



A Study to evaluate the Frequency and Association of Various Mucosal Conditions among Geriatric Patients

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ABSTRACT

Geriatric dentistry or gerodontics is the delivery of dental care to older adults involving the diagnosis, prevention and treatment of problems associated with normal aging and age-related diseases as part of an interdisciplinary team with other health care professionals.

Aim: To evaluate the oral mucosal status in the elderly population of different age group and find out the association of age, gender and denture with oral mucosal disorders.

Materials and methods: The study sample consisted of 570 geriatric persons concentrating mainly on the oral mucosal changes or lesions occurring in the geriatric population. Individuals those are aged above 60 years were selected, and all the examined geriatric persons were categorized into 3 age groups to find out the association of oral mucosal lesions in each group.

Group I—60 to 65 years, Group II—66 to 70 years, Group III—71 and above years.

Results: The sample of 570 elderly patients included 279 (48.95%) men and 291 (51.05%) women in three age groups: 61 to 65 years (40.35%), 66 to 70 years (31.05%), and 71 years and older (28.60%). The sample included 254 (44.56%) dentate patients, 205 (35.96%) denture wearers (partial and complete denture wearers) and 111 (19.47%) edentulous persons who lacked dentures in both the jaws. Almost half of the patients examined (48%) had one or more oral mucosal lesions. The 48% of the patients who presented with oral mucosal lesions, twenty five different oral mucosal conditions were identified and the three most common findings were lingual varices (13.68%), denture induced inflammatory fibrous hyperplasia (4.21%), squamous cell carcinoma (4.21%). There was some differences in the distribution of oral mucosal condition among the sexes. Leukoplakia and dysplasia were significantly associated with men ($p < 0.001$) whereas the association of fibroma and lichen planus with women were significant ($p < 0.001$).

Conclusion: In our study it was found that patients in groups II and III had more prevalence of oral mucosal disorders. Lingual varices, oral squamous cell carcinoma, fibroma and denture induced inflammatory fibrous hyperplasia were more commonly associated with the geriatric patients. The oral lesions (fibroma

and lichen planus) were strongly associated with women while leukoplakia was strongly associated with men. Ageing is an important factor that can influence the occurrence of mucosal lesions and with age the oral mucosa becomes more permeable to noxious substances and more vulnerable to external carcinogens.

Keywords: Geriatrics, Edentulous, Squamous cell carcinoma, Lichen planus, Lingual varices, Fibroma.

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INTRODUCTION

Geriatric dentistry is the delivery of dental care to older adults involving the diagnosis, prevention, and treatment of problems associated with normal aging and age-related diseases as part of an interdisciplinary team with other health care professionals. Last century has witnessed a number of remarkable demographic changes related to health, diseases, longevity and mortality of the population all over the world.¹

Epidemiologic studies provide important information for the understanding of the prevalence, incidence, and severity of oral disease in a specific population. It is important to understand the distribution, etiology, risk factors, and pathogenesis of oral mucosal lesions. This presents an opportunity for a timely primary prevention, early diagnosis, and prompt treatment.²

Although in 1980, the World Health Organization (WHO)'s 'Guide to epidemiology and diagnosis of oral mucosal disease and conditions' provided a systemic approach of data collection, the epidemiologic literature on oral mucosal diseases is somewhat scanty in this country.² WHO, in 1984, established that people 60 years

and older are considered elderly in developing countries. Current demographic indicators predict a dramatic shift in the distribution of the Indian population and that of other 'developing' nations, with a substantial growth in the number of persons in the 60 and older age group.^{3,4}

As more people live longer and become elderly, there will be an increase in chronic conditions and illnesses that will influence both oral and systemic health. As the aging progresses the oral mucosa exhibits many epithelial and connective tissue changes and these changes can substantially be responsible for the various neoplastic and non-neoplastic lesions in the oral cavity.

It may be difficult to differentiate between diseases and ageing. It is important to recognize the difference between normal ageing and what is actually pathological. Several studies have been conducted across the world to evaluate the oral mucosal conditions of elderly people based on clinical diagnosis, however limited literature exists on studies confirming this with the histopathological diagnosis. The distribution of oral diseases using biopsies allows greater accuracy in data about the oral health of elderly patients, especially when considering the malignant and premalignant lesions.

