KNOWLEDGE, ATTITUDE AND AWARENESS ABOUT THE BENEFITS OF INDOOR PLANTS: REDUCTION IN STRESS LEVEL AND MENTAL HEALTH SATISFACTION

Running title: Awareness about benefits of indoor plants.

ABSTRACT

Background: Environmental pollution is a serious threat to living beings and global warming. Indoor pollution also comes under environmental pollution. One of the sustainable but underexploited solutions are the indoor plants which are of much significance and importance. The indoor air quality is improved by indoor plants, which benefits humans by improving their physical and mental health.

Aim: The aim of this study is to analyse and gain knowledge on the awareness people of age 25-35 have on the benefits of indoor plants.

Materials and methods: The self-administered questionnaire was designed based on awareness. The questionnaire was distributed through google forms linked to 110 numbers of the study population of age between 25 and 35. Methods of representation of each output variable were represented in the pie chart form. The measure that was taken to minimize the sampling bias was that the validity was checked both internally and externally. The statistics were done using SPSS software, chi square test was used to check the association and P value of 0.05 was said to be statistically significant.

Results: From this study, 83.6% of the participants' have indoor plants at their homes or workplaces. 82% people felt that indoor plants help to reduce stress levels which was not statistically significant (p:0.07) and 89% of them felt indoor plants helping to promote healing of injuries faster which was statistically significant (p:0.02).

Conclusion: Indoor plants were beneficial to the majority of the population in different ways. Populations between the age 25 and 35 were aware about indoor plants and awareness camps, social media, seminars and workshops can be conducted among the people to promote knowledge on indoor plants.

Key words: Indoor plants, pollution, air quality, health, innovative

INTRODUCTION

Time is spent indoors by 80-90% of the population, so the opportunity to keep themselves physically and mentally healthy is limited (1). Well being of physical and mental health can be established by indoor plants, which is also confirmed by empirical studies (2) (3). Apart from this, the indoor plants are beneficial in improving indoor air quality (4), stress is lowered (5), helps in faster recovery from sickness (6), reduction of mental fatigue (7), and enhances productivity (8).

Indoor plants are of much importance when it comes to cleansing air. Studies were funded by the US National Aeronautics and space administration. Their results showed that the levels of interior pollutants such as formaldehyde and carbon monoxide were reduced by common foliage plants (9) . Indoor plants also have an effect on acoustics. Depending on the frequency, plants showed they can absorb, reflect or refract sounds. Noise was also reduced under certain conditions. Placement of plants, frequency of sound, specificity of room were the variables for the responses. Rooms with hard surfaces having high frequencies were reduced best by indoor plants, which was found by the researchers. It had a similar effect to when a carpet was installed. These benefits were found from an examination of the effects in interior spaces with indoor plants by Lothian and Costa through their study (10).

Peace lily and Chinese evergreen, which are common low-light houseplants help in allergy relief. Dryness in the winter, which can cause skin itch or a flu that can be caught, can be prevented by installing spider plants, which increases the moisture content and humidity by 20-30%. Asparagus fern, dragon tree and English ivy are good air scrubbers which purify air (11). Basil (Tulsi) helps in medicinal purposes (12). Plants like peppermint have antiviral and antimicrobial activities, antitumor actions, is a strong antioxidant and an antiallergic agent (13). Mint is a beneficial indoor plant as it contains vitamins and micronutrients and protects against malnutrition. It also contains fiber contents and antioxidants (14). Some plants are also used for décor and fragrance such as lavender which also has effects on the nervous system and also has curative properties and therapeutic actions like relaxing insect bit areas (15).

All these benefits and important uses of indoor plants brought a passion to do research on them and conduct a survey among the working population, whose lives are stressful and are struggling from physical and mental peace. The main motive of this survey is to analyze the knowledge, awareness and attitude the population have on indoor plants. Apart from this, awareness camps, social media, seminars and workshops can be conducted to spread awareness which would

certainly impact positively on human lifestyle and also will help in maintaining sustainable development in this world. This survey has not been done for this population previously. Our team has extensive knowledge and research experience that has translate into high quality publications (16–18)(19–24),(25)(26),(27)(28),(29)(30)(31–35)

The aim of this study is to assess the knowledge on indoor plants and to analyze the survey on indoor plants among the population of age between 25 and 35.

