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# Attitude and Awareness about Infection Control among Dental Students, Oral Radiologists and Dental Practitioners in South Chennai -A Questionnaire Study

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***Abstract : Aim: To assess the awareness, attitudes, about infection-control practices among dental students, oral radiologists, and dental practitioners in South Chennai***

***Materials and Methods: A descriptive, questionnaire-based cross-sectional survey was conducted using a pre-validated Google Forms questionnaire. Participants were recruited from a private dental college in Chennai following Institutional Review Board approval. The survey captured demographic data and responses across knowledge, awareness, practice, and attitude domains. Collected data (n=101) were analyzed descriptively using frequencies and percentages.***

***Results: Most participants (91.1%) were aware of infection-control guidelines, and 95% recognized the importance of protective barriers. However, only 51% disinfected radiographic equipment between patients, and sterilization practices for imaging accessories varied. Nearly half had undergone formal training, while 59.4% expressed interest in further workshops.***

***Conclusion: Although participants demonstrated strong awareness and positive attitudes, notable gaps persisted between knowledge and consistent practice. Enhanced training, stricter protocols, and periodic audits are recommended to improve compliance in dental radiology settings.***

***Keywords: Infection Control, Dental Radiology, Awareness, Compliance, Dental Practitioners***

## I. INTRODUCTION

Infection control is a cornerstone of safe dental practice, serving as a critical safeguard against the transmission of infectious diseases in both clinical and radiographic settings.[1] Dental environments inherently involve close patient contact, exposure to saliva and blood, use of sharp instruments, and frequent handling of intraoral and radiographic equipment all of which increase the risk of cross-contamination if proper protocols are not followed.[2] Radiology units, often overlooked in traditional infection control training, pose unique risks due to repeated contact with imaging sensors, film holders, tube heads, control panels, and patient positioning devices.[3] As microbial pathogens can survive on environmental surfaces for extended periods, inadequate disinfection practices may significantly contribute to infection transmission.[4] The emergence of global threats such as COVID-19 has further heightened the importance of strict adherence to infection control measures, emphasizing the need to reinforce compliance across all dental disciplines.[5]

The rationale for infection control in dental radiology is to protect susceptible hosts by breaking the chain of infection through standardized precautions that consider all body fluids as potentially infectious. [6]Measures such as barrier protection, use of disposable items, careful handling and disinfection of digital sensors, and adherence to manufacturer instructions for use are critical components in minimizing cross-contamination risks in the radiology setting. The increasing use of digital imaging technology in dentistry further accentuates the need for meticulous asepsis and infection control practices to ensure patient and healthcare worker safety.[7]

Effective infection control in dental radiology not only safeguards against the transmission of common oral pathogens but also prevents the spread of bloodborne infections and respiratory agents., the present study aims to assess the level of awareness, attitudes, and adherence to infection control protocols among dental students, oral radiologists, and dental practitioners in south Chennai.

 

## II. MATERIALS AND METHODS

A descriptive, questionnaire-based survey was conducted to assess the awareness, attitudes, and infection control practices among dental students, oral radiologists, and dental practitioners. A structured and pre-validated survey was developed, capturing demographic information and comprising sections on knowledge and awareness, practical behaviors, and attitudes and perceptions. The tool consisted of a mix of yes/no and multiple-choice items to allow for comprehensive data collection, and it was distributed electronically through Google Forms to enable broad and convenient participation. Ethical approval was obtained from the Institutional Review Board prior to the study, and the research was carried out under the supervision at a private dental college in Chennai. All participants were informed about the purpose of the study, assured of confidentiality, and their voluntary participation was emphasized in accordance with ethical guidelines. Responses were systematically compiled and organized using Microsoft Excel, and descriptive statistics primarily frequencies and percentages were employed to analyze the data. The results were then presented in well-structured tables and graphical formats to facilitate clearer interpretation and visualization of the findings.

