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Knowledge And Awareness Of Awareness About Insectophobia Among Dental Students - A Questionnaire Survey

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Abstract

BACKGROUND: Phobia is an intense but unrealistic fear that can interfere with the ability to socialize. Entamophotria / arachnophobia / insectophobia is a correlation between fear of insects & ticks and is considered one of the most serious psychological problems demanding professional treatment.
OBJECTIVES: The present study aimed to find the fear of bugs between male and female dental students.**MATERIALS AND METHODS:** A cross sectional study was conducted among 1st year dental students using a questionnaire that was prepared in google form which was sent electronically to their respective Mail Id's which is a self structured, pre-validated questionnaire. Statistical analysis was performed in SPSS software version- 23. Pie charts were analysed, chi-square test was done to check the relation of insectophobia among gender. Descriptive and inferential statistics were performed.
RESULT: In this survey, 103 responses were gathered, in which 18.45% are females & 17.48% are males who know about Insectophobia and out of which were mostly scared of termites 32.04% totally which is so commonly seen.(p value <0.05) **CONCLUSION**: Women seem to be more affected by bugs than males in this study. Insectophobia is quite common in this era as most people in this generation are not very close to nature so the identification of whether the insect is poisonous or not is critical. Therapy and counselling needed to be given as termites and other bugs are quite commonly seen in our house. If the phobia prolongs it may even lead to adverse conditions such as loss of life.

KEYWORDS: Bugs, Innovative Method, Insects, Phobia, Students, Termites

INTRODUCTION:

Insectophobia, clinically defined as the persistent, intense, and irrational fear of bugs and insects, represents one of the most common specific phobias affecting human populations across diverse cultural and geographic contexts. This condition is characterized by an overwhelming and disproportionate fear response triggered by the presence or even the mere thought of insects, leading to significant distress and avoidance behaviors that can profoundly impact an individual's quality of life. Insectophobia is mostly common in urban areas due to lack of interaction with natural habitats and limited exposure to non-threatening insects during childhood development, which may prevent the learning of appropriate discrimination between dangerous and harmless arthropods. The phenomenon manifests as an intense but unrealistic fear that can profoundly influence both our social interactions and private daily activities, causing individuals to avoid outdoor recreational activities, limit their living spaces, and experience persistent anxiety even in environments where insect encounters are unlikely. It is important to note that not all ticks and insects carry diseases that affect humans, but some species can transmit illnesses through bites or contact, adding a layer of legitimate health concern that may become intertwined with phobic responses (1). Understanding the distinction between reasonable caution toward potentially dangerous insects and the disproportionate, debilitating fear characteristic of true insectophobia is essential for accurate diagnosis and effective treatment.

Behavioural studies have provided important insights into the cognitive and neurobiological mechanisms underlying phobic responses, demonstrating that phobia subjects are hypersensitive in the processing of phobia-related linguistic stimuli, showing heightened attention and faster reaction times to words associated with their feared objects (2). This attentional bias toward threat-relevant information reflects the hypervigilance that characterizes anxiety disorders and contributes to the maintenance of phobic responses by preferentially processing fear-related cues in the environment. The most common types of phobias are specific to particular categories of stimuli, with animal phobias representing one of the most prevalent subtypes. Specific phobia is classified into four main categories by diagnostic systems, one major part of which is the fear of particular animals, including insects, spiders, snakes, and other creatures that have been associated with threat throughout human evolutionary history (3).
Insects, as the large and diverse class of invertebrates within the arthropod phylum that encompasses millions of species with varied morphologies, behaviors, and ecological roles, can lead to insect phobias in humans through multiple pathways, either directly through frightening encounters or indirectly by stimulating the mental state through cultural transmission, media portrayals, or parental modeling of fear responses (4). Delusional parasitosis, also known as Ekbom's syndrome, represents another threat associated with insect phobias that can significantly affect the health and well-being of vertebrates, including humans. This condition involves the fixed, false belief that one is infested with parasites, insects, or other organisms despite the absence of any medical evidence for such infestation, and it can lead to severe distress, social isolation, and self-inflicted skin injuries from scratching or attempts to remove the imagined organisms (5). The distinction between true insectophobia, which involves fear of actual insects, and delusional parasitosis, which involves belief in nonexistent infestations, is important for appropriate diagnosis and treatment.

Insectophobia is most likely caused by two main mechanisms that operate through different pathways but may interact in complex ways. The first is true entomophobia, a phenomenon that occurs when a phobia develops gradually in a person who holds certain ideas, beliefs, or cognitive schemas about insects as dangerous, disgusting, or threatening, with the fear intensifying over time through avoidance and reinforcement. This gradual development may involve repeated exposure to frightening information, vicarious learning through observing others' fear responses, or the progressive generalization of fear from specific contexts to broader situations. The second mechanism is false entomophobia, which occurs when a person is suddenly and unexpectedly exposed to insects in a startling or traumatic manner, such as an unexpected encounter, being bitten or stung, or witnessing someone else's distressing experience with insects (6). This acute onset pathway resembles the development of conditioned fear responses through classical conditioning, where a neutral stimulus becomes associated with an aversive event and subsequently elicits fear on its own.

The evolutionary study of fear of insects and the genetic basis of fear emphasizes the importance of learned behaviors, particularly the eight behaviors of parents and especially mothers, which can lead to the development of fear in children through observational learning and social referencing (7). Children are highly attuned to their parents' emotional expressions and use these cues to guide their own responses to novel or ambiguous stimuli. Research has demonstrated that children showed greater fear expression and avoidance of

the stimuli following negative reactions from their mothers, indicating that parental responses serve as powerful models for children's emotional learning. This effect was true for both boys and girls, but interestingly, avoidance was greater in girls than in boys, suggesting that gender differences in fear expression may emerge early in development and be reinforced through socialization processes (8). These findings highlight the role of family environment and parenting in the etiology of phobias and suggest potential targets for preventive interventions.

Symptomatic medication for conditions related to insect phobias may include relief of pruritus or pain associated with scratching or skin damage, and treatment of other symptoms that may accompany the condition, including delusions in cases of delusional parasitosis. Folie à deux, or shared delusional disorder, can occur when delusional parasitosis affects multiple individuals in close relationships. Complaints of skin infestation may also involve the gastrointestinal tract when individuals believe they have ingested insects or parasites. Psychiatric disorders often co-occur with phobias, and the management of these conditions requires comprehensive psychiatric evaluation and treatment. Urban populations are not mentally or physically prepared when they encounter arthropods compared to rural communities, where regular exposure to insects throughout development may provide opportunities for habituation and learning of appropriate discrimination (9). Fear of insects and other organisms evokes intense anxiety responses that may include rapid heartbeat, nausea, shortness of breath, dizziness, and panic symptoms. Exposure therapy, the most empirically supported treatment for specific phobias, depends on the person's perseverance and willingness to confront feared stimuli gradually, with studies showing that very few patients, less than 5%, drop out of treatment altogether when properly supported (10). The high success rate of exposure therapy for specific phobias underscores the treatability of these conditions and the importance of accessing evidence-based care.

