ORIGINAL RESEARCH PAPER
Volume - 12 | Issue - 06 | June - 2023 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

IMPARTING KNOWLEDGE OF STANDARDIZED METHODOLOGY FOR GROWING MICROGREENS AND ASSESSMENT OF KNOWLEDGE, ATTITUDE, AND PRACTICE-BASED NUTRITION EDUCATION IN ADULTS AGED 30-60 YEARS IN MUMBAI

Nutritional Science

Ms. Varsha Pradeepkumar — MSC Specialized Dietetics

Dr. Jagmeet Madan — Principal, Professor, Dept. of Food Nutrition and Dietetics, Sir Vithaldas Thackersey College Of Home Science (Autonomous) SNDT Women's University, Juhu TaraRoad, Mumbai

Dr. Nisha Bellare — Assistant Professor M.SC. Specialized Dietetics in Sir Vithaldas Thackersey College of Home Science

ABSTRACT

Microgreens are immature green leafy vegetables with a stem, cotyledon, and a pair of true leaves. They are compact packets of nutrition; packed with many vitamins, minerals, and bioactive compounds. They can be grown in any confined space without any special equipment or materials and hence they can be used to fulfill daily micronutrient requirements in the population. The awareness regarding microgreens could be higher, especially among common people; hence this study aimed to impart nutrition education to the participants in order to spread awareness. The study was conducted in two phases; 1st phase was for growing the 4 varieties of microgreens, observing and documenting the growth. The 2nd phase was for imparting education. A KAP survey was conducted; this study was pre-post interventional action research. 37 participants from SVT College of Home Science were recruited; there was a four-week-long intervention which included 4 sessions regarding microgreens. a questionnaire assessed the participant's knowledge, attitudes, and practices before and after the intervention. Data were analyzed using SPSS software (version 20) calculating the frequency and percentage and running inferential statistical tests such as the chi-square test to determine the association between two variables. 37 participants completed the intervention period and a significant difference was seen in their knowledge, attitude, and practices at the end of the intervention period compared with the baseline (p-value < 0.05). The intervention was successful in improving knowledge and bringing positive changes in the participant's attitudes and practices.

KEYWORDS

Microgreens, KAP study, cost-effective, micronutrients

INTRODUCTION

In recent years, microgreens have become increasingly popular, especially because people nowadays are interested in fresh foods, diets, and growing public concern for health has led to more attention being paid to these topics. This has led people to look for new food sources. Microgreens are young, immature plants that have just been identified as a new category of vegetables. They are young, immature plants made from vegetable seeds or other plant vegetative organs, as their name suggests. They typically have cotyledons that are fully grown, with or without a true pair of leaves. (Ellen R Turner et al.,2020). Eating microgreens, which are a good source of nutrients and bioactive compounds, helps meet the dietary needs for essential nutrients. Since they could be produced on a smaller scale than green vegetables, they might be an option.

Microgreens is a new word and a whole new concept in India. People see microgreens as some luxury food that is not affordable for the common man, whereas the truth is that it is just a leafy vegetable that can be grown anywhere using materials available at home. There might be many people among the population who already know about it and also consume them, but they are just new to the term ' microgreens' and its benefits.

Microgreens are simple to grow, healthy for the environment, and a great source of many different nutrients. They are rich in various micronutrients and bioactive compounds like Vitamin K, C, E, A, magnesium, Manganese, Copper, Calcium, etc. Microgreens are a great option for them, they can grow it at home with seeds available in their kitchen, and every kitchen has ingredients as basic as a mustard seed. They can use those seeds and scatter them in tissue paper or some soil available, within 3-5 days microgreens would be ready and they can use them in any recipe they usually prepare. Hence educating them about it is really important and can be super beneficial for them.

