Chinese young people's perceptions and preferences with regard to various edible urban plants

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Materials and methods

Study sample

Beijing, China is a large modern city with more than 21.89 million permanent residents. The young citizens living in Beijing suffer from work and life stress, and with the development of internet technology and logistics distribution, they spend the majority of their time indoors and hardly have time to contact with outdoor green spaces. Therefore, the sample of this study was taken from Beijing. The G*Power software (version 3.1) was used to calculate the sample size by setting Cohen's d at 0.34, the α error probability at 0.05 and the power (1-β error probability) at 0.95, resulting in a total sample size of 376. In order to select the respondents for data collection, a convenience-sampling technique by recruiting participants from universities was used. People were invited to participate voluntarily via email and WeChat. The respondents were informed that the survey was about their perception and preference of various edible urban plants, and gave their informed consent by proceeding with the questionnaire. Finally, 486 participants (17 to 38 years) from Beijing, China, made up the population of this study, including 207 males (42.6%) and 279 females (57.4%). The actual number of participants tested matched the calculated sample number. The majority of the respondents were undergraduate students and postgraduate students, and a few of respondents were university office workers. Most of the respondents have lived in Beijing for more than one year or their families live in Beijing.

Questionnaire survey

All the data were collected via an online survey research platform -- Questionnaire Star (https://www.wjx.cn). The questionnaire was subjected to a pre-test phase (10 completed questionnaires) to verify the layout, content, and wording of the questions. The questionnaire was written in Chinese and was comprised of 17 questions, of which one was a fill-in-the-blank question and 16 were multiple-choice questions. The first section dealt with the respondent demographics (age, gender, education level) and other information about plants (questions 1-10).

In the second section, twenty-two common L & F species were selected as candidates after consultation with vegetable cultivation experts. The candidate edible plants were selected based on the criteria that they were common in Chinese home gardens, could be grown in urban gardens in Beijing, were relatively simple to cultivate, and had no special requirements for environmental conditions. Finally, the twenty-two species were selected as the survey objects, which were presented in the questionnaire with pictures of harvest (leafy vegetables) or flowering and fruiting (fruiting vegetables) stage, to ensure that all kinds of plants were presented in the best state for the vision of respondents. There were eleven kinds of leafy vegetables: romaine lettuce (*Lactuca sativa* var. *longifoliaf*. Lam), lettuce (*Lactuca sativa* L. var. *rapid*), endive (*Cichorium endivia* L.), okinawan spinach (*Gynura bicolor* (Roxb. ex Willd.) DC.), field sowthistle herb (*Sonchus wightianus* DC.), aizoon stonecrop (*Phedimus aizoon* (L.) 't Hart), water spinach (*Ipomoea aquatica* Forsk.), Chinese cabbage (*Brassica pekinensis* (Lour.) Rupr.), red-stemmed beet (*Beta vulgaris* var. *cicla* 'Dracaenifolia'), purple rape (*Brassica napus* L.), amaranth (*Amaranthus tricolor* L.); eight kinds of herbs: coriander (*Coriandrum sativum* L.), perilla (*Perilla frutescens* (L.) Britt.), nepeta (*Nepeta cataria* L.), peppermint (*Mentha xpiperita*), parsley (*Petroselinum crispum*), crown daisy (*Glebionis coronaria* (L.) Cass. ex Spach), chive (*Allium schoenoprasum* L.), Chinese mugwort (*Artemisia argyi* Levl. et Van.); and three kinds of fruiting plants: cherry tomato (*Lycopersicon esculentum* var. *cerasiforme* Alef.), strawberry (*Fragaria × ananassa* Duch.), hot pepper (*Capsicum annuum* L.) (Fig. S1).

Table S1 listed the questions and answer choices used in the questionnaire. Respondents were informed the research purposes and the time required to complete the questionnaire (approximately 3 minutes). The order in which the plants were arranged in the questionnaire was randomized. All questionnaires were managed anonymously in order to reduce the deviation of social expectations. The respondent's consent had been obtained before filling out the questionnaire, and the data would be used for research purposes. No identifiable personal data were acquired. Moreover, the questionnaires were completed and submitted online by oneself, and did not require the presence of researchers. The English version of the questionnaire can be found at this link: https://www.wjx.cn/vm/wz0z7KF.aspx.

Data analysis

According to the research objectives, data were analyzed mainly by descriptive statistical methods and chi-square test using Excel (2020) and R software packages. The chi-square test is a statistical procedure for testing if vegetable selection was affected by factors such as gender. Results were elaborated in form of percentages.

romaine lettuce	lettuce	endive	okinawan spinach	Chinese cabbage	water spinach
purple rape	field sowthistle herb	red-stemmed beet	aizoon stonecrop	amaranth	Chinese mugwort
coriander	perilla	nepeta	peppermint	parsley	crown daisy
chive	cherry tomato	strawberry	hot pepper		

Fig. S1   Pictures of the twenty-two dwarf leafy and fruiting edible plants (L&F) used in the questionnaire.

Table S1　Questions and answer choices used in the questionnaire

Questions	Answer choices
Part 1　Respondent's characteristics	
1. What is your gender?	Male; Female
2. How old are you?	(Number of years)
3. Are you studying at a college now?	Yes; No
4. What is your education level?	Doctor; Master; Bachelor; High school
5. Do you like plants?	Very like; Like; No feelings; Dislike; Dislike very much
6. Do you have experience in cultivating plants?	Yes; No
7. How much do you know about plants?	Very much; Much; A little; Not at all
8. What are the ways to obtain plant knowledge?	Books or Courses; Daily experience; TV/Internet; Listen to others; Others
9. How do you feel when you see the plants?	Relaxed; Happy; Excited; Sad; Tense; Anger; No feelings; Others
10. What function do you think plants have?	Space decoration; Air purification; UV absorption; Food; Emotion regulation; Have no idea; Others
Part 2　Vegetable and fruit preference survey	
11. Which two kinds of plants do you prefer?	Romaine lettuce; Lettuce; Endive; Okinawan spinach; Field sowthistle herb; Aizoon stonecrop; Water spinach; Chinese cabbage; Red-stemmed beet; Purple rape; Amaranth
12. What were the main reasons that led you to choose plants in the last question?	Taste; Shape; Color; Smell; Others
13. Which two kinds of plants do you prefer?	Coriander; Perilla; Nepeta; Peppemint; Parsley; Crown daisy; Chive; Chinese mugwort
14. What were the main reasons that led you to choose plants in the last question?	Taste; Shape; Color; Smell; Others
15. Which two kinds of plants do you prefer?	Tomato; Strawberry; Hot pepper
16. What were the main reasons that led you to choose plants in the last question?	Taste; Shape; Color; Smell; Others
17. Which color of hot pepper do you like the most in the following pictures?	Multi-color; White; Green; Red; Orange; Purple