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The ecology of plant ingredients, food heritage, and adaptation among Syrian, Afghan, and Egyptian Coptic diasporas in Northwestern Italy

Mousaab Alrhoun^{1*}, Naji Sulaiman^{1*}, Laura Longhi¹, Ajmal Khan Manduzai², Abdullah Faiz³, Francesca Manzetti¹, Chiara Gasperini¹, Alice Peruzzo¹, Dauro M. Zocchi⁴ and Andrea Pieroni^{1,5}

Abstract

Background This study investigates how migration affects the culinary practices of Syrian, Afghan, and Egyptian Coptic communities living in Northwest Italy, specifically focusing on how these groups preserve, adapt, or abandon traditional foodways in a new socio-cultural environment. The objective is to understand the role of food in maintaining cultural identity and navigating integration in the host country.

Methods Using a multidisciplinary approach, the research combines semi-structured interviews with 64 participants. Data were analyzed using SAS 9.4 and R 4.4.2. Descriptive and frequency analyses summarized demographic and food-related patterns, while Fisher's exact tests and logistic regression assessed differences and predictors of traditional food maintenance. Qualitative data from interviews were thematically analyzed using an inductive approach, highlighting key themes such as adaptation, resilience, and cultural continuity.

Results The findings reveal distinct culinary patterns shaped by each group's cultural and ecological heritage, Syrian horticultural traditions, Afghan pastoral legacies, and the Coptic plant-based diet. While culinary resilience, adaptation, and loss occur across all groups, the extent varies. Influencing factors include ingredient availability, economic constraints, and levels of social integration. Age, gender, religion, and migration history further shape food behavior.

Conclusions This research underscores the dynamic relationship between migration and food, highlighting how culinary practices serve as a site of both cultural preservation and adaptation in diaspora contexts.

Keywords Culinary adaptation, Culinary resilience, Cultural identity, Diaspora communities, Ethnobiology, Food heritage, Migration

*Correspondence:

Mousaab Alrhoun
m.alrhoun@unisg.it
Naji Sulaiman
n.sulaiman@unisg.it

Full list of author information is available at the end of the article



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Introduction

Migration continues to reshape societies globally, bringing diverse cultural practices, including food traditions, into new contexts [1–4]. Food, beyond its nutritional role, functions as a key marker of cultural identity, memory, and belonging [5, 6]. For migrant communities, culinary practices become both a site of preservation and adaptation, reflecting the complex negotiation between maintaining heritage and integrating into host cultures [7, 8].

In Italy, a country with a strong culinary identity, the arrival of Syrian, Afghan, and Egyptian Coptic migrants has introduced rich food traditions shaped by their distinct cultural, religious, and human ecology backgrounds. These communities must navigate challenges in accessing traditional ingredients, adjusting to local tastes, and managing economic constraints, all while preserving culinary identity [9–11].

This study focused on Syrian, Afghan, and Egyptian Coptic communities living in NW Italy since they represent different new and/or largely less-studied diasporas and present diverse cultural and religious backgrounds, each with distinct food traditions shaped by specific human ecological trajectories (Levantine and Nilotic horticulturalism among Syrians and Coptic Egyptians and pastoralism among Afghans). Syrian cuisine is rich and diverse, deeply rooted in communal practices and characterized by staple ingredients such as *tahini*, *pomegranate molasses*, and spice blends like *sumac* and *za'atar*. [11–13]. Bread, particularly the traditional flat *Levantine* variety, is a dietary cornerstone, complementing a balanced intake of meat and plant-based dishes [14]. However, ongoing conflict in Syria has severely affected food security, prompting a growing dependence on foraged wild greens as alternative food sources [15]. Rice, meat, and bread are the main ingredients of Afghan cuisine, which distinguishes between regular meals and festive specialties, such as *Qabuli Palaw* [16, 17].

While migration introduces constraints, such as limited ingredient availability and economic hardship, these communities continue to preserve, adapt, or reimagine their traditional foodways in Italy [18]. Egyptian Coptic cuisine, shaped by Egypt's agrarian past and Orthodox Christian practices, emphasizes plant-based ingredients such as legumes, cereals, and vegetables, particularly during fasting periods. The consumption of dairy, meat, and fish is selective, aligning with religious guidelines and historical influences [19, 20].

The extent of this culinary transformation varies across groups and is shaped by the intersection of cultural memory, religious practices, and host-country integration.

Food plays a critical role in the integration process, serving as both a connection to the past and a means of

fostering new social bonds in host communities [21, 22]. Sulaiman et al. [23] demonstrated how a beverage such as Yerba Mate facilitated the integration of Syrian migrants into the host South American societies at the beginning of the twentieth century, and how this beverage gradually became “traditional” in their country of origin when some migrants returned home. The dynamics of food consumption within migrant communities reflect the complex interaction between tradition and adaptation, where factors such as age, gender, religion, and duration of migration influence the extent to which food practices are maintained or modified [6, 7, 22]. As they relocate, migrants have several options: they can strive to preserve their traditional ingredients, adapting their procurement methods to the new environment; they can replace familiar ingredients with accessible local alternatives, leading to transformed culinary practices; or they can hybridize their traditional and new ingredients, creating novel dishes and expanding their folk culinary knowledge [22, 24, 25]. These strategies are not static; they may change over time and across generations, reflecting a dynamic negotiation of cultural identity and belonging [18, 22, 24].

The conflicts between authenticity and adaptation are frequently at the center of discussions in food heritage studies [26]. The hybridization of food practices is seen by some academics as a creative adaptation that enhances cultural diversity, while others believe that maintaining traditional cuisine is essential for cultural survival [7]. Food customs can become political in the context of migration, signifying either a purposeful adjustment to gain acceptability in the host society or a sentimental return to one's origins [27, 28]. When looking at immigrant groups whose culinary legacy has both cultural and spiritual value, these conversations are especially pertinent.

This study is grounded in interdisciplinary theoretical approaches that examine the intersection of food, identity, and migration. It draws from diaspora studies, where food is seen as a central element of cultural continuity and a means of negotiating belonging in host societies [22, 24]. The concepts of culinary resilience and culinary adaptation are used here to describe the dynamic ways in which traditional food practices are maintained or transformed in response to migration. Culinary resilience refers to the ability of individuals and communities to preserve core elements of their food heritage despite socio-cultural and economic pressures. In contrast, culinary adaptation denotes the modification or replacement of traditional practices, often driven by factors such as ingredient availability, new dietary norms, or the desire to integrate into the host society [22]. From an ethnobiological perspective, this study examines how local ecological (particularly concerning plant-based food practices)

and gastronomic knowledge, is preserved or adapted among Syrian, Afghan, and Egyptian Coptic communities in diaspora. Their culinary traditions reflect deep cultural and ecological roots, which continue to evolve in response to migration-related challenges.

To address these discussions, this article examines the native cuisines of three different immigrant groups in Northwestern and Eastern Italy: Egyptian Copts, Afghans, and Syrians.

This study aims to contribute to the understanding of cultural food evolution among migrant communities by focusing on three key areas. First, it documents the traditional cuisines of Syrian, Afghan, and Coptic Egyptian communities in NW Italy, highlighting possible historical roots and cultural meanings of their dietary practices. Second, it examines the influence of relocation/migration on these communities' food habits, considering factors such as ingredient availability, economic challenges, and interactions with Italian society. Finally, the study offers an exploratory comparison of how these communities adapt their domestic food practices in response to migration-related changes. By doing so, the research provides valuable insights into the dynamic relationship between migration, cultural identity, and food heritage within the context of diaspora communities in Italy.

Materials and methods

Historical and anthropological background of the Syrian, Afghan, and Coptic migration to Italy

Different historical, political, geographic, and social circumstances have influenced the migration of Syrians, Afghans, and Coptic Egyptians to Italy; each group has faced particular difficulties and has contributed to the multicultural fabric of the nation. Following the start of the conflict in 2011, a large number of Syrians fled the violence, destruction, and economic crisis in search of safety and stability, which led to a major surge in migration to Italy [29, 30]. Geographically, Syrians mostly moved to large cities like Rome, Milan, and Turin, where they established thriving communities with deep cultural ties to their native country. Conflict has also been a major factor in Afghan migration, especially during the Soviet invasion in the 1980s, the US-led war in 2001 [31], and the Taliban's recent comeback in 2021. As part of larger migration movements, Afghans have sought safety in Italy, with the Piedmont and Calabria regions, and major cities like Rome, Pisa, Padua, and Turin serving as important larger migrants' hubs [31]. Afghan migration sometimes entails short-term, risky travel followed by longer-term residency in Italian cities, with a sizable segment of the population first residing in temporary housing or refugee camps. Members of one of Egypt's oldest Christian communities, the Coptic community, have also

relocated to Italy, particularly after periods of political unrest and religious persecution in Egypt, when violence against Copts escalated after the Arab Spring and the emergence of Islamist organisations [32]. In the past, a large number of Coptic migrants have made their homes in minor Italian settlements, namely in Milan, Rome, Turin, and Florence. Coptic migrants frequently create churches and community centers to preserve their faith and customs, thereby maintaining strong religious and cultural ties across geographic boundaries.