Genetic and environmental factors can interact to cause phobias in susceptible individuals. Children who have close relationships with family members who have anxiety disorders are at increased risk of developing phobias themselves, reflecting both genetic vulnerability and environmental influences. Exposure to confined spaces, extreme heights, and animal or insect bites can all be sources of phobic reactions, particularly when such experiences occur during sensitive developmental periods or are accompanied by intense emotional responses. The interplay between genetic predisposition and environmental triggers is complex and continues to be an active area of research.

Therefore, understanding the epidemiological factors that affect animal phobias, including prevalence rates, demographic patterns, risk factors, and cultural variations, could be very critical for developing effective prevention and intervention strategies. To the best of my knowledge, there are no comprehensive studies so far on this topic specifically conducted in the southern part of Chennai among dental students, representing a gap in the literature that this study aims to address. Hence, the present study is aimed at identifying the prevalence of insectophobia and its awareness among dental students, a population that may have unique exposure patterns and health literacy levels that influence their understanding of this condition.

Analyzing this phobia was particularly challenging among urban people because it is more common to be scared of bugs and insects nowadays, given limited exposure and the portrayal of insects as dangerous or disgusting in media and popular culture. The normalization of insect fear in urban environments may make it difficult to distinguish between normative caution and clinically significant phobia, requiring careful assessment of distress and impairment.

A study conducted in Germany demonstrated that females are more likely to experience phobic disorders than males, a finding consistent with the broader epidemiological literature on anxiety disorders. This study also found that this gender difference may be attributable to methodological differences in assessment or may be based on the reflection of differential referral rates for treatment in males compared to females, with women more likely to seek help for anxiety-related conditions (6). In this study, the fear of animals was three times higher in females compared to males, representing a substantial gender disparity. The teenage period is identified as a critical developmental window during which the development of females' phobias and fears form and develop faster than males, possibly due to hormonal influences, socialization pressures, or cognitive maturation patterns.

According to broader epidemiological studies, the prevalence of anxiety disorders is approximately 32% over a lifetime, and 12.5% of these disorders are generally attributable to specific causes of fear. Normal phobia,

representing the typical pattern of phobic disorders in the population, has been consistently reported in females more than males across multiple studies and cultural contexts (11). These gender differences have important implications for understanding etiology, planning prevention efforts, and ensuring that treatment services are accessible and acceptable to both men and women.

People with entomophobia experience anxiety and distress even when they consciously realize that many insects do not pose any actual threat to them, highlighting the irrational nature of phobic fear. This insight, while present, does not diminish the intensity of the emotional response, which is mediated by automatic, subcortical fear circuits that operate independently of conscious cognitive appraisal. Patients may complain that external contamination with these external parasites leads to self-illness that develops into a mental and nervous disorder, reflecting the profound impact of these conditions on psychological well-being and daily functioning (12). Our team has extensive knowledge and research experience that has translated into high-quality publications in the fields of anxiety disorders, specific phobias, and public health, providing a strong foundation for the current investigation (13,14) (15)(13,14,16)(17). The main aim of this study is to find whether the dental students are aware about insectophobia, to assess the prevalence of this condition in this specific population, and to identify demographic and educational factors associated with knowledge and attitudes toward insect fears. By addressing these objectives, the study will contribute to the limited literature on insectophobia in urban Indian populations and provide evidence to inform mental health education and support services for dental students and similar young adult populations.

MATERIALS AND METHOD:

Study Design and Setting

A cross-sectional study design was employed to assess the knowledge, awareness, and attitudes regarding insectophobia among undergraduate dental students in Chennai, India. This design is particularly appropriate for capturing a snapshot of current perspectives and identifying factors associated with awareness levels at a specific point in time, providing valuable baseline data for understanding the prevalence and characteristics of insectophobia in this specific population. The cross-sectional approach allows for efficient data collection from a defined population and facilitates the examination of relationships between demographic variables and awareness levels. The study was conducted among first-year undergraduate dental students enrolled at dental colleges in Chennai, representing a population at the beginning of their professional training who may have unique exposure patterns and health literacy levels that influence their understanding of this condition.

Participant Selection and Sample Size

The study population consisted of first-year undergraduate dental students currently enrolled in dental colleges across Chennai. First-year students were specifically selected as they represent individuals at the early stage of professional education, before extensive exposure to clinical training and specialized knowledge about mental health conditions that might influence their awareness of phobias. A total of 103 responses were collected from all participants, including both males and females, providing a robust dataset for analysis. This sample size was determined based on practical considerations of feasibility within the available resources and timeline, combined with the need to obtain sufficient statistical power for detecting meaningful associations between variables. The sample size of 103 is consistent with similar cross-sectional studies in health research and provides adequate power for detecting moderate effect sizes in chi-square analyses and other statistical tests.

Questionnaire Development and Validation

The questionnaire utilized in this study was carefully referred and adapted from a previous study conducted on awareness about insectophobia among dental students, ensuring that the instrument had been previously tested and validated in a similar population (18). This approach of using a pre-validated instrument enhances the reliability and validity of the data collected and allows for meaningful comparison of findings across studies. The questionnaire is a pre-validated and reliable instrument containing 10 questions that comprehensively cover the key domains relevant to understanding insectophobia in this population. The questionnaire was designed to be concise yet comprehensive, ensuring that participants could complete it within a reasonable time frame while providing meaningful data for analysis.

Questionnaire Content and Domains

The questionnaire contained question items pertaining to multiple important domains related to insectophobia, including questions about participants' personal experiences with insect fear or phobia, which helps establish

the prevalence of self-reported symptoms and distress. Items addressing symptoms of insectophobia were included to characterize the nature and intensity of fear responses experienced by participants, such as physiological reactions, avoidance behaviors, and emotional distress. Questions about factors contributing to insectophobia were designed to identify potential etiological influences, including personal traumatic experiences, family modeling, media exposure, and cultural factors. Items addressing common causes of insectophobia explored participants' understanding of why people develop fears of insects, including both psychological and biological explanations. Questions about treatment and management of insectophobia assessed participants' knowledge of available interventions, including exposure therapy, cognitive behavioral therapy, medication options, and self-help strategies. Finally, items specifically addressing awareness about insectophobia among dental students evaluated the level of understanding about this condition within this professional population. The comprehensive coverage of these domains ensures that the questionnaire captures a complete picture of both personal experiences with insectophobia and knowledge about the condition.