MATERIALS AND METHODS

A pre-post interventional study was conducted for which participants were recruited from the SVT College of Home Science, located at Santacruz, Mumbai. The study was conducted for 1 month. The sample size was 37 and convenience sampling technique was used for the selection of participants. The participants were included based on the following inclusion and exclusion criteria:

Inclusion Criteria

I. Adults within the range of 30 - 60 years

Exclusion Criteria

I. Pregnant and lactating women
II. Serious infections, surgery, serious trauma moderate or higher renal dysfunction (male serum creatinine (Cre) level ≥1.3 mg/dL and female Cre ≥1.2 mg/dL), hemodialysis treatment (including peritoneal hemodialysis), severe liver injury, and history of serious vascular complications (stroke, myocardial infarction, and heart failure) requiring hospital admission.

METHODOLOGY

After informed consent was duly signed by the participant, they were recruited to the study. The participants had to undergo a one month intervention period. In the first session a case record form and a pre-KAP questionnaire were administered; followed by sessions on various aspects of micronutrients and also hands-on experience on the growth of microgreens. At the end of the intervention period participants were made to fill out the post-KAP form and nutrition education material was shared with the participants.

Statistical Analysis

Data analysis was performed using SPSS (Statistical Package for Social Sciences) software (version 20), and suitable statistical tests were applied to analyze the data obtained. Inferential statistics such as the chi-square test was performed to determine the association between two variables.

RESULTS

In the present study, the majority of participants were females (59.5%), and most of the participants were between the age range of 30-40 years.

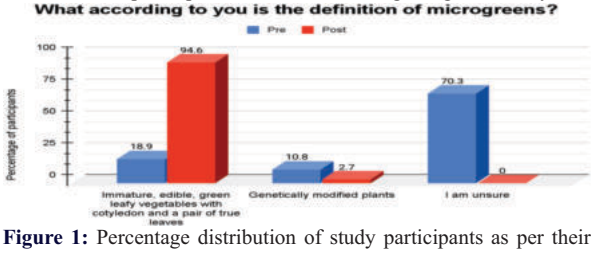

Figure 1: Percentage distribution of study participants as per their knowledge about the definition of microgreens

Pre-intervention only 18.9% knew the correct definition of microgreens, 10.8 % chose the wrong definition and others i.e 70.3% were unsure. Post-intervention a change was observed 94.6% got the right definition and only 2.7% of the participants thought microgreens were genetically modified plants. There is a notion among people that microgreens are something that is not natural, it is something fancy. This was observed while talking to them while sessions and filling out the questionnaire. Post-intervention, the majority knew the correct definition and the change was statistically significant (p-value ≤ 0.05)

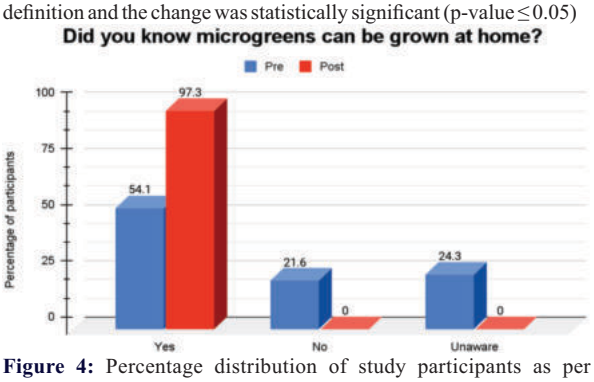

Figure 4: Percentage distribution of study participants as per awareness about whether microgreens can be grown at home or not

Microgreens can be simply grown anywhere, even in confined spaces. While talking to people about microgreens, the majority of them responded by saying that these would not be of any use to them as they stay at a small place and do not have a place to grow vegetables there. Hence knowledge regarding microgreens would be more helpful as microgreens can be grown even inside the house, on windows or balconies. Before the intervention, when this was asked, only 54.1% of participants thought that microgreens could be grown at home, 21.6% believed it cannot be grown at home and 24.% of them were unaware of it. Post-intervention 97.3% knew that microgreen can be grown at home; this was because all of them tried growing it themself and saw the results during the intervention. It can be said that the intervention was helpful in bringing about a change in the participant's knowledge (p-value = 0.000)