Research design and methodology

The field study was carried out in the town of Bra, which has about 30,000 inhabitants, and the city of Turin, the capital of the Piedmont Region, which has approximately 900,000 inhabitants [7] (Fig. 1). The Metropolitan City of Turin had approximately 214,860 foreign residents, accounting for 9.7% of the total population [1]. Although disaggregated demographic data for Syrian, Afghan, and Coptic Egyptian communities at the city level are scarce, qualitative observations and existing migration studies suggest that these groups are part of the broader multicultural landscape of northwestern Italy [3, 7].

The research presented draws from three separate studies, each focusing on a different migrant community in Italy: Syrians, Afghans, and Egyptians (Coptic community).

In our study, we employed semi-structured interviews as the primary method of qualitative data collection. This approach allowed us to engage participants in open yet guided conversations while exploring key themes related to culinary adaptation and food heritage [3, 6]. The interviews provided a nuanced understanding of how migration impacts food practices, cultural identity, and the preservation of culinary traditions.

To recruit participants from the Syrian, Afghan, and Egyptian Coptic communities in northwestern Italy, we adopted a multi-pronged sampling strategy, combining purposive sampling with snowball sampling. Snowball sampling was particularly effective in reaching participants from migrant communities who may be less accessible through formal recruitment channels [7]. In this method, each initial participant (seed) referred others in their social networks, without predefined quotas. Purposive sampling ensured variation across age, gender, and length of stay, allowing us to explore intergenerational dynamics and gendered food roles [4].

A total of 64 participants from the three communities were recruited through snowball and purposeful sampling methods, ensuring diverse perspectives across age, gender, and migration experiences. The interviews were conducted between March 2023 and August 2024.

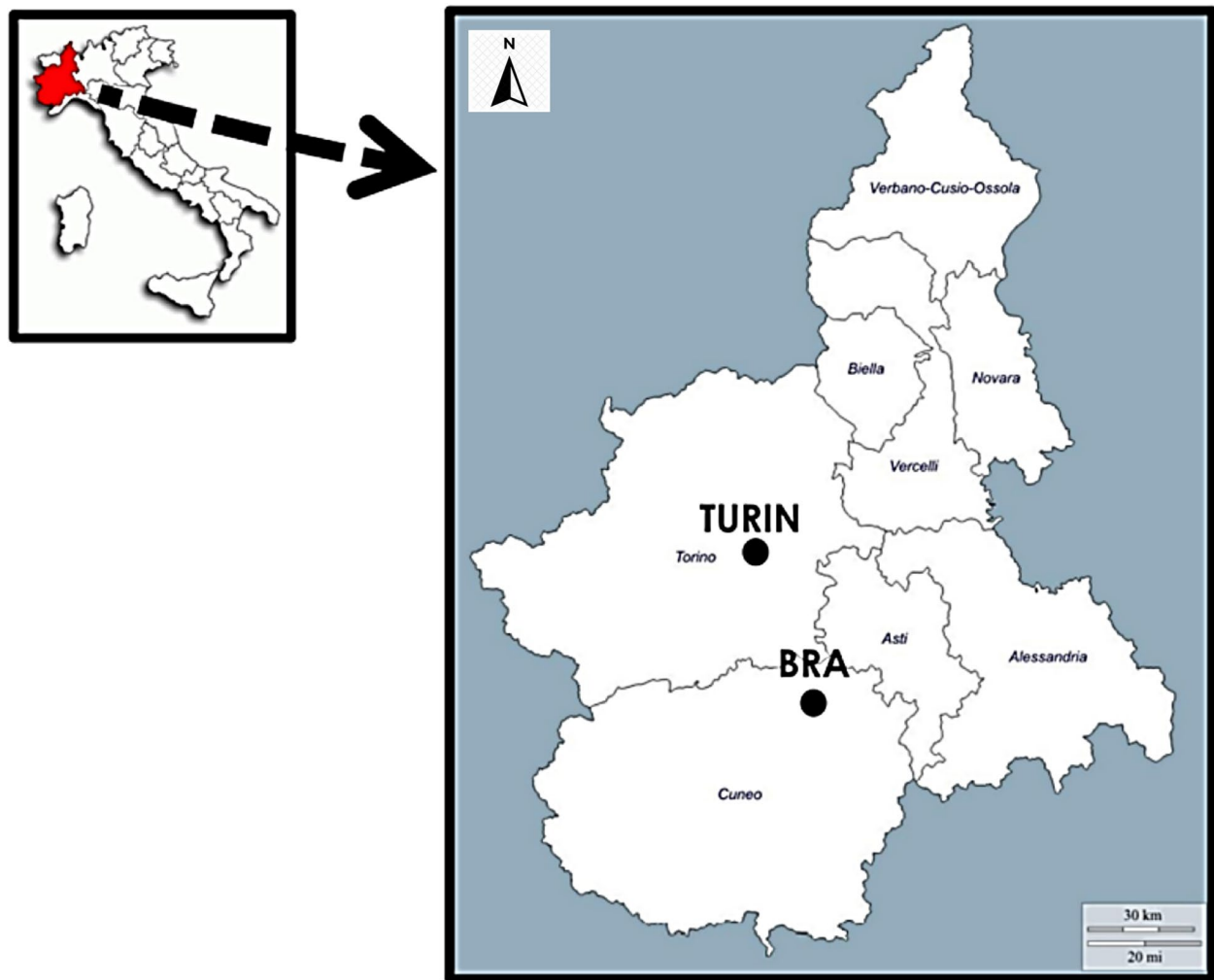


Fig. 1 Geographical location of the study sites

To accommodate participants' linguistic preferences, interviews were carried out in Italian, English, and Arabic (with translators when necessary), and recorded with prior consent. In some instances, detailed notes replaced recordings to respect participants' comfort. The Code of Ethics of the International Society of Ethnobiology was rigorously followed, and informed consent was obtained before interviews [33]. The interviews ranged from informal, spontaneous conversations during communal gatherings to structured online meetings, each lasting approximately 40 min.

The interview questions were designed to explore key analytical dimensions: cultural preservation versus assimilation, challenges in food sourcing and adaptation, generational and gender roles in food preparation, the role of food in community cohesion, and the interaction with Italian cuisine. These aspects were

investigated through open-ended questions, ensuring in-depth insights into culinary adaptation in the context of migration. Participants were questioned regarding their traditional eating habits, difficulty locating ingredients, difficulties preserving their culinary history, and their adjustment to Italian food culture in order to obtain a thorough grasp of culinary adaptation. Both those who are actively involved in food preparation and those who are primarily responsible for cooking were taken into consideration when creating profiles based on gender dynamics and culinary responsibilities. Participants of varied ages offered insights into both modern customs and the historical maintenance of culinary traditions (Table 1). Ethical considerations followed the guidelines of the International Society of Ethnobiology [33], ensuring participant anonymity, informed consent, and cultural sensitivity.

Table 1 Provides a detailed overview of each community's sampling strategy, participant demographics, interview methods, and data collection settings

Aspect	Syrian community	Afghan community	Coptic Egyptian community
Study Area	Turin, Bra, Vercelli, Novara	Bra, Turin	Turin (Coptic Church of Santa Maria Vergine)
Meeting Year	March–May 2024	March–May 2023	March-2023
Number of Participants	20 (12 women, 8 men)	28 (18 women, 10 men)	16 (12 women, 4 men)
Study Focus	Food-related biocultural diversity, food adaptation	Afghan food adaptation and challenges in Italy	Evolution of Coptic culinary traditions pre- and post-migration
Interview design	Semi-structured		
Data Collection Method	In-person & online	In-person & online	In-person
Key Themes	Food Consumption in Syria	Afghan Food Consumption	Evolution of Coptic Culinary Traditions
	Post-Migration Food-related Changes	Ingredient Sourcing and Substitution	Generational Transmission of Food Practices
	Ingredient Sourcing and Substitution	Challenges with Italian Cuisine Adaptation	Role of Food in Social and Religious Bonds
	Consumption of Italian Food	Discontinuation of Afghan Dishes	Differences with non-Coptic Egyptian cuisine?
Ethical Considerations	Informed consent, confidentiality, ISE Ethics		
Data Analysis	Transcriptions, qualitative analysis	Excel database, frequency calculations	Recorded interviews, qualitative analysis

