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Study Of Chalk Dust As Etiological Factor Of Tamak Shwas In Teaching Profession

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Abstract

Background - In 21st century, where life & industrialization is growing high, many types of pollutant are released into environment affecting health of people in various ways. In *Ayurveda*, these pollutants are included as “*raja*”. Acharya *Charaka* had mentioned that ‘a single etiological factor may produce single disease or group of diseases or many factors together produces single disease or group of diseases. Acharya *Charaka* has mentioned that ‘*Raja*’ (dust particles including pollen grains) is responsible for the development of respiratory system disorders like *Shwasa* (dyspnea), *Kasa* (cough) and *Hikka* (hiccups) and *Pratikshyaya* (Rhinitis)

Aims – To study chalk dust as an etiological factor of *Tamak Shwasa* in the teaching profession

Material & Method - 100 diagnosed teacher patients of “*Tamak Shwas*” are evaluated for considering chalk dust as causative factor. This study is done on the parameters like age, sex, time for exposure to chalk, duration of teaching, measurement of absolute eosinophil count. Study results were statistically analysed using chi square test.

Observation - Significant correlation was found between chalk dust and the development of *Tamak Shwasa* in teachers (P-value $0.0024 < 0.05$).

Conclusion – Chalk dust serves as the aetiological factor for the development of *Tamak Shawas* (Atopic Asthma)

Keywords: *Tamak Shwas, Raj*

Introduction :

In the 21st century, where life & industrialization is growing rapidly, many types of pollutants are released into the environment, affecting the health of people in various ways. In Ayurveda, these pollutants are included as “*raja*”. In Nidan Sthana 8/24,25.2, Charak has mentioned that ‘a single etiological factor may produce a single disease or a group of diseases, or many factors together produce a single disease or a group of diseases. ‘Raj’ has been considered a causative factor for the formation of *Shwasa*, *Kasa*, *Hikka*, and *Pratishyay* diseases. According to Charak, raj has been mentioned as the first Hetu in the causation of respiratory system disorders, i.e *Shwasa*, *Hikka* Cha.chi.17/12,13.3

This dust can be compared to chalk dust, with particles nearly 1 micrometre in diameter, which can be easily inhaled and cause diseases like *Shwasa*, *Kasa*, and *Hikka*. In teaching professions, teachers frequently come into contact with chalk as a teaching aid. Nowadays, chalk is dustless and produces dust that settles down faster. To determine whether this raja can be one of the Hetu of *Tamak Shwasa*, this study was conducted.

Aim: To study chalk dust as an etiological factor of *Tamak Shwasa* in the teaching profession

Objective :

To study *Tamak Shwasa* in various classical texts.

To study chalk dust in detail.

To study effect of chalk dust as etiological factor in the formation of *Tamak Shwasa* in teaching profession.

Materials -

The Teachers will be selected from Gadhinglaj and peripheral primary schools and colleges.

Patients attending the hospital and special camps conducted by LKRAM&RS Gadhinglaj.

Methodology -

- **Place of work:** College Hospital and Primary & Secondary Schools & College in the periphery area.
- **Plan of work: A minimum of 100 patients will be included in the study.** A survey study of 100 Teachers diagnosed with *Tamak Shwasa* will be selected. Prior informed written consent, wherever necessary, will be taken from the patient. History and examination of all the patients will be taken thoroughly with the help of a special case paper format. The investigation will be done on the same day of the clinical examination.
- **Sample size -** 100 Teachers diagnosed with *Tamak shwasa*.

Inclusion Criteria

- Pts. between age group 20 to 60 yr
- Either sex will be selected for study.
- Diagnosed teachers of *Tamak Shwasa*.

Exclusive Criteria :

- *Mahashwasa*
- *Urdhvaswasa*
- *Chinnashwasa*
- *Shudrashwasa*
- *Hridrog*
- *Hikka*
- *Kasa*
- *Rajyaksma*
- *Urahshata*
- *Pnemothorax*
- *Plural effusion*
- *Bronchogenic carcinoma*

- Fibrosis of lung
- Collapse of lung.
- Hereditary causes of Asthma

Subjective Criteria

Objective Criteria

1. Total Leucocyte Count (TLC)
2. Differential white cell count (DLC).
3. Absolute Eosinophill Count (AEC)

Analytical study of chalk -

Writing chalk mainly consist of

1. Calcium sulphate in its dehydrate form. $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ (gypsum).
2. Calcium carbonate 40-60% of CaCO_3 (calcite).

Any complaint during teaching	Present /absent	duration
No complaints		
Sneezing		
Coughing		
Shwas		

Observation Table 1 –Distribution Of Teachers having *Tamak Shwasa* according to age

Age in yrs	No of teachers
20-30	5
31-40	37
41-50	46
51-60	12

Observation Table 2 – Distribution of Teachers having *Tamak Shwasa* according to sex.

Sex	No of teachers
Male	60
Female	40

Observation Table 3- Distribution of Teachers having *Tamak Shwasa* according to – Teaching Profession –

Teaching Profession	No of teachers
Primary	29
Secondary	42
High Secondary	19
College	10

Observation Table No. :4 -

Comparison Between Total Experience Of Teaching & Duration Of *Tamak Shwasa*.

