

Trends In Antibiotics Medication Post Endodontic Treatment - A Survey

D. Angel Fastinamary¹, Dhanraj Ganapathy², Revathi Duraisamy³, Ashok Velayudhan⁴

¹Graduate student Saveetha Dental college and Hospital, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai -600077 Email id :151701054.sdc@saveetha.com Contact number : +91 - 9092279295

²Professor and Head, Department of Prosthodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai – TamilNadu India – 600077 Email:dhanraj@saveetha.com

³Assistant Professor, Department of Prosthodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai – TamilNadu India – 600077 **Email ID:**revathid.sdc@saveetha.com

⁴Professor & Head (Academics) Department of Prosthodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai – TamilNadu India - 600077

ABSTRACT

Introduction :

Antibiotics are used in some endodontic cases. However, successful cases can predominantly be achieved by mechanical and chemical cleaning of the canal or surgical intervention. prescription of antibiotic with clinical experience and there was a moderate level of knowledge regarding specific indications for antibiotic prescription both therapeutically and prophylactically. The survey instrument has historically been successful in obtaining pertinent information on the practice of endodontics. The aim of the study is to assess and create awareness on prescribing antibiotics - post endodontic treatment among dental students.

Material and methods :

The antibiotic prescribing in dentistry and , specifically, in endodontics, has mostly been analyzed by mean of cross- sectional observational studies conducted using surveys. The sample size was 113. A well structured 12 questioner was prepared and was distributed through online protocol. The collected data were entered in MS excel and statistical analysis of the data was performed using the SPSS software and chi square test was used to compare different variables.

Result :

As the prescribing type of antibiotics based on the knowledge regarding specific indication of endodontic treatment, 40.71 % of dental students use metronidazole whereas 50 % of clindamycin. It would appear from this study that students' lack of knowledge about the use of antibiotics in post endodontic treatment practice is far from ideal.

Conclusion :

Students' knowledge about antibiotics seems inadequate and further education is recommended to update the students.

Key words : antibiotics, post endodontic treatment, penicillin, metronidazole, clindamycin, innovation.

INTRODUCTION :

Diseases of the dental pulp and periapical tissues are chiefly caused by microorganisms. Antibiotics are used in some endodontic cases [1]. However, successful cases can predominantly be achieved by mechanical and chemical cleaning of the canal or surgical intervention [2]. prescription of antibiotic with clinical experience and there was a moderate level of knowledge regarding specific indications for antibiotic prescription both therapeutically and prophylactically [3]. Bacterial resistance to antibiotics is a serious public health problem [4]. A major contributing factor for the development of this problem is the excessive use of antibiotics in medicine and agriculture [5]. In dental practice, antimicrobial drugs are prescribed during treatment of particular clinical situations related to inflammatory processes in the periodontium or bone [6–8]. Evidence exists that the resistance of oral microflora to antibiotics has increased during the past decades [9]. Overuse of antibiotics in dental practice has been observed.

Beside the problem of resistance, the antibiotic therapy poses risks of serious complications, involving drug-related adverse effects and allergic reactions [10]. Despite persistent efforts of control, antibiotic misuse and increasing counts of prescriptions are primarily responsible for the negative development [11]. In Europe 7 - 9% of all dispensed antibiotics in primary care are prescribed by general dental practitioners (GDPs) [12]. Lithuania demonstrates an overall decline in numbers of antibiotic usage in the primary care sector [13]. Nonetheless, prescription trends to certain antibiotic classes can be observed [14]. Antibiotic therapy regularly involves the utilization of systemic broad-spectrum agents, against recommendations of guidelines and on basis of clinical symptoms that do not justify their usage [15]. In spite of their limited therapeutic value, the inadequate prescribing practices of systemic antibiotics in endodontic therapy have been thoroughly described in present studies and the available literature [16].

In order to design effective interventions to optimize antimicrobial prescribing in the dental practice, analysis of causes for the inappropriate usage is needed and influencing factors have to be understood. The aim of the study is to assess and create awareness on the recent trends in antibiotic application - post endodontic treatment among dental students. Our research experience has prompted us in pursuing this research [17–28].