Hence, the purpose of this study was to assess the frequency and association of various mucosal conditions among the elderly population of different age group and find out the association of age, gender and denture wearing with oral mucosal disorders.

MATERIALS AND METHODS

The sample consisted of 570 geriatric persons concentrating mainly on the oral mucosal changes or lesions occurring in the geriatric population. The sample of 570 elderly patients included 279 (48.95%) men and 291 (51.05%) women and all the examined geriatric persons were categorized into 3 age groups to find out the association of oral mucosal lesions in each group.

Group I—61 to 65 years (40.35%)

Group II—66 to 70 years (31.05%),

Group III—71 and above years (28.60%).

The sample included 254 (44.56%) dentate patients, 205 (35.96%) denture wearers (partial and complete denture wearers) and 111 (19.47%) edentulous persons who were nondenture wearers.

Cytological smears and biopsies were performed on certain patients which required a confirmatory diagnosis. Consent of the patient was obtained before the biopsy. Xylocaine 0.2% was injected around the site of biopsy, then by using bard parker blade a small portion of the

lesional tissue was cut and removed using tissue forceps. The biopsied area was sutured and the tissue was then fixed in 10% formalin solution. The tissue was processed by the usual procedures to obtain 5 micron paraffin sections. The sections were stained with hematoxylin and eosin stains. The stained sections were observed under light microscope and the histopathological features were recorded.

Smears were taken from the appropriate lesions from the oral cavity and were fixed with and stained by periodic acid Schiff method. The smears were observed under the light microscope for the presence of yeast cells and hyphal forms.

The results were subjected to statistical analysis, Chi-square analysis and also the significance of differences for the diagnostic in the elderly between the 3 age groups, differences in sex distribution for the diagnostic categories between age groups and also the differences in denture status between the age groups and the sex were tested by Chi-square analysis using the SPSS software 11 version.

RESULTS

Almost half of the patients examined (48%) had one or more oral mucosal lesions. The 48% of the patients who presented with oral mucosal lesions, twenty five different oral mucosal conditions were identified and the three most common findings were lingual varices (13.68%), denture induced inflammatory fibrous hyperplasia (4.21%), squamous cell carcinoma (4.21%). There were some differences in the distribution of oral mucosal condition among the sexes. Leukoplakia and dysplasia were significantly associated with men ($p < 0.001$) whereas the association of fibroma and lichen planus with women were significant ($p < 0.001$) (Tables 1 and 2) (Graphs 1 to 6).

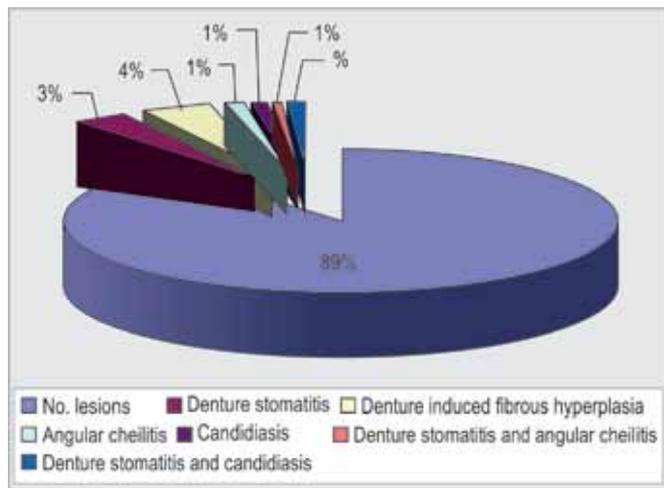
DISCUSSION

The number of individuals over 60 years is steadily increasing in almost all the countries as a result of the improvement in living conditions and medical advances in therapeutics. Oral health is an important part of the quality of life of any individual. Oral lesions can cause discomfort or pain, may interfere with mastication, swallowing and speech. The diagnosis of the wide variety of lesions that occur in the oral cavity is an essential part of dental practice. The prevalence of oral mucosal lesions is an important parameter for the evaluation of the oral health of any population, and the prevalence data of these lesions is vital for planning oral health care services.²