Teaching Profession	No of teachers
Primary	29
Secondary	42
High Secondary	19
College	10

Observation Table No. :5-

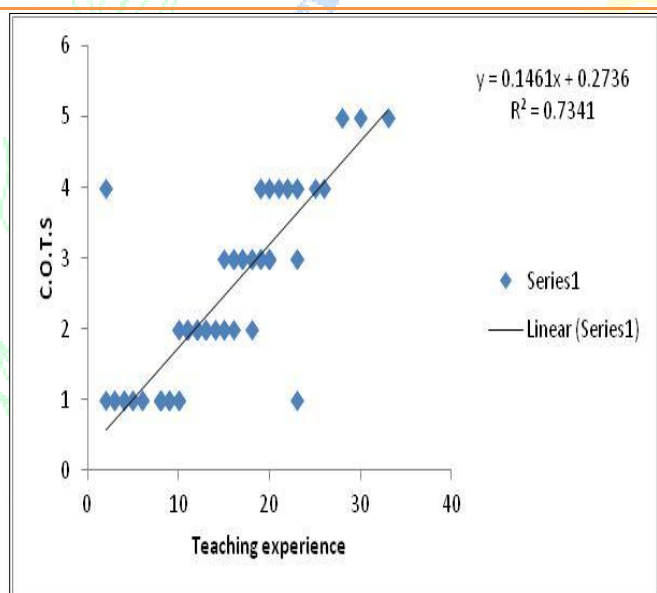
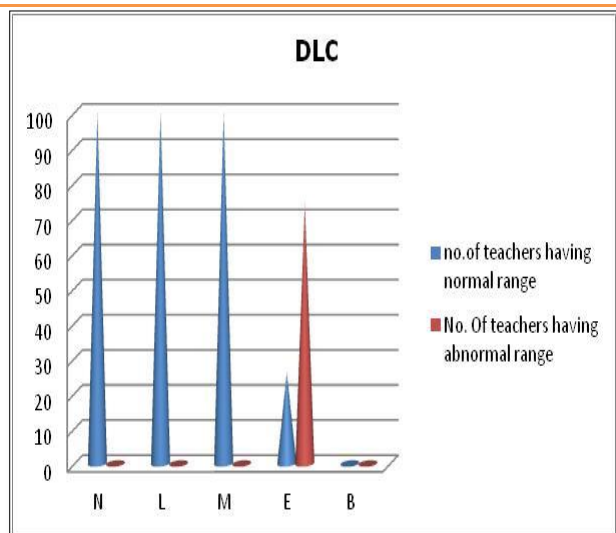
Distribution of Teachers having *Tamak shwasa* according to Complaint during teaching

Complaint During Teaching	No of Teachers
Sneezing	13
Coughing	34
Shwasa	27
No Complaint	26

Observation Table No. :6-

Distribution of Teachers having *Tamak Shwasa* according to Absolute Eosinophill Count

Ab. eosinophill count range (cu/mm)	No of Teachers
less than or equal to 400	21
>400	79



Correlation between total teaching exposure and Chronicity of Tamak Shwasa.

Discussion

- **Age & Sex** – Maximum age found was 60 yr, minimum was 20yr.

- **Teaching Profession and Subject –**

High incidence of *Tamak shwasa* in secondary school teachers 37% followed by primary teachers 30%. High secondary school 27%, college 6%, Teachers teaching all subjects 29%, followed by Maths 16%, Drawing 12%, English 9%, Those

Teachers used chalk frequently and have *Tamak shwasa*.

Teaching profession and Total exposure to chalk dust: In primary teachers, maximum exposure to chalk dust was 5-6 hrs in 10% and 3-4 hrs in 19%. In secondary school teachers, maximum exposure to chalk dust was 5-6hrs in 6%, 3-4 hrs in 12%, 1-2 hrs in 7%, and less than 1 hr in 16%. In high school, teachers: 5-6 hrs, 3-4 hrs in 5% each, 1-2 hrs in 3%, and less than 1 hr in 6%. In college, 5-6 hrs exposure in 2%, 3-4 hrs in 3%, 1-2 hrs in 1%, and less than 1 in 4%.

Complaints During Teaching

In this study, the majority of teachers showed coughing symptoms (34% during teaching, followed by Shwasa 27%) and sneezing 13%. 26% of teachers had no complaints during teaching.

Nidan – In this study, maximum *Viharaj Nidan* (*Raja*) chalk dust was found to be 74%.

Absolute eosinophil count – 79% of teachers showed borderline eosinophilia, and 21% of teachers showed AEC within the normal range.

Duration of chalk dust exposure and Complaints during teaching showed a significant correlation. As ($p\text{-value } 0.0024 < 0.05$)

No correlation was found between chalk dust exposure and eosinophil range (P-value 0.821 > 0.05). Though mild Eosinophilia was found in most cases (79%.

A significant correlation was found between chalk dust and the development of *Tamak Shwasa* in teachers (P-value $0.0024 < 0.05$).

Conclusion :

- On the basis of observations obtained in the present study,

- Male dominance was found in Teachers having *Tamak shwasa*.
- The majority of Teachers having *Tamak shwasa* were found in the 41-50 yrs age group.
- The majority of teachers who had *Tamak shwasa* were from Secondary school.
- Total chalk exposure was 3-4 hrs in most teachers.
- The majority of Teachers showed coughing symptoms during teaching.
- The majority of Teachers having *Tamak shwasa* teach subjects like all subjects, Maths, Drawing, Physics.
- Habit of Tea/coffee was found in most teachers.

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