

## AN OBSERVATIONAL STUDY OF LONG TERM EXPOSURE TO FIRE AND ITS HEALTH IMPACT IN FEMALE COOKS WITH SPECIAL REFERENCE TO VITIATIONS IN *RAKTAVAHA STROTAS*

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Article Received on 05 April 2026,  
Article Revised on 25 April 2026,  
Article Pulished on 01 May 2026,

<https://doi.org/10.5281/zenodo.20032903>

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**How to cite this Article:** \*Dr. Bhakti Prakash Kale. (2026). An Observational Study Of Long Term Exposure To Fire And Its Health Impact In Female Cooks With Special Reference To Vitiations In *Raktavaha Strotas*. World Journal of Pharmaceutical Research, 15(9), 1421-1429.

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### ABSTRACT

Long term exposure to fire (अनलसेवा) is one of the etiological factors of *raktavaha srotasa* vitiation. Both exposure to fire (अनलसेवा) and sunlight (आतपसेवा) lead to exposure to heat, but they are separately mentioned as two different etiological factors. And therefore exposure to fire (अनलसेवा) carries more significance for its specific mention. Occupations or workplaces where one works near fire are the fire fighters, miners, workers working near industrial fire, etc and the domestic and hotel cooks. Almost in every household kitchen of Indian cities, Liquefied Petroleum Gas (LPG) is used as fuel and therefore it is the place where domestic female cooks are exposed to heat generated by fire (अनल). In this study, total 100 female cooks, who had daily exposure to fire, were included in the study. They were studied for signs and symptoms of

*raktavaha srotasa* vitiation. In this study it is observed that, 61% patients have past or present history of signs and symptoms of *raktavaha srotasa* vitiation. In these maximum of 30 patients were found to have *vyanga* (melasma), followed by 28 patients of *tilakalaka* (excess moles), 27 patients of *vaivarnya* (discolouration of skin), 22 patients of *atisweda* (excessive sweating), 18 patients of *pidaka* (acne), 16 patients of *mukhapaka* (stomatitis), 14 patients of *kushtha* (any skin related disease/ signs and symptoms) and *daha* (burning), 10 patients of *kandu* (itching). Hence it is concluded, that there is association of long term exposure to fire and *raktavaha srotasa* vitiation. Briefly, it can be concluded that long term exposure to fire vitiate the *raktavaha srotasa* and signs and symptoms of vitiation can be found in patients.

Maximum number of signs and symptoms of vitiation can explain the severity of *raktavaha srotas* vitiation.

**KEYWORDS:** *raktavaha srotas*, *analseva* (अनलसेवा), female cooks, skin.

## INTRODUCTION

Long term exposure to fire (अनलसेवा) is one of the etiological factors of *raktavaha srotasa* vitiation.<sup>[1]</sup> Both exposure to fire (अनलसेवा) and sunlight (आतपसेवा) lead to exposure to heat, but they are separately mentioned as two different etiological factors. And therefore exposure to fire (अनलसेवा) carries more significance for its specific mention. Occupations or workplaces where one works near fire are the fire fighters, miners, workers working near industrial fire, etc and the domestic and hotel cooks. Almost in every household kitchen of Indian cities, Liquefied Petroleum Gas (LPG) is used as fuel and therefore it is the place where domestic female cooks are exposed to heat generated by fire (अनल). In this study, total 100 female cooks, who had daily exposure to fire, were included in the study. They were studied for signs and symptoms of *raktavaha srotasa* vitiation. In this study it is observed that, 61% patients have past or present history of signs and symptoms of *raktavaha srotasa* vitiation. In these maximum of 30 patients were found to have *vyanga* (melasma), followed by 28 patients of *tilakalaka* (excess moles), 27 patients of *vaivarnya* (discolouration of skin), 22 patients of *atisweda* (excessive sweating), 18 patients of *pidaka* (acne), 16 patients of *mukhapaka* (stomatitis), 14 patients of *kushtha* (any skin related disease/ Sign and symptoms) and *daha* (burning), 10 patients of *kandu* (itching). Hence it is concluded, that there is association of long term exposure to fire and *raktavaha srotasa* vitiation. Briefly, it can be concluded that long term exposure to fire vitiate the *raktavaha srotasa* and signs and symptoms of vitiation can be found in patients. Maximum number of signs and symptoms of vitiation can explain the severity of *raktavaha srotas* vitiation.

## AIMS AND OBJECTIVE

To study association between long term exposure to fire and other signs and symptoms of *raktavaha srotasa* vitiation in female cooks.