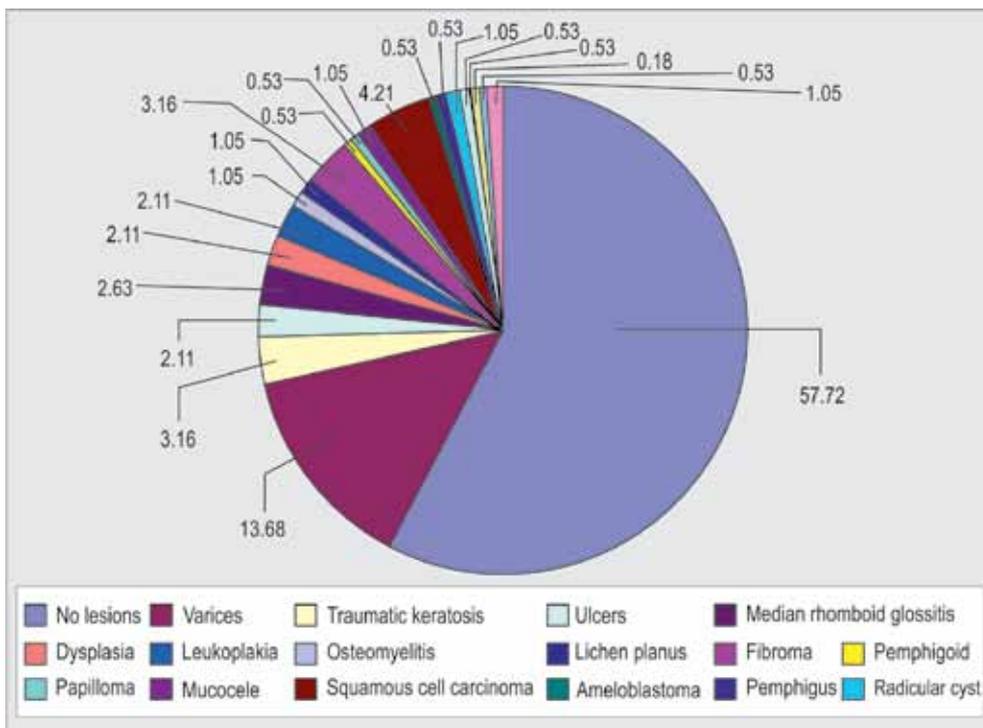
Integrity of the oral mucosa is especially important in the elderly, who are known to have age-related decline in immune system function. This study was undertaken to evaluate the association of oral mucosal lesions in geriatric

Lesions	Age group I	Age group II	Age group III
No. lesions	194	162	151
Den. stomatitis	15	3	0
Den. induced fib. hyperplasia	9	12	3
Angular cheilitis	6	0	0
Candidiasis	0	0	6
Den. stom. + candidiasis	3	0	0
Den. stom. + Angular cheilitis	3	0	3

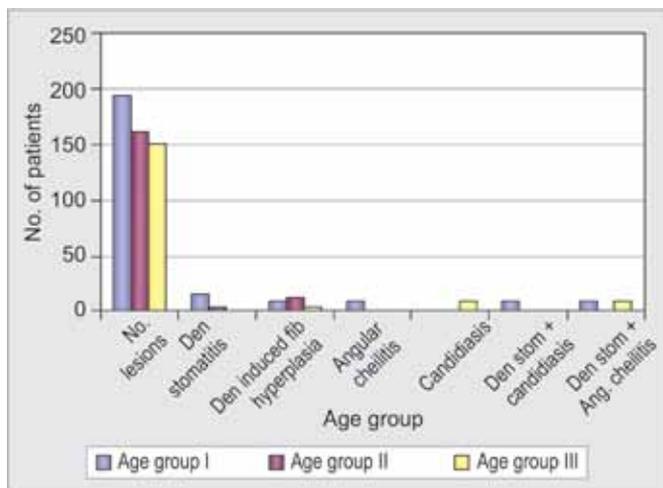
Lesions	Age group I	Age group II	Age group III
No. lesions	151	96	82
Varices	3	6	69
Traumatic keratosis	6	12	0
Ulcers	6	6	3
Median rhomboid glossitis	6	6	0
Dysplasia	6	6	0
Leukoplakia	3	9	0
Osteomyelitis	6	0	0
Lichen planus	0	6	0
Fibroma	15	3	0
Pemphigoid	0	3	0
Papilloma	3	0	0
Mucocele	3	3	0
ScC	9	12	3
Ameloblastoma	0	3	0
Pemphigus	3	0	0
Radicular cyst	3	3	0
Fordyce's granules	0	3	0
Fibrosarcoma	1	0	0
Lichenoid reaction	3	0	0
Pleomorphic adenoma	3	0	0
Depigmentation	0	0	6