Materials and methods :

A Cross Sectional study was performed through online protocol among the dental students. The sample size was 113. A well structured 12 questionnaire was prepared that assessed the following circumstances, The survey instrument has historically been successful in obtaining pertinent information on the practice of endodontics. Questions are designed to collect a variety of data on the types of antibiotics use and the prescribing habits of dentists/endodontists as determined by their prescribing types of antibiotics assigned to endodontics in their overall dental practice. The collected data were entered into the computer in an MS excel sheet and statistical analysis of the data was performed using the SPSS software and chi square test was used to compare different variables.

Result :

Among a sample of 113 participants, 7.08% of participants were 3rd year, 51.33% were 4th year and 41.59% were interns as shown in figure 1. Within gender, 27.43% were female and 72.57% were males who participated in the study as shown in figure 2. Majority of 40.71% of participants responded that the recommended metronidazole and least number of participants 32.74% responded to clindamycin shown in figure 3. It would appear from this study that students knowledge about the use of antibiotics in general practice is far from ideal. There was correlation between the prescribing antibiotics based on the year of study with significant p value <0.05 (figure 4). The prescribing types of antibiotics assigned to endodontics in their overall dental practice ranged between 58.41% and 41.59 % shown in figure 5. This mirrors general medical practice where studies have shown that decision making in antibiotic therapy requires improvement. Rational prescribing based on thorough evidence based knowledge is essential.

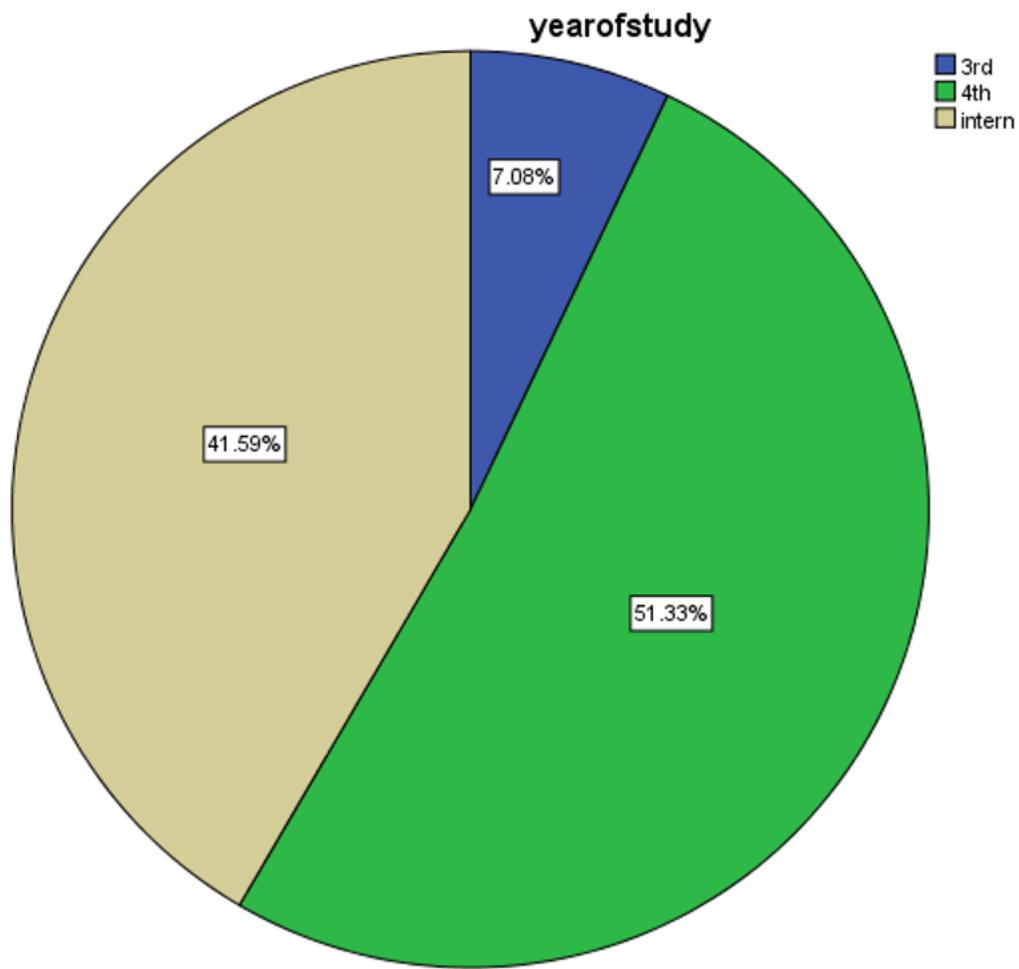


Figure 1, the above graph represents the percentage distribution of participants based on the year of study involved in this study. Blue color denotes 3rd year with 7.08%, green color denotes 4th year with 51.33%, beige color denotes that interns with 41.59%.