## Review of literature

Causes of *srotasa* vitiation.<sup>[2]</sup>

Vitiations of srotasa are due to food and lifestyle behaviors which are similar to dosha and dissimilar to dhatus in their guna (properties).

### **General signs and symptoms of Srotasa Vitiation<sup>[3]</sup>**

According to Acharya Charaka, they are

- Atipravrutti (Excessive stimulation/ Enhanced flow)
- Sanga (Partial to complete obstruction)
- Sira granthi (Formation of nodules, tumors, i.e. complete obstruction)
- Vimaargagaman (Flow of contents in the wrong direction)

### **Common causes of Raktavaha srotasa vitiation**

Vitiation factors, in Charak Vimanasthana 5/14,<sup>[4]</sup>

raktavaha strota vitiations are due to

- Vidahi annapana (that causing burning sensation)
- Snigdha annapana (unctuous)
- Ushna annapana (hot)
- Drava annapana (liquid form or watery)
- Aatapseva (exposure to sunlight)
- Analseva (अनलसेवा) (exposure to heat).

Signs and symptoms of raktvaha srotasa vitiation:

Raktapradoshaj diseases are (Charak sutrasthana 28/11-12)<sup>[5]</sup>

Kushtha, Visarpa (Herpes infection), Pidaka (Acne/Boil), Raktapitta (haemorrhagic diseases/ bleeding disorders), Asrukdara (menstrual disorder), Gudapaka (Perianal abscess), Medhrapa (), Aasyapaka (stomatitis), Plihavruddhi (spleenomegaly), Gulma (), Shotha (swelling), Vidradhi (cyst), Nilika (bluish discolouration), Kamala (jaundice), Vyanga (melasma), Piplava (moles), Til Kalaka(moles), Dadru (Ringworm or tinea), Charmadala (Excoriation), Switra (vitiligo), Pama 9scabies), Koth (urticaria), Asramandala (reddish circular patches)

## **MATERIAL METHODS**

Sample size: 100

Type of study: observational

Place: Pune region

Duration: One year

Study population: Female cooks

## SELECTION OF PATIENTS

### 1. Inclusion Criteria

- i. Age group 25-40 years.
- ii. Females will be selected irrespective of caste, socio economic status.
- iii. Otherwise apparently healthy females.
- iv. Females cooks working in kitchens using LPG as a fuel for at least 3 hours per day with or without break for at least 5 days per week and at least for last 3 months (i.e. long term exposure to fire)
- v. Atmospheric temperature not exceeding more than 30 degree celsius.

### 2. Exclusion Criteria

- i. Females having major health issues like Diabetes Mellitus, Hypertension, Hypothyroidism, Hyperthyroidism.

## STUDY DESIGN

1. 100 Female cooks between 25 to 40 years of age working in household kitchens using LPG as a fuel for at least 3 hours per day with or without break for at least 5 days per week and at least for last 3 months (i.e. long term exposure to fire) were selected by purposive method of selection.
2. Informed written consents were taken for inclusion in the study.
3. They were asked for previous and present history of vitiation signs of raktavaha srotasa if any.
4. Observations were noted.
5. Statistical analysis was done.
6. Results were noted.
7. Discussion was done according to data.
8. Conclusions were drawn accordingly.

## RESULTS

**Table No. 1.**

<b>Sign &amp; Symptoms</b>	<b>Past History (Out of total present)</b>	<b>Present History (Out of total present)</b>
<i>Kushtha</i>	14	08
<i>Visarpa</i>	00	00
<i>Pidaka</i>	15	07
<i>Raktapitta</i>	00	00

<i>Gudapaka</i>	01	00
<i>Mukhapaka</i>	15	01
<i>Pleehavridhi</i>	00	00
<i>Gulma</i>	00	00
<i>Shohta</i>	04	02
<i>Vidradhi</i>	01	00
<i>Nilika</i>	00	00
<i>Kamala</i>	02	00
<i>Vyanga</i>	30	28
<i>Piplawa</i>	07	05
<i>Tilakalaka</i>	27	28
<i>Dadru</i>	08	00
<i>Charmadala</i>	00	00
<i>Shwitra</i>	01	01
<i>Pama</i>	01	00
<i>Kotha</i>	04	02
<i>Asramandala</i>	05	01
<i>Kandu</i>	08	02
<i>Arunshika</i>	01	00
<i>Sweda</i>	18	17
<i>Sharirdaugandhya</i>	14	14
<i>Vaivarnya</i>	25	18
<i>Daha</i>	11	08
<i>Kshudraroga</i>	04	01
<i>Nyachha</i>	08	07
<i>Indralupta</i>	00	00