MATERIALS AND METHODS

The self-administered questionnaire was designed based on awareness. The questionnaire was distributed through online Google docs to 110 people of age between 25 and 35 in South India. This age group was particularly selected because they are mostly working, and work these days is mostly done indoors, so their awareness related to indoor pollution and indoor plants is very important. The participants were explained about the purpose of the study in detail. It was a prospective administrational study. Survey participants were randomly selected, avoiding asking irrelevant questions, restriction on particular population and age group. This Survey was conducted in February 2021.

The pros for this Survey were Online setting platform and random selection of the population. The cons for this survey were that the same homogeneous study population were selected and Questionnaire- error options may be present. Simple Random sampling method was the sampling method used in this Survey. SPSS is the statistical software used for this Survey. The independent variables were height, skin tone, weight, gender and the dependent variables used for this Survey is a profession, education, occupation, food habits, area of living and age. Descriptive analysis was the type of analysis being used.

RESULTS

The results were statistically analyzed and studied, when participants were asked about indoor plants and its benefits. 110 people responded out of which 62.7% were females and 37.3% were males. 83.6% people have indoor plants and 16.4% people do not have indoor plants [figure 1]. Indoor plants help to reduce stress levels for 81.8% people and don't help to reduce stress levels for 18.2% people [figure 2]. Indoor plants help sharpen attention for 72.7% people and don't help sharpen attention for 27.3% people [figure 3]. Plants like aloe vera, ginger, ashwagandha help in curing illness like nausea, cold and cough faster for 93.6% people and don't help for 6.4% people. Indoor plants help in promoting healing faster for 89.1% people and don't help for 10.9% people. 97.3% people feel plants like Tulsi have medicinal purposes, while 2.7% people disapprove. 83.6% of people feel plants like English ivy, bamboo palm, Chinese evergreen, dragon tree, spider plant, peace lily help purify air and are able to breathe fresh air, while 16.4% of people disapprove. 84.5% people feel indoor plants boosts mental well-being, creates positive vibrations, and helps clear away their psychological worries, while 15.5% people disapprove. Indoor plants give a sense of accomplishment for 77.3% of people and don't for 22.7% of people. Indoor plants help enhance productivity for 79.1% people and don't help for 20.9% people. 76.4% of people feel plants like aloe vera, English ivy, rubber tree, snake plant, peace lily help enhance therapeutic care, and don't help for 23.6% people. Indoor plants help give good sleep for 78.2% of people, and don't help for 21.8% of people. Indoor plants help enhance decor at home

or workplace for 94.5% people and don't help for 5.5% people. Indoor plants like lavender help enhance the surrounding fragrance for 90% people and don't help for 10% people. 92.7% of people feel indoor plants are better than artificial fragrance products like Odonil, etc., and 7.3% of people disapprove. 26.4% of people feel the fragrance is disturbing for them or their kids, while 73.6% of people disapprove. 57.3% of people feel indoor plants may become messy if they fall on the floor and feel it is hard to maintain, while 42.7% of people disapprove. 23.6% people feel indoor plants make the place clumsy/congested and occupy space, while 76.4% disapproved.

In the Chi-square analysis between the gender and whether plants like aloe vera, English ivy, rubber tree, snake plant, peace lily help enhance therapeutic care, The P-value that was obtained was about 0.045, and it was statistically significant. [figure 4]. In the Chi-square analysis between the gender and whether indoor plants help reduce stress level, The P-value that was obtained was about 0.070, and it was not statistically significant [figure 5]. In the Chi-square analysis between the gender and whether indoor plants help promote healing of injuries faster, the P-value that was obtained was about 0.026, and it was statistically significant. In the Chi-square analysis between the gender and whether plants like Tulsi helps in medicinal purposes, The P-value that was obtained was about 0.023, and it was statistically significant. In the Chi-square analysis between the gender and whether plants like English ivy, bamboo palm, Chinese evergreen, dragon tree, spider plant, peace lily help purify air and people are able to breathe fresh air, the P-value that was obtained was about 0.022, and it was statistically significant. In the Chi-square analysis between the gender and whether indoor plants help enhance décor at home or workplace, the P-value that was obtained was about 0.016, and it was statistically significant. [figure 6].