Data analysis

The data analysis was conducted using SAS 9.4 software (SAS Institute Inc., Cary, NC, USA) and R 4.4.2, employing various statistical techniques to explore the adaptation and maintenance of traditional food practices among the three communities. Descriptive statistics were used to summarize demographic characteristics such as age, gender, length of stay in Italy, and geographic origins. Frequency analysis helped identify the most commonly mentioned dishes, ingredients, and substitution practices across the communities. Comparative analysis, including Fisher's exact tests, was applied to compare the frequency of traditional dish consumption among the communities. Logistic regression was performed to examine factors influencing the likelihood of maintaining traditional food and gastronomy practices, considering variables like age, gender, time since migration, and access to ethnic markets, in addition to religion and the community. All the statistical analysis results were considered significant when the P -value < 0.05. To account for potential clustering effects, such as family ties or community-based similarities, robust standard errors were used in the logistic regression models. Prior to analysis, assumptions of logistic regression, including multicollinearity and model fit, were assessed to ensure the validity of the results. Qualitative data analysis was carried out through thematic analysis following the framework proposed by [34]. An inductive approach allowed themes to emerge directly from the data rather than fitting into predefined categories. Open coding identified recurring concepts and patterns across participants' narratives, which were

subsequently grouped into broader thematic categories through axial coding. Key dimensions such as culinary adaptation, resilience, cultural continuity, and social integration were defined based on existing literature to provide conceptual clarity. Coding was conducted manually, and two researchers independently coded the transcripts. Inter-coder reliability was assessed by calculating Cohen's kappa coefficient, achieving substantial agreement ($\kappa=0.78$), thus minimizing potential bias. This qualitative analysis complements the quantitative findings by providing deeper insight into the lived experiences behind observed statistical trends.

Results

Descriptive characteristics of the participants

The majority of Syrian participants (57.9%) are between 20 and 49 years old, indicating a strong presence of young adults likely seeking education or work opportunities. Those aged ≥ 50 make up 26.3%. Younger individuals under 20 represent 15.8%, likely students or early-career professionals, while 5.3% fall within the 31 to 40 age range. Additionally, 5.3% are over 60. In terms of religious affiliation, 33.3% identify as Christians, 23.8% as Muslims, while a significant 42.9% chose not to disclose their religion. Women slightly outnumber men, representing 55% of the group. Geographically, 40% of the participants originate from Northern Syria, primarily Aleppo, a region heavily affected by conflict. Another 50% are from Southern Syria, including Damascus and Daraa, reflecting the impact of war on these urban centers. Meanwhile, 5% are from Syria's coastal areas, and 40% from central

regions. Most of the respondents are relatively recent immigrants, with 11 having lived in Italy for four to seven years. Six participants have arrived more recently, within the last one to three years, while one individual has been in Italy for 23 years. Living arrangements vary, with some individuals living alone, particularly students, while others live with family members, partners, or friends.

In the Afghan community, twenty-three interviewees (82.14%) identified as Islamic, four as agnostic or non-believers (14.28%), and one (3.58%) did not provide this information. All the interviewees arrived in Italy due to their prior collaboration with Italian institutions and universities during their work in Afghanistan or through their families' involvement. The majority arrived between August and September 2021, with a smaller number arriving in 2022. One-third of the interviewees relocated to Italy through collaborations between Italian associations and the Afghan State, while 5 students are currently pursuing their studies in Italy thanks to scholarships. The remaining interviewees are engaged in various capacities with Italian institutions and municipalities. Among the 28 participants, there is a higher representation of

women, accounting for 64% of the sample, while men make up 36%. The participants come from various regions in Afghanistan. The largest group of participants (50.00%) originates from Kabul, followed by Herat (21.43%), and Islamabad and Rawalpindi (7.14%). Smaller groups come from cities such as Tagika, Masar, and Mazar-i-Sharif, with a few missing or unspecified geographic locations. The age range of the participants spans from 19 to 56 years. The largest group of participants is between the ages of 20–49 years, comprising 87.5% of the sample, indicating a younger population. Participants aged <20 make up 4.17%, while those in the ≥50 age groups represent 8.33% each. However, it is essential to note that many of the interviewees, particularly researchers and professors at universities in Afghanistan, had to adapt to different roles upon their arrival in Italy (Table 2).

The demographic analysis of the Coptic community participants showed a diverse age range, from 10 to 70 years old, age <20 years (18.75%), 20–49 years (47.13%) and age ≥50 years (34.12%) with a predominance of women (75%) over men (25%). Most of the

Table 2 Demographic and sociocultural characteristics of Syrian, Afghan, and Coptic communities in Italy

Factors influencing culinary practices and cultural adaptation	Study Community		
	Syrian	Afghan	Coptic Egyptian
Age Range	< 20 years (15.8%) 20–49 years (57.9%) ≥ 50 years (26.3%)	< 20 years (4.17%) 20–49 years (87.5%) ≥ 50 years (8.33%)	< 20 years (18.75%) 20–49 years (47.13%) ≥ 50 years (34.12%)
Religious Affiliation	Christian (33.3%), Muslim (23.8%), ND (42.9%)	Islamic (82.14%), Agnostic/Non-believer (14.28%), Not Determined (3.58%)	Christian (100%)
Gender Distribution	Female (55%), Male (45%)	Female (64.29%), Male (35.71%)	Female (75%), Male (25%)
Geographic Origin	40% Northern Syria (Aleppo), 50% Southern Syria (Damascus, Daraa), 5% Coastal Areas, 40% Central Syria	50.00% Kabul, Herat (21.43%), Islamabad, and Rawalpindi (7.14%)	Cairo- Giza Kalyubia, Luxor, Minya-Assuit, Assuit-Souhag
Length of Stay in Italy	1–3 years (30%), 4–7 years (55%), 23 years (5%)	The majority arrived in 2021 (3–4 years ago) Some in 2022 (2–3 years ago)	10–15 years (75%) 15–25 years (25%)
Living Arrangements	Alone (students), with family, partners, or friends	Students, professionals, and their families	Living with family members (mainly)
Primary Migration Reason	Education, work, family reunification	Scholarship collaborations with Italian institutions	Religious, cultural community, and social gatherings
Primary Settlement Area	Turin (Majority), Vercelli, Novara, Bra	Turin (Majority), Bra, and some other small municipalities	Turin (Main meeting point: Coptic Church Santa Maria Vergine)
Educational Background	Focus on education and work opportunities	Many engaged with Italian institutions and universities	Mix of young and older generations; some involved in education
Cultural Adaptation	Varies; recent immigrants (1–3 years) may still be adapting	Adaptation to new roles facilitated by Italian institutions	Culinary traditions evolving in Italy; cultural adaptation observed
Primary Occupations	Education, work, students	Researchers, professors, and students in scholarships	Women were mainly involved in home cooking and preserving traditions, men contributed to religious discussions
Community Integration	Varies; students are more integrated into education systems	Facilitated by Italian institutions, adapting to new roles	Strong integration through the Coptic Church and social gatherings

interviewees were middle-aged women, along with a very elderly woman who provided valuable insights into the culinary traditions of the Coptic community before migration. The younger participants, including a ten-year-old girl and a woman in their twenties, displayed remarkable interest and knowledge, offering perspectives on how these traditions are maintained in Italy. Women were mainly involved in home cooking and preserving traditions, while men contributed to religious discussions. Strong integration through the Coptic Church and social gatherings (Table 2).

Gastronomy and culinary traditions followed by the three migrant communities (Syrian, Afghan, and Copts in Italy)

The results of the research highlight the diverse food and beverage ingredients used by Syrian, Afghan, and Coptic communities in Italy, with specific culinary practices and ingredient usage reflecting their distinct cultural backgrounds. Table 3 outlines the core ingredients for each community, showcasing the importance of vegetables, fruits, legumes, grains, spices, herbs, meats, dairy, and preserved foods.

For Syrian cuisine, vegetables like aubergines, zucchini, tomatoes, and cauliflower represent 15.84% of the ingredients used. Fruits such as tart cherries, apricots, and pomegranates make up 8.91% of Syrian cuisine ingredients. Legumes, including chickpeas and lentils, contribute to 4.95%, whole grains and derivatives such as bulgur, rice, and couscous represent 10.89%. Spices and herbs, including cardamom, *za'atar* (*Origanum syriacum* L.-based food), and cumin, are vital to Syrian cooking, accounting for 18.81%. Wild plants form a significant part of some regions in Syria, such as the coastal region, particularly with the Alawite community, where dishes like *Sleeq* are traditional (Fig. 2) [52]. In our study, wild and foraged plants like *Portulaca oleracea* L. and *Urtica dioica* L. make up 3.96%, while meat ingredients such as lamb, chicken, and turkey contribute to 6.93%. Nuts and dried fruits (like walnuts and pistachios) account for 3.96%, and dairy products like yogurt and fresh cheese represent 8.91%. Preserves and preparations such as olives, vine leaves, and pomegranate sauce are included in 6.93% of Syrian culinary ingredients, while other ingredients (e.g., olive oil, honey, and coffee) account for 9.90%. (Tables 3 and 4).