Data Collection Procedure

The questionnaire was distributed to the participants electronically via Google Forms, which were sent to their respective institutional email addresses, ensuring efficient and widespread distribution while maintaining social distancing requirements during the pandemic period (annexure 1). Google Forms offers several significant advantages for data collection, including widespread accessibility through any internet-connected device, automated data entry that eliminates manual transcription errors, and convenience for participants who can complete the survey at their own pace and at a time and location of their choosing. The use of email distribution ensured that all first-year dental students had equal opportunity to participate, regardless of their location or access to other communication platforms. The electronic format also facilitated anonymous responses, encouraging honest and candid answers without fear of judgment or repercussion. The average time taken by the participants to complete the questionnaire was approximately 8 minutes, indicating that the instrument was appropriately concise and did not impose an excessive burden on respondents. This reasonable completion time likely contributed to the good response rate and the quality of data collected.

Data Management and Statistical Analysis

Upon completion of data collection, the responses from Google Forms were exported directly into a Microsoft Excel spreadsheet, ensuring accurate transfer without manual data entry errors that could compromise data quality. The data were carefully reviewed for completeness and consistency, with any incomplete responses or obvious errors flagged for review and, where necessary, excluded from analysis to maintain data integrity. The cleaned and coded data were then imported into Statistical Package for the Social Sciences (SPSS) software version 23.0 for Windows (IBM, Chicago, USA) for comprehensive statistical analysis. SPSS is a powerful and widely used statistical software package that offers a comprehensive range of descriptive and inferential statistical procedures suitable for health research, with user-friendly interfaces and robust analytical capabilities.

Descriptive statistics were performed to present the frequency distribution of the options for each question item, providing a clear and detailed overview of the sample characteristics and the patterns of responses across the study population. Frequencies and percentages were calculated for all categorical variables, providing a clear picture of how participants responded to each question and allowing for initial identification of trends, patterns, and areas of consensus or divergence within the population. These descriptive statistics form the foundation for understanding the knowledge, awareness, and experiences of the study population regarding insectophobia and serve as the basis for more complex inferential analyses.

Additionally, Pearson's chi-square test of association was performed to examine the influence of demographic and educational factors on the knowledge, attitude, and awareness about insectophobia among the participants. This statistical test is appropriate for analyzing the relationship between two categorical variables, in this case, demographic characteristics such as gender or prior education, and various indicators of insectophobia awareness and knowledge. The chi-square test compares the observed frequencies in each category of the contingency table with the frequencies that would be expected if there were no association between the variables, calculating a test statistic that follows a chi-square distribution under the null hypothesis of independence. A p-value of less than 0.05 was considered to be statistically significant, indicating that the observed association is unlikely to have occurred by chance alone and providing evidence for a real relationship between demographic factors and insectophobia-related outcomes. This threshold is conventional

in health research and provides a balance between detecting meaningful associations and avoiding false-positive findings that could lead to incorrect conclusions.

The results of the chi-square analyses will identify whether factors such as gender, prior education, or personal experience are significant determinants of insectophobia awareness and attitudes, providing valuable insights that can guide targeted educational interventions and mental health support strategies for dental students. If significant associations are found, this would suggest that efforts to improve awareness and address insectophobia should consider tailoring messages and approaches to different demographic groups. Conversely, if no significant associations are found, this would indicate that awareness is more uniformly distributed across the population and that other factors may be more important determinants of knowledge about insectophobia. The combination of descriptive and inferential statistical analyses provides a comprehensive and nuanced understanding of the factors influencing insectophobia awareness among first-year dental students and generates robust evidence to inform educational curricula, mental health services, and future research directions in this area.

RESULT:

Demographic Characteristics of the Study Population

A total of 103 first-year undergraduate dental students participated in this study, providing a comprehensive dataset for analyzing the awareness, knowledge, and experiences related to insectophobia among this specific population. The demographic distribution of participants revealed that 57% of respondents were females, representing the majority of the sample, while 46% were males, providing a reasonably balanced though female-predominant perspective on insectophobia awareness (Fig. 1). This gender distribution is generally representative of the demographic composition of dental student populations in India, where female enrollment has been increasing in recent years. The slight female predominance in the sample should be considered when interpreting gender-specific findings and comparing results across studies with different demographic compositions.

Awareness of Insectophobia

Regarding fundamental knowledge about the condition under investigation, approximately 43.7% of participants reported that they do not know about insectophobia, indicating that a substantial proportion of first-year dental students lack awareness of this specific phobia despite their enrollment in health professions education (Fig. 2). This finding reveals a significant knowledge gap that could be addressed through curricular interventions and educational programs. Gender-stratified analysis showed that among those unaware of insectophobia, 18.45% were females and 17.48% were males, indicating relatively comparable levels of unawareness across genders though with slightly higher unawareness among females (Fig. 2). The near-equivalent levels of unawareness between genders suggest that the knowledge gap is not primarily driven by gender differences but rather reflects broader deficiencies in mental health education within the dental curriculum.

Behavioral Responses to Insect Encounters

When examining how participants typically respond when they encounter bugs or insects, the results revealed a diverse range of behavioral and emotional reactions that reflect different coping styles and levels of fear. Among female participants, approximately 12.62% reported that they ignore insects when encountered, while among male participants, 15.53% reported ignoring them, indicating that males are slightly more likely to disregard insects rather than react with fear or avoidance (Fig. 3). Regarding anxiety responses, 13.59% of females and 4.85% of males reported that encountering insects triggers their anxiety, revealing a substantially higher rate of anxiety activation among females compared to males, consistent with the broader literature on gender differences in fear and anxiety disorders (Fig. 3). A freezing response, characterized by immobility and inability to act when encountering insects, was reported by 20.39% of females and 10.68% of males, again showing higher rates of this fear response among female participants (Fig. 3). Conversely, no reaction to insect encounters was reported by 8.74% of females and 13.59% of males, indicating that males are more likely to remain unaffected by insect encounters (Fig. 3). These gender differences in response patterns have important implications for understanding the phenomenology of insect fear and for developing gender-sensitive approaches to prevention and intervention.

Perceptions of Insectophobia Severity and Treatment-Seeking

Regarding the perceived seriousness of insectophobia as a condition warranting attention and intervention, approximately 35% of participants reported that they do consider insectophobia seriously, recognizing it as a legitimate condition that can cause significant distress and impairment (Fig. 4). Gender-stratified analysis revealed a striking disparity in these perceptions, with 28.16% of females considering insectophobia seriously compared to only 5.83% of males, indicating that female participants are nearly five times more likely than males to recognize the seriousness of this condition (Fig. 4). This gender difference may reflect greater personal experience with insect fear among females, greater willingness to acknowledge emotional distress, or different cultural expectations regarding the expression of fear.

Among those who recognize insectophobia as a serious condition, treatment-seeking behaviors were examined, revealing that 16.50% of females and 9.71% of males reported taking medication for their insect-related fears (Fig. 5). The higher rate of medication use among females is consistent with the gender differences observed in symptom reporting and seriousness perceptions, and may also reflect greater healthcare-seeking behavior among women generally.

