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Consumption and awareness of mushrooms in the Ghazipur district of Uttar Pradesh

Shubham Prakash Gupta[1], Anand Kumar Chaudhari[2], Jeetendra Kumar Rao[1*]
[1] Department of Botany, Mycology and Natural Pesticide Laboratory, Post Graduate College, Ghazipur, Uttar Pradesh, India
[2] Department of Botany, Government Girls P.G. College, Ghazipur, Uttar Pradesh, India

Abstract
Edible mushrooms are gaining huge attention owing to their low-calorie content, high-quality protein, low lipid levels, and high nutritional as well as medicinal properties. There is a dearth of studies in the field of mushroom consumption and mushroom awareness in Ghazipur district. Hence, this study was conducted to know the mushroom consumption and awareness in Ghazipur district of Uttar Pradesh. The study was conducted on 200 people in Ghazipur district from December 2023 to May 2024. Further, on the basis of age, the respondents were divided into two groups: Group 1, in which there were 100 respondents below 20 years of age, and Group 2, in which 100 respondents of 20 to 40 years of age were included. A structured questionnaire was prepared for this investigation. The result shows that 38% of the respondents were unaware of the properties found in mushrooms, and 35% of the respondents had never consumed mushrooms. Out of the total 200 responses, 74 were non-vegetarian, while 126 were vegetarian. Among the respondents who had ever consumed mushrooms, 114 of them found mushrooms delicious, and 117 had cooked and eaten mushrooms at home. The number of respondents who consume mushrooms regularly was quite low, whereas awareness among people about wild mushrooms was also extremely limited and unsatisfactory. Policymakers and stakeholders may educate people about mushrooms, which would have a positive impact on mushroom consumption and mushroom awareness in the Ghazipur district of Uttar Pradesh.

Keywords: Mushrooms, awareness, consumption, Ghazipur, properties

Introduction

Edible mushrooms constitute an important part of the human diet due to their special flavour, nutritional value, and medicinal properties. However, mushrooms are unable to take the place of regular vegetables, but due to their high protein-making capacity and medicinal and nutritional properties, they might become the future vegetable foods, especially in India (Shirur *et al*., 2014) [7]. Diets with high nutritive properties are represented by edible mushrooms, and they have a favourable result on those who consume them (Predanócyová *et al*., 2023) [5].

Due to the presence of various important nutrients like riboflavin, vitamin D, selenium, fibre, potassium, etc., mushrooms are a precious food, and many investigations also show that to deal with or avert numerous illnesses, mushrooms have excellent properties (Valverde *et al*.,2015) [10]. In India, significant attention has not been paid to the consumption and production of many edible mushrooms, hence, there is no exact data on this, while marketable cultivation of mushrooms in India has been started since decades of 1970-80s, still among commoners mushroom consumption is infrequent (Shirur & Shivalingegowda, 2015) [8].

'Vegetarian meat without bones' and 'white vegetables' are also other names of mushrooms (Thakur, 2014) [9]. Mushrooms are ideal sources to improve quality of life and health benefits because they have nine essential amino acids that are needed by human beings, as well as possessing antimicrobial, antitumor, and antioxidant properties (Kumar, 2015) [1]. Since antiquity, mushrooms have been commonly used as a food because of their therapeutic capabilities, and mushrooms are not only a feasible functional food but also a boon for those who are struggling to lose weight because mushrooms have low-calorie content (Rani *et al.*, 2023) [6].

Ghazipur is a significant district of Uttar Pradesh, situated on the bank of the sacred river Ganga. This district is adjacent to famous city Varanasi and it falls under the division of Varanasi. Ghazipur district comprises seven tehsils, namely Ghazipur, Mohammdabad, Jakhania, Kasimabad, Saidpur, Sevrai, and Zamania. This district of Uttar Pradesh shares a border with Bihar State. Ghazipur is also known as 'Lahuri Kashi', and the two most common languages spoken here are Bhojpuri and Hindi.

We have a lot of health advantages from edible mushrooms, yet in Ghazipur district, there is very limited research work on mushroom consumption and awareness. The gap in this research knowledge is a crucial challenge for our students, academia, stakeholders, and policymakers. Exploring mushroom consumption and awareness can play an influential role in improving the public health of Ghazipur district.