For Afghan cuisine, vegetables like *sabzi* and *sabzi chala* represent 11.76% of the ingredients used. Fruits, such as those found in Haft Miwa, make up 2.94%. Legumes are not listed among Afghan culinary ingredients. Grains and derivatives, including *silah* rice, *kabuli palow*, and various rice dishes, represent 26.47%. Afghan cuisine is rich in spices and herbs like *char masala* and *kalpura*, which account for 5.88%.

Wild foraged plants, including *kalpura*, make up 2.94%. Meat dishes, such as *kabâb*, *kofta*, and lamb, represent 14.71%, while nuts and dried fruits like walnuts and pistachios contribute 2.94%. Dairy products like *qorma*, *chaka*, and *qoroot* make up 17.65%, with preserves and preparations such as chutney and samosa contributing 8.82%. Other ingredients, like *gulab* and various sweets, account for 23.53%.

For Coptic cuisine, vegetables such as okra, leeks, and carrots make up 28.21%. Fruits like orange and lemon juice contribute 2.56%, and legumes such as lentils, chickpeas, and broad beans represent 7.69%. Grains and derivatives, including barley, rye, and rice, account for 15.38%. Spices and herbs like caraway, fennel, and fenu-greek contribute 7.69%, while wild foraged plants like *molokhia* make up 2.56%. Meat, including quail, duck, and lamb, represents 17.95%, and nuts and dried fruits such as dates and sultanas account for 5.13%. Dairy products like butter and cheese make up 7.69%, while there are no listed preserves or preparations. Finally, other ingredients like Turkish coffee, sweets, and infusions contribute to 15.38%.

An interesting observation from the comparative ingredient table (Table 3) is the notable overlap in certain food components among the Syrian, Afghan, and Coptic communities. Ingredients such as okra, aubergines, lentils, and rice appear across all or multiple groups, suggesting a level of culinary convergence. This overlap may reflect both the geographic and cultural proximities of their countries of origin and the influence of Italy's local foodscape, which encourages adaptations using accessible, familiar ingredients. Such convergence could also point to emerging hybrid culinary practices shaped by shared migratory experiences and access to similar resources in diaspora. These findings highlight the adaptive and integrative nature of migrant foodways, where tradition and innovation coexist in response to the host environment.

The results (Table 4) show significant differences in the consumption of certain ingredients between the community groups of immigrants in Italy. For example, vegetables ($p=0.0297$), fruits ($p=0.0030$), spices, and herbs ($p=0.0001$) reveal statistically significant variations in how frequently they are consumed by Syrians, Afghans, and Copts. Conversely, for other ingredients such as wild foraged plants ($p=0.2231$) and meat ($p=0.8102$), no significant differences were found, suggesting similar consumption patterns across the groups. These findings highlight the cultural diversity in food choices and dietary habits, reflecting the unique culinary traditions and preferences of each group. The p -values further emphasize which ingredients show cultural distinctiveness, which could inform future studies on dietary patterns and cultural food practices within these communities.

Table 3 Culinary ingredients and preparations of Syrian, Afghan, and Coptic communities

Culinary Components that Shape Traditional Diets	Ingredients and dishes		
	Syrian Community	Afghan Community	Coptic Community
Vegetables	Aubergines, Pumpkin, Green bell pepper, Onion, Zucchini, Tomatoes, Cauliflower, Spinach, Artichokes, Peppers, Radishes, Lettuce, Garlic, Cucumbers, Okra, Carrot, <i>Mlukhyeh</i>	Spinach, Mixed greens (<i>Sabzi</i>), Onions, Potatoes, Tomatoes (<i>Qurma-e-Kachalu</i>), Grape leaves, Herbs and vegetables	Okra, Leeks, Carrots, Cucumbers, Courgettes, Aubergines, Artichokes, Peppers, Turnips, Onions, Garlic
Fruits	Tart cherries, Apricots, Pomegranate, Apples, Damascene orange, Strawberry, Pear, Orange, Lemon	Dried fruits, Raisins, Apricots, Walnuts, Almonds, Rosewater	Orange or Lemon Juice
Legumes	Chickpeas, Lentils, Beans, String beans, Fava beans	None listed	Lentils, Chickpeas, Broad Beans
Grains and Derivatives	Bulgur, Durum wheat flour, <i>Freekeh</i> , <i>Yufka</i> , Rice, Pasta, Spelt, Couscous, Soft wheat flour, Angel hair, Bread	<i>Silah</i> Rice, <i>Palow</i> , <i>Kabuli Palow</i> , <i>Zarishk Palow</i> , <i>Qurma Palow</i> , <i>Kichiri</i> , Rice and lentils (<i>Qoroot</i>), Rice and orange peel (<i>Nareng Palow</i>), Dumpling dough (<i>Mantu</i>)	Barley, Wheat, Rice, Rye, Sorghum, Spelt
Spices and Herbs	Cardamom, <i>Zaatar</i> , White pepper, Coriander, <i>Sabah</i> pepper, Parsley, Saffron, Cumin, Sesame seeds, Salt, Cloves, Cinnamon, Mint, Oregano, Bay leaf, seven spice, Chilli, Paprika, Nutmeg, Black pepper	<i>Char Masala</i> , <i>Kalpura</i> , Herbs/Medicinal: Caraway, Fen-nel, Fenugreek	None listed
Wild/Foraged Plants	<i>Portulaca oleracea</i> , <i>Urtica dioica</i> , Wild green vegetables (<i>Sleeq</i>)	<i>Kalpura</i>	<i>Molokhia</i> (<i>Corchorus olitorius</i> L.)
Meat	Sheep, Ground beef, Lamb, Chicken, Sheep intestines, Turkey, Fish	Ground or cubed meat (beef or lamb), <i>Kababb</i> , <i>Tikka Kabdb</i> , <i>Kofta Kabdb</i> , <i>Gosht Qaq</i> , <i>Mahi Laqa</i>	Quail, Duck, Goose, Pigeon, Lamb, Beef, Veal
Nuts and Dried Fruits	Walnuts, Pistachios, Pine nuts, Dates	<i>Haft Miwa</i> (mixed dried fruits)	Dates, Sultanas
Dairy	Fresh cheese, clarified butter, Heavy cream, Butter, Yogurt, Milk, <i>Jameed</i> , <i>Kaymak</i> , <i>Labneh</i>	Strained yogurt (<i>Chaka</i>), Dried yogurt cheese (<i>Qoroot</i>), Fresh cheese (<i>Panir</i>), Cream (<i>Khame</i>)	Butter, Cheese (<i>Karish</i>), Mish
Preserves and Preparations	Vine leaves, Pomegranate sauce, Olives, Tomato sauce, orange blossom syrup, Rose petal syrup, Spicy sauce	Chutney sauce, <i>Samosa-e-Goshti</i> , Flatbread, Leeks, Lentils preserved	None listed
Other Ingredients	Damascene rose, Olive oil, Yeast, Honey, Pumpkin powder, Tahini, Potatoes, Coffee powder, Eggs, Sugar	Rose syrup-based desserts (<i>Gulab</i> , <i>Ferni</i> , <i>Baglawas</i> , <i>Jelabi</i> , <i>Sheer Peera</i> , <i>Khajoor Krapfen</i>), Wheat sprouts, Slow-cooked paste (<i>Samanak</i>)	Tea (<i>Shai bil Na'na</i>), Arabic coffee (<i>Ahwa</i>), Various sweets, Infusions



Fig. 2 Syrian wild greens dish (*Sleeq*), hummus, yogurt, along with Levantine flatbread and green onion (Photo credit: N. Sulaiman)

Adaptation and resilience of traditional dishes in Syrian, Afghan, and Coptic Communities

The research results provide a detailed overview of dish categories across three different communities, Syrian, Afghan, and Coptic, showing various dishes’ resilience, adaptation, and disappearance. Table 5 presents these results and is divided into three sections: dishes that remain resilient, those that adapt, and those that disappear. Each section highlights the frequency, description, usage, and adaptation strategies applied to specific dishes and beverages within these communities.

The Syrian migrants showcase a significant number of resilient dishes (41.07%), including staples such as cooked vegetables, *shakriyeh* (lamb and yogurt stew), hummus, falafel, and kebabs (Table 5). These dishes are considered core to Syrian cuisine and remain popular,

often served during gatherings or special occasions. Beverages like wine, tea, and yerba mate are regularly consumed, contributing to their cultural continuity. These dishes are typically maintained in their traditional forms, with ingredients sourced from local ethnic markets or grown in community gardens. Some dishes have remained consistent over time, especially in the context of communal events where traditional preparation methods are preserved.