## III. RESULTS

The survey reflected responses from 101 participants, predominantly Interns (43.6%), followed by Dental Students (25.7%), General Dentists/Specialists (15.8%), and Oral Radiologists (13.9%), indicating a respondent pool largely composed of early-career professionals[Fig 1]. In terms of experience, nearly half had less than 1 year of practice (44.6%), while 1–5 years of experience accounted for 40.6%, and only a small minority had 6–10 years (6.9%) or more than 10 years (7.9%), again reflecting a young workforce[Fig 2].Awareness of infection control guidelines was high, with 91.1% reporting familiarity, although 8.9% remained unaware [Fig 3]. When questioned about the primary mode of infection transmission in radiology clinics, 43.6% identified contaminated instruments, 35.6% direct contact with blood/saliva, 14.9% aerosols, and 5.9% contaminated surfaces, indicating varied but generally accurate perceptions [Fig 4]. A strong 60.4% believed radiographic procedures carry a cross-contamination risk, though 39.6% did not perceive such risk, suggesting a concerning knowledge gap[Fig 5].Encouragingly, 89.1% recognized the importance of barrier protection for radiographic equipment[Fig 6].PPE usage showed that gloves, masks, and headcaps were used routinely by a majority, though protective eyewear usage was relatively lower (8.9%), pointing toward inconsistent adherence to high-level respiratory protection[Fig 7].

Regarding disinfection practices, 47.5% disinfected radiographic equipment after every patient[Fig 8] For film-holder sterilization, a little over half used disposable [30.7%] or properly sterilized holders [42.7%] , while the rest relied on inconsistent methods[Fig 9].Disposal of contaminated PPE was done correctly by 76–80%, though a minority reported improper or uncertain methods[Fig 9]. A significant 83% changed gloves between patients, while 17% admitted to lapses in glove-changing [Fig10].Attitudinal analysis showed strong positivity 48.5% strongly agreed and 25.7% agreed that infection control in radiology is as important as in operative dentistry; only 6.9% disagreed, and 2.9% strongly disagreed [Fig11]. Confidence levels were moderately high, with 41.6% very confident, 41.6% somewhat confident, while 11.9% were not confident and 5% unsure, reflecting a need for further skill-building [Fig 12]. Training status showed a near-even split, with 48.5% having received training, 35.6% not receiving training, and 15.8% planning to, highlighting a gap in formal education [Fig 13].Impressively, 59.4% expressed interest in future workshops, 25.7% were not interested, and 14.9% were unsure, demonstrating a largely positive attitude toward continued learning[Fig 14].

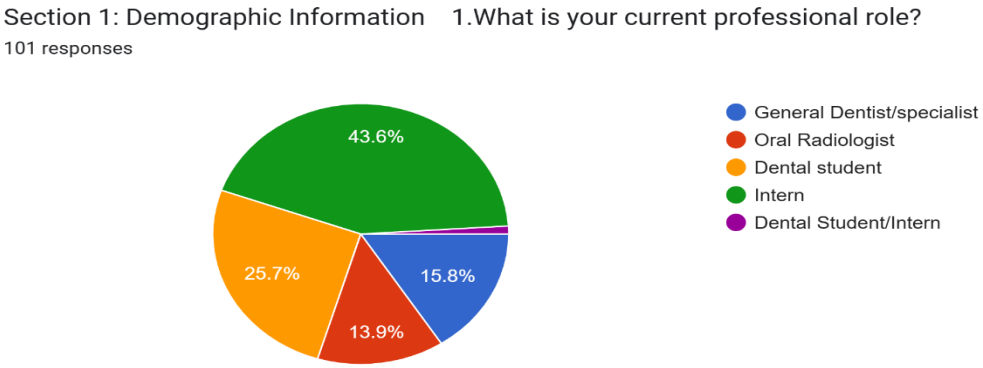


Figure 1

2.How many years have you been practicing dentistry/oral radiology?
101 responses

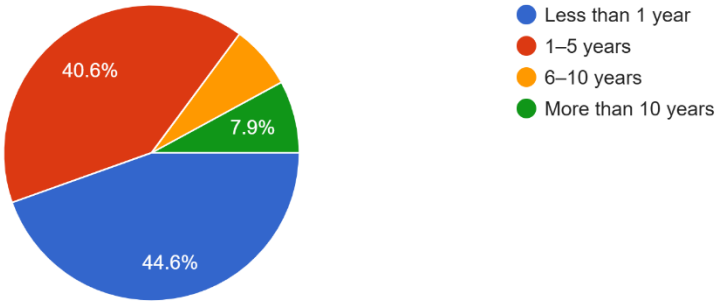


Figure 2

Section 2: Knowledge and Awareness 3.Are you aware of the standard infection control guidelines recommended by organizations such as the CDC or WHO for dental practices?
101 responses