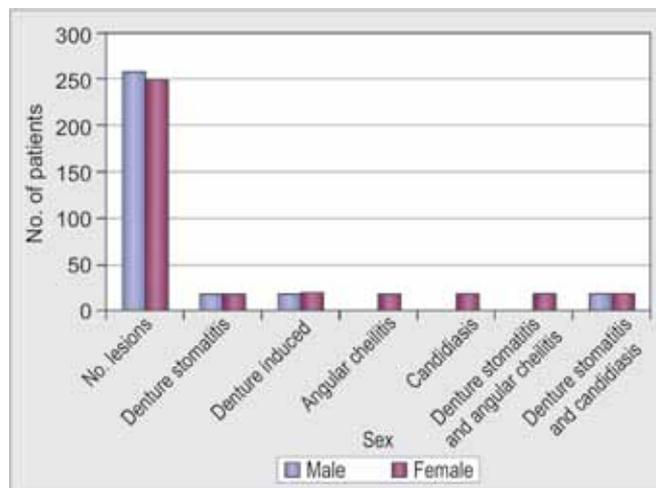
Graph 1 : Lesions in denture wearers



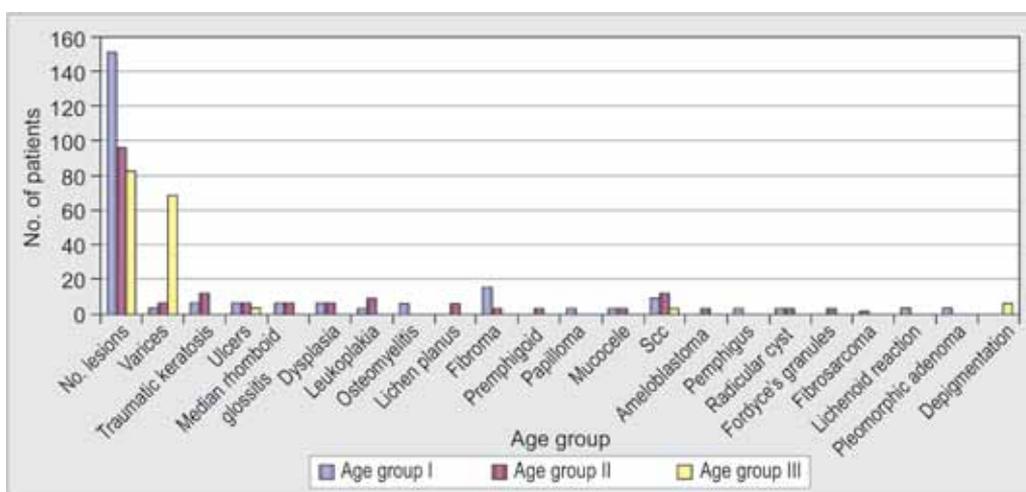
Graph 2: Lesions in dentulous patients



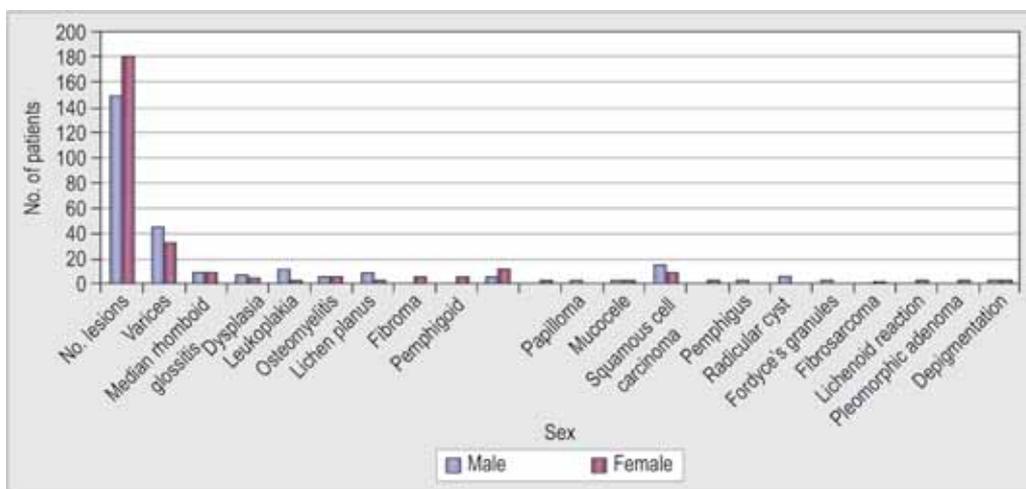
Graph 3: Denture related lesions with age