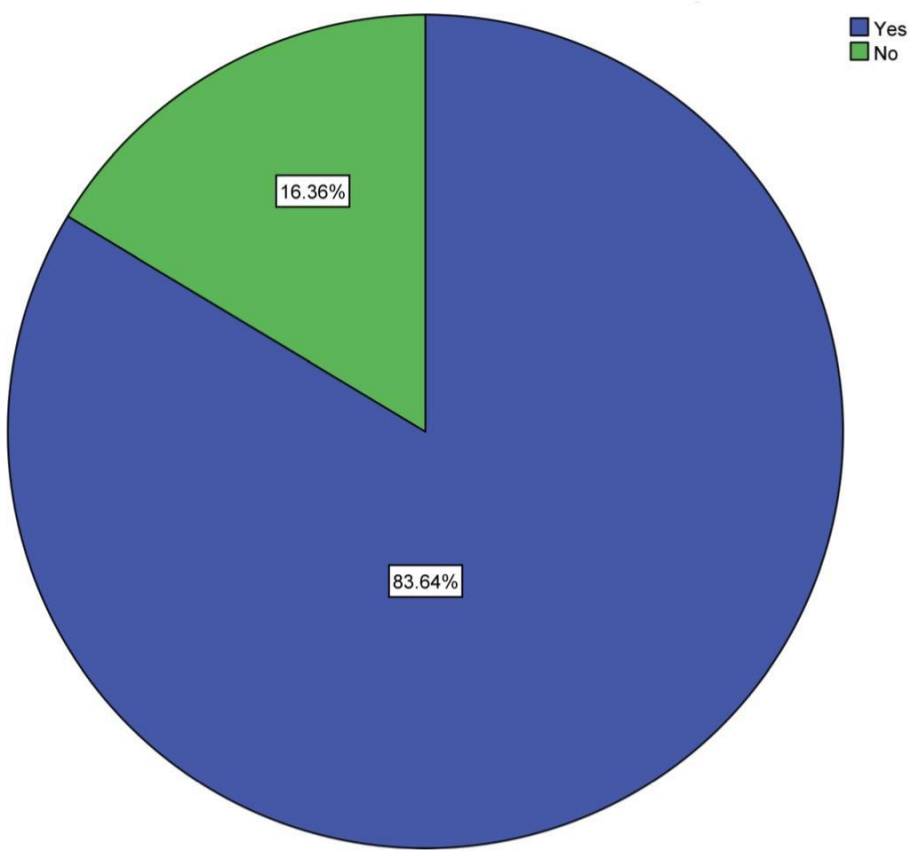

Figure 1: Pie chart representing percentage distribution of responses about awareness on whether populations have indoor plants at their homes or workplaces. 83.64% responded yes (blue); 16.36% responded no (green)