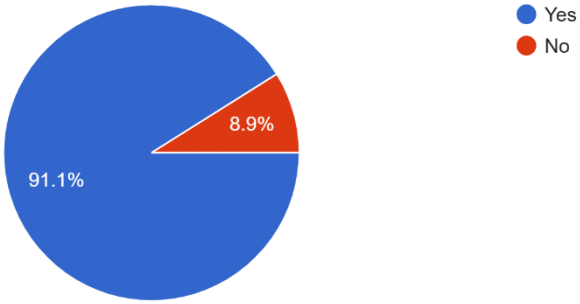


Figure 3

4. Which of the following do you consider the most important mode of infection transmission in dental radiology clinics?
101 responses

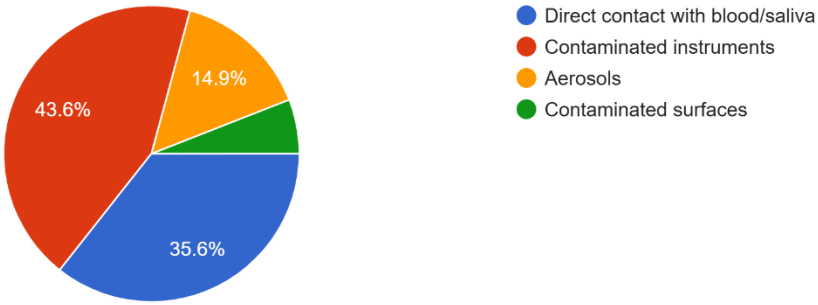


Figure 4

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5. Do you think that radiographic procedures carry a risk of cross-contamination or infection transmission?
101 responses

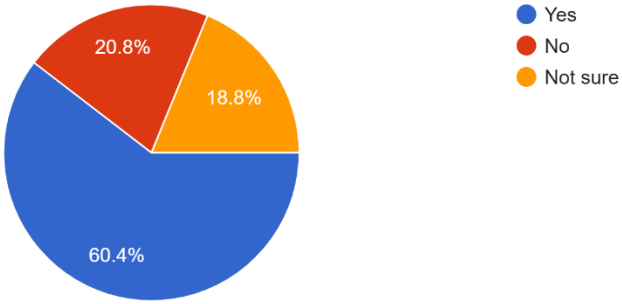


Figure 5

6.Are you aware of the importance of using barrier protection (e.g., plastic covers) on radiographic equipment?
101 responses

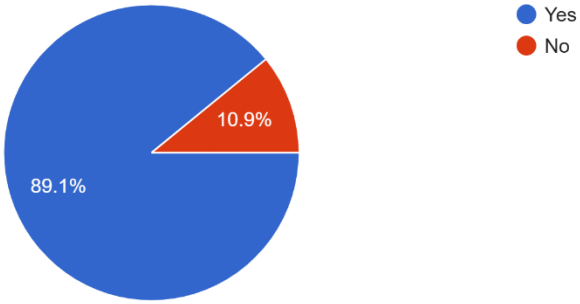


Figure 6

7.Which of the following personal protective equipment (PPE) do you routinely use during radiographic procedures?
101 responses

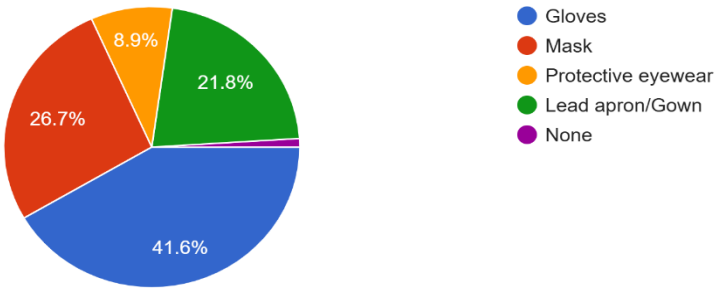


Figure 7

 

Section 3: Practices 8.How often do you disinfect radiographic equipment (e.g., X-ray tube head, control panel) after each patient?

101 responses

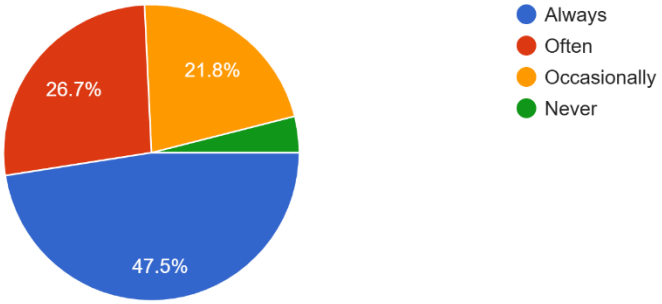


Figure 8

9.Do you use disposable film holders or sterilize reusable ones after each patient?