14 patients have past history and 8 patients have present history of *kushta*,  
0 patients have past history and 0 patients have present history of *visrapa*,  
15 patients have past history and 7 patients have present history of *pidaka*,  
0 patients have past history and 0 patients have present history of *raktapitta*,  
1 patient have past history and 0 patients have present history of *gudapaka*,  
15 patients have past history and 1 patient have present history of *mukhapaka*,  
0 patients have past history and 0 patients have present history of *pleehavridhi*,  
0 patients have past history and 0 patients have present history of *gulma*,  
4 patients have past history and 2 patients have present history of *shohta*,  
1 patients have past history and 0 patients have present history of *vidradhi*,  
0 patients have past history and 0 patients have present history of *nilika*,  
2 patients have past history and 0 patients have present history of *kamala*,  
30 patients have past history and 28 patients have present history of *vyanga*,  
7 patients have past history and 5 patients have present history of *piplawa*,  
27 patients have past history and 28 patients have present history of *tilakalaka*,

8 patients have past history and 0 patient have present history of *dadru*,  
 0 patients have past history and 0 patients have present history of *charmada*,  
 1 patients have past history and 1 patients have present history of *shwitra*,  
 1 patients have past history and 0 patients have present history of *pama*,  
 4 patients have past history and 2 patients have present history of *kotha*,  
 5 patients have past history and 1 patients have present history of *asramandala*,  
 8 patients have past history and 2 patients have present history of *kandu*,  
 1 patients have past history and 0 patients have present history of *arunshika*,  
 18 patients have past history and 17 patients have present history of *sweda*,  
 14 patients have past history and 14 patients have present history of *sharirdaugandhya*,  
 25 patients have past history and 18 patients have present history of *vaivarnya*,  
 11 patients have past history and 8 patients have present history of *daha*,  
 4 patients have past history and 1 patient have present history of *kshudraroga*,  
 8 patients have past history and 7 patients have present history of *nyachha* and  
 0 patients have past history and 0 patients have present history of *indralupta*.

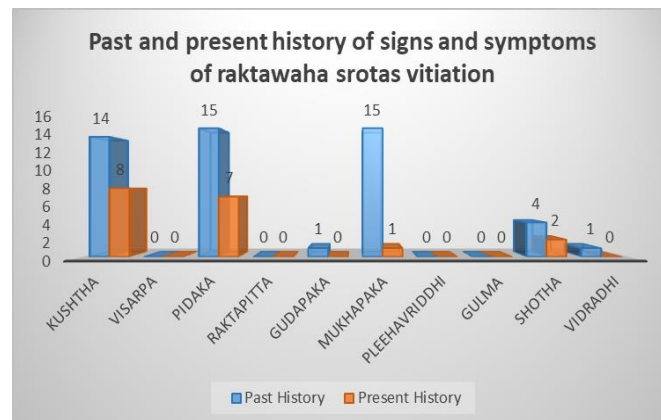


Chart No. 1.

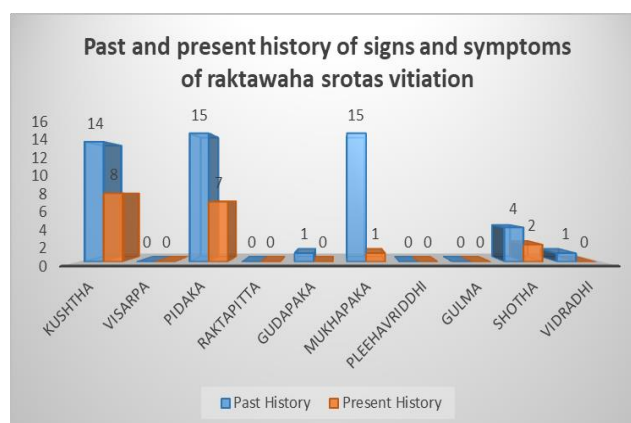


Chart No. 2.