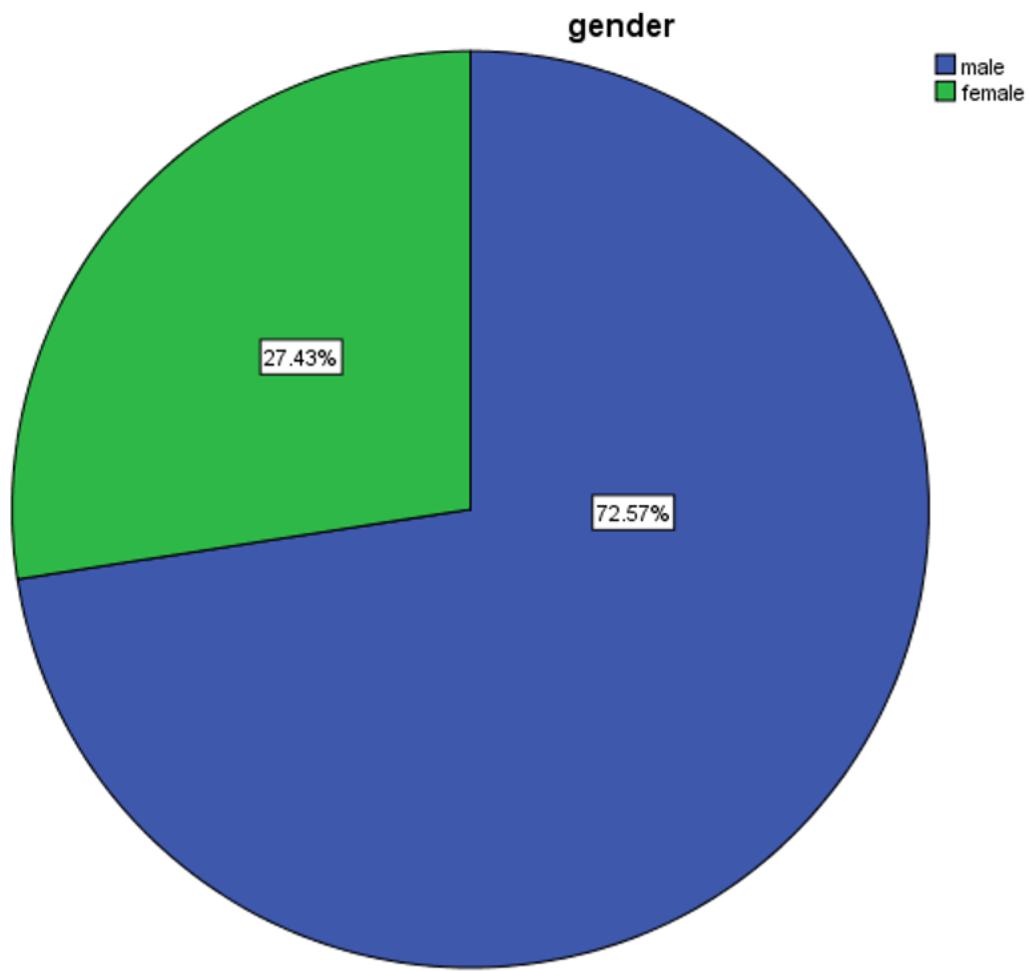


Figure 2, represents the percentage distribution of participants based on gender. Blue color denotes the percentage of male participants responded with 72.57%, green color denotes the percentage of female participants responded with 27.43%.