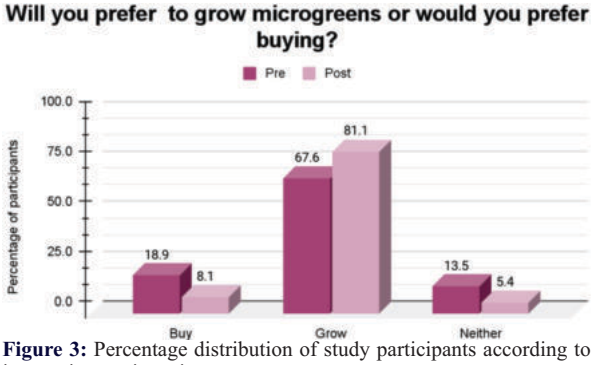

Figure 3: Percentage distribution of study participants according to interest in growing microgreens

Pre-intervention 18.9% said they would buy microgreens, 67.6% said they would like to grow and 13.5% of participants were not interested in either of them. But post-intervention there was a change in responses. 8.1% responded as buy, the percentage has reduced when compared to pre-intervention, the percentage of participants who would like to grow increased to 81.1% and people who were not interested in both reduced to 5.4%. During the intervention, it was observed that participants were a little surprised with the ease of growing microgreens and they were interested in learning more about it which was not the case when they were first approached for the study. Though the change observed was not significant, after the intervention, more people were convinced to grow microgreens rather than buy, and the percentage of participants who would prefer to buy also reduced.

Before intervention participants answered the question whether they would be interested in including microgreens in the diet or not; 62.2% responded that yes they would, 10.8% said no, 2.7% of participants said they would never do that, 18.9% would give it a try and 5.4% did not know what it is. The same question answered by the participants post-intervention had different responses; the percentage of participants who said yes increased to 89.2%, the response to no reduced from 10.8% to 2.7%, and just 2.7% responded that they would give it a try. There were no participants who said never or did not know what it was. The majority of the participants were interested in including microgreens in the diet, and a significant change(p-value - 0.026) was brought about by the intervention.

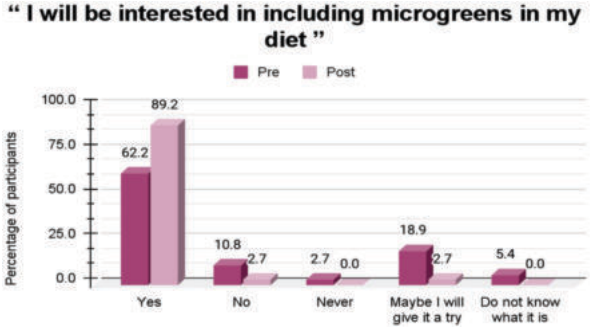

Figure 4: Percentage distribution of study participants as per their interest to include microgreens in the diet

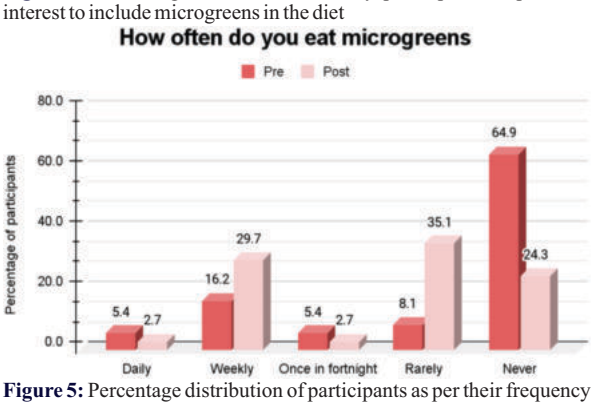

Figure 5: Percentage distribution of participants as per their frequency of consumption of microgreens

There were very few people who consumed microgreens; before the intervention, 5.4% said they consumed microgreens daily, 16.2% consumed them daily, 5.4% consumed once in a fortnight, 8.1% said they rarely consumed microgreens and a majority of 64.9% never consumed microgreens. Post-intervention the percentage of participants who never consumed microgreens reduced drastically from 64.9% to 24.3%. This shows a change in the practice of the participants, some people started consuming microgreens, and the percentage of participants who never consumed microgreens reduced. The participants started consuming microgreens, there were small changes seen in their practices which were statistically significant (p-value = 0.004).

