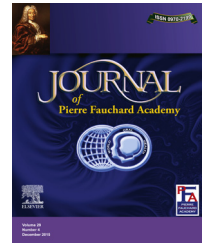


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# The Grinspan Syndrome: “Fact” or “fiction” – A Meta Analysis research

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## ABSTRACT

Grinspan Syndrome since its inception has been an arena of interest that has appeared very lucrative to numerous researchers due to its lack of clarity and enhanced ambiguity. This syndrome, which is a triad of Oral Lichen Planus (OLP), Diabetes Mellitus (DM) and Hypertension (HTN) as reported in the early 1963 by Grinspan has not found much appreciation in the literature thereafter.<sup>1</sup> There are few studies however which are affirmative towards the association but simultaneously there are more studies which deny it. In our present study therefore, which was based on the case control trials, we aimed at systematically reviewing various literatures available so far using network Meta Analysis in order to establish the exact association between the three entities. Meta Analysis was performed and odds ratios and 95% confidence intervals (CI) calculated. From a total of 45 identified records, 24 case control studies were included in the study. Meta Analysis projected the association between OLP and DM to be 0.1 (no association), between OLP and HTN to be 0.5 (no association) and between OLP, DM and HTN to be 0.5 (no association). Although the results of the intended study do not go in favour of the association between the three entities, further researches need to be carried out in order to make the scenario clearer because the association among the three entities raises a ambiguity or a doubt.

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## 1. Introduction

The Grinspan Syndrome is a “triad” of Oral Lichen Planus (OLP), Diabetes Mellitus (DM) and Hypertension (HTN), 1st coined by Grinspan in the year 1963 after he observed an interesting association between the three systemic disorders.<sup>1</sup> Although there were several questions raised by various researchers over this association who could not simulate similar association in their studies, it was in the year 1965 that

the two eminent researchers, Grupper and Avril, confirmed the existence of this symptomatological triad.<sup>1-3</sup> DM and HTN are chronic diseases involving multiple systems of the body with cutaneous manifestations being quite common. However even after the descriptive and elaborate explanation given by the duo described above, the exact level at which Grinspan would have noticed the association amongst the 3 disorders was not clear. LP (1st coined by Erasmus Wilson in the year 1869) is a mucocutaneous disorder, with intraoral manifestations being a regular feature.<sup>4,5</sup> The aetiology of OLP in the eyes of evidence

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based dentistry largely suggests that it is an inflammatory T cell mediated immune response.<sup>6</sup> DM on the other hand is characterized by elevated levels of glucose in the blood.<sup>4</sup> This elevation is the result of a deficiency in insulin secretion or an increased cellular resistance to the actions of insulin, leading to a variety of metabolic abnormalities involving carbohydrates, fats and proteins.<sup>6-8</sup> The most common types of diabetes are type 1 (also known as insulin dependent) and type 2 (also known as non-insulin-dependent) of which Type 2 is the more prevalent type.<sup>9,10</sup>

The prevalence of OLP as an oral disease is 1–2% however in association with DM is 0.55–5.76%, the association of the triad has been reported to be 0.4–0.23%.<sup>11,12</sup> With so much of ambiguity in the literature related to the association among the three entities, it definitely brings an onus upon the modern day researchers to investigate into the basics of the studies and carry out further researches in order to clarify the same.<sup>13,14,5,15,16</sup> With this regard, the present study in the form of Meta Analysis, aims to establish the association between OLP, DM and HTN thus heralding a new era in terms of the clarity of the syndrome and also determining to a greater extent whether the three entities actually lie in a close relationship with each other based on the numerous research literature available so far.<sup>17,8,12</sup>

## 2. Aims and objectives

To statistically establish the association between Oral Lichen Planus (OLP), Diabetes Mellitus (DM) and Hypertension (HTN) using Meta Analysis. The objectives of the study included:

1. To establish the association between OLP and DM.
2. To establish the association between OLP and HTN.
3. To establish the association between OLP, HTN and DM.

## 3. Materials and methods

This study follows international guidelines for performing and reporting systematic reviews and Meta Analysis (Moher et al., 2009; Hoaglin et al., 2011; Jansen et al., 2011). We aimed at answering the following question: Since a long time, the concept of Grinspan Syndrome has been in literatures but its incidence and prevalence has always lacked enough evidence. In such a scenario, is there a definite relationship or association between the three entities that it comprises of or if it is just on the basis of chance factors.

### 3.1. Selection (inclusion and exclusion) criteria

With the Cochrane collaboration taken as source for authenticated scientific research data, 45 case control articles were selected having undergone a randomized control trial. Out of these, the articles were screened and finally 24 articles (Table 1) were selected which met the criterion for Meta Analysis. Articles which were not published in English and where the full text could not be obtained were excluded. Case reports, reviews, non-RCTs and non-case control articles were

**Table 1 – List of articles selected for the study based on Meta Analysis criterion.**

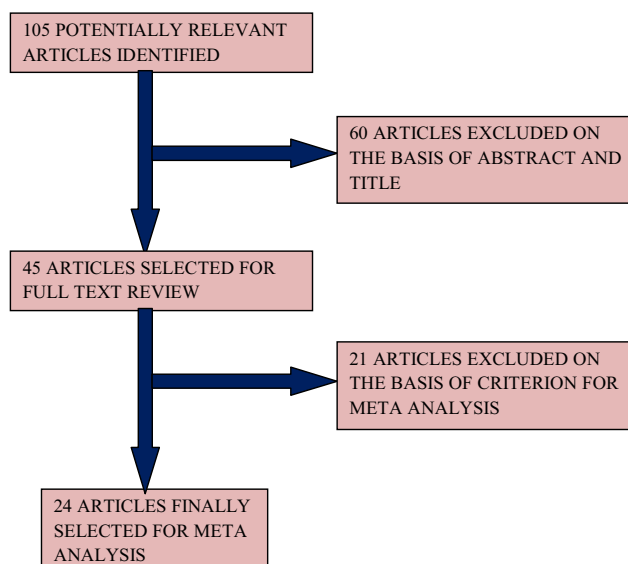
Sn.	Researches conducted by	Case	Controls
1	Musa Sahin et al.	95	101
2	Gabriel Antonio et al.	1275	1275
3	Talamini R et al.	79	79
4	Franceschi S et al.	800	800
5	Ainamo J et al.	1000	1000
6	Salma Abdel Zaher et al.	980	900
7	Belmiro Cavalcanti et al.	465	335
8	Del Maso et al.	1000	1000
9	Seppala B et al.	150	75
10	Kaaks R et al.	145	88
11	Yang CS et al.	76	50
12	Mc Intyre G et al.	94	50
13	D'Ambrossio JA et al.	185	56
14	Chavez EM et al.	155	105
15	Anjana Bagewadi et al.	95	88
16	Pihlstorm et al.	485	340
17	Wilson TC et al.	150	90
18	Ara SA et al.	88	88
19	Bokharai MM et al.	95	50
20	Al-Maweri SA et al.	150	90
21	Truelove EL et al.	1000	550
22	Hamilton BC et al.	1500	500
23	Macfarlane TW et al.	500	500
24	Morgan R et al.	264	150

also not included in the study. All the articles were checked for validity, eligibility and design of the study. There were 3 groups which were included in our study, viz.:

**Group 1:** Diabetes Mellitus vs Oral Lichen Planus.

**Group 2:** Hypertension vs Oral Lichen Planus.

**Group 3:** Diabetes Mellitus vs Oral Lichen Planus vs Hypertension.



## 4. Results

Meta Analysis is a technique of combining the results of many studies in a rigorous and systemic manner to allow us to better

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