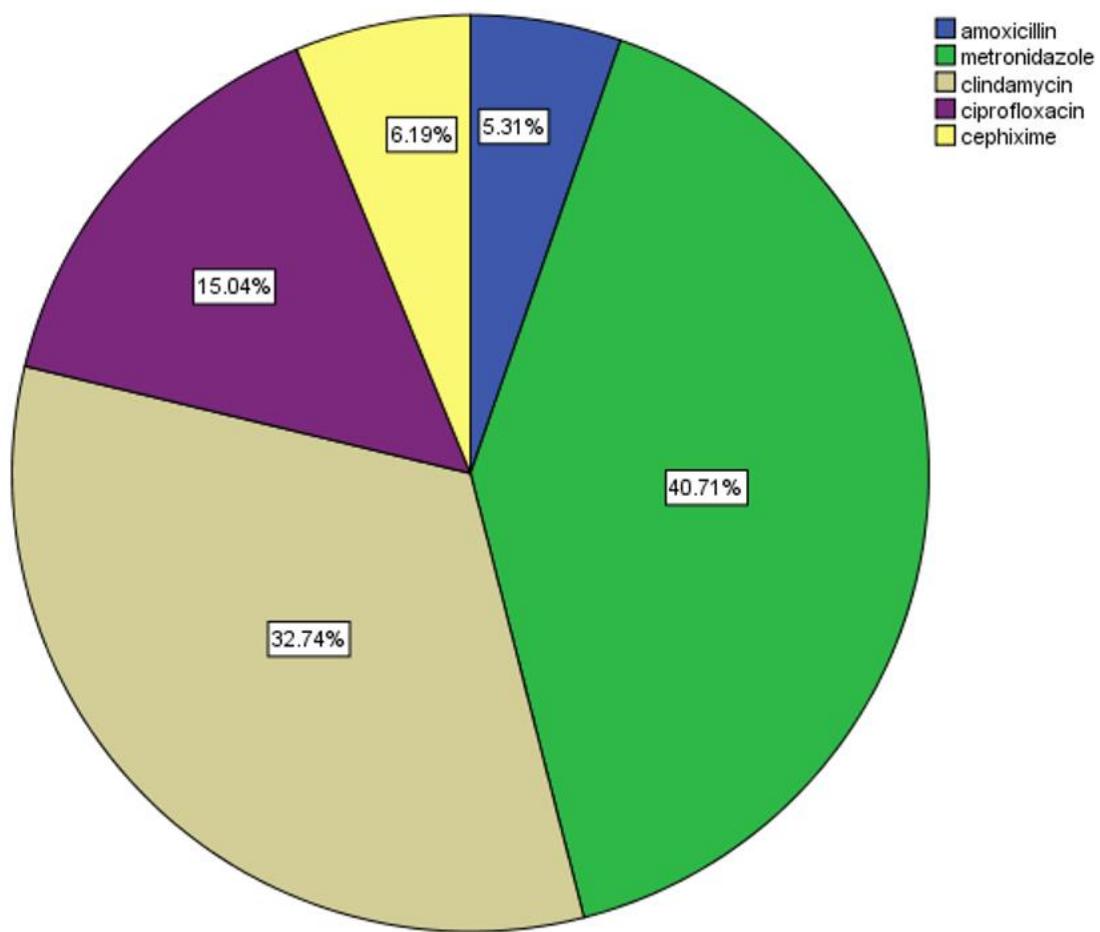


Figure 3, represents the percentage distribution of choice of antibiotics prescribed by general dental practitioners. Blue color denotes percentage of responses to amoxicillin with 5.31%, green color denotes responds to metronidazole with 40.71%, beige color denotes responds to clindamycin with 32.74%, purple color denotes responds to ciprofloxacin with 15.04%, yellow color indicates responds to ciprofloxacin with 6.19% respondents.