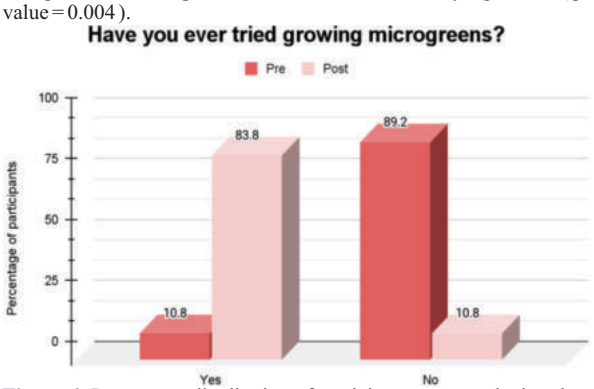

Figure 6: Percentage distribution of participants as per whether they have ever tried growing microgreens

Pre-intervention only 10.8% had tried growing microgreens and a majority of 89.2% had never tried growing microgreens. This may be because very few participants were aware of it initially. Post-intervention 83.8% of participants had tried growing microgreens and 10.8% had not yet tried. A statistically significant change was observed (p-value = 0.000). This is probably because the intervention included a session where each participant was made to grow microgreens, and also they took back the knowledge and some of them might have tried it at home.

DISCUSSION

Microgreens are a stage in the development of a seed to a mature plant. Seeds after sowing germinate, then within 7-10 days they become microgreens, then baby greens, and then mature plants. (Eva Martínez-Ispizua et al., 2022) Before the intervention a huge percentage of participants had never heard of microgreens, this may be because India is still a developing country, microgreens have gained a lot of attention in developed countries due to their attraction towards healthy eating, gourmet cooking, indoor gardening, etc. India has started paying attention to healthy foods, functional foods, etc. and hence microgreens have started to become popular slowly. (Shashank Sharma et al, 2020) Many studies showed higher nutritional quality in microgreens than in their mature plants. They are rich in micronutrients like Cu, Zn, Se, Ca, K, vitamin C, E, K, etc. It also has bioactive compounds like carotenoids and phenolic compounds (Yanqi Zhang et al.,) microgreens are very potent and have various benefits like they are anti-diabetic, anti-inflammatory, anti-proliferative so on and so forth.

CONCLUSION

This is India's first interventional study on microgreens to spread awareness and learn about them more closely. Due to their high nutrient density and potential health benefits, microgreens have grown in acceptance and appeal on the market. The growth of microgreens is very quick and hassle-free. This study showed that knowledge is the key, when the participants were made aware of microgreens, their health benefits, how to use them, etc. not only did they enhance their knowledge but also positive changes were seen in their practices. Participants were a little disinterested at the start, but after the intervention, all were happy and satisfied to have learned something new which they can apply in their daily lives. Conducting such studies on a large scale would help more people and awareness will lead to more research in the future too.

REFERENCES

1. Turner, E. R., Luo, Y., & Buchanan, R. L. (2020). Microgreen nutrition, food safety, and shelf life: A review. Journal of food science, 85(4), 870-882. https://doi.org/10.1111/1750-3841.15049
2. Martínez-Ispizua, E., Calatayud, Á., Marsal, J. I., Cannata, C., Basile, F., Abdelkhalik, A., ... & Martínez-Cuenca, M. R. (2022). The Nutritional Quality Potential of Microgreens, Baby Leaves, and Adult Lettuce: An Underexploited Nutraceutical Source. Foods, 11(3), 423. https://doi.org/10.3390/foods11030423
3. Sharma, S., Dhingra, P., & Koranne, S. (2020). Microgreens: Exciting new food for 21st Century. Ecology, Environment and Conservation, 26, 2020.
4. Zhang, Y., Xiao, Z., Ager, E., Kong, L., & Tan, L. (2021). Nutritional quality and health benefits of microgreens, a crop of modern agriculture. Journal of Future Foods, 1(1), 58-66. https://doi.org/10.1016/j.jfutfo.2021.07.001