Graph 5: Denture related lesions by sex



Graph 4: Nondenture related lesions with age



Graph 6: Nondenture related lesions by sex

persons with respect to age, gender and dentures. All subjects were divided into subgroups according to age and gender, similar to studies conducted by Prasad et al, Saraswathi et al,⁵ Mathew et al⁶ and Shivakumar et al⁷ Bhatnagar et al.²

Various oral mucosal lesions seen in geriatrics in our study were categorized into denture related lesions: denture stomatitis, denture induced inflammatory fibrous hyperplasia, angular cheilitis, candidiasis, denture stomatitis with angular cheilitis, denture stomatitis with candidiasis.

Nondenture related lesions include Varicosities, traumatic keratosis, ulcers, median rhomboid glossitis, dysplasia, leukoplakia, osteomyelitis, lichen planus, fibroma, pemphigoid, papilloma, mucocele, squamous cell carcinoma, ameloblastoma, pemphigus, radicular cyst, Fordyce's granules, fibrosarcoma, lichenoid reaction, pleomorphic adenoma, depigmentation

In this study when patients were questioned regarding the presence of oral health complaint it was observed that about 38% of the patients experienced oral health problems. MacEntee et al¹⁰ found oral health complaints in 35% of elderly people which was consistent with the findings of our study. In this study about 38% of the elderly patients stated that they were medically compromised or had systemic diseases which was very less compared to the study conducted by Dimitris et al¹¹ where 90% subjects were medically compromised.

In this study, about 42% of the elderly patients mainly in the age groups I and II reported recent use of dental services which was very less when compared to the study conducted by MacEntee et al¹⁰ where 60% of individuals reported recent use of dental services, which also probably reflects the unavailability of dental services for the elderly people or the carelessness of the elderly people in this sample group.¹²

There is an associations that has been reported between oral mucosal lesions and habits this was consistent with the findings of our study and that of Salonen et al¹³ and Gönül et al.¹⁴

In this study, comparatively, there were lesser number of denture wearers and increasingly higher number of edentulous persons who were nondenture wearers. Our study reported 19.6% of edentulous persons were nondentures and most of them were in the age group III – 71 years and above. This finding was not consistent with Mikael Grabowski et al¹² where only 3.6% were edentulous and nondenture wearers. In another study conducted by Paul Tramini et al¹⁵ and John M Starr et al¹⁶ there were slightly higher frequency where 11.4% were edentulous and nondentures. This indicates an indifferent attitude as age progresses toward dental health.

In this study, we observed an increasing incidence of lingual varices among the age group III—71 years and above, which was followed by the age group II—66 to 70 years, indicating the increasing incidence of lingual varices with age. This could be attributed to the fact that lingual varices is a physiological age related degeneration which represents the ageing process in which a loss of connective tissue tone supporting the vessels occurs, and it is invariably seen most often in the 70 years and above individuals. This finding was consistent with the study by Kaplan et al¹⁷ and Jainkittivong et al.¹⁸

In this study, squamous cell carcinoma was the second most common lesion detected with 12 cases reported in age group II followed by 9 cases in age groups I and 3 cases in age group III. This finding was in accordance with the study by Luciana Correa et al¹⁹ and Sujatha et al.²⁰ With advancement of age, the oral mucosa becomes more permeable to noxious substances and more vulnerable to external carcinogens.²¹

Vigild et al²² stated that the oral epithelium has been reported to be thinner with age and collagen synthesis by connective tissue decreases hence, decreased tissue regeneration and decreased disease resistance would be expected J Scott et al²³ stated that the occurrence of premalignant and malignant diseases increases 5.5 fold higher in the elderly. Luciana Correa et al¹⁹ also stated that the three most common lesions to be associated with elderly patients are inflammatory fibrous hyperplasia, fibroma and squamous cell carcinoma which are in accordance with the findings of our study.