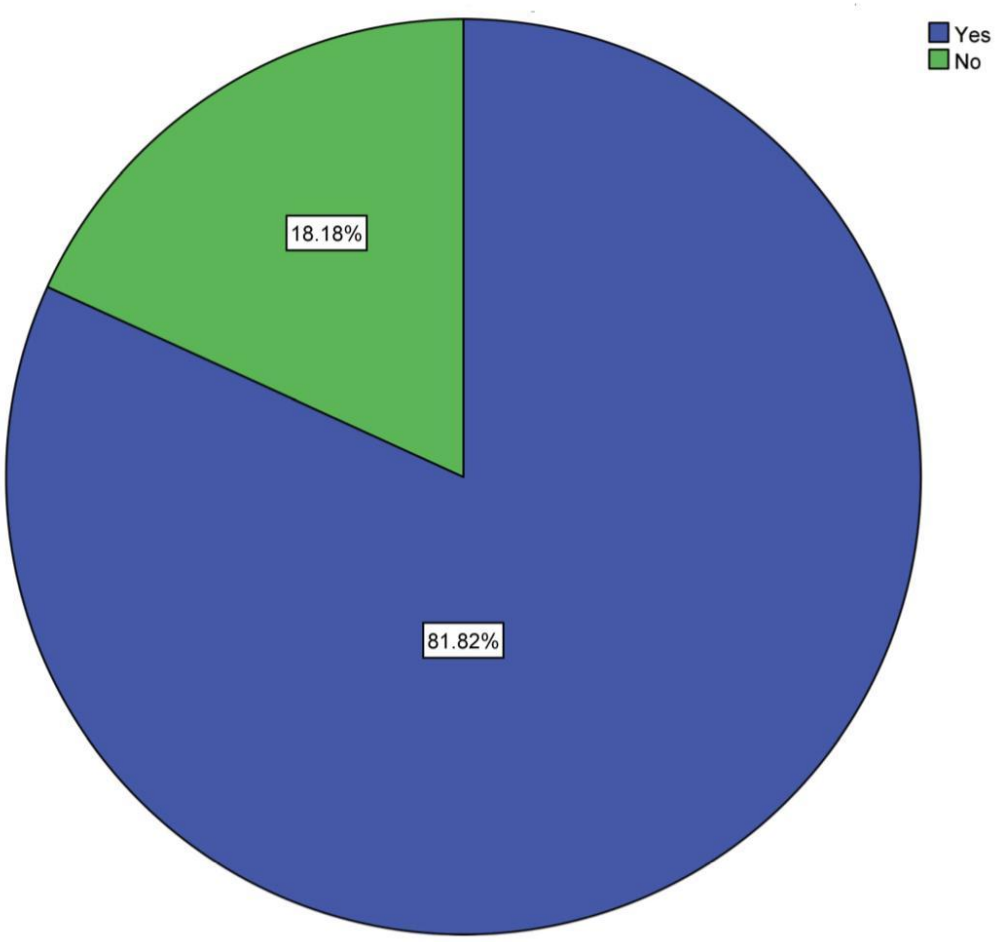

Figure 2: Pie chart representing percentage distribution of responses about awareness on whether indoor plants reduce stress level. 81.82% responded yes (blue); 18.18% responded no (green)

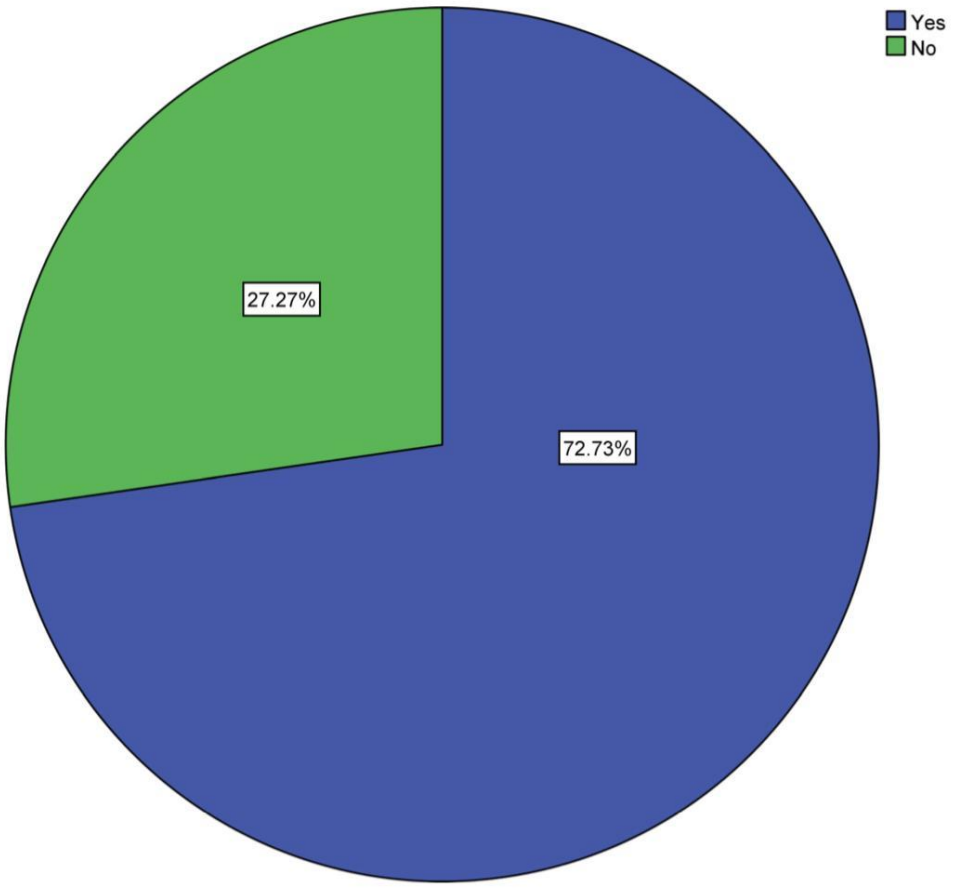

Figure 3: Pie chart representing percentage distribution of responses about awareness on whether indoor plants help sharpen attention. 72.73% responded yes (blue); 27.27% responded no (green)