Material and methods

This study was conducted in the Ghazipur district of eastern Uttar Pradesh from December 2023 to May 2024 to determine mushroom consumption and awareness in the region. The data were collected on the basis of a questionnaire-based survey. A systematic questionnaire comprising ten questions with a yes or no response option was created. Since Hindi and Bhojpuri are spoken by the majority here, hence, the language of the questionnaire was kept in Hindi. This questionnaire was pre-tested on 15 people before full-scale deployment. The findings of this pilot testing had not been included in the main study. 200 individuals living in different areas of Ghazipur district, whose ages were 40 years or less, had taken part in this study.

On the basis of age, the respondents were divided into two groups, viz., group-1, which had 100 respondents below 20 years of age, and group-2, which had 100 respondents of 20 to 40 years of age, so that a more comprehensive analysis of the study could be done. Questions that would aid in understanding mushroom consumption as well as awareness related to mushrooms in district Ghazipur were included in the questionnaire.

In this questionnaire, the respondents were also questioned about their dietary preferences, whether they are vegetarians or not, and also about their health status, whether they have diabetes or have blood pressure-related issues.

In light of the COVID-19 outbreak, it was also inquired whether the respondents had eaten mushrooms before the COVID-19 pandemic so that the impact of the Corona pandemic on mushroom consumption in Ghazipur district could be explored.

Results

1. Dietary preferences

In terms of dietary choices, the result shows that out of 200 respondents, 126 were vegetarians and 74 were non-vegetarians.

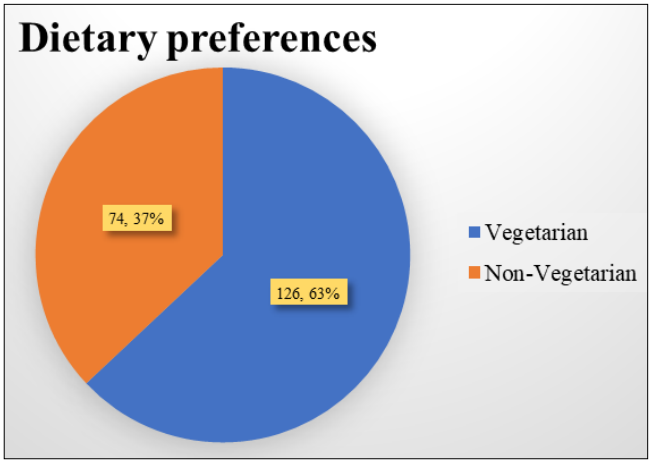

Fig 1: Dietary preferences among respondents

2. Awareness of mushroom properties

Out of 200 respondents, 124 were aware of the properties found in mushrooms, while 76 were not aware.

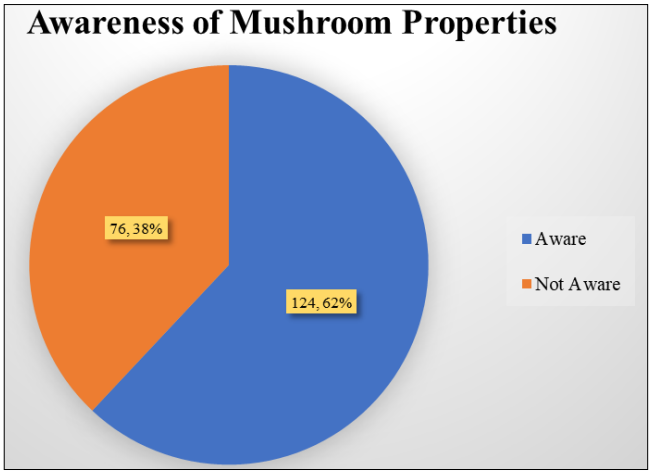

Fig 2: Awareness of mushroom properties among respondents

3. Mushroom consumption

Out of 200 respondents, there were 70 who had never consumed mushrooms and 130 who had ever consumed mushrooms.