Precautionary Behaviors and Specific Fears

Regarding precautionary measures taken to avoid or manage insect encounters, approximately 40.78% of participants reported that they do not take any precautionary methods when they encounter bugs, indicating that a substantial proportion of the population does not actively avoid or prepare for insect encounters (Fig. 6). Gender analysis revealed that among those not taking precautions, females comprised 24.27% and males comprised 16.50%, showing that females are more likely than males to report taking some form of precautionary action (Fig. 6). This finding may reflect greater fear or greater proactive health behavior among females.

When examining fears of specific insects, approximately 32% of participants reported being afraid of termites, representing a substantial minority with specific fear of these wood-destroying insects (Fig. 7). Gender analysis showed that 18.45% of females and 13.59% of males reported fear of termites, indicating that this specific fear is more prevalent among female participants (Fig. 7). The focus on termites may reflect concerns about property damage in addition to direct fear of the insects themselves.

Nightmares and Sleep Disturbance

A particularly striking finding was that approximately 57.28% of participants reported experiencing nightmares when they encounter bugs, indicating that insect encounters can trigger significant sleep disturbances and intrusive fearful imagery that extends beyond waking hours (Fig. 8). Gender analysis revealed that 13.59% of females and 3.88% of males reported such nightmares, showing that this sleep disturbance phenomenon is substantially more common among female participants (Fig. 8). The experience of nightmares following insect encounters suggests that for many individuals, particularly females, insect fear has a significant impact on mental well-being that extends into sleep and may contribute to overall distress and impairment.

Age of Onset of Insect Phobia

The age at which insect phobia first showed visible effects on participants was examined, providing insights into the developmental timing of fear acquisition. The majority of participants reported that their phobia showed visible effects during adolescence, with 42.72% reporting onset during this developmental period (Fig. 9). Childhood onset was reported by 39.81% of participants, indicating that insect fears often develop early in life, consistent with the literature on the developmental origins of specific phobias. Adulthood onset was least common, reported by only 17.48% of participants, suggesting that new-onset insect phobia is relatively uncommon after the early years.

Gender-stratified analysis of onset age revealed important patterns. Among females, adolescence and childhood onset were equally common, each reported by 21.36% of female participants, while adulthood onset was reported by 12.62% of females (Fig. 9). Among males, childhood onset was most common at 21.63%, followed by adolescence at 18.45%, and adulthood onset was least common at only 4.85% (Fig. 9). These patterns suggest that while both genders commonly develop insect fears in childhood and adolescence, males are particularly unlikely to develop new fears in adulthood, whereas females retain some vulnerability to adult-

onset fears. The gender differences in onset timing may reflect differential exposure, socialization, or biological factors that influence fear acquisition across the lifespan.

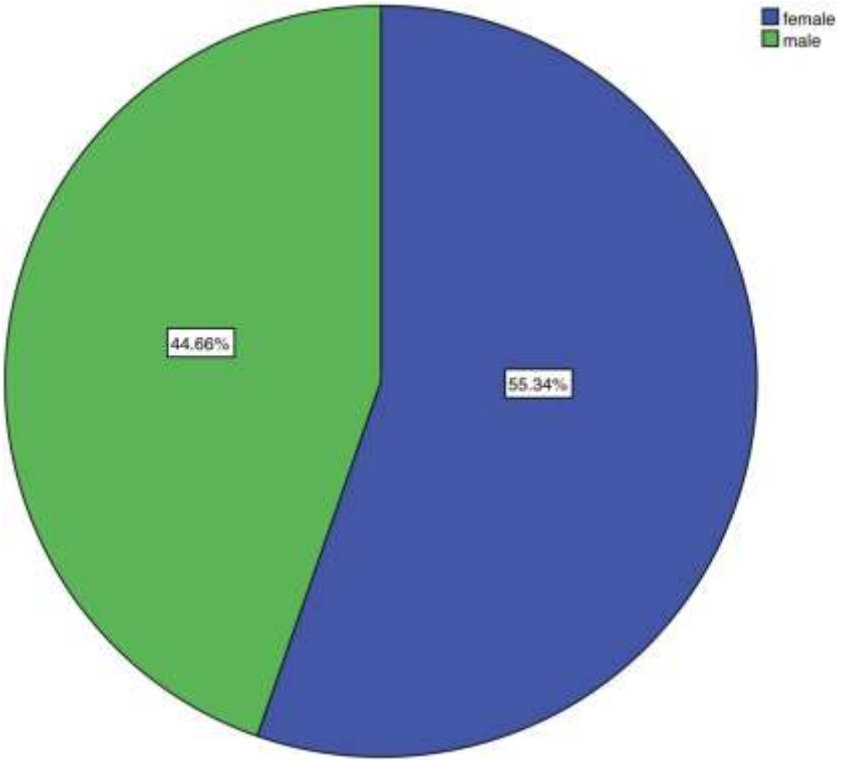

Figure 1: represents the percentage of participants distributed based on gender, of which 55.34% were female participants (blue) and 44.66% were males (green).Majority participants were females.

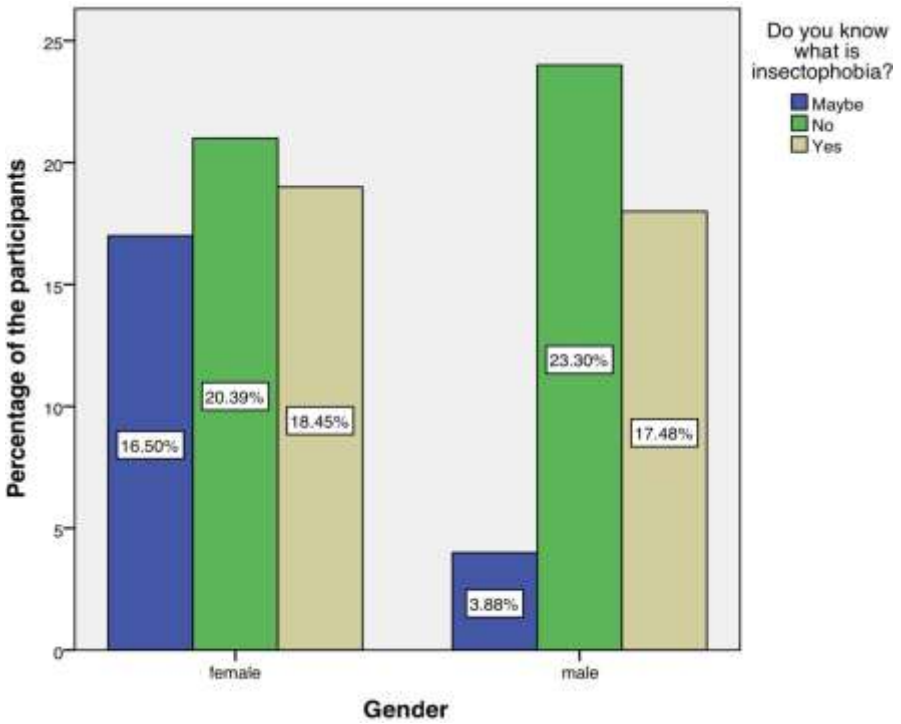

Figure 2: Bar graph represents correlation between gender and the awareness about insectophobia among participants. X axis represents gender and Y axis represents percentage of participants.blue depicts 'maybe', green depicts 'no' and beige depicts 'yes'. In females 16.50% responded maybe, 20.39% responded no and 18.45% responded yes whereas, in males 3.88% responded maybe, 23.30% responded no and 17.48% responded yes. This difference between the groups were statistically significant (chi-square test; p value=0.04)