Dishes that have adapted (41.07%) include items like *halawat el-jibn* (cheese dessert), *kibbeh* (meat dish), and *manakish* (pizza-like pie). These dishes have undergone modifications in response to the availability of local ingredients or changes in preparation methods. For instance, some ingredients have been replaced with locally available options, and cooking methods have shifted to align with modern dietary preferences, such as baking instead of frying (Table 5). For instance, reduced meat consumption due to cost or health concerns, and an increased incorporation of Italian products like olive oil, mozzarella, and pasta. These adaptations reflect the community’s ability to maintain cultural food traditions while adjusting to the availability of ingredients in their new environment.

Certain Syrian dishes (17.85%) have become less common or have disappeared entirely, such as *fawaregh* (stuffed sheep intestines), *shawarma*, Eid nests (dessert), and others (Table 5). For instance, Syrian pomegranate molasses, sheep intestines (used for *fawaregh*), and *mahlab* (wild cherry seed flour) are not readily available, which has led participants to use alternatives such as balsamic vinegar, lamb sausage casings, or omit the ingredient altogether. These foods, which were once linked to specific traditions or holidays, are now harder

Table 4 Comparative analysis of key ingredients in dishes among Syrian, Afghan, and Coptic migrant communities in Italy

Differences in Food/beverages	Frequency (n) and percentage (%) of the consumption of Ingredients between the three communities						p-value
	Syrian		Afghan		Coptic		
Vegetables	16	15.84%	4	11.76%	11	28.21%	0.0297
Fruits	9	8.91%	1	2.94%	1	2.56%	0.0030
Legumes	5	4.95%	0	0%	3	7.69%	0.0930
Grains and Derivatives	11	10.89%	9	26.47%	6	15.38%	0.0481
Spices and Herbs	19	18.81%	2	5.88%	3	7.69%	0.0001
Wild/Foraged Plants	4	3.96%	1	2.94%	1	2.56%	0.2231
Meat	7	6.93%	5	14.71%	7	17.95%	0.8102
Nuts and Dried Fruits	4	3.96%	1	2.94%	2	5.13%	0.3679
Dairy	9	8.91%	6	17.65%	3	7.69%	0.2231
Preserves and Preparations	7	6.93%	3	8.82%	0	0%	0.0247
Other Ingredients	10	9.90%	8	23.53%	6	15.38%	0.6065

Table 5 Presents the classification of traditional dishes in the Syrian, Afghan, and Coptic communities, based on their resilience, adaptation, and disappearance in the context of migration or relocation in Italy

Category	Traditional Dish name	Frequency (n, %)	Description	Usage or Importance	Adaptation strategy
<i>Syrian community</i> Dishes that Remain (Resilient)¹	Cooked vegetables, <i>Shakriyeh</i> (lamb and yogurt stew), Salads, Rice/bulgur/meat dishes, <i>Tabouleh</i> (herb, bulgur, cucumber, tomato salad), <i>Mejadra</i> (lentil and grain dish), <i>Kousa mahshi</i> (stuffed zucchini), <i>Makloubeh/Maqluba</i> (rice, lamb, vegetables), <i>Kebab Hindi</i> (lamb meatballs, tomato), <i>Fattoush</i> (flatbread salad), Hummus, Falafel (legume patties), <i>Fatteh</i> (chickpeas tossed in a creamy tahini-yogurt sauce, topped with toasted nuts and fried flatbread)—(Fig. 3), <i>Babaganoush</i> (aubergine spread), <i>Kabsa</i> (rice-based dish), <i>Sheikh el mahshi</i> (stuffed aubergines), <i>Foul</i> (fava beans dish), <i>Musabaha</i> (chickpeas, tahini), <i>Rezz Bil-Halib</i> (Rice and milk pudding), Chicken with spelt, <i>Harisa</i> (semolina sheet cake), Yellow rice, and Wine, Yerba mate, Tea	23, (41.07%)	A collection of staple dishes that remain popular and consistently made, and beverages	Core to Syrian cuisine, enjoyed across occasions. Drinks are consumed regularly during meals and gatherings	Maintained in their traditional forms, ingredients are sourced from local ethnic markets or grown in home gardens. Community gatherings help preserve traditional preparation methods
	Dishes that Change (Adapted)² <i>Halawat el Jbn</i> (cheese dessert), <i>Knafeh</i> (cheese dessert), <i>Qatayef</i> (pancakes with cheese), <i>Kibbeh</i> (deep-fried, roasted, grilled, with various fillings), Bulgur dishes, Eggplant dishes, <i>Yabrak/Warak</i> (<i>Eneb</i> (stuffed vine leaves)—(Fig. 5), Syrian breakfast, <i>Shish barak</i> (meat dumplings, yogurt sauce), Sandwiches, <i>Maamoul</i> (biscuits), <i>Barbecue</i>, <i>Madlouka</i> (cheese dessert), <i>Sayadieh</i> (fish and rice), <i>Samsak</i> (cheese stuffed pockets), <i>Ouzi</i> (meat-stuffed phyllo pockets), <i>Manakish</i> ("pizzette"), <i>Kebab Karaz</i> (cherries, meatballs), <i>Freekeh</i> and meat, <i>Lahim Barajin</i> (meat pie), <i>Fatayer</i> (spinach pie), <i>Hrisse</i> (meat porridge) and Coffee, <i>Arak</i> (anise liquor), Yerba mate	23, (41.07%)	Dishes that may vary by season or occasion, and beverages	Typically consumed on special occasions, these dishes offer variety and richness to the diet. Drinks are consumed socially or during specific events	Adjusted using available ingredients, sometimes fused with Italian cuisine (e.g., pizza with manakish toppings). Health-conscious methods like baking are used

Table 5 (continued)

Category	Traditional Dish name	Frequency (n, %)	Description	Usage or Importance	Adaptation strategy
Dishes that Disappear ³	Khobz (Levantine flatbread), Fawar-egh (stuffed sheep intestines), Murabba El-Batinjan (eggplant jam), Sfha (flatbread with meat), Shawarma, Eid nests (dessert), Maamoul (biscuits), Yellow rice, Airan (yogurt, water, salt), Dama-scene rose drink	10, (17.85)	Foods less common or disappearing, and beverages	Linked to older traditions or holidays. Drinks rarely served in traditional contexts	Disappearance due to ingredient scarcity, complex preparation, or reduced demand. Revival possible via cultural events/workshops
<i>Afghan community</i>					
Dishes that Remain (Resilient)	Sildah Rice, Palow, Kabuli Palow, Zarishk Palow, Qurma Palow, Kichiri Qoroot, Chutney Sauce, Mantu, Ashak, Samosa-e-Goshti, Ash, Shorba (or Shorwa), Kabab, Tikka Kabab, Kofta Kabab, Qorma, Ghormeh Sabzi, Gosht Qaq, Mahi Laqa, Chaka, Qoroot, Dough, Shiroz, Panir, Burani Banjan, Khame, Bolani, Lubia, Sabzi, Sabzi Chala, Qurma-e-Kachalu, Dolma, Char Masala, Gulab, Nareng Palow, Ferni, Baqlawa, Jelabi, Sheer Peera, Kharboza, Shir Yakh, Kalpura, Nabat, Chhattni sauce, Roghan-e-Zhard, Khame	47, (65.27%)	Represents everyday meals and festive dishes	Strong role in community bonding and holidays	Minor local substitutions, but core preparation and ingredients are retained
Dishes that Change (Adapted)	Siawoshami rice, Sohan, Bulani, Galef, Sar Shir, Dough, Nan, Qroti o Kari, Mantu, Ashak, Gandana, Kharboza, Shir Yakh, Kalpura, Nabat, Chhattni sauce, Roghan-e-Zhard, Khame	18, (25%)	Ingredient/preparation adaptations	Important in Afghan identity, adapted in diaspora	Substitution of hard-to-find ingredients with Italian equivalents
Dishes that Disappear	Kari, Mantu, Ashak, Gandana (wild leek), Shir Yakh (Afghan ice cream), Pizza (American style)	7, (9.72%)	Rarely made due to availability and cultural shift	Losing traction among newer generations	Replaced or heavily modified, ingredient access is the main constraint
<i>Coptic community</i>					
Dishes that Remain (Resilient)	Aish Baladi, Aish Shamsi, Khobz Merahrah, Aish Fino, Coptic Orban (Bread), Falafel (Tamaya), Molokhia, Tea (Shai bil Nana), Arabic Coffee (Ahwa), Orange or Lemon Juice, Infusions (Kharkade, Caraway, Fen-nel, Fenugreek)	14, (42%)	Bread and drinks with symbolic and everyday use	Consumed at home and during community worship/gatherings	Original form preserved, ingredients accessed via specialty or local markets

Table 5 (continued)