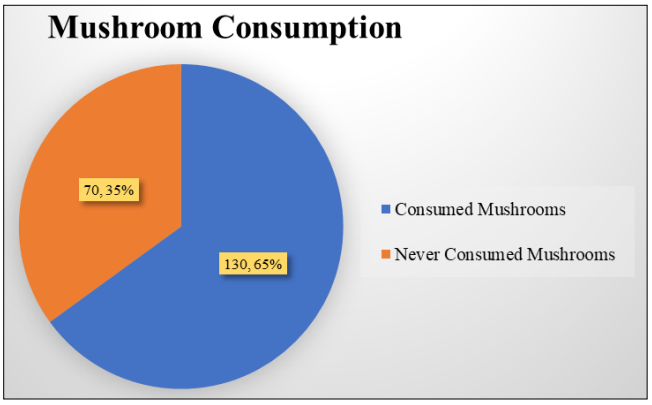

Fig 3: Mushroom consumption among respondents

4. Mushroom consumption before the corona pandemic

This investigation showed that out of 130 respondents who had ever consumed mushrooms, 38 had started consuming mushrooms after the Corona pandemic, while 92 respondents were consuming mushrooms before the pandemic.

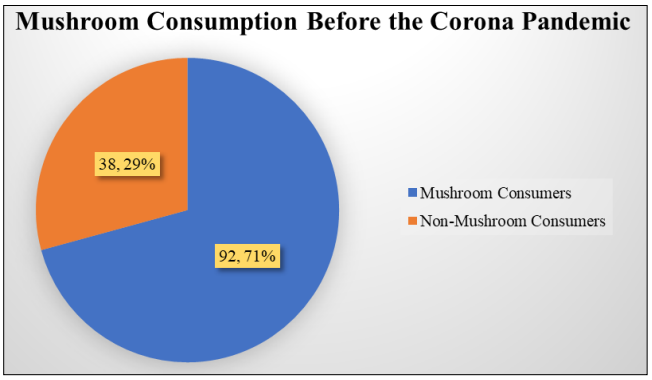

Fig 4: Mushroom consumptions before the COVID-19 pandemic

5. Responses to mushroom taste

According to the survey, 114 out of 130 respondents found mushrooms delicious, while only 16 people did not find mushrooms delicious.

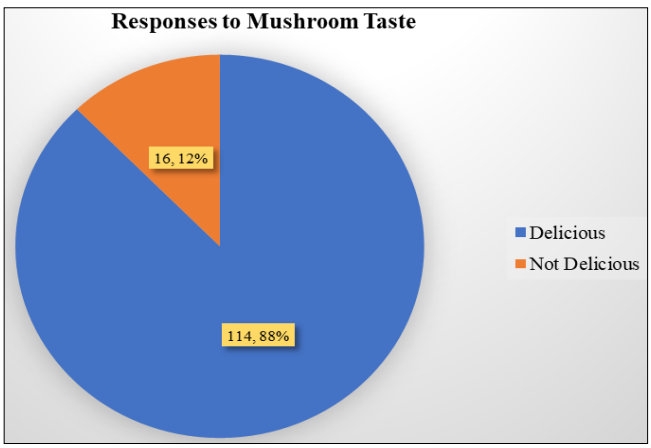

Fig 5: Taste responses for mushrooms

6. Cooking and eating mushrooms at home

According to the study, out of 130 respondents who had ever consumed mushrooms, 117 had cooked and eaten mushrooms at home, whereas 13 had not.

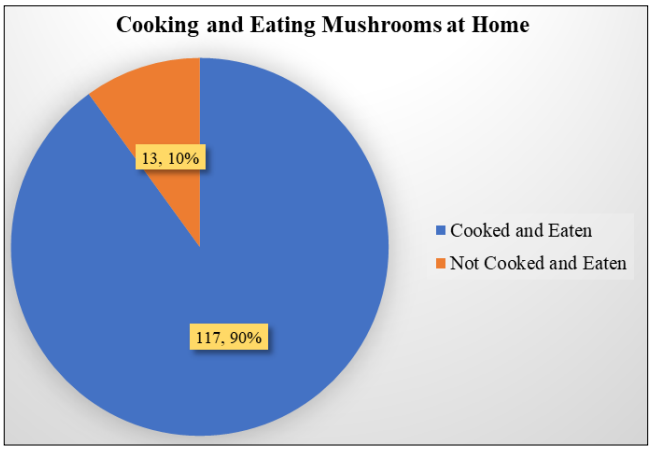

Fig 6: Cooking and eating mushrooms at home

7. Mushroom consumption frequency

According to the survey, out of 130 respondents who had ever consumed mushrooms, only 26 took them on a regular basis, while 104 did not.