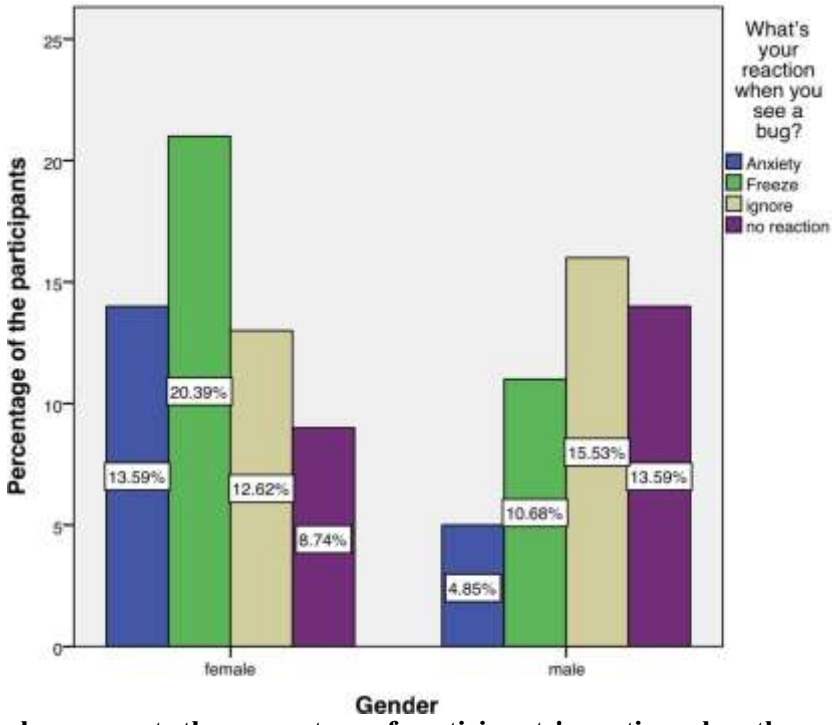

Figure 3: Bar graph represents the percentage of participants' reaction when they encounter bugs and correlates gender in X axis and percentage of participants in Y axis in which blue depicts 'anxiety', green depicts 'freeze' and beige depicts 'ignore' and purple depicts 'no reaction'. In females 13.59% responded to anxiety, 20.39% responded to freeze, 12.62% responded to ignore and 8.74% responded to no reaction whereas in males 4.85% responded to anxiety, 10.68% responded to freeze,15.53% responded to ignore and 13.59% responded to no reaction.This difference between the groups were statistically significant (chi-square test; p value=0.04)

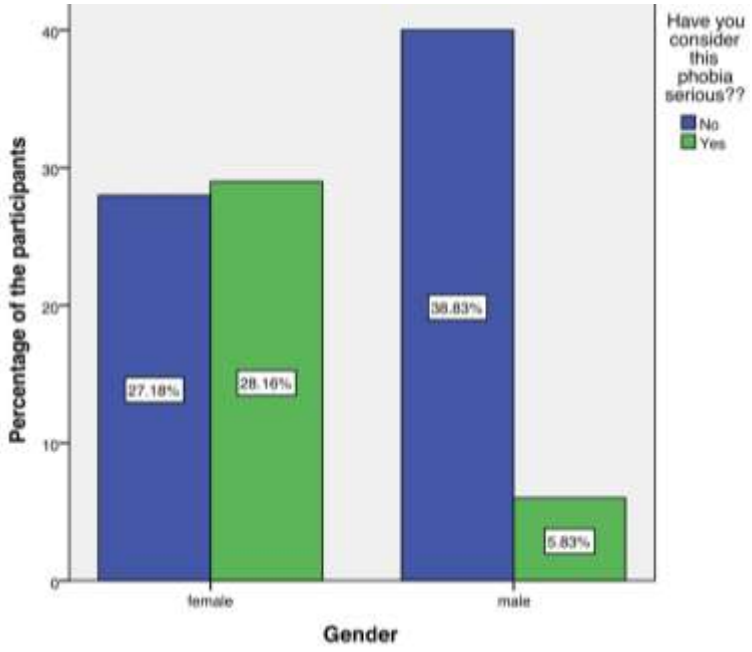

Figure 4: Bar graph represents the percentage of participants who have taken insectophobia as a serious phobia and correlates gender in X axis and percentage of participants in Y axis in which blue depicts 'no' and green depicts 'yes'. In females 27.18% responded no and 28.16% responded yes whereas in males 38.83% responded no and 5.83% responded yes. This difference between the groups were statistically significant (chi-square test; p value=0.04)

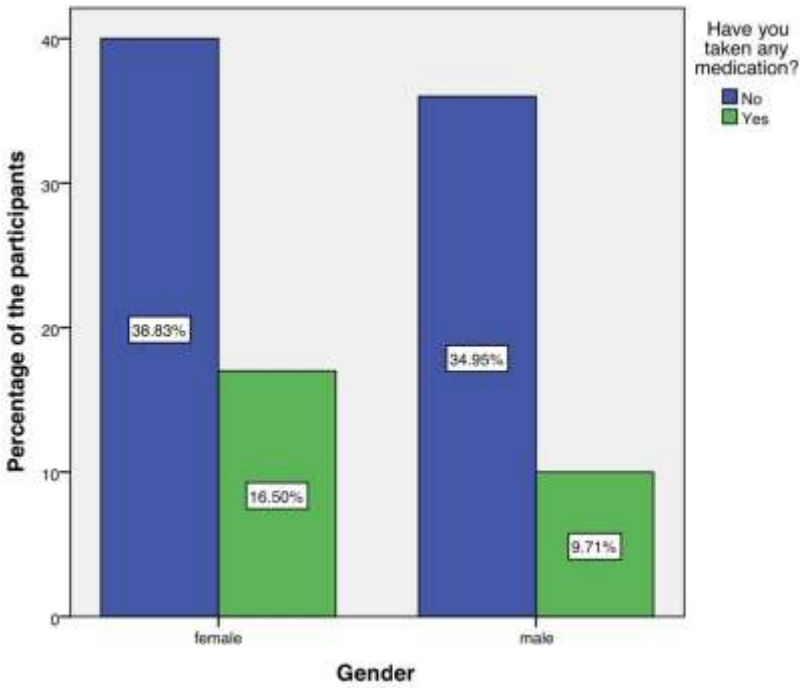

Figure 5: Bar graph represents the percentage of participants who have taken any medication for the treatment of insectophobia and correlates gender in X axis and percentage of participants in Y axis in which blue depicts 'no' and green depicts 'yes'. In females 38.83% responded no and 16.50% responded yes whereas in males 34.95% responded no and 9.71% responded yes. This difference between the groups were statistically significant (chi-square test; p value=0.04)