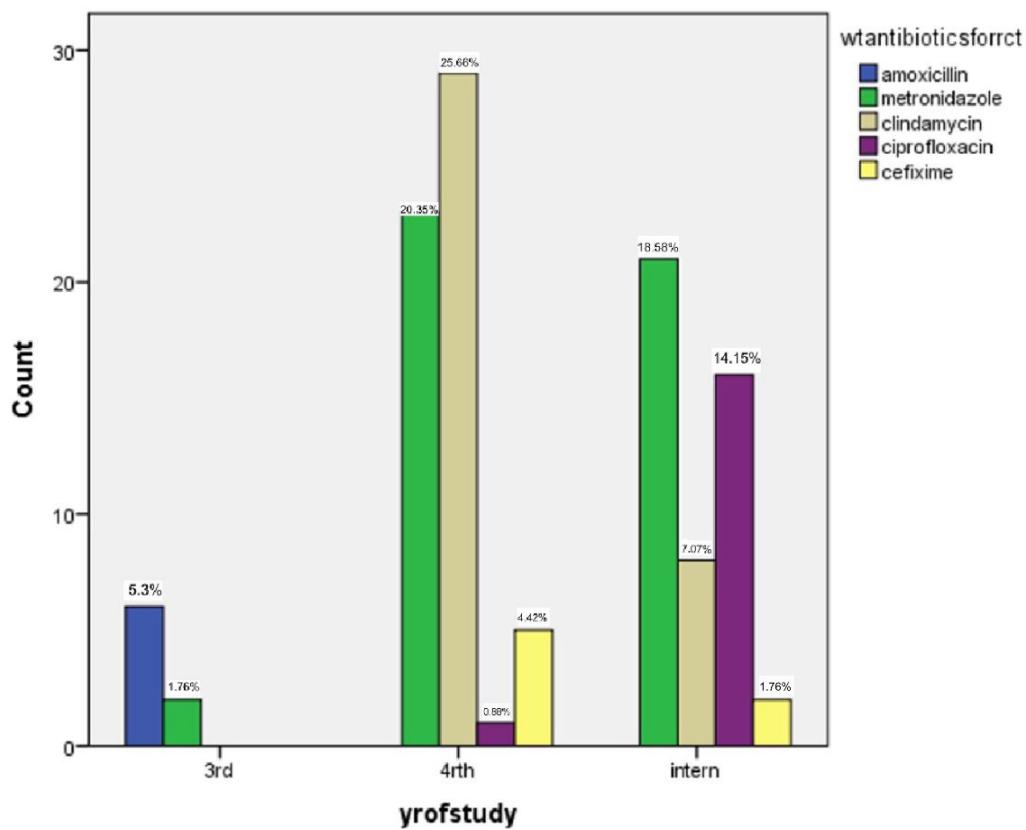


Figure 4, represents the distribution of percentage responses based on the correlation between year of study and prescribing antibiotics. blue color denotes percentage of respondents to amoxicillin with 5.3% from 3rd year, green color denotes percentage of respondents to metronidazole with 1.76% respondents from 3rd year, 20.35% respondents from 4th year, 18.58% respondents from interns. Beige color denotes percentage of respondents to clindamycin with 25.66% from 4th year, with 7.07% respondents from interns. Purple color denotes percentage of respondents to ciprofloxacin with 0.88% respondents from 4th years and with 14.15% respondents from interns. Yellow color denotes percentage of respondents to 4.42% from 4th year, 1.76% respondents from interns with significant p value < 0.05.

Will you prescribe antibiotics to your patient for post Endodontic procedures?