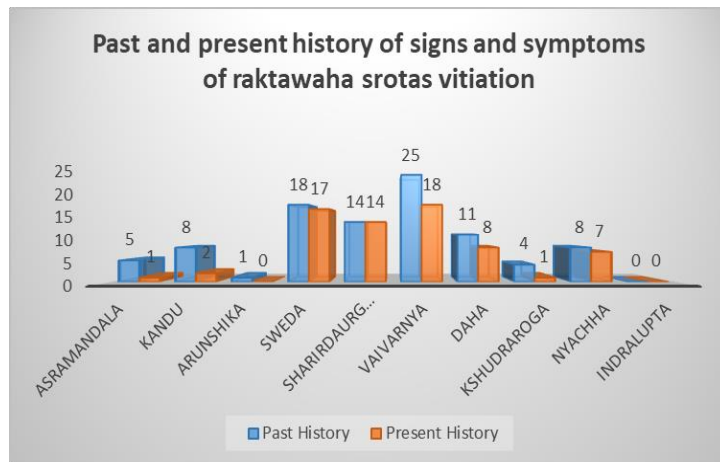


Chart No. 3.

According to presence of number of signs and symptoms of raktawahasrotas vitiation in patients.

Table No. 2.

No of signs and symptoms	No of patients
0	39
1	4
2	14
3	14
4	9
5	5
6	4
7	5
8	3
9	0
10	1
11	1
12	1

39 patients have 0 symptoms, 4 patients have 1 symptoms, 14 patients have 2 symptoms, 14 patients have 3 symptoms, 9 patients have 4 symptoms, 5 patients have 5 symptoms, 4 patients have 6 symptoms, 5 patients have 7 symptoms, 3 patients have 8 symptoms, 0 patients have 9 symptoms, 10 patients have 1 symptoms, 11 patients have 1 symptoms and 12 patients have 1 symptoms.

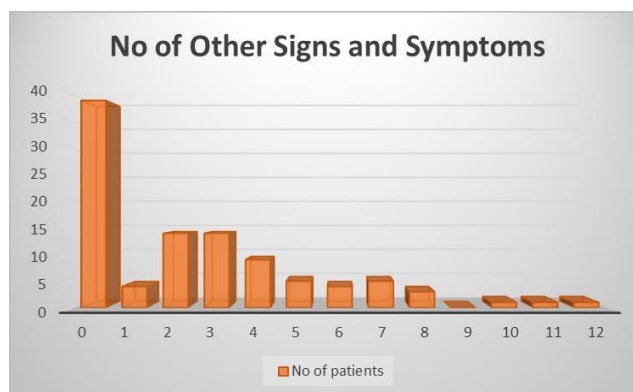


Chart No. 4.

## DISCUSSION

In this study it is observed that, 61% patients have past or present history of other signs and symptoms of *raktavaha srotasa* vitiation. In these maximum of 30 patients were found to have *vyanga*, followed by 28 patients of *tilakalaka*, 27 patients of *vaivarnya*, 22 patients of *atisweda*, 18 patients of *pidaka*, 16 patients of *mukhapaka*, 14 patients of *kushtha* and *daha*, 10 patients of *kandu*. Maximum of 12 signs and symptoms of *raktavaha srotasa* vitiation were observed in the patients having exposure to fire. Included patients had daily minimum 3 hours to maximum of 10 hours of exposure to fire produced by LPG (Liquefied Petroleum Gas) and for minimum 3 months to maximum of 20 years. As above, it is observed that majorly skin related signs and symptoms were found in patients as past or present history.

It means long term exposure to fire vitiates the *raktavaha srotasa* and signs and symptoms of vitiation can be found in any above form.

## CONCLUSION

In this study, evidences of signs and symptoms of *raktavaha srotasa* vitiation were assessed in 100 female patients who have exposure to fire. After assessing the collected data and evaluating the results following conclusions can be noted Domestic female cook is an emerging occupation in urban areas of India. Majority of these cooks work in more than 2-3 houses and are therefore exposed to heat generated by fire (LPG) (अनल) for more than two to three hours approximately. Majority of them come from marginalized population where ignorance about health related issues is commonly found. Exposure to fire (अनल) vitiates the *raktavaha srotasa*, and various signs and symptoms of vitiation can be seen in exposed individual. From the collected data, we can conclude that exposure to fire vitiates the *raktavaha srotasa* and shows signs and symptoms of vitiation. Maximum patients i.e. 61%

showed evidences of signs and symptoms of *raktavaha srotasa* vitiation. It is observed that majorly skin related signs and symptoms were found in patients as past or present history i.e. *vyanga, tilakalaka, vaivarnya, atisweda, pidaka, mukhapaaka, kushtha, daha, kandu, etc.*

This study helps to bring into attention the thought process of *raktavaha srotasa* vitiation in female cooks. All the above observations and results are suggestive of correlation between long term exposure to fire signs and symptoms of *raktavaha srotasa* vitiation.

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