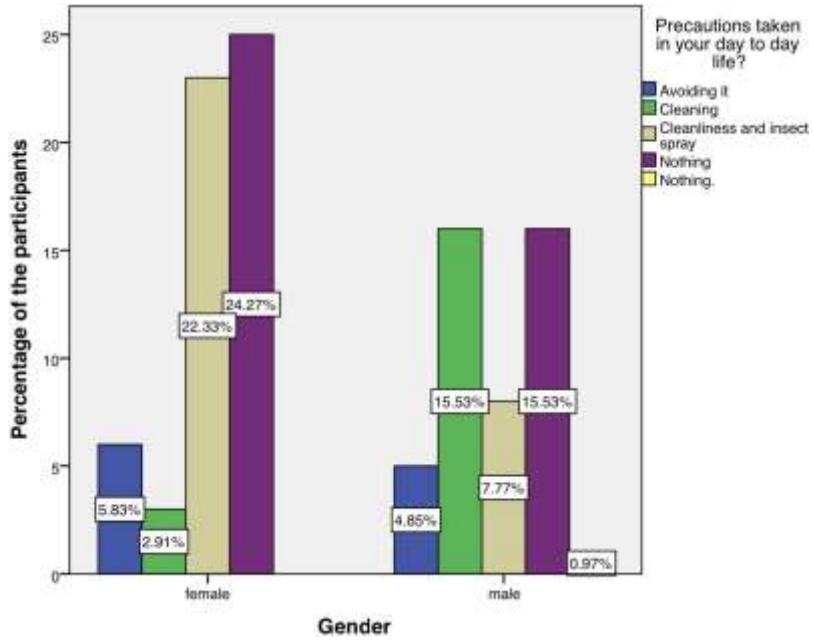

Figure 6: Bar graph represents the percentage of participants who have taken necessary precaution for avoiding insects and correlates gender in X axis and percentage of participants in Y axis in which blue depicts 'avoiding it', green depicts 'cleaning' and beige depicts 'cleaning and insect spray' and purple depicts 'nothing'. In females 5.83% responded to avoiding it, 2.91% responded to cleaning, 22.33% responded to cleaning and insect spray and 24.27% responded to nothing whereas in males 4.85% responded to avoiding it, 15.53% responded to cleaning, 7.77% responded to cleaning and insect spray and 16.50% responded to nothing. This difference between the groups were statistically significant (chi-square test; p value=0.04)

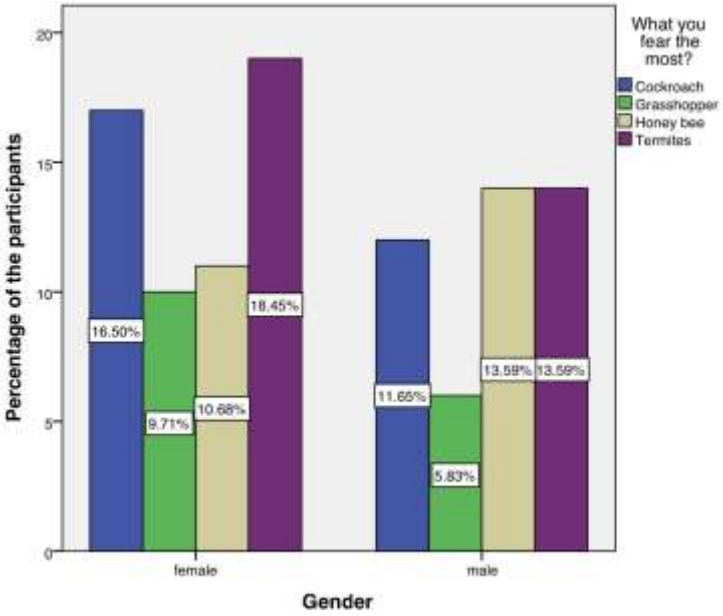

Figure 7: Bar graph represents the percentage of participants what insect they fear the most and correlates gender in X axis and percentage of participants in Y axis in which blue depicts 'cockroaches', green depicts 'grasshoppers' and beige depicts 'honey bee' and purple depicts 'termites'. In females 16.50% responded to cockroaches, 9.71% responded to grasshoppers, 10.68% responded to honeybees and 18.45% responded to termites whereas in males 11.65% responded to cockroaches, 5.63% responded to grasshoppers, 13.59% responded to honeybees and 13.59% responded to termites. This difference between the groups were statistically significant (chi-square test; p value=0.04)

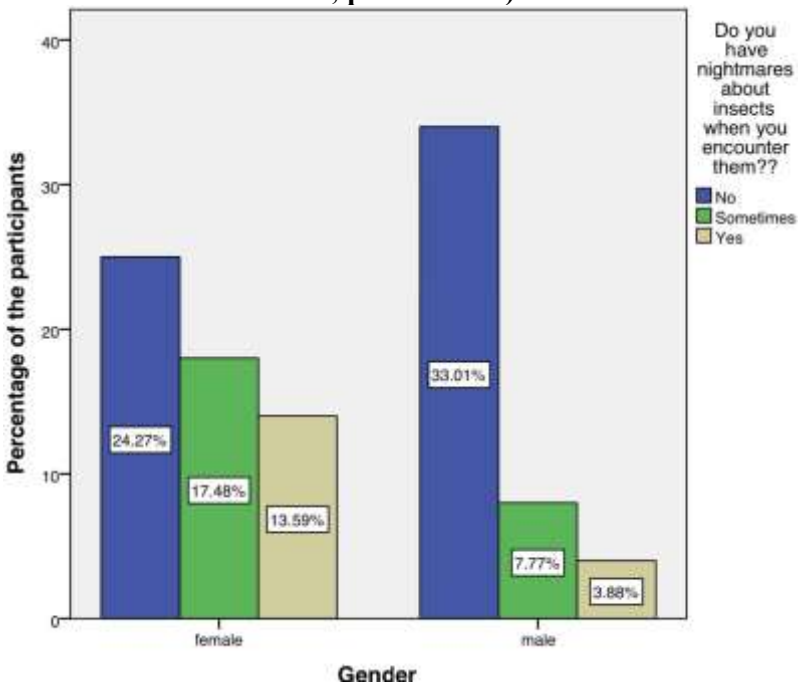

Figure 8: Bar graph the percentage of participants whether they have nightmares after encountering bugs and correlates gender in X axis and percentage of participants in Y axis in which blue depicts 'no', green depicts 'sometimes' and beige depicts 'yes'. In females 24.27% responded no, 17.48% responded sometimes and 13.59% responded yes whereas, in males 33.01% responded no, 7.77% responded sometimes and 3.88% responded yes. This difference between the groups were statistically significant (chi-square test; p value=0.04)