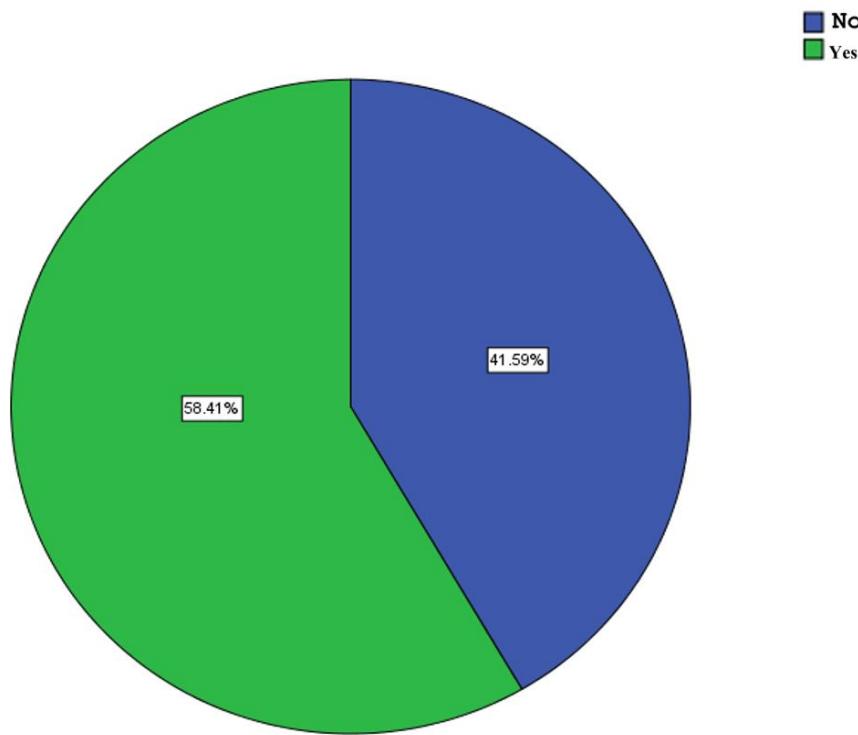


Figure 5, represents the percentage of distribution of prescribing antibiotics or not post endodontic treatment. 58.41% responded that they prescribe antibiotics in post endodontic treatment where it is indicated as green color whereas 41.59% responded that they do not prescribe antibiotics where it is indicated as blue color.

Discussion :

The use of antibiotics in an inappropriate manner leads to the selection of dominance of resistant microorganisms and/or the increased transfer of resistance genes from antibiotic-resistant to antibiotic-susceptible microorganisms[29]. Navabizadeh et al., (2011) in Iran also used questionnaires to assess antibiotic prescriptions for endodontic infection and reported a response rate of 46.5% [30]. Similarly, a study by Maslamani and Sedeqi (2018) determined prescribing patterns of antibiotics and analgesics among dentists for endodontic infection using questionnaires and reported a response rate of 75.6% similar to the current study. Al Khabuli et al., (2016) investigated the knowledge and attitude of dentists to antibiotic prescription in the Northern Emirates of the UAE reporting a response rate of 77% [31]. In

the present study, 41.59% of the participants did not prescribe antibiotics for post endodontic treatment (figure 5).

There was no statistically significant difference based on gender and qualification of dentists [32]; our previous study reported that male dentists prescribed antibiotics for pain management significantly more frequently than female dentists (figure 2), similar to the study conducted by Abraham et al. 2020[33]. In the present study ,(40.71%) metronidazole is a primary antibiotic recommended to prescribe for dental infections (figure 3). Metronidazole is effective against obligate, but not facultative anaerobes, and has to be used in combination with other agents to obtain resolution of mixed aerobic-anaerobic, oral infections [34]. However, if the initial antibiotic was ineffective after 2–3 days, 40.2% of the dentists preferred to add metronidazole as a supporting antibiotic [35]. There was correlation between the prescribing antibiotics based on the year of study with significant p value <0.05 (figure 4).

Medically compromised patients are more susceptible to complication arising from endodontic infections [36]. Thus, antibiotics should be considered in patients having systemic diseases with compromised immunity and in patients with a localized congenital or acquired altered defence capacity, such as patients with infective endocarditis, prosthetic cardiac valves, or with recent prosthetic joint replacement. Although penicillin VK, possibly combined with metronidazole to cover anaerobic strains, is still effective in most cases, amoxicillin (alone or together with clavulanic acid) is recommended because of better absorption and lower risk of side effects. In case of confirmed penicillin allergy, lincosamides, such as clindamycin, are the drug of choice[37].

A limitation of our study was the use of convenience sampling technique. Accordingly, the findings of this study should be interpreted with caution, given that the selected sample was randomly chosen from all dentists. Although the response rate in this study is relatively high (58.41%), it is possible that dentists who agreed to participate in this survey are different in their knowledge of antibiotics prescription. In addition, the results of the survey showed a larger participation from younger dentists when compared to the older dentists and could be speculated that younger dentists were more responsive through electronic media.

CONCLUSION :

This study supports the conclusion that there is a lack of knowledge about the right indication, type, and dosage of antibiotics in post endodontic treatment dental practice among the participants. There is also a requirement to enhance undergraduate education and to increase the provision of postgraduate courses and other educational initiatives on antibiotic prescribing.

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