101 responses

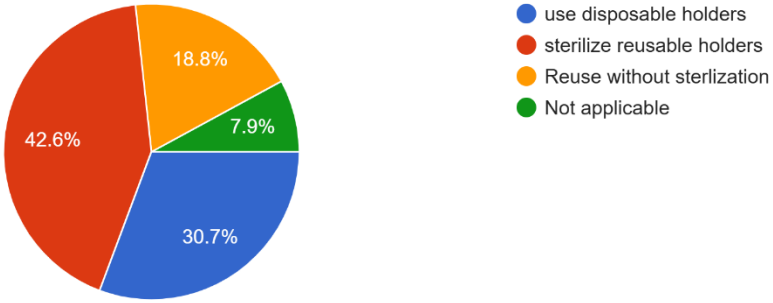


Figure 9

11.Do you change gloves between patients even if they appear clean?

101 responses

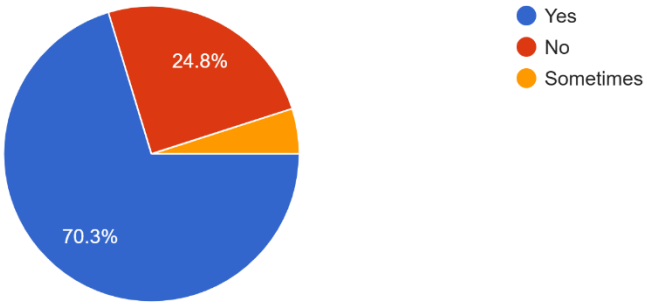


Figure 10

Section 4: Attitudes and Perceptions 12.Do you believe that infection control in dental radiology is as important as in operative dentistry?

101 responses

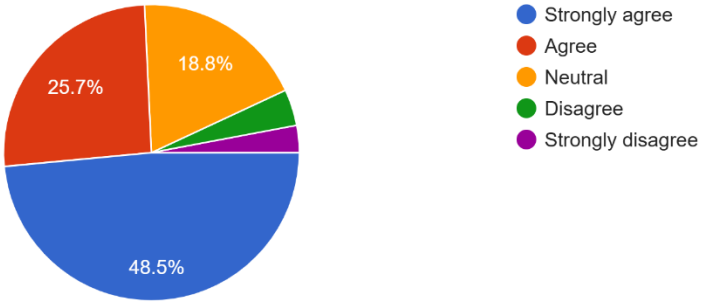


Figure 11

13.How confident are you in your current infection control practices during radiographic procedures?

101 responses

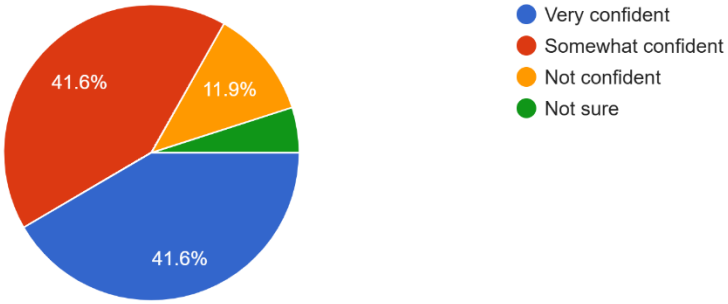


Figure12

14.Have you received formal training or continuing education on infection control in dental radiology?