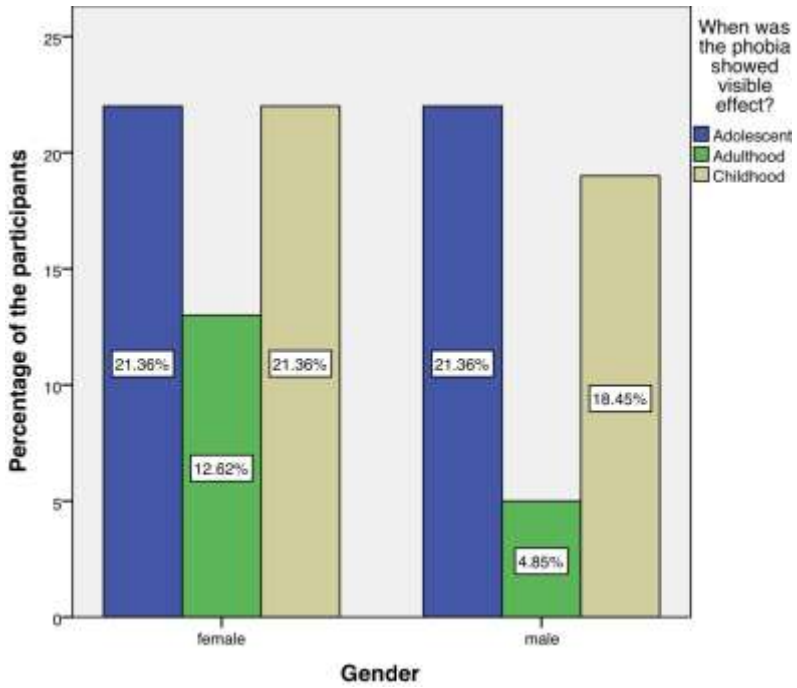

Figure 9: Bar graph represents the percentage of participants when the effect was visible caused by insects and correlates gender in X axis and percentage of participants in Y axis in which blue depicts 'adolescent', green depicts 'adulthood' and beige depicts 'childhood'. In females 21.36% responded adolescent, 12.62% responded adulthood and 21.36% responded childhood whereas in males 21.36% responded adolescent, 4.85% responded adulthood and 18.45% responded childhood. This difference between the groups were statistically significant (chi-square test; p value=0.04)

DISCUSSION:

The present study provides valuable insights into the awareness, knowledge, and experiences of insectophobia among first-year dental students in Chennai, revealing important patterns in gender differences, symptom expression, and developmental timing of fear acquisition. By comparing these findings with existing literature, we can better contextualize the results and develop evidence-based recommendations for improving mental health education and support services for this population.

In the present survey, comparison of male and female responses revealed notable gender differences across multiple dimensions of insectophobia. Regarding basic awareness, 18.45% of females and 17.48% of males reported knowing about insectophobia, indicating relatively comparable levels of knowledge between genders though with slightly higher awareness among females. This finding suggests that gender is not a major determinant of basic awareness about this condition, and that both male and female students would benefit from educational interventions to improve knowledge. However, more striking gender differences emerged when examining emotional and behavioral responses. Approximately 13.59% of females compared to only 3.88% of males responded affirmatively when asked about having nightmares after encountering bugs, revealing that insect-related sleep disturbances are nearly four times more common among female participants. This substantial gender disparity in nightmare experiences may reflect greater emotional processing of fear-related stimuli during sleep, higher levels of baseline anxiety, or differences in how males and females report sleep disturbances. Regarding recognition of the seriousness of insectophobia as a condition warranting attention, about 28.16% of females and only 5.83% of males recognized this phobia seriously, indicating that female participants are nearly five times more likely than males to acknowledge the clinical significance of insect-related fears. These gender differences are consistent with the broader literature documenting higher rates of anxiety disorders and specific phobias in females, and they highlight the importance of considering gender in both clinical assessment and intervention planning for insectophobia.

A comprehensive study examining knowledge, attitudes, and practices related to entomophobia concluded that there was no significant difference between age and insect phobias, suggesting that fear of insects is not strongly influenced by developmental stage once adulthood is reached, though the current study did find meaningful differences in onset timing between childhood, adolescence, and adulthood (6). Regarding beliefs

about risk factors, more than 17.1% of the studied cases believed in the relationship between gender and entomophobia, recognizing that males and females differ in their vulnerability to insect fears, a perception that aligns with the empirical findings of the current study. In terms of behavioral responses to insect encounters, approximately 37% of subjects in the referenced study reported being willing to kill insects when encountered, while 22.5% preferred to escape from the situation, revealing two distinct coping strategies that reflect different levels of fear and different approaches to managing insect encounters (6). These behavioral patterns are consistent with the fight-or-flight response to threat, with some individuals opting for aggressive confrontation while others choose avoidance.

A significant challenge in understanding and addressing insectophobia is that most people don't have common ideas or shared understanding about this condition, leading to varied interpretations of symptoms, causes, and appropriate responses. In a study involving a total population of 500 individuals, approximately 45.3% were found to be aware about insectophobia, and these individuals were more likely to be on medication for anxiety and to report increased anxiety levels when they encounter bugs compared to those unaware of the condition (1). This finding suggests that awareness of insectophobia as a recognized condition may be associated with greater recognition of one's own symptoms and greater willingness to seek treatment. The study also documented that while encountering bugs, affected individuals experience a range of physiological symptoms including rapid heart rate, trembling, sweating, nausea, and shortness of breath, reflecting the autonomic nervous system activation that characterizes phobic fear responses. These symptoms can be highly distressing and may reinforce avoidance behaviors that maintain the phobia over time.

In a significant contribution to the literature, Hayati and Minaei (2015) studied entomophobia among university students and reported that insect phobia can be reduced through systematic exposure to these creatures, supporting the use of exposure therapy as a primary treatment approach for this condition. Their study examined responses to four groups of insects: dragonflies, cockroaches, bees, and butterflies, revealing substantial variation in fear levels across different insect types. Notably, cockroaches and butterflies triggered the highest and lowest rates of phobia respectively among the study population, indicating that not all insects are equally feared and that specific characteristics such as appearance, behavior, and cultural associations influence fear responses (19). Cockroaches, with their rapid movements, nocturnal habits, and association with unsanitary conditions, tend to evoke strong fear and disgust responses, while butterflies, with their colorful appearance and gentle flight, are generally viewed positively and rarely trigger phobic reactions.