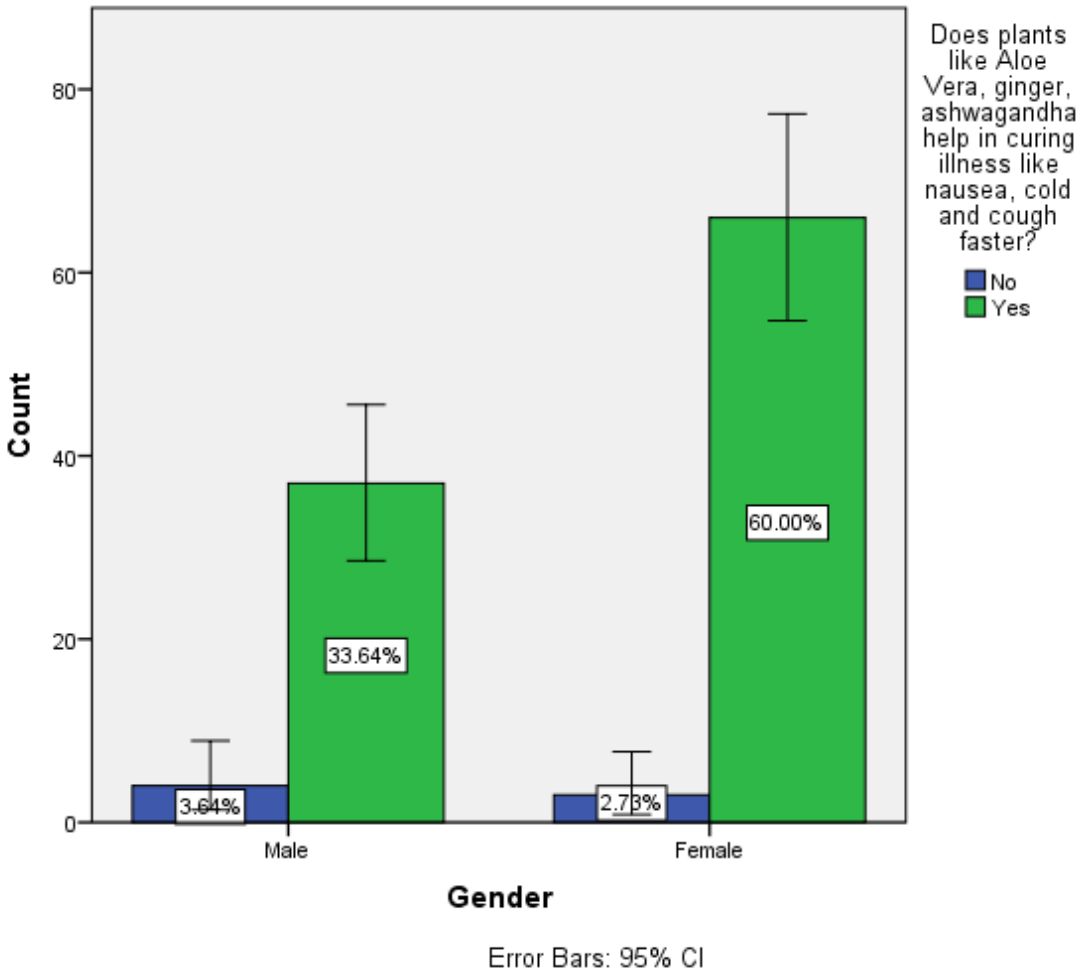

Figure 4: Bar graph showing association between the gender (X axis) and responses to awareness on whether plants like aloe vera, English ivy, rubber tree, snake plant, peace lily help enhance therapeutic care (Y axis). Blue denotes yes and green denotes no. Pearson chi square test showed p value was 0.045 (<0.05), and it was statistically significant.