101 responses

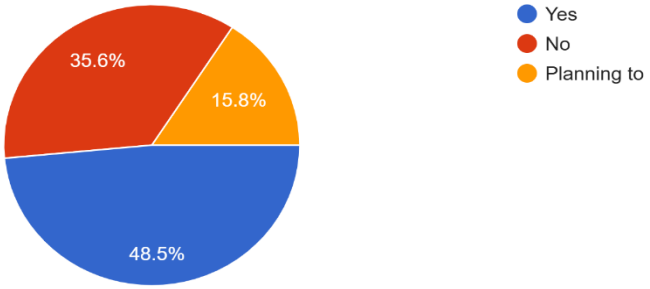


Figure 13

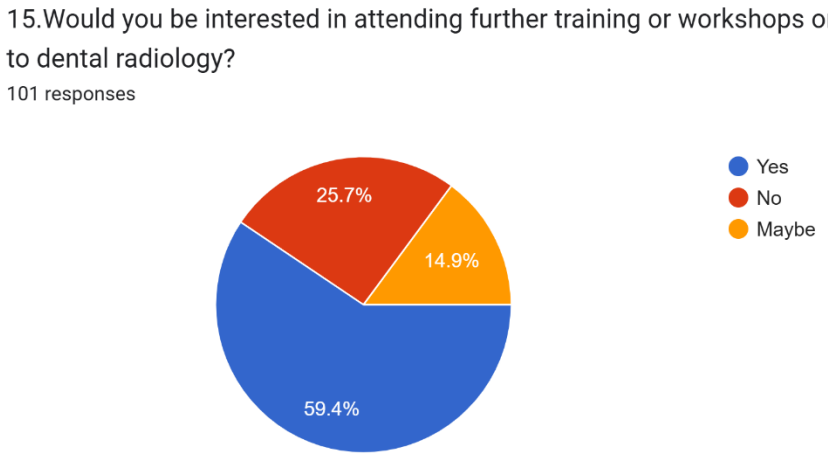


Figure 14

## IV. DISCUSSION

The findings of the present study align with existing literature demonstrating generally high awareness but inconsistent practices related to infection control among dental professionals and students. In our study, over 91% of respondents reported awareness of infection control guidelines, which is consistent with earlier research showing knowledge levels ranging from 81.3% to 95.02% among dental students (Mohammadi et al., ; Kumar, )[7,8].However, similar to Mohammadi et al. (2022)7, our results also revealed persistent knowledge gaps, particularly among early-career professionals such as interns and undergraduate students, reflecting the widely observed disparity between academic exposure and applied understanding[7].

With regard to attitudes, our participants demonstrated strongly positive perceptions of infection control importance, with nearly 75% agreeing or strongly agreeing that radiographic infection control is as essential as operative dentistry. This corroborates findings from Elmabrouk et al (2025)9 and Kumar et al [8], who reported significant attitudinal commitment toward PPE use and hand hygiene. However, consistent with Girotra et al.[10], our study identified a notable disconnect between attitudes and real-world practices even though participants acknowledged the importance of infection control, actual compliance was often suboptimal. For instance, only about 51% disinfected radiographic equipment after every patient, despite 95% acknowledging the necessity of barrier protection. This mirrors the broader problem highlighted in international literature wherein positive attitudes fail to translate into consistent clinical behavior.

Practice-related findings from our study reveal moderate adherence, similar to prior work reporting compliance rates of 41–44% (Lasune et al.; Elagib et al.,)[11,12] .Regional variation noted in earlier studies was also reflected in our sample; while glove-changing practices were strong (≈83%), proper disinfection and sterilization of radiographic accessories were inconsistent. These findings contrast somewhat with the exceptionally high practice compliance (e.g., 100% glove use, 94% mask use) reported by Alireza Ebrahimpour et al.,[13] where institutional regulations enforced higher standards. Similarly, although Ebrahimpour's study reported very good performance despite only moderate knowledge, our study observed good knowledge but only partial adherence, suggesting that external enforcement mechanisms play a significant role in compliance[13.]

Our findings also parallel the work of Haghani et al., who noted good knowledge but only moderate practice in infection control for digital radiology, affirming that radiology-specific infection control receives comparatively less attention in training programs[14.] Moreover, the moderate knowledge (58%) and poor practice scores (41.1%) reported by Bimali Sanjeevani Weerakoon et al.[15] resonate with our observations of practice deficits despite adequate awareness, and their finding of significant associations with academic year and clinical exposure supports our pattern of lower consistency among less experienced practitioners. Lack of demographic influence on practice, as reported by Weerakoon et al., is also reflected in our results, which showed no significant differences across age or professional groups.[15]

The broader call for increased training highlighted in studies by Awadia Gareeballah et al. [16]and others is echoed by our finding that 36% had never received radiology-specific infection control training, and nearly 60% expressed interest in attending further workshops.

 

This is consistent with global recommendations emphasizing ongoing professional development to address persistent gaps in radiographic infection control.[16] Comparatively low adherence rates such as the 68.73% compliance reported by Santos et al. And variability in awareness levels among dental interns and students (Santos et al., 2024)[6] further reinforce the need for curriculum-level interventions and structured competency assessments.

Overall, when compared with the literature, our study demonstrates that while knowledge and attitudes in infection control are improving and largely align with global trends, practical implementation remains insufficient, particularly in radiographic procedures. This emphasizes the necessity for targeted, radiology-focused infection control training, stricter institutional protocols, and periodic audits to ensure that knowledge translates effectively into practice, ultimately enhancing patient and practitioner safety.