In relation to these findings, the current study showed that people who have experience of being in insect-rich environments, such as those who grew up in rural areas or spent time in natural settings, demonstrated less phobia than others, supporting the role of familiarity and habituation in reducing fear responses. This observation is consistent with the lower prevalence of insectophobia in rural compared to urban populations noted in the introduction, and it suggests that exposure-based interventions that gradually increase contact with insects in controlled settings could be effective for reducing fear. The study also found that phobia towards cockroaches and termites was higher than that of other insects such as arachnids, indicating that within the class of arthropods, different orders and families evoke varying levels of fear. The specific fear of termites, documented in the results, may reflect concerns about property damage in addition to direct fear of the insects themselves, particularly relevant in urban settings where termite infestations can cause significant economic loss.

An important contextual factor in interpreting the findings of this study is that the majority of participants are from urban backgrounds and are currently studying while staying in hostels, which represents a distinct living situation characterized by shared accommodations, limited control over the environment, and potentially higher exposure to insects compared to home settings. This urban hostel-dwelling population is different from other study populations described in the literature, which may include rural residents, older adults, or individuals living in family homes, and this difference should be considered when comparing findings across studies and when generalizing results to other populations. The unique characteristics of this population may influence both their exposure to insects and their psychological responses to such encounters.

Comparison with Existing Literature

The findings of the present study align with and extend the existing literature on insectophobia in several important ways. The gender differences observed, with females reporting higher rates of fear, nightmares, and recognition of seriousness, are consistent with the broader epidemiological pattern of higher anxiety disorder

prevalence in females. The specific fears of cockroaches and termites documented in this study parallel the findings of Hayati and Minaei regarding cockroaches as highly feared insects, while extending this to include termites as a significant fear stimulus in the Indian context. The role of environmental exposure in moderating fear levels, suggested by the observation that those with insect-rich backgrounds show less phobia, supports the importance of familiarity and habituation in fear reduction and provides a rationale for exposure-based interventions.

However, some differences between the current findings and previous studies should be noted. The awareness levels in this population (approximately 43.7% unaware) are somewhat lower than those reported in some other studies, possibly reflecting the specific characteristics of first-year dental students who have not yet received extensive mental health education. The prevalence of nightmares following insect encounters (57.28%) is higher than might be expected based on general population estimates, suggesting that this symptom may be particularly prominent in young adult urban populations.

Implications for Practice and Education

The findings of this study have several important implications for dental education and mental health support services. The substantial knowledge gaps regarding insectophobia among first-year dental students suggest a need for curricular interventions that address mental health literacy, including education about common phobias, their symptoms, and available treatments. The gender differences in symptom reporting and recognition of seriousness suggest that educational approaches may need to be tailored to address the specific needs and perspectives of male and female students. The high rates of nightmares and other distressing symptoms reported by affected students indicate that insectophobia can have meaningful impacts on quality of life and academic performance, supporting the need for accessible mental health services that can provide assessment and treatment for students with phobic disorders.

FUTURE RESEARCH DIRECTIONS

For future research investigating insectophobia and related conditions, several important considerations should be addressed to build upon the foundation established by this study. Large population sizes should be considered in future studies to enhance statistical power, improve the precision of estimates, and enable more detailed subgroup analyses that can identify factors associated with phobia development and maintenance. The inclusion of diverse populations across different geographic regions, urban and rural settings, and age groups would help establish the generalizability of findings and identify cultural variations in insectophobia expression and prevalence.

For comprehensive literature reviews, all language articles that are related to phobia need to be referred for data collection, rather than limiting to English-language publications as in the present study, to ensure that relevant findings from non-English sources are not overlooked and that a truly global perspective on insectophobia is developed. This inclusive approach to literature review would help identify cross-cultural patterns and variations in insect fear that might be missed when relying solely on English-language sources.

Methodologically, future studies should consider that manual collection of responses through face-to-face interviews will be more accurate than online surveys, as more accurate data can be obtained through direct interaction where responses can be clarified and probed. Conversations are often more effective than systematic surveys for understanding the nuances of individual experiences with phobia, as they allow for follow-up questions, clarification of ambiguous responses, and exploration of unexpected themes that emerge during discussion. Additionally, responses can be made in the presence of investigators to ensure proper understanding of questions and to minimize misinterpretation, thereby enhancing data quality and validity. The combination of quantitative surveys with qualitative interviews would provide a more complete understanding of insectophobia experiences and could identify factors that are not captured by structured questionnaires.

Limitations

Several limitations of the present study should be acknowledged when interpreting the findings. The sample was limited to first-year dental students from a single geographic area, which may limit the generalizability of findings to other populations, including students at different educational levels, students from other

professional programs, or non-student populations. The reliance on self-report measures may be subject to recall bias, social desirability bias, and variations in how participants interpret and respond to questions. The cross-sectional design provides a snapshot of awareness and experiences at a single time point but cannot capture changes over time or establish causal relationships between variables. The use of an online survey, while efficient, may have excluded individuals without reliable internet access and prevented the clarification of questions that would be possible in face-to-face administration. Despite these limitations, the study provides valuable baseline data on insectophobia awareness among dental students and identifies important patterns that warrant further investigation.

CONCLUSION:

Among the responders, the majority of females are more scared of bugs in comparison with males of dental students, especially to termites. The fear of insects is a challenging and very common condition for dental urban students. Still very limited study was done on the prevalence of insectophobia. Therefore, more participants needed to be indulged for more accurate datas so that the risks can be reduced.

AUTHORS CONTRIBUTION

Priyanka: Literature search, data collection analysis, manuscript drafting.
Dr. Dhanraj M: Aided in conception of the topic, has participated in the study design, statistical analysis and has supervised the preparation and final corrections of the manuscript.
Dr L. Keerthi Sasanka : Data verification, manuscript drafting, preparation of the manuscript.

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CONFLICT OF INTEREST:

All the authors declare that there is no conflict of interest in present study

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ANNEXURE 1:

1. What is your gender?	Female/Male
2. Do you know what insectophobia is?	Maybe/No/Yes
3. What's your reaction when you see bugs?	Anxiety/Freeze/Ignore/No reaction
4. Have you considered this phobia serious?	No/Yes
5. Have you taken any medications?	No/Yes
6. Precautions taken in your day to day life?	
7. What do you fear the most?	Cockroaches/Grasshoppers/Honey Bees/Termites
8. Do you have nightmares about insects when you encounter them?	No/Sometimes/Yes
9. When did the phobia show a visible effect?	Adolescent/Adulthood/Childhood