Traumatic keratosis and ulcers are two other common lesions detected in our study. These lesions were most commonly seen on the buccal mucosa and labial mucosa which may be caused by trauma from the fractured restoration, sharp edges on worn teeth, type of diet or by the habit of placing the tobacco pouch or the betel quid in the buccal or labial vestibule. This finding along with the location of the lesion was in accordance with the study done by Jainkittivong et al.¹⁸

In this study, we found that the tobacco related lesions (leukoplakia/dysplasia) was found to be much higher in males as compared to females in this study and is in accordance with the other studies Bhatanagar et al² Saraswathi et al,⁵ Jainkittivong et al,¹⁸ Sujatha et al,²⁰ Rani et al,²⁴ Jaber et al.²⁵

The prevalence of adverse oral habits median rhomboid glossitis or the central papillary atrophy of the tongue was the fourth most common lesion detected in our study. This was found to be significantly associated with males with the possible explanation could be the poor oral hygiene, vitamin deficiency, xerostomia, anemia, candidal infection and trauma. It was noted that 73% of the median rhomboid glossitis smear were positive for the candida species. This high percentage of active candidal infection provides a partial explanation for the relatively poor oral hygiene seen in elderly males. These findings were consistent with the study done by Ilana Kaplan et al,¹⁷ Dimitris Triantos et al¹¹ and Mozafari et al.⁹

In this study, a strong correlation was established between the fibroma and lichen planus with the female patients. The correlation of lichen planus in female patients is attributed to the hormonal alterations (especially menopause) and stress. This finding is in accordance with Luciana Correa et al¹⁹ and J Scott et al.²³

In our study, denture stomatitis and denture induced fibrous hyperplasia were the two most common denture related lesions detected. The correlation of denture stomatitis in elderly may be attributed to the mechanical irritation from the denture, infection or an allergic reactions provoked by the constituents of the denture base material. Vigild et al²² stated that the predominant single factor influencing the occurrence of denture stomatitis was denture hygiene. In our study denture stomatitis was noted higher in the age group I – 15 cases and followed by the age group II—3 cases and in group III it was seen in combination with candidiasis but no single denture stomatitis was noted in group III. The decrease in the incidence of denture stomatitis with increasing age is established and the same observation has been made in studies done by Mozafari et al⁹ and Vigild et al.²² One possible way of explaining this surprising trend might be that the very old individuals constitute a generation of survivors with a high general resistance Vigild et al.²²

An increasing frequency of denture induced inflammatory fibrous hyperplasia was seen in age group II—12 cases followed by group I—9 cases this may be due to the length of the denture use, or the presence of an ill fitting denture that cause trauma and inflammation of the oral tissues. It was also strongly associated with females than males. These findings were in consistent with the study done by Coelho et al.²⁶

Garcia Pola et al²⁷ stated that the denture was a risk factor for some of the oral lesions like denture stomatitis, denture induced inflammatory fibrous hyperplasia and candidiasis.

In this study, angular cheilitis was seen only in the age group I patients and also it was only noted in the female patients. This is due to the increased length of denture use suggesting the loss of vertical height as it is assumed that the over closure of the jaws will produce folds at the angles of the mouth in which saliva tends to collect and the skin subsequently becomes macerated, fissured and secondarily infected. This finding was in accordance with the study done by Coelho et al.²⁶

CONCLUSION

The diagnosis of the wide variety of lesions that occur in the oral cavity is an essential part of the dental practice. An important parameter for evaluating the oral health of any population is the prevalence data of oral mucosal lesion, which is also vital for planning the oral health care services. The results emphasize the necessity of national programs toward oral health promotion. The study emphasizes the urgent need for awareness programs involving the community health workers, dentists, and allied medical professionals. Sometimes OML may be present in the patients who are not aware of it. We suggest that oral

mucosa should be examined carefully even if the patients do not attend with the complaint of oral lesions, especially in elderly, smokers and denture users.

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