## V. CONCLUSION

The study highlights that while dental students, oral radiologists, and practitioners demonstrate generally good awareness and positive attitudes toward infection control, significant gaps remain in the consistent application of recommended practices, especially in radiographic settings. Despite high levels of reported knowledge, actual compliance with disinfection, PPE use, and equipment barrier protection was only moderate. These discrepancies emphasize the need for reinforced training, clearer institutional protocols, and routine monitoring. Strengthening radiology-specific infection control education could help bridge the gap between awareness and practice. Overall, targeted interventions are essential to enhance safety standards and minimize infection risks in dental clinical environments.

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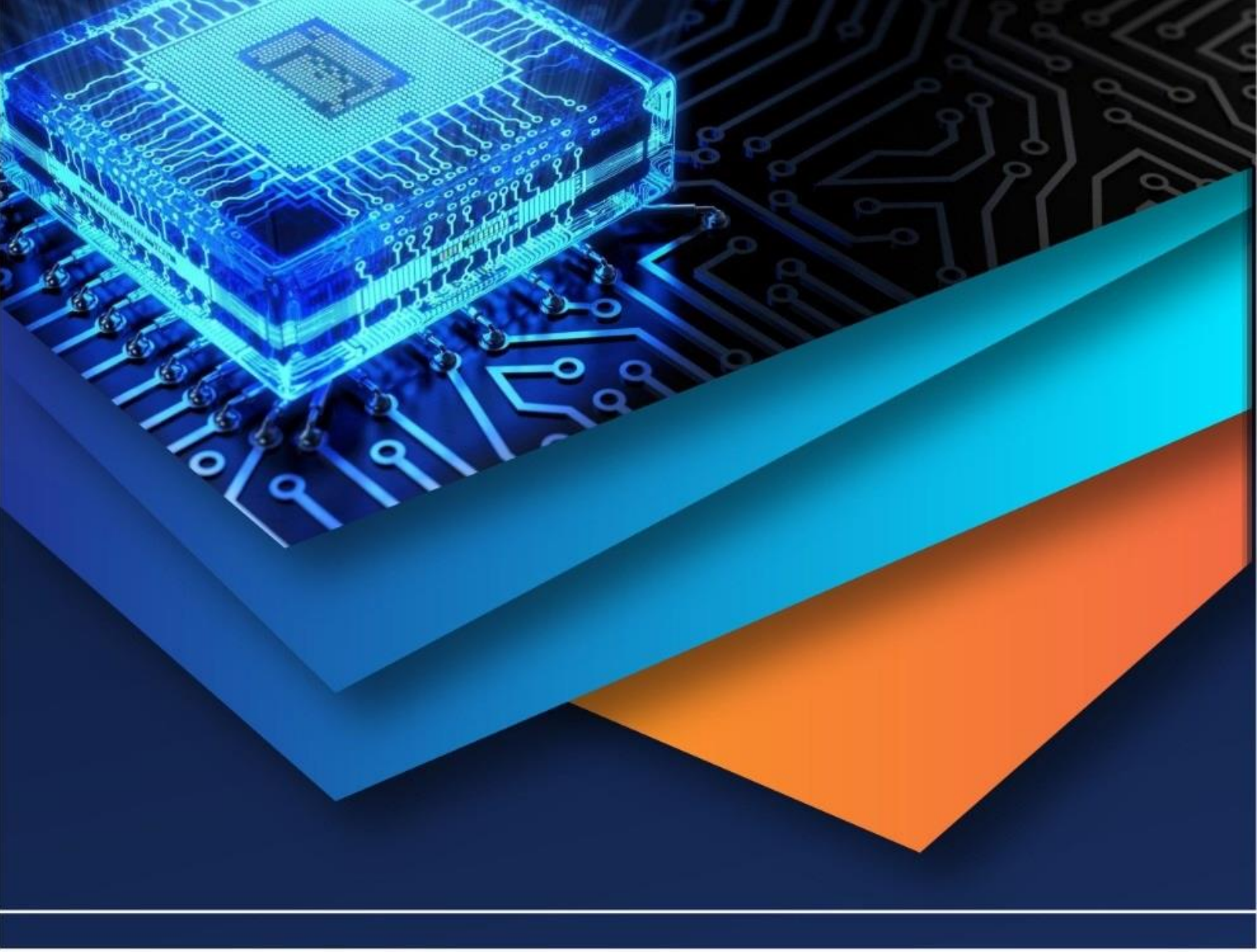

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