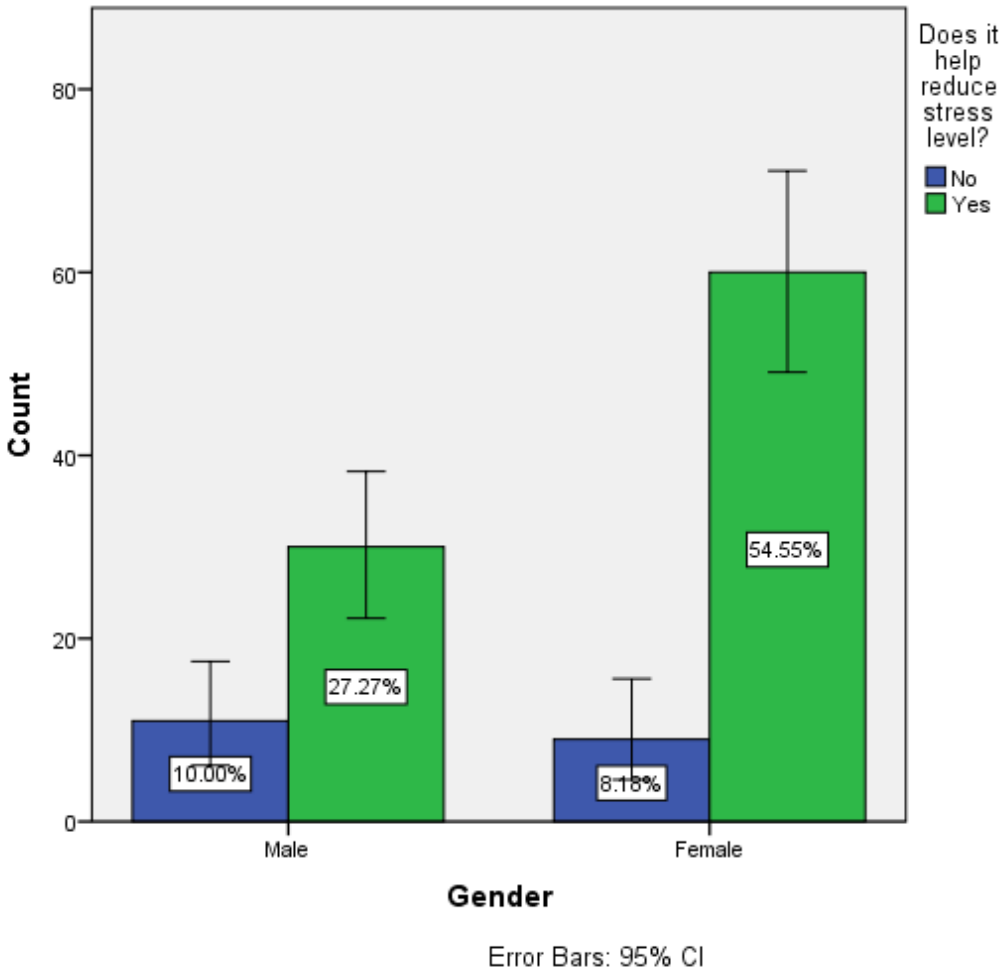

Figure 5: Bar graph showing association between the gender (X axis) and responses to awareness on whether indoor plants help reduce stress level (Y axis), Blue denotes yes and green denotes no. Pearson chi square test showed p value was 0.070, and it was not statistically significant.

