reported the PD occurrence in their close relatives. The culturally bound beliefs, values and preferences a person holds influenced how a person interprets healthcare messages. Self-reported PD incidence was quite high. About half of the studied population had awareness that PD relates to plants and apparent physician consultancy rate was encouraging. Contrary to that, majority

of the people never approached general practitioner, dermatologist or specialist. Approximately 76.58% subjects reported PD ( $p<0.05$ ). Of these, 85.91% ( $p<0.05$ ) had one month disease duration. More than half (53.66%;  $p<0.05$ ) of the subjects believed that plants related irritants and allergens were responsible for PD and 88.72% ( $p<0.05$ ) said that by eradicating some plants, skin irritation is minimized. When asked about causative factors, 22% people said that PD was due to dietary factors. Almost 55.49% rejected the statement that skin condition is not affected by activity. Again, 93.25% of subjects rejected the concept that development of PD is a part of aging process. Majority (83.42%) of the study population was of the view that PD cannot lead to other diseases, although 88.34% had observation that PD makes a person's appearance obnoxious. Consulting a physician was the option with the highest frequency (55.97%), followed by traditional healers (17.63%). 61.36% participants believed that PD can persist despite physician's guidance and 90.65% observed that it affects the work (Table 2).

Although a large number of participants had awareness about irritants and allergens. With low literacy rate, such an understanding is presumed to be aroused from their work experience. Personnel factors (including cognitions) and environmental influences are determinants of such behaviours [14]. As reported by Neelima *et al*, [15] all the respondents knew about the *Parthenium* weed but only 47% knew about its ill effects on health. They observed that 78% of the respondents knew about *Parthenium* from neighbours and 17% through media. Among their respondents, 47% knew about the ill effects caused by the weed and 55% of them knew about the problems caused to human beings like skin allergy, asthma and fever, and 27% did not have any idea. According to another study, [16] majority of the rural people in India had no idea about the poisonous and toxic nature of the weed. The participants presented a risky behaviour when 54.52% said that they never contacted general practitioner, dermatologist or specialist. Few of the people (31.59%) received treatment for PD during the last two years. Of these, 94.20% and 89.33% were satisfied with the treatment and physician guidance during visits. Most (91.04%) of the subjects were advised about PD from pharmacist or relatives (table 3).

Table 4 shows the distribution of subjects regarding skin care self-management attitudes. 89.11% never checked their skin for cuts, blisters or rashes (n=408) included 93.16% males and 6.84% females. Noble practice of hand and feet washing was reported by nearly everyone (95.27%). Knowledge (7.51%) and use (5.10%) of appropriate clothing to avoid PD was quite limited. Likewise, fewer participants had knowledge (3.17%) and only 0.96% used barrier creams/moisturizers. Use of protective gloves and shoes during work was uncommon (2.4%). A large number (69.65%) were acquainted with the role of environmental hygiene to control PD. PD management includes avoiding contact with allergen, managing dermatitis with topical corticosteroids and other immunosuppressives [10] Effective management is difficult because of cultural barriers. Barriers to self-care included educational deficits, low socioeconomic status and cultural beliefs. The resulting delays in seeking care can lead to poor outcomes.

**Table 1. Baseline Characteristics of the study participants**

<b>Parameters</b>	<b>Participants</b>
<b>Total participants (n)</b>	1038
<b>Gender (male/female)</b>	967/71
<b>Age (years) min.-max.</b>	25-69
<b>Mean age (years)</b>	52.1 ± 1.49
<b>Marital status</b>	
• Single	34
• Married	996
• Divorced	01
• Widowed	07
<b>Living area</b>	
• Urban	23
• Rural	1015
<b>Education</b>	
• Illiterate	783
• Primary	117
• Secondary school	97
• Intermediate	28
• Graduate and higher	13
<b>Family history of contact Dermatitis /allergy</b>	12

Data are expressed as n (number) or mean ± SD

**Table 2. Distribution of participants regarding perceptions about parthenium dermatitis**

Queries	Participants (n)
<b>Exposure to Parthenium dermatitis (PD)</b>	
• Yes	795
• No	135
• Don't know	108
<b>Duration of PD*</b>	
• A week	03
• A month	683
• A year	101
• Forever	8
<b>Potential irritants/ allergens</b>	
• Diet	229
• Weather changes	71
• Plants	557
• Insect	92
• Don't know	89
<b>Knowledge to Control allergens/irritants</b>	
• Yes	921
• No	117
<b>Skin condition relate to nature of work</b>	
• Yes	
• No	346
• Don't know	576
<b>PD leads to other health problem</b>	116
• Yes	
• No	103
• Don't know	866
<b>PD makes a person look bad</b>	69
• Yes	
• No	
• Don't know	917
<b>PD affect work</b>	106
• Yes	
• No	
<b>PD is a natural consequence of getting old</b>	941
• Yes	97
• No	
• Don't know	
<b>Treatment options</b>	11
• Consult doctor	968
• Consult traditional healer	59
• Self-remedy	
• Consult family elders	581
• Ignore it	183
• Don't know	69
<b>PD persists even after medical treatment</b>	90
• Yes	35
• No	80
• Don't know	637
	274
	127