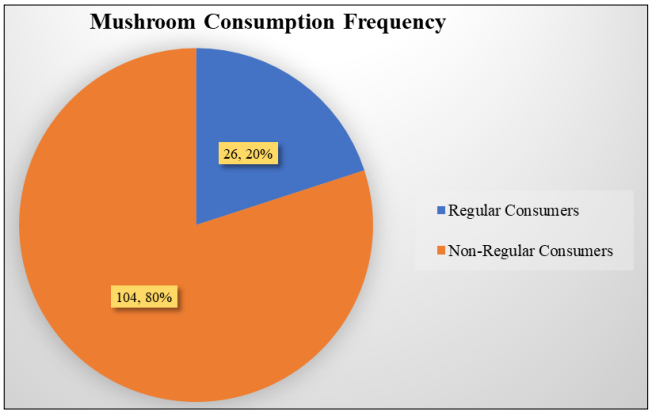

Fig 7: The frequency of mushroom consumption

8. Wild mushroom consumption

This investigation revealed that out of 130, just 5 had consumed wild mushrooms, whereas 125 had never consumed wild mushrooms.

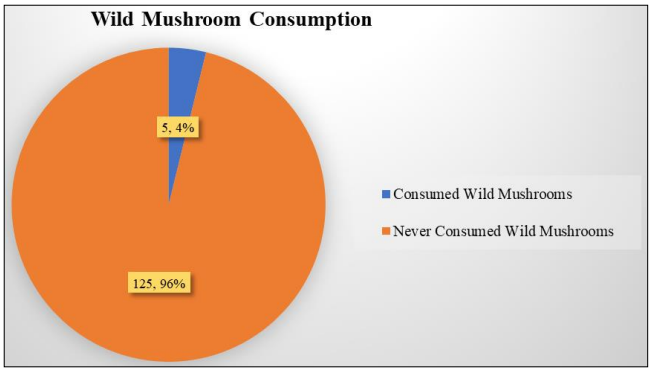

Fig 8: Consumption of wild mushrooms

According to the findings of this survey, out of 200 respondents, none had diabetes or problems related to blood pressure.

9. Comparison between Group 1 and Group 2

Of the total 200 respondents, 100 who were below 20 years of age were placed in Group 1, and 100 who were 20 to 40 years of age were placed in Group 2. Their data is being presented separately, as follows:

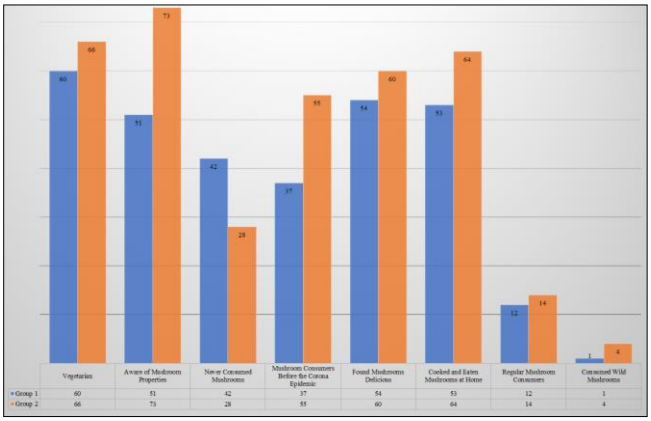

Fig 9: Comparison between Group 1 and Group 2

Figure 9 shows that out of 100 respondents in Group 1, 60 were vegetarians, and 51 were aware of the properties found in mushrooms, whereas in Group 2, out of 100 respondents, 66 were vegetarians, and 73 were aware of the properties found in mushrooms. In Group 1, there were 42 out of 100 respondents who had never consumed mushrooms, while in Group 2, there were 28 out of 100 respondents who had never consumed mushrooms.

In Group 1, out of 58 respondents who had ever consumed mushrooms, 37 had consumed mushroom even before Corona, 54 respondents found mushroom delicious, and 53 respondents had cooked and eaten mushrooms at home. Regarding Group 2, out of 72 respondents who had ever consumed mushrooms, 55 reported consuming them prior to the COVID-19 pandemic, 60 found mushrooms delicious, and 64 were those who cooked and eaten mushrooms at home. Only 12 respondents in Group 1 and 14 respondents in Group 2 regularly consumed mushrooms. When it came to the consumption of wild mushrooms, in Group 1, only one respondent had consumed wild mushrooms, whereas in Group 2, their number was 4.