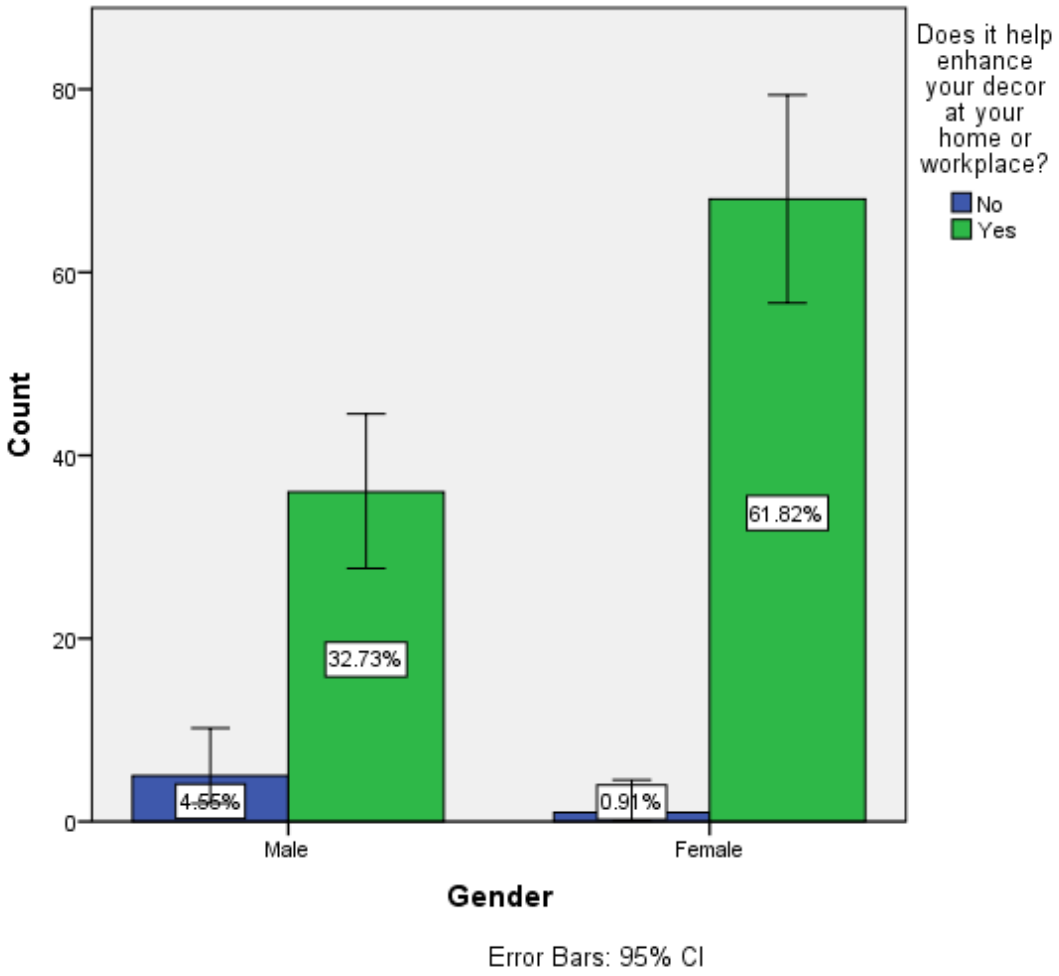

Figure 6: Bar graph showing association between the gender (X axis) and responses to awareness on whether indoor plants help enhance decor at home or workplace (Y axis), Blue denotes yes and green denotes no. Pearson chi square test showed p value was 0.016 (<0.05), and it was statistically significant.

DISCUSSION

From this survey, it is evident that the majority of the population have indoor plants at their homes or workplace and are well aware of the benefits of indoor plants. Majority of them are also benefiting from the beneficial aspects of indoor plants, predominantly females. Studies were conducted in the past to support the beneficial aspects of indoor plants such as its presence reduces stress and enhances therapeutic care, sharpens attention, cures illness, heals injuries faster, has medicinal properties, purifies air, gives sense of accomplishment, clears psychological worries, and enhances productivity (5,36). Previous study was conducted to find more beneficial effects of indoor plants for the betterment of physical and mental human health which was supported by the present study (37).

A similar study was done by Andrew Smith and Michael Pitt (38,39) which demonstrates the benefits of plants in offices in contributing to employee health and well-being by applying the

study to a working office. Based on the literature review, it absolutely was expected that the results for the office with plants would be more positive than for the one without plants. This showed that those within the environment with plants felt slightly more productive than those within the environment without plants. It was expected that plants within the workplace would increase perceptions of privacy (40). This survey may be conducted for a larger population and in the future to assess and relieve people who are spending more time indoors and suffering with problems.

The limitation of this study is that it is an objective study done on a small sample space of a limited geographical population. In the future, a large-scale subjective study can be done at different geographical regions to gain knowledge on the awareness people have on indoor pollution and how they suffer from that and deal with it and indoor plants.

CONCLUSION:

This study concludes that people are having good awareness and knowledge on indoor plants and their benefits. Awareness camps, social media, seminars and workshops may be conducted to create awareness on indoor plants and its benefits among the public on a larger scale for a larger geographical area.

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