Data are expressed as n (number), \*Of 795

**Table 3. Distribution of participants regarding physician guidance about parthenium dermatitis**

Queries	Participants (n)
<b>Contact with general practitioner/dermatologist</b>	
• Yes	472
• No	566
<b>Treatment received within last two years</b>	
• Yes	328
• No	693
• Don't remember	17
<b>Treatment effective*</b>	
• Yes	309
• No	19
<b>Treatment satisfaction*</b>	
• Yes	293
• No	35
<b>Guidance from pharmacist or relatives</b>	
• Yes	945
• No	93

Data are expressed as n (number), \* Of 328

**Table 4. Distribution of participants regarding skin care self-management about parthenium dermatitis**

Queries	Participants (n)
<b>Daily skin check for cuts/blisters/red spots/swelling/watery nose</b>	
• Yes	
• No	113
<b>Wash hands and feet daily</b>	925
• Yes	
• No	989
<b>Knowledge about appropriate clothing</b>	49
• Yes	
• No	78
<b>Use of appropriate clothing</b>	960
• Yes	
• No	53
<b>knowledge about barrier creams/moisturizers</b>	985
• Yes	
• No	33
<b>Use of barrier creams/moisturizers</b>	1005
• Yes	
• No	10
<b>Use of protective gloves and shoes</b>	1028
• Yes	
• No	25
<b>Knowledge that environmental hygiene can prevent PD</b>	1013
• Yes	
• No	723
	315

Data are expressed as n (number)

#### 4. Conclusion

Although knowledge about PD exists, yet several misconceptions were observed among participants about toxic effects of PH on human health. Most of the people never consulted general practitioner, dermatologist or specialist and use of protective gloves, shoes and barrier creams/moisturizers was uncommon. Barriers to self-care included educational deficits, low socioeconomic status and cultural beliefs.

#### References

- [1] M. Hannuksela. (2012). Skin contact reactions caused by plants. *Duodecim*. 125: 1398-1406.
- [2] G.M. Modi., J.C. Doherty., R. Katta and I.F. Orengo. (2009). Irritant contact dermatitis from plants. *Dermatitis*. 20: 63-78.
- [3] A.T. Goon and C.L. Goh. (2011). Plant dermatitis: Asian perspective. *Indian J Dermatology*. 56: 707-710.
- [4] R.K. Kohli., D.R. Batish., H.P. Singh and K.S. Dogra. (2006). Status, invasiveness and environmental threats of three tropical American invasive weeds (*Parthenium hysterophorus* L., *Ageratum conyzoides* L., *Lantana camara* L.) in India. *Biological Journal of Medicinal Plants Research*. 3: 1109-1112.
- [5] B. Timsina., B.B. Shrestha, M.B. Rokaya and M. Münzbergová. (2011). Impact of *Parthenium hysterophorus* L. invasion on plant species composition and soil properties of grassland communities in Nepal. *Flora-Morphology Distribution Functional Ecology of Plants*. 206: 233-240.
- [6] S. Patel. (2011). Harmful and beneficial aspects of *Parthenium hysterophorus*: an update. *3 Biotechnology*. 1: 1-9.
- [7] C. Lakshmi and C. Srinivas. (2012). Parthenium the terminator: An update. *Indian Dermatology Online Journal*. 3: 89-100.
- [8] V.K. Sharma., P. Verma and K. Maharaja. (2013). Parthenium dermatitis. *Photochemical and Photobiological Sciences*. 12: 85-94.
- [9] N. Akhtar., A. Satyam., V. Anand., K.K. Verma., R. Khatri and A. Sharma. (2010). Dysregulation of T (H) type cytokines in the patients of Parthenium induced contact dermatitis. *Clinica Chimica Acta*. 411: 2024-2028.
- [10] V.K. Sharma and P.Verma. (2012). Parthenium dermatitis in India: past, present and future. *Indian Journal Dermatology Venereology and Leprology*. 78: 560-568.
- [11] G.H. Towers and J.C. Mitchell. (1983). The current status of the weed *Parthenium hysterophorus* L. as a cause of allergic contact dermatitis. *Contact Dermatitis*. 9: 465-469.
- [12] V.K. Sharma and G. Sethuraman. (2007). Parthenium dermatitis. *Dermatitis*. 18: 183-190.
- [13] E. Gambillara., F. Spertini and A. Leimgruber. (2010). Allergic and toxic cutaneous reactions to plants. *Revue Medicale De La Suisse*. 6: 824-829.
- [14] V.J. Strecher., B.M. DeVellis., M.H. Becker and I.M. Rosenstock. (1986). The role of self-efficacy in achieving health behavior change. *Health Education and Behavior*. 1: 73-92.
- [15] T.L. Neelima., M.D. Reddy and M. Madhavi. (2010). Survey on awareness of *Parthenium* infestation and its ill effects in Andhra Pradesh, India. *International Journal of Bio-resource and Stress Management* 1: 63-65.
- [16] R.T. Kapoor. (2012). Awareness related survey of an invasive alien weed, *Parthenium hysterophorus* L. in Gautam Budh Nagar district, Uttar Pradesh, *Indian Journal Agricultural Technology*. 8: 1129-1140.