Discussion

The main objective of this study was to investigate mushroom consumption and mushroom awareness in the Ghazipur district of Uttar Pradesh. Oguntoye *et al.* (2022) [4] conducted research in Nigeria on the consumption pattern of mushrooms. Mistry and Iqubal conducted a survey in 2019 to investigate knowledge of the cultivation of mushrooms in Gazipur, Bangladesh. Among the residents of Klang Valley, Malaysia, Lim *et al.* (2023) [2] studied attitudes, knowledge, and behaviours about mushrooms as foodstuffs. There is a dearth of studies done in this field in the Ghazipur district of Uttar Pradesh, which greatly increases the value of the current study.

Out of all 200 respondents, 63% were vegetarians, which shows the inclination of most respondents towards plant-based diets. Not a single respondent aged 40 years and below suffered from blood pressure or diabetes-related issues, which was quite an unexpected result. Interestingly, a sizeable portion of respondents were still not familiar with the properties of mushrooms, which may have a negative

impact on the consumption of mushrooms. Through effective communication and other appropriate efforts, people can be made aware of the important properties found in mushrooms. A notable portion of the respondents (35%) had never consumed mushrooms, indicating that a noteworthy percentage of respondents are not yet familiar with mushrooms. Mushroom cultivators and mushroom-related entrepreneurs have a fantastic opportunity to make people aware of mushrooms and to attract new customers. The Corona pandemic has had little impact on mushroom consumption in Ghazipur district because most of the respondents who consume mushrooms used to consume mushrooms even before the Corona pandemic. Mushrooms have become well accepted among the respondents who had ever consumed mushrooms, because most of these respondents found mushrooms delicious, and the majority of them had also cooked and eaten mushrooms at home. There does not appear to be much enthusiasm among respondents about the regularity of mushroom consumption because there were fewer respondents who consume mushrooms regularly. To increase the frequency of mushroom consumption, the obstacles to mushroom intake should be identified and overcome. So that growing number of individuals can take advantage of it. There was a severe lack of awareness among the respondents about wild mushrooms, which indicates that there may be little or no use of wild mushrooms in the district.

If we look at Group 1 and Group 2 comparatively, it was observed that people in Group 2 were more aware of the properties found in mushrooms, and more respondents in Group 2 consumed mushrooms as compared to Group 1, which shows that with increasing age, both mushroom consumption and awareness are increasing among respondents. The number of older individuals was higher than that of teenagers in consuming mushrooms before the Corona pandemic, the main reason for which could be that older individuals may have more awareness of mushrooms and have more experience in making and eating diverse food dishes before the Corona pandemic. Vegetarians were slightly less in Group 1 as compared to Group 2, although both groups had a higher percentage of vegetarians than non-vegetarians. This data suggests that plant-based diets are on the rise among respondents in both age groups. It is evident that mushrooms are well accepted among respondents who consumed mushrooms because the majority of the people in both groups who had ever consumed mushrooms found them tasty, and the majority of the respondents also cooked and eaten mushrooms at home. The performance of both groups on regular mushroom consumption and wild mushroom consumption is not satisfactory.

This study is limited only to Ghazipur district and does not represent mushroom consumption or mushroom awareness in other districts of Uttar Pradesh. The present study has been done in Ghazipur district of Uttar Pradesh. Future research can be done to investigate the consumption and awareness of mushrooms in a large area of Uttar Pradesh, which will help in exploring this topic in a large area. Future research can also look into how mushroom consumption and awareness vary over time.

Conclusion

The present study sheds light on the status of mushroom consumption and awareness in Ghazipur district and also points to exciting possibilities for mushroom cultivators and mushroom entrepreneurs in Ghazipur. Because there is a significant lack of awareness of mushrooms in the region; hence, stakeholders and policymakers can take appropriate steps towards improving awareness. There is very little enthusiasm among the respondents towards wild mushrooms, due to which an important nutritional source in the district is not being used much, which can be addressed under educational programs.

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Disclosure statement

The authors disclose no conflicts of interest**.**

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