Category	Traditional Dish name	Frequency (n, %)	Description	Usage or Importance	Adaptation strategy
Dishes that Change (Adapted)	Lentils, Chickpeas, Broad Beans (Used in soups, stews, and salads adapted to Italian tastes), Okra, Leeks, Carrots, Cucumbers, Courgettes, Aubergines, Artichokes, Peppers, Turnips, Onions, Garlic (Used in local Italian dishes), Sea Bream, Sea Bass, Mullet (Fish, prepared differently in Italian seafood dishes), Quail, Duck, Goose, Pigeon, Lamb, Beef, Veal (Prepared in Italian-style roasts or stews), Butter, Cheese (Karish, Mish) (Substituted with ricotta or feta), Various Sweets (Turkish, Arab Influence) (Adapted to Italian-style sweets)	28, (50%)	Ingredient adaptations and cooking style changes	Frequently prepared, especially during fasting periods	Used in hybrid Coptic-Italian recipes, e.g., beans with pasta
Dishes that Disappear	<i>Karish</i> , <i>Mish</i> , <i>Kichiri Qoroot</i> , <i>Samanak</i> , <i>Goash-e-Feel</i> , <i>Shiraz</i> , <i>Panir</i>	7, (18%)	Rarely seen, hard to reproduce in diaspora	Less relevant among youth; preparation is laborious	Missing ingredients, loss of relevance, or generational disconnect

¹ Dishes that remain largely unchanged, retaining traditional ingredients and preparation methods, often preserved through ethnic markets or community gardens

² Dishes modified due to ingredient availability or local food customs, maintaining core concepts but using substitutions or altered preparation methods. ³ Dishes that have largely disappeared due to ingredient scarcity, changes in food preferences, or cultural shifts, making them rare or no longer prepared

to find or prepare due to ingredient scarcity or shifts in dietary preferences.

The trend of resilient dishes is also dominant in the Afghan community, with 65.27% of dishes falling into this category. These include traditional Afghan items like *kabab*, *palow* (rice dishes), *samosa-e-goshti* (meat-filled pastries), and various sweets such as *baklava*. These dishes are integral to Afghan social life and remain central to both daily meals and special gatherings. While local substitutions may occur, the core recipes and preparation methods largely remain intact, ensuring the preservation of cultural identity.

Adapted dishes (25%) in the Afghan community reflect changes in ingredient availability, with dishes like *mantu* (dumplings) and *ashak* (dumplings filled with leeks and meat) being modified. The adaptation strategies often involve substituting difficult-to-find ingredients with locally available options, allowing for continued preparation of these dishes despite challenges in sourcing original ingredients.

The disappearance of certain Afghan dishes (9.72%) is attributed to either ingredient scarcity or shifts in cultural practices. Examples of such dishes include *kari* (a type of curry) and *shir yakh* (Afghan ice cream). These dishes, once common, have become more difficult to prepare, as they rely on specific ingredients that are no longer readily available. Some Afghan dishes have been replaced by new dishes or modified to suit current tastes.

In the Coptic community, resilient dishes such as *aish baladi* (traditional bread), *molokhia* (stewed leaves), and tea (*shai bil na'na*) continue to play a significant role in maintaining cultural identity. These dishes and drinks are regularly consumed and remain key components of Coptic cuisine, especially during communal gatherings and religious events. The use of locally sourced ingredients or specialized ethnic markets helps preserve the authenticity of these foods.

Adapted dishes (50%) in the Coptic community reflect integration with Italian culinary practices. Common ingredients, such as lentils, chickpeas, and various vegetables, are often adapted into Italian-style dishes like pasta and risotto. While these adaptations reflect a blending of Coptic and Italian culinary traditions, the core ingredients and flavors of Coptic cuisine are maintained. During fasting periods, these hybrid dishes are especially important as they continue to adhere to dietary customs while embracing local food culture. Certain traditional Coptic dishes, such as *karish* (a type of fermented cheese), have largely disappeared (18%) due to ingredient unavailability, as the specific milk fermentation techniques and bacterial cultures used in Egypt are not easily replicated in Italy. On the other hand, *samanak* (a wheat-based dessert traditionally prepared over several days) has declined

primarily due to shifts in food practices and preferences. Participants reported that younger generations find the dish too time-consuming to prepare and prefer lighter, more convenient desserts. These examples illustrate how both structural limitations (ingredient access) and evolving culinary tastes contribute to the transformation or loss of traditional food items within the diaspora.

When comparing Syrian, Afghan, and Coptic cuisines, it's important to consider both their traditional culinary practices in their home countries and how they adapt to life in Italy as immigrant communities. The key differences between these cuisines lie in their primary ingredients, cooking methods, and the integration of local food customs, which change based on both cultural traditions and the practicalities of living abroad (Fig. 3).

Referring to (Fig. 4), it is evident that there are significant differences in the distribution of dishes that remain, change, or disappear across the Syrian, Afghan, and Coptic communities. Specifically, the data shows that the Syrian community has an equal proportion of resilient (41.07%) and adapted (41.07%) dishes, with a smaller percentage of dishes that have disappeared (17.85%). In contrast, the Afghan community displays a higher percentage of resilient dishes (65.27%), while the adapted dishes make up only 25%, and the dishes that have disappeared are the least (9.72%). The Coptic community, on the other hand, shows a greater adaptation to local culinary practices, with 50% of the dishes being adapted, 42% remaining resilient, and 18% disappearing. This comparison clearly highlights the varying degrees of preservation and adaptation within each community's food culture,



Fig. 3 *Fatteh*: chickpeas tossed in a creamy tahini-yogurt sauce, topped with toasted nuts and fried flatbread. (Photo credit: N. Sulaiman)

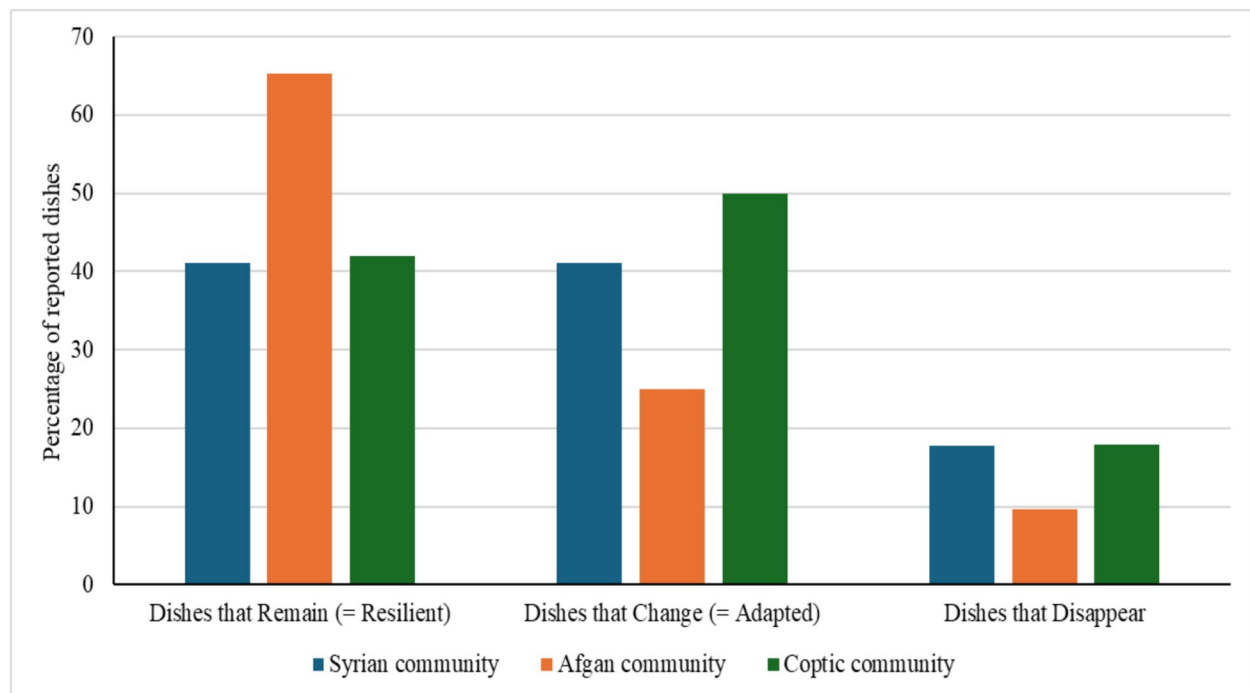


Fig. 4 Culinary resilience and adaptation among migrant communities (Syrian, Afghan, and Coptic) in Italy

reflecting the unique ways in which each group has maintained or adjusted their culinary traditions in response to changing environments and available resources (Fig. 5).

Factors influencing the resilience of traditional food practices among migrant communities in Italy

The results of this logistic regression analysis (Table 6) provide valuable insights into the factors associated with the retention of traditional food practices among migrant communities in Italy. Age and gender emerge as significant predictors, with older individuals (coefficient=0.42, OR=1.59, $p<0.036$) and women (coefficient=0.93, OR=2.52, $p<0.015$) being more likely to preserve traditional culinary practices. Religion also plays a notable role, with Muslims being significantly more likely to retain traditional food practices compared to Christians (coefficient=1.23, OR=3.42, $p<0.033$), underscoring the importance of cultural and religious ties to culinary traditions. Interestingly, non-assimilated individuals (coefficient=0.50, OR=1.65, $p<0.001$) are more likely to retain these practices, indicating that cultural assimilation may be associated with the loss of traditional food practices. Access to ethnic markets is another crucial factor, as individuals with such access (coefficient=1.10, OR=3.02, $p<0.009$) are more likely to preserve their gastronomic heritage. Finally, community identity also influences food retention, with Afghan migrants (coefficient=1.11, OR=2.05, $p<0.029$) showing a greater likelihood of



Fig. 5 Yabrak or Warak Eneb: stuffed vine leaves. (Photo credit: N. Sulaiman)

Table 6 Factors influencing the retention of traditional food practices among three migrant communities in Italy

Variable	Description	Coefficient	Odds Ratio	Std Error	95%	p-Value
Intercept		0.24	1.27	0.572	(-0.879, 1.361)	< 0.047
Age	Elder*Younger	0.42	1.59	0.039	(-0.021, 0.067)	< 0.036
Gender (Female)	Women*Male	0.93	2.52	0.380	(0.180, 1.671)	< 0.015
Religion	Muslim*Christian	1.23	3.42	0.515	(0.207, 2.257)	< 0.033
	Muslim*Non determined	1.31	0.84	0.563	(0.235, 2.482)	< 0.947
Time Since Migration	Long*court period	-0.02	0.98	0.021	(-0.064, 0.019)	< 0.281
Ethnic markets Access	Yes*No	1.10	3.02	0.421	(0.281, 1.928)	< 0.009
Cultural Assimilation	Not assimilated*assimilated	0.50	1.65	0.080	(1.39, 1.97)	< 0.001
Community	Syrian*Coptic	0.63	1.88	0.539	(-0.422, 1.689)	< 0.24
	Afghan*Coptic	1.11	2.05	0.510	(0.101, 2.124)	< 0.029

retaining traditional food practices compared to Coptic individuals.

While these findings highlight relevant associations, they should be interpreted with caution. Given the cross-sectional design of the study, the results cannot imply causality. Although some predictors show statistically significant p-values, their confidence intervals include zero, indicating that these effects should be interpreted with caution.

Discussion

Culinary continuity and change: the impact of migration on food practices, identity, and social integration

Food practices in migrant communities, such as those of Syrian, Afghan, and Coptic migrants in Italy, are not merely cultural expressions but are also driven by necessity [6, 22, 35]. Migrants often face challenges in obtaining traditional ingredients due to limited access to ethnic markets or financial constraints. This results in practical adaptations, such as modifying traditional recipes or substituting unavailable ingredients. For example, Afghan migrants, when faced with difficulties in finding *gandana* [36], often adapt by using available local alternatives. As one Afghan woman explained: “The yogurt that I find at the supermarket has a different taste, it is sweeter, while the Afghan one is more acidic; therefore, now I buy milk and yeast to make my yogurt, reminiscent of the Afghan one” (A, 38-year-old woman). “Without a Tandoor oven, we cannot prepare the bread, but we have adapted” (A, 38-year-old woman).

Food serves as a bridge that enables all migrants to preserve their cultural identity while assimilating into a new community [22]. Food offers a material means of preserving a part of their hometown even when other facets of their lives change. The emotional value placed on rare ingredients is also evident. A young Afghan woman recounted her surprise at finding a treasured

dairy product: “The only time I found Qoroot in Italy was in a Korean shop in Turin; as soon as I saw it, I was very amazed” (M, 21-year-old woman). It is a strategy for cultural survival rather than only consumption [37].

Access to vital ingredients that are necessary for their traditional recipes is frequently restricted by financial constraints [38]. This is especially troublesome for Afghan migrants because eating less meat has negative health effects. Because traditional cuisines are incomplete without essential ingredients like meat, the unaffordability of these items affects not only eating habits but also the cultural experience itself [16, 39]. Initiatives for community-driven urban gardening could be one way to solve this problem. Through these programs, migrants can re-establish ethnic food production techniques and grow items that are hard to get in stores [40]. Additionally, by allowing migrants to share their culinary expertise with locals, these programs may promote intercultural interchange, enhancing cultural links and adding to the richness of local cuisine.

One key factor influencing the ability of immigrants to maintain their culinary traditions is access to ethnic marketplaces. Ethnic market access acts as a facilitator, offering culturally specific ingredients that are essential for preparing traditional food [7, 21, 41]. These marketplaces offer necessary, culturally particular ingredients that might not be found in typical supermarkets. Ethnic markets can help preserve traditional foods for recently arrived migrants by providing access to the ingredients they need.

“When the Dough is about to finish, I tell my children to leave the last spoonful so I can add it to the new Dough I prepare, for the milk and yeast I buy them in an ethnic shop in Padua” (H, 34-year-old woman).

However, access to these markets is not universal, and restricted access poses a barrier to preserving culinary traditions. Additionally, as ethnic markets are frequently

used as cultural gathering places where people exchange culinary skills, recipes, and experiences, their presence might promote communal cohesion [22, 28]. On the other hand, the loss of these markets might cause community members to become more isolated, which would lead to a slower loss of culinary customs and a higher level of assimilation into the food culture of the host nation. Ethnic markets are therefore essential for maintaining cultural identity through culinary customs, in addition to being providers of ingredients [42].

The eating patterns of immigrant populations are also influenced by changes in generations [43, 44]. Younger generations eventually tend to absorb the cuisine of their host nation, in this example, Italy. Fitting in and adjusting to the new surroundings are more important than merely enjoying Italian cuisine. Younger generations use Italian cuisine as a means of interacting with one another, assimilating into Italian culture more broadly, and embracing social norms [45].

"For my son, I cook pasta with tomato sauce, while for my husband and me, I cook pasta by adding some vegetables, such as salad" (A, 38-year-old Afghan woman). But when older generations try to preserve culinary traditions, this change frequently results in the loss of traditional eating customs, which strains relations between generations [7, 18, 26]. Food serves as a bridge between cultures, and the process of culinary socialization reflects greater cultural changes. Migrants blend elements of Italian cuisine with their traditions, reflecting their evolving identities in the diaspora [46].

In addition, changes in gender roles due to migration represent another aspect of both barriers and facilitators. Traditionally, women have been responsible for food preparation in Syrian, Afghan, and Coptic immigrant households [6, 16]. These dynamics have changed as a result of migration, particularly for Syrian men who did not participate much in cooking before their migration [11, 29].

As one Syrian man noted, "In Syria, I never entered the kitchen, but here I had to learn to cook for my children. Now, I even make kibbeh".

Many Syrian males have taken on the role of self-cooking in Italy as a result of their need to adjust to new surroundings. This transition indicates a change in gender roles and family dynamics in addition to a change in culinary techniques [44]. A more equitable division of domestic duties results from males learning to cook, which implies a reinterpretation of masculinity and family roles in the context of migration [47].

Migration also affects religious eating habits. Keeping up halal eating practices is an important part of Syrian Muslims' identities [48]. However, as certain elements necessary to uphold halal norms might not be easily

accessible or reasonably priced in Italy, migration frequently necessitates adjustments. For example, it could be challenging to find halal meat, which forces some people to make dietary concessions [49, 50]. As a Syrian Muslim mother (A, 45-year-old shared,

"Sometimes I go to three different shops just to find halal chicken. If I can't, I cook vegetarian food for my family".

On the other hand, Christian Syrians living abroad might be more likely to follow the dietary customs of their new nation, including eating pork, which would have been rigorously forbidden in Syria. These changes in eating habits reflect larger transformations in identity and religious devotion. To survive and integrate, migrants must modify their eating habits, and food becomes an obvious and palpable indicator of these shifts [51, 52]. This adaptation can lead to internal debates within the migrant community, with some individuals feeling pressure to abandon religious practices to fit in, while others may resist full assimilation to preserve their cultural identity [22, 41].

Research on migrant food practices in Germany, Australia, and Italy reveals similar challenges and adaptations among migrant communities. For instance, a qualitative study in Germany found that Syrian migrants face barriers to maintaining their preferred diet, including food insecurity and unfamiliar food environments, leading to dietary acculturation over time [48]. Similarly, Afghan women refugees in Adelaide experience stress related to accessing culturally appropriate food, particularly halal options, and encounter challenges in navigating the food system [36]. In Italy, studies on Albanian and Moroccan migrants highlight different strategies in adapting to the local food environment, with Moroccans more frequently using home country food plants and herbal ingredients, while Albanians rely more on informal imports during family visits [7]. These comparative studies underscore the complex interplay between cultural identity, food access, and adaptation strategies among migrant communities across different host countries.

The length of time since migration has a significant impact on whether traditional culinary habits within migrant populations are preserved, modified, or vanished [53]. Because traditional foods provide a connection to their country and provide solace and a feeling of identity in an unfamiliar setting, people who have recently moved frequently maintain a greater bond with their cultural culinary history [42, 54]. On the other hand, societies that have been around for a longer time may see slow changes in their eating patterns. Traditional and regional cuisines may merge as second and third-generation people become more integrated into the host culture

over time [16, 22]. The longer the period of adaptation, the greater the likelihood that traditional dishes may be modified to suit the tastes, dietary norms, and ingredients available in the new environment [8]. Additionally, with more extended periods since migration, younger generations may prioritize convenience over tradition, leading to the decline or disappearance of labor-intensive traditional dishes [28, 55, 56].

The shifts in gender roles, particularly the involvement of Syrian men in cooking, reflect broader processes of migration adaptation. These changes align with Berry's Acculturation Model [57], which outlines how individuals and groups adapt to a new society. Specifically, the integration strategy where individuals adopt elements of the host culture while maintaining their cultural identity can be observed in the male Syrian migrants learning to cook. In traditional Syrian households, men rarely participated in food preparation. However, migration to Italy necessitated this shift as men adjusted to new familial and cultural dynamics. This adaptation to domestic responsibilities not only signifies a shift in gender roles but also underscores the resilience and flexibility of immigrant families in the face of migration pressures.

The relative resilience of Afghan culinary practices among recent migrants may be attributed to two key factors. First, many Afghan participants had arrived in Italy within the past three years, meaning they had less time to undergo significant dietary acculturation. Second, the limited availability of non-Mediterranean ingredients may paradoxically encourage Afghan migrants to preserve core elements of their traditional cuisine, adapting only when absolutely necessary rather than by choice.

Additionally, the generational differences in cooking practices can be examined through the lens of transnationalism [58]. Younger generations often adapt more quickly to their host society's practices, while older generations retain more traditional ways. This generational shift is visible in how younger Syrian migrants navigate Italian food culture while retaining essential elements of their culinary heritage. Transnationalism highlights how migrants maintain strong ties to their home countries through food, language, and traditions, even as they adopt new practices in host society. As seen in this study, ethnic markets play a significant role in maintaining these culinary practices, serving as spaces where cultural continuity is preserved.

The uniqueness of the Italian context and the "soft power" of Mediterranean gastronomy

It is crucial to understand that the host nation's impact on the culinary customs of immigrant communities varies around the globe. Italian cuisine is special because of its social dynamics, distinctive Mediterranean gastronomic

identity, and the international renown of its cuisine [59]. Because different host countries have different attitudes toward migrants, varying degrees of multiculturalism, and distinct culinary landscapes, the integrating experiences and culinary adaptations seen in Italy cannot be extrapolated to all migrant groups globally. What might be true in Italy, with its rich Mediterranean food culture and potent culinary soft power, might not be true in other nations with differing gastronomic traditions, cultural integration programs, or access to ethnic markets [7]. The idea of "soft power" through food illustrates how the popularity of Italian cuisine can cause traditional dishes to gradually incorporate or adapt Italian flavors and components. Traditional meals may be replaced or altered as a result of the popularity of Italian cuisine in daily life, as well as its accessibility and cost. Additionally, communities from Mediterranean or Middle Eastern backgrounds, such as Syrians and Copts, feel a sense of comfort due to the common Mediterranean culinary elements, such as the usage of olive oil, vegetables, legumes, and herbs [12]. This common ground could make it easier to combine different cuisines while maintaining cultural values. However, the effect of Italian cuisine might be more resisted by groups like the Afghans, whose traditional diet is more distinctive, leading to a higher degree of resilience in maintaining traditional practices.

Limitations of the study

There are various restrictions on this study. The sample size might not adequately represent the variety found in each town. In addition, the moderate sample size in some cases, discrepancies between p-values and confidence intervals may arise due to sample size limitations and the use of Wald tests and should be interpreted with caution. It is important to note that multiple statistical comparisons were conducted without applying formal corrections, which may increase the risk of Type I errors. The classification of meals as robust, adaptable, or disappearing is subjective, and self-reported data may induce recollection bias. Furthermore, the results are unique to the Italian setting and might not apply to other host nations with distinct cultural dynamics. Additionally, the impact of global food trends and digitization on culinary practices is not thoroughly examined in this study.

To capture a wider range of viewpoints, future studies should increase the sample size and incorporate more diverse localities. A deeper understanding of how various cultural and policy factors affect the preservation or adaptation of traditional cuisines may be possible through comparative research conducted across several host nations. For instance, multisite comparisons with long-established migrant communities in other global contexts, such as those in other non-Mediterranean EU

countries or the United States, can shed light on processes of culinary hybridization and naturalization (e.g., the case of tacos al pastor). Investigating how digital media influences cooking practices and the transmission of culinary knowledge would also be beneficial, as online platforms play an increasing role in maintaining diasporic food traditions.

Conclusions

To sum up, this study looks at how Coptic, Syrian, and Afghan immigrant communities in Northwestern Italy modify their culinary customs while juggling the difficulties of migration with the preservation of cultural identity. Afghan cuisine, which is based on grains, meat, and dairy, offers comfort and nourishment, whereas Syrian cuisine, which emphasizes vegetables, legumes, and spices, is still closely tied to agricultural traditions. The plant-based meals that define Coptic cuisine reflect the region's long-standing dependence on grains and vegetables. The accessibility of regional ingredients, financial limitations, and social integration are some of the variables affecting these dietary adjustments. Food habits are also strongly influenced by age, gender, religion, and length of migration. These factors, along with the specific characteristics of each community, including their initial migration context and cultural heritage, contribute to the evolution of their culinary traditions over time.

A larger, more varied sample of migrant groups from various areas or countries of origin, as well as several host countries, could be included in future studies to broaden the scope. Future research could also benefit from longitudinal tracking of culinary adaptation processes over time and comparative studies across different migrant communities and host societies, offering deeper insight into how food practices evolve in transnational contexts.

Ultimately, food is more than sustenance; it is a vessel of memory, a marker of identity, and a resilient thread that ties migrant communities to their roots while helping them weave new connections in their host societies. This study highlights how culinary practices serve as both adaptive strategies and powerful expressions of cultural continuity in the face of displacement.

Author contributions

M.A.: Conceptualization, Methodology, Conducted Software Analysis and Visualisation, Writing Original Draft and Review. N.S.: Conceptualization, Methodology, Writing-Review and Editing, Visualisation (Photos), Student Supervision, Funding. L.L.: Investigation, Writing-Review and Editing. A.K.M.: Writing-Review and Editing. A.F.: Writing-Review and Editing. F.M.: Investigation, Writing-Review and Editing. C.G.: Investigation, Writing-Review and Editing. A. Peruzzo: Investigation, Writing-Review and Editing. D.M.Z.: Writing-Review and Editing, Student Supervision. A.Pieroni: Conceptualization, Data curation, Student Supervision, Writing-Review and Editing. All authors have read and agreed to the published version of the manuscript.

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Data availability

The data that support the findings of this study are presented in the article. Further inquiries can be directed to the corresponding author.

Declarations

Ethics approval and consent of participate

The study adhered to the International Society of Ethnobiology Code of Ethics: https://www.ethnobiology.net/wp-content/uploads/ISE-COE_Eng_rev_24Nov08.pdf (accessed on 24 March 2025). Before conducting interviews, verbal informed consent was obtained from all participants. Participants were fully informed about the research purpose, methods, and their rights, including those to withdraw from the study at any time.

Consent for publication

All informants allowed us to share their opinions and photographs for publication. In addition, the ethical guidelines and rules of the International Society of Ethnobiology (ISE) (<http://www.ethnobiology.net/>) were strictly followed.

Competing interests

The authors declare no competing interest. AP is the EiC of the JEET.

Author details

¹University of Gastronomic Sciences, Piazza Vittorio Emanuele II 9, 12042 Pollenzo, Italy. ²Mili Institute of Higher Education, 40M Road of Airport, Lab-E-Jar Square, Kabul, Afghanistan. ³Slow Food International, Via Mendicita Istruita 14, 12060 Bra, Italy. ⁴Department of Foreign Languages, Literatures and Cultures, University of Bergamo, Piazza Rosate 2, 24129 Bergamo, Italy. ⁵Department of Medical Analysis, Tishk International University, Erbil 